

# **SmartWare Software System**

# COPYRIGHT INFORMATION

**Copyright, SmartWare Corporation, 1997. All Rights Reserved Worldwide. The ANGOSS software and most support materials (see below) are confidential and the property of SmartWare Corporation. They may only be used under license. Any unlicensed use, reproduction, disclosure, decompilation, or transfer is strictly prohibited. Use of ANGOSS software is governed by the License Agreement.**

**ANGOSS is a trademark of SmartWare Corporation. SmartWare is a trademark of Informix Software, Inc. All brand and product names in this publication are registered trademarks or trademarks of their respective owners/holders.**

Acrobat(R) Reader copyright (C) 1987-1996 Adobe Systems Incorporated. All rights reserved. Adobe and Acrobat are trademarks of Adobe Systems Incorporated

The programs "bmtopppm, giftopppm, pxtopppm, tiftopppm, ppmtobmp, ppmtogif, ppmtopcX, and ppmtotif" are derived from the PBMPlus package, written by Jef Poskanzer. The PBMPlus package has the following copyright:

Copyright (C) 1988, 1989, 1991 by Jef Poskanzer. Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. This software is provided "as is" without express or implied warranty.

The programs "tiftopppm and ppmtotif" contains the "libtiff" package, which was written by Sam Leffler. The libtiff package has the following copyright:

Copyright (c) 1988, 1989, 1990, 1991, 1992 Sam Leffler

Copyright (c) 1991, 1992 Silicon Graphics, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that (i) the above copyright notices and this permission notice appear in all copies of the software and related documentation, and (ii) the names of Sam Leffler and Silicon Graphics may not be used in any advertising or publicity relating to the software without the specific, prior written permission of Sam Leffler and Silicon Graphics. THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The program "tiftopppm and ppmtotif" are derived from software written by Patrick J. Naughton, which has the following copyright:

Copyright (c) 1990 by Sun Microsystems, Inc.

Author: Patrick J. Naughton naughton@wind.sun.com Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. This file is provided AS IS with no warranties of any kind. The author shall have no liability with respect to the infringement of copyrights, trade secrets or any patents by this file or any part thereof. In no event will the author be liable for any lost revenue or profits or other special, indirect and consequential damages.

The programs "bmtopppm and ppmtobmp are based on software written by David W. Sanderson, which contains the following copyright:

Copyright (C) 1992 by David W. Sanderson. Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. This software is provided "as is" without express or implied warranty.

The programs "pxtopppm and ppmtopcX" is based on a program written by Michael Davidson, which contains the following copyright:

Copyright (c) 1990 by Michael Davidson Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. This file is provided AS IS with no warranties of any kind. The author shall have no liability with respect to the infringement of copyrights, trade secrets or any patents by this file or any part thereof. In no event will the author be liable for any lost revenue or profits or other special, indirect and consequential damages.

Portions of this software are (c) Copyright 1984 FairCom Columbia MO, All Rights reserved.

# Table of Contents

<b>Table of Contents .....</b>	<b>i</b>
--------------------------------	----------

<b>Chapter 1: Introduction to ANGOSS .....</b>	<b>1 - 1</b>
--	--------------

<b>ANGOSS .....</b>	<b>1 - 1</b>
The ANGOSS Environment .....	1 - 1
ANGOSS O.A. Module Descriptions .....	1 - 1
The ANGOSS Developer System.....	1 - 2
About this Manual .....	1 - 2

<b>Chapter 2: Common System Features .....</b>	<b>2 - 1</b>
--	--------------

The Main Menu .....	2 - 1
Command Line Options.....	2 - 1
Leaving ANGOSS .....	2 - 5
Building Command Statements .....	2 - 5
ANGOSS Features .....	2 - 6
Quick Keys .....	2 - 7
Using On-Line Help .....	2 - 8
Help Text .....	2 - 9
Help Table of Contents .....	2 - 10
Help Index .....	2 - 11

Help for Error Messages .....	2 - 12
Resource Library .....	2 - 12
Setting Defaults .....	2 - 13
Selecting Definition Menus.....	2 - 13
Changing Default Settings.....	2 - 13
Tools OS Command .....	2 - 15
ANGOSS Text-Editor.....	2 - 16
Tools Edit-Printer Command.....	2 - 16
Using the Mouse.....	2 - 16
Mouse Drivers .....	2 - 16
General Use .....	2 - 17
The Mouse Buttons .....	2 - 17
Single and Double Clicking .....	2 - 17
Selecting Commands.....	2 - 18
Switching Modes.....	2 - 18
Cursor Movement and Scroll Bars .....	2 - 18
Block Marking.....	2 - 19
Prompter Selection .....	2 - 19
Buttons .....	2 - 19
Option Screens .....	2 - 19
Multiple Windows.....	2 - 20
Miscellaneous Features .....	2 - 20

## **Chapter 3: Directory and File Management ..... 3 - 1**

Organizing Information .....	3 - 1
Hierarchical Directories.....	3 - 3
Creating a Directory .....	3 - 3

Changing Directories Using Tools Directory .....	3 - 5
Deleting a Directory .....	3 - 6
Displaying a Directory File List .....	3 - 6
Performing File Operations .....	3 - 9
Pathnames .....	3 - 9
Using the File Prompter.....	3 - 10
Copying Files.....	3 - 11
Deleting Files.....	3 - 12
Moving Files.....	3 - 12
Renaming Files .....	3 - 12
Printing Files.....	3 - 12

**Chapter 4: Printing with ANGOSS..... 4 - 1**

Controlling the Hardware .....	4 - 1
Changing Printers or Printer Modes .....	4 - 3
Configuring Your Plotter .....	4 - 10
Module-Specific Print Options .....	4 - 12
How ANGOSS uses Fonts .....	4 - 12
Print Commands .....	4 - 20
Printing Draft.....	4 - 20
Printing Enhanced .....	4 - 20
Printing Special Characters .....	4 - 21
Using HP4 Printers .....	4 - 21

## **Chapter 5: Editing Descriptor Files ..... 5 - 1**

Overview.....	5 - 1
Descriptor Files and Printer Drivers .....	5 - 2
Storing Descriptors Files .....	5 - 3
Using the Descriptor Editor.....	5 - 3
Descriptor Editor Sections .....	5 - 3
Moving Around the Descriptor Editor .....	5 - 4
Entering Descriptor Information .....	5 - 6
Units of Measure .....	5 - 10
Accessing the Descriptor Editor.....	5 - 10
Descriptor Editor Prompts .....	5 - 12
Descriptor Name .....	5 - 13
General Description Section.....	5 - 13
Portrait Duplex Set/Reset Sequence.....	5 - 20
Landscape Duplex Set/Reset Sequence.....	5 - 20
Paper Path Section.....	5 - 20
Paper Size Section.....	5 - 22
Fonts Section .....	5 - 24
Proportional Space Table Section .....	5 - 32
Character Generation Table Section .....	5 - 34
Movement and Graphics Commands Section .....	5 - 36
Font Sequences Section.....	5 - 42
Printer Resolution.....	5 - 46
Color Sequences .....	5 - 51
Example Tasks .....	5 - 59
Modifying Descriptors Manually .....	5 - 61
Decompiling and Compiling Printer Descriptors.....	5 - 61
File Format .....	5 - 63
LSC Overview.....	5 - 70
Overall LSC format.....	5 - 70
DSC/LSC file basics: .....	5 - 70

RECORD DESCRIPTIONS .....	5 - 73
PAPER PROFILES .....	5 - 88
PAGE START/END .....	5 - 90
FONT SPECIFICATION .....	5 - 90
Customizing Drivers and Other Descriptors.....	5 - 108
Screen Driver.....	5 - 108
Character Comparison Table.....	5 - 114

## **Chapter 6: Creating and Using Macros..... 6 - 1**

Creating Macros.....	6 - 1
Remembering Macros .....	6 - 1
Suspending Remember Mode .....	6 - 2
Finishing Macros.....	6 - 2
Editing Macros.....	6 - 2
Advanced Macro Terms .....	6 - 4
Saving Macros .....	6 - 8
Loading Macros .....	6 - 9
Unloading Macros .....	6 - 10
Suspending Macros.....	6 - 10

## **Chapter 7: Using the ANGOSS Calculator ..... 7 - 1**

General Features .....	7 - 1
Formula Mode .....	7 - 4
Algebraic Mode .....	7 - 6
Exiting The Calculator.....	7 - 9

## **Chapter 8: Using the Appointment Manager..... 8 - 1**

Running the Appointment Manager .....	8 - 1
From the Main Menu.....	8 - 1
Within Module .....	8 - 2
Placing Appointment-Manager on ANGOSS Menus.....	8 - 2
Using the Keyword Appointment-Manager.....	8 - 3
Exiting the Appointment Manager .....	8 - 3
Operating Modes .....	8 - 3
Appointment Manager Help .....	8 - 3
Calendars .....	8 - 4
Appointment Manager Screens.....	8 - 4
Day Screen .....	8 - 4
Week Screen.....	8 - 7
Month Screen .....	8 - 9
Setting Defaults .....	8 - 12
Creating Calendars.....	8 - 13
Inserting Appointments.....	8 - 13
Naming and Saving Appointment Files .....	8 - 15
Attaching a Password.....	8 - 16
Attaching a Heading.....	8 - 17
Accessing Calendars.....	8 - 18
Managing Calendars .....	8 - 19
Moving to Appointments .....	8 - 19
Editing Appointments .....	8 - 20
Deleting Appointments .....	8 - 21
Searching for Appointments.....	8 - 22
Printing Appointments .....	8 - 23

Managing Directories and Files ..... 8 - 25

**Chapter 9: System Command Reference..... 9 - 1**

Help Commands ..... 9 - 1

Remember Commands..... 9 - 2

    Remember Start ..... 9 - 2

    Remember Finish..... 9 - 2

    Remember Tools..... 9 - 3

    Remember Execute..... 9 - 4

    Remember Load..... 9 - 5

    Remember Unload ..... 9 - 5

Tools Commands ..... 9 - 5

    Tools Calculator..... 9 - 5

    Tools Directory ..... 9 - 6

    Tools File ..... 9 - 7

    Tools Macros ..... 9 - 8

    Tools New-Font..... 9 - 9

    Tools OS ..... 9 - 10

    Tools Preferences..... 9 - 11

    Tools Resource ..... 9 - 17

    Tools Text-Editor..... 9 - 17

Tools Edit-Printer .....	9 - 18
Quit Commands .....	9 - 18

**Chapter 10: ANGOSS Directory Structure..... 10 - 1**

How ANGOSS Finds Its Files .....	10 - 1
Main System Directory .....	10 - 1
Message files .....	10 - 1
Default files (*.def) .....	10 - 2
Local Resource File (resource.lrl) .....	10 - 2
System Resource File (resource.srl) .....	10 - 3
Extended Terminal Information (etic files) .....	10 - 3

**Appendix A: File Extensions..... A - 1**

File Extensions in Alphabetical Order .....	A - 1
File Extensions by Module .....	A - 6

**Appendix B: ANGOSS Special Characters.....B - 1**

ANGOSS Special Characters .....	B - 1
---------------------------------	-------

**Appendix C: Character Set Chart..... C - 1**

Character Set Chart .....	C - 1
---------------------------	-------

**Appendix D: Hardware Worksheet ..... D - 1**

Hardware Worksheet..... D - 1

**Appendix E: User Directory Worksheet.....E - 1**

User Directory Worksheet..... E - 1

**Appendix F: Recommended Directory Structures .....F - 1**

Directory Structures .....F - 1

**Appendix G: Conversion From Older Versions ..... G - 1**

ANGOSS 2.4x (Unix)..... G - 1

SmartWare II version 1.5x or ANGOSS 2.30 (DOS)..... G - 1

Reconfiguration ..... G - 1

Enriched Applications ..... G - 2

Project Processing Applications ..... G - 3

SmartWare II 1.00 to 1.02 ..... G - 3

Communications ..... G - 4

Database..... G - 4

Spreadsheet ..... G - 4

Word Processor..... G - 6

Printer Descriptor Files.....	G - 6
Project Files .....	G - 7
SmartWare 2.0 - 3.10.....	G - 8
Applications.....	G - 8
Communications.....	G - 8
Database.....	G - 9
Database Screen Converter .....	G - 10
Spreadsheet.....	G - 13
Word Processor.....	G - 13
Project Files .....	G - 15
Converting Other Definitions .....	G - 19

**Index..... Index -1**

# Chapter 1: Introduction to ANGOSS

## ANGOSS

ANGOSS is an acronym for "A New Generation Of Software Solutions," a revolutionary software environment in which information management applications can be constructed and operated. The combination of the ANGOSS Environment and Developer System provides a rich development, management, and user environment unequalled in today's rapidly evolving software industry.

## The ANGOSS Environment

The Environment consists of two main parts: the ANGOSS Office Automation (O.A) and the Application Shell. The ANGOSS O.A. software is the core system that provides the Communications, Database, Spreadsheet, and Word Processor modules. If you do not have the Developer System or do not use Enriched Applications, created by the Developer System, then this is the only part of ANGOSS you will be using.

**NOTE:** You can still create and use applications, but they will not have the automated features of Enriched Applications.

## ANGOSS O.A. Module Descriptions

**ANGOSS Communications** is a complete communications program that performs two primary functions: terminal emulation and file transfer. The module can perform sophisticated, automatic, unattended communications jobs.

**ANGOSS Database** is a full-featured relational database management program that can be used in virtually any business, educational, or private environment where there is a need to record, manipulate, store, and retrieve data quickly and easily.

**ANGOSS Spreadsheet** is an electronic "accounting" worksheet designed to handle numbers, text, and formulas. ANGOSS' formula calculation capabilities provide you with trigonometric, statistical, business, date and time functions, as well as matrix analysis

capabilities. Once you have created a worksheet, you can use ANGOSS Graphics to present your results in a variety of graphs.

**ANGOSS Word Processor** is a sophisticated word processing program that enables you to create, edit, and print virtually any type of document. This module includes a spellchecker and a thesaurus program.

Every module in ANGOSS uses its own data structures. This allows each module to optimize the operations it performs. In order to integrate the different data structures, each module has the ability to translate data into one or more formats that can be used by any other ANGOSS module.

Additionally, each ANGOSS module has interface capabilities with one or more outside programs through a number of common file formats.

## The ANGOSS Developer System

The ANGOSS Developer System is used to create and modify RAD Enriched Applications. This menu driven development tool is accessible from within the application menu structure itself, via a single key-press. Enriched Applications are operational from the moment they are first created. Alterations or additions become active when they are defined, allowing developers to make changes quickly, and to see results immediately. Applications can be created in any combination of the four ANGOSS O.A. modules.

## About this Manual

**ANGOSS Software System** covers system and memory requirements, system-wide ANGOSS features and the Descriptor Editor. A succinct reference of system-wide commands is provided in the last chapter. The contents of each chapter is described below.

**Chapter 1: Introduction to ANGOSS** describes the uses of each module and the contents and conventions of the documentation.

**Chapter 2: Common System Features** discusses a number of topics common to all modules. These include entering and leaving ANGOSS, building command structures, using the Help system, integrating data between modules, and setting system-wide operational defaults.

**Chapter 3: Directory and File Management** discusses the creation, use, and organization of directories and files. Tools Directory and Tools File commands are also explained.

**Chapter 4: Printing with ANGOSS** provides an overview of printing in ANGOSS. Topics include configuring printers and plotters, the function of printer descriptor files, specifying paper profiles, font types, changing character sets, and determining which print command to use.

**Chapter 5: Editing Descriptor Files** explains the role of descriptor files in printing and how to modify them using the Descriptor Editor.

**Chapter 6: Creating and Using Macros** defines macros and explains how to create them and use them to simplify routine tasks.

**Chapter 7: Using the ANGOSS Calculator** explains how to use the calculator in both formula and algebraic modes.

**Chapter 8: Using the Appointment Manager** describes the appointment calendar tool that can help you track your daily, weekly, and monthly meetings and tasks.

**Chapter 9: System Command Reference** describes each command associated with the system commands: Help, Remember, Tools, and Quit.

**Chapter 10: ANGOSS Directory Structure** describes the directory structure of the ANGOSS system that is created by the install procedure.

## Chapter 1: Introduction to ANGOSS

## Chapter 2: Common System Features

One reason that ANGOSS is easy to learn is that the modules share many common features. All ANGOSS modules have similar screen designs, functional capabilities, and command structures. This chapter explains some of these common features.

### The Main Menu

The Main Menu gives you access to each module, information about On-line Help, and the Tools and Remember commands. The menu options are:

- Communications
- Database
- Spreadsheet
- Wordprocessor
- Help
- Remember
- Tools
- Quit

### Command Line Options

Just as you can go to a specific module upon entering ANGOSS, you can also use various entry options to automatically perform special tasks.

**Table 2-1** The following table lists start up flags for all versions of ANGOSS SmartWare. These lists can also be obtained by executing `angoss` or `angossx` with the `-x` flag.

**Version 2.6 and Later - DOS (386 mode) / Windows**

- x display this explanation
- mod module specifier ( -cm, -db, -ss, -wp, c, d, s, w )
- a cmds execute the specified commands upon entering ANGOSS
- d path set the current data path
- f ignore network driver
- k use interrupts to read keyboard (needed for some TSR's & voice)
- n ignore floating point co-processor
- oa num set the size of the argument stack
- oc file play key stroke file upon entering ANGOSS
- od [file] display the given file upon entry (default=start.msg)
- oe set default project file execution to be in-memory
- oh num change max number of open files (default=255)
- oi turn off the intro screen
- ok alternate mouse handling - compatible with pop-up TSR's
- om [file] search for a menu keyword file (default=smart.mnu)
- op num set the size of the print buffer (default=500)
- os num override auto detection of speech rec. software
- ot num set the size of the string stack
- p file automatically execute file upon entering Angoss
- s path set the path where ANGOSS is located
- m str memory configuration
- v0 disable virtual memory
- vf file swap file to use for virtual memory (default=ANGOSS.SWP)
- vd delete swap file on exit (default=no)
- vn num minimum swap file size, less cushion (default=128K)
- vx num maximum swap file size (default=64MB)
- vi num swap file increment size (default=128K)
- vs num size of virtual memory in K bytes (default=64MB)
- vc file virtual memory configuration file (default=none)
- vu num maximum amount of physical memory (low & ext) (def=4096K)

**Version 2.6 DOS (286 mode)**

- x display this explanation
- mod module specifier ( -cm, -db, -ss, -wp, c, d, s, w )
- a cmds execute the specified commands upon entering ANGOSS
- d path set the current data path

-f	ignore network driver
-k	use interrupts to read keyboard (needed for some TSR's & voice)
-n	ignore floating point co-processor
-oa num	set the size of the argument stack
-oc file	play key stroke file upon entering ANGOSS
-od [file]	display the given file upon entry (default=start.msg)
-oe	set default project file execution to be in-memory
-oh num	change max number of open files (default=255)
-oi	turn off the intro screen
-ok	alternate mouse handling - compatible with pop-up TSR's
-om [file]	search for a menu keyword file (default=smart.mnu)
-op num	set the size of the print buffer (default=500)
-os num	override auto detection of speech recognition software
-ot num	set the size of the string stack
-p file	automatically execute file upon entering ANGOSS
-r num	reserve low memory (def=16K)
-s path	set the path where ANGOSS is located
-m str	memory configuration
-v0	disable virtual memory
-vf file	swap file to use for virtual memory (default=ANGOSS.SWP)
-vd	delete swap file on exit (default=no)
-vn num	minimum swap file size, less cushion (default=128K)
-vx num	maximum swap file size (default=16384K)
-vi num	swap file increment size (default=128K)
-vs num	size of virtual memory in K bytes (default=16384K)
-vc file	virtual memory configuration file (default=none)
-vu num	maximum amount of physical memory (low & ext) (def=4096K)
-ve num	expanded memory swap size (default=0K)

### **Version 1.51 (DOS)**

-a cmds	execute the specified commands upon entering ANGOSS
-d path	set the current data path
-e	ignore expanded memory
-e num	use specified expanded memory in KBs
-e,num	leave specified expanded memory in KBs free
-f	ignore network driver

## Chapter 2: Common System Features

-n	ignore floating point co-processor
-oa num	set the size of the argument stack
-od [file]	display the given file upon entry (default=start.msg)
-oe	set default project file execution to be in-memory
-oh num	change max number of open files (default=255)
-oi	turn off the intro screen
-om [file]	search for a menu keyword file (default=smart.mnu)
-op num	protected mode only - set the size of the print buffer (default=500)
-os num	protected mode only - set hardware stack in bytes (10,000 or higher)
-ot num	set the size of the string stack
-ov num	protected mode only - overlay mode (1, 2, or 3)
-p file	automatically execute file upon entering ANGOSS
-r num	reserves memory for Tools OS in KBs (def=16K)
-s path	set the path where ANGOSS is located
-x	use expanded memory and inhibit disk paging
-y	prevents low memory from being allocated

### **Unix:**

-x	Display this explanation
s	Start Spreadsheet (must be first argument)
w	Start Word Processor (must be first argument)
d	Start Data Base (must be first argument)
c	Start Communications (must be first argument)
-p<file>	Run project upon entry (-pstart)
-d<dir>	Data directory (-d/usr/mydir)
-a<cmds>	Run a command (“-afile load \”mydoc\””)
-oa<size>	Value stack size (-oa1000)
-oe	Default project execution mode = in-memory
-od<file>	Special start up screen (-odmyfile)
-oi	Suppress start up screen (-oi)
-om<menu>	Optional menu (-ommymenu)
-ot<size>	String stack size (-ot1000)

## Leaving ANGOSS

When you are working in a module, you can use the Quit Menu to leave ANGOSS, transfer to another module, or go to the Main Menu. Depending on the situation, you may use **Esc** or **F10** to reach the Quit Menu.

### Using Esc

If the top level module menu is not displayed in the Control Area of the screen, press **Esc** until the menu appears. From the menu, select Quit. You are now at the Quit Menu. Select Quit again if you want to leave ANGOSS and return to the operating system. Select the module name if you want to transfer to another module, or Main Menu if you want to return to ANGOSS' Main Menu.

### Using F10

You may also use **F10** to leave ANGOSS in some circumstances. For example, in the Word Processor, pressing **F10** in either Text Entry Mode or Command Mode will return you to the Quit Menu. From Text Entry Mode, **F10** will bypass Command Mode and go straight to the Quit Menu. From this menu you can choose to Quit to the operating system or transfer to another module or the Main Menu.

## Building Command Statements

With ANGOSS you build commands by making selections from hierarchical menus.

The first level of command keywords is displayed following the prompt `Menu :` in the Command Mode of all modules. You can select a command from the menu in one of two ways:

- Position the highlighter over the appropriate keyword and press **Enter**. Use **Spacebar** or **+** to move the highlighter forward or **-** to move it backward through the menu. In version 2.6 and higher, you can use the mouse to select the command.
- Or, type the first letter of the keyword.

Once you have selected a command keyword, a list of option keywords appears. You can select a keyword from this list in the same manner. Depending on the command, several levels of option menus can appear.

Some commands also require you to type in an entry or make a selection from a prompter list. For example, if you select File from the main keyword menu, and then Load from the subsequent option menu, a prompter list of all available files in the current directory is displayed. You must select or enter the name of the file you wish to load in order to complete the command.

All keyword selections and entries combine to create the command syntax that initiates an action. For example, look at the following Spreadsheet command:

Edit Copy From r1c1 to r1c2

Edit, Copy, and From are keywords selected from hierarchical menus, and r1c1 and r1c2 are entries (because you enter them as responses). The combination of all keywords and entries is a command.

To finish a command using defaults, press **Ctrl Enter**. To cancel a command while selecting keywords and typing entries, press **Esc** or **Alt Z**. **Esc** allows you to go back one level in the menu hierarchy.

**Alt Z** will take you all the way back to the top level menu.

For example, if you selected Tools File and decided not to complete the command format, press **Esc** or **Alt Z**. If you press **Esc**, ANGOSS displays the previous menu. You can either continue to press **Esc** to return to the top level menu or select another keyword from the menu that is displayed to initiate another command. Or, you can return to the top level in one step by pressing **Alt Z**.

A series of commands can be combined to create a project file. Refer to the **ANGOSS Project Processing** manual for additional information about project files.

## ANGOSS Features

Keep in mind the following important ANGOSS features.

**Modular Integration.** Each module in ANGOSS has its own unique optimized data structure. The transfer mechanism between modules translates between these data structures. This permits you to run the module independently or to use it together with any combination of other ANGOSS modules.

**Paging.** With v2.3 and earlier, ANGOSS' paging feature automatically transfers information to disk or expanded memory (EMS) when available memory in RAM is

filled. This allows you to create very large documents or worksheets. Later versions of ANGOSS for DOS use virtual memory.

**Project Processing.** Project processing is a feature that allows you to develop and implement automated tasks. See the *ANGOSS Project Processing* manual for more information.

**Smart Programming Language.** The Smart Programming Language (SPL) is an application development language that is used to create ANGOSS project files. The language consists of module commands, project commands, and project functions.

**Fonts.** ANGOSS gives you great flexibility in type styles. A set of predefined fonts or a set of fonts you define can be used in any module. For details on how to use fonts, refer to the manual corresponding to the module in which you are currently working. The number and type of fonts available are dependent on your particular printer.

## Quick Keys

Quick Keys are keys that, when pressed, immediately execute special tasks or initiate command statements. Table 2-2 lists Quick Keys that can be used throughout the system. Additional Quick Keys are described in the Quick Reference.

**Table 2-2**

Quick Key	Action
F1	Displays help information on the screen.
F2	Displays a list of Quick Keys in the Control Area of the screen.
F8	Initiates the Remember Execute command.
F9	Repeats the previous command. (Useful for repetitive procedures.)
F10	Concludes the current operation. If no command is in progress, it displays a menu that allows you to leave ANGOSS.

Quick Key	Action
Alt K	Displays the ANGOSS Calculator.
Alt O	Initiates the Tools Directory Display command.
Alt X	Displays the last command and allows you to edit it.
Ctrl F1	Displays the Status Box showing available memory space, disk space, and version number of your product.
Ctrl O	Temporarily suspends ANGOSS to access DOS.
Shift F10	Ignores any user-defined macros and uses ANGOSS' default definition for the next key pressed.
Alt Z	Cancels the current command selection and returns to the top level menu.
Ctrl F10	Suspends Remember Mode while creating a project file or defining a macro.

## Using On-Line Help

ANGOSS has extensive on-line help that displays context-sensitive information from any menu or user-input level. On-line help also supplies information for all program error messages. The text for the on-line help is derived from the reference chapters of the printed documentation.

On-line help is divided into two broad categories: common and module-specific. The common help includes information that is common to all modules and is drawn from *ANGOSS Software System*, *ANGOSS Project Processing*, and *ANGOSS Formula Reference*. The module help includes information specific to the module in which you are currently working and is taken from the corresponding module manual.

In addition to the help text, a six-level table of contents and a two-level index can help you select a specific item of help information.

On-line help information can be displayed either through a series of keyword selections or by pressing **F1**. When you press **F1**, the system displays help text related to the task you are performing or the error message you received.

By selecting Help from the module menu, you can display either the table of contents or index from which you may choose a help topic. You may also specify an error number to display help for that error message.

## Help Text

The help text is based on the documentation in the reference chapters of each manual. Subject headings are highlighted for quick identification. You may want to display the help text in any of the following situations:

- You've begun the process of building a command statement and you don't understand each option; press **F1**. The text relating to the task you are performing appears.
- Using the table of contents or index, you select a particular subject and the text relating to that subject appears.
- You've received an error message and you need information in order to correct the problem; press **F1** while the error is still displayed. The text relating to the error message appears.
- You want information about a particular error message; select the Help On-Error command and enter the error number. The help text relating to the error message appears.
- You want information on a particular formula or command while editing a project file or using the calculator.

The help text identifies topics related to the subject you are reading about. To read information about those topics, move the pointer to the topic (using **+** and **-**) and press **Enter**. Help text for that topic appears.

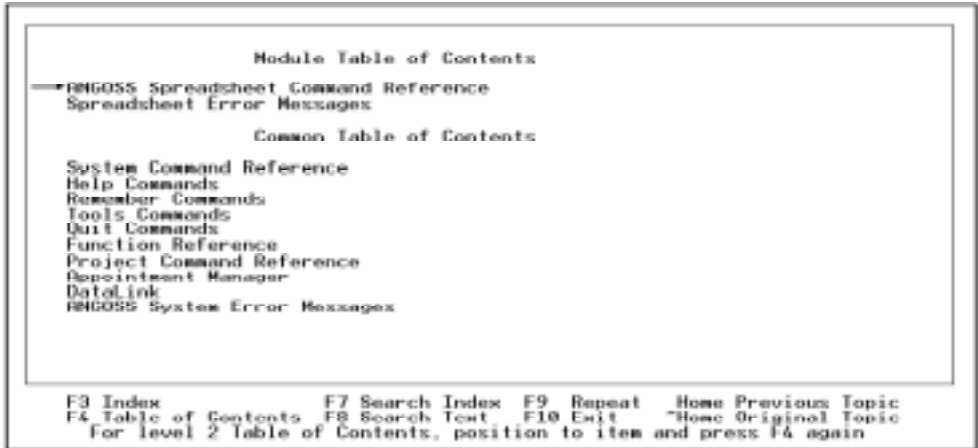
The help feature keeps a record of the last ten topics you displayed, as well as the original topic. Therefore, you may jump from topic to topic and back again, if necessary. To return to the original topic, press **Ctrl Home**. To return to the previous topic, press **Home**.

You may also search the text for a particular word or phrase. This word or phrase, called a string, cannot be longer than 40 characters. To search the text, press **F8** and enter the string. You will be taken to the first place where that string appears in the help text. Press **F9** to search for the next occurrence.

Context-sensitive help for formulas and commands is available in the project file editor and in the calculator. Press **F1** while the cursor is on the function or command you want information for. Note that this feature is not available in ANGOSS v2.3 and earlier.

## Help Table of Contents

The help table of contents is similar to the table of contents at the beginning of the printed manuals. When you select Contents from the keyword menu, the Table of Contents screen appears.



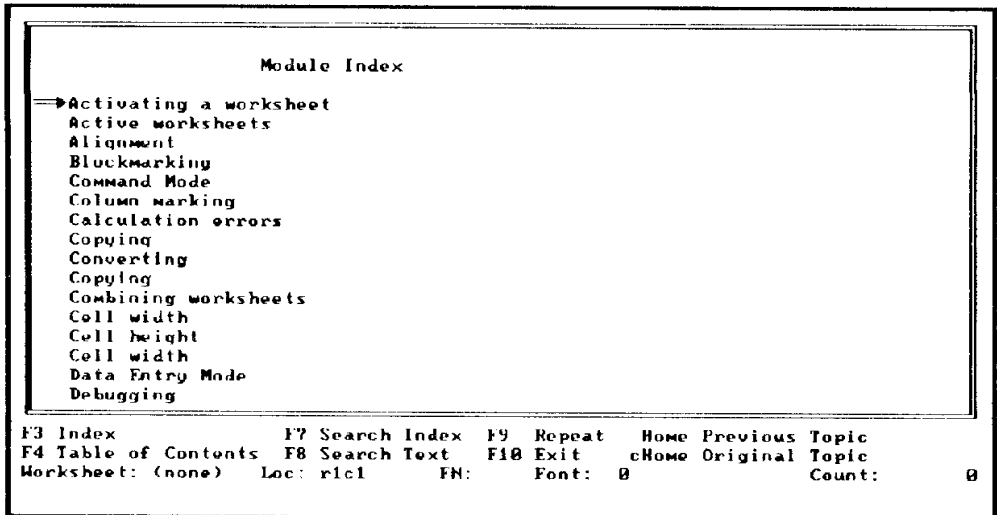
Notice that only the first level of headings appears. Press **F4** to display the next level of headings and continue to do so until you reach the heading level you want. Move the pointer (using the cursor movement keys) to the topic that interests you and press **Enter**. Help information related to that topic is displayed. You can:

- Return to the table of contents by pressing **F4**.
- Leave the table of contents and go to the index by pressing **F3**.
- Exit help and return to the module menu by pressing **F10**.

## Help Index

The help index is similar to the index at the back of the printed manuals. When you select Index from the module menu, the Help Index screen (Figure 2-1) appears.

*Figure 2-1.* ANGOSS Help Index screen



Notice only the first level of the index is displayed. To reach the second level, press **F3**. To return to the previous level, press **Esc**.

As in the help text itself, you may search the index for a particular word or phrase. The string can be up to 40 characters in length. To search the index, press **F7** and enter the string. Press **F9** to search for the next occurrence. You can:

- Return to the index by pressing **F3**.
- Leave the index and go to the table of contents from the index by pressing **F4**.
- Leave help and return to the module menu by pressing **F10**.

## Help for Error Messages

Error messages can be frustrating, especially if you cannot find the appropriate documentation to explain them. ANGOSS provides the appropriate documentation and easy access to it. When you receive an error message for which you need information, simply press **F1** and the appropriate help information appears. Press **Esc** to exit help.

Because each error message has been assigned a unique number, you may select help text about a specific error message at any time using the Help On-Error command. At the prompt, `Enter the error number:`, enter the corresponding error number and press **Enter**. The help text appears.

You can also use Help On-Error to display help information for the last error message you received because ANGOSS keeps the error number in memory. Simply press **Enter** at the prompt `Enter the error number:` and the information appears.

To leave help, press **F10** or **Esc**.

A listing of error messages and their corresponding numbers appears in the *ANGOSS Project Processing* manual.

## Resource Library

The resource library is a file created automatically during installation. This file is stored in the system resource directory under the name ***resource.srl*** and contains resources such as drivers, descriptors, and font files. By combining these resources into one file, ANGOSS speeds up activities that must access these resources.

The resource library is managed with the Tools Resources Commands. For more information on the Tools Resource commands, refer to the *System Command Reference* chapter. Information about Resource libraries is also presented in the *ANGOSS Install Manual*.

Understanding and managing Resource libraries is especially important on a network. If you are running ANGOSS on a network, you have the option of creating and maintaining a Local Resource Library ***resource.lrl***. This file may contain resources which you need but which others using ANGOSS do not need, such as a printer descriptor for a printer attached to your machine.

## Setting Defaults

Default settings determine how the ANGOSS system operates. These default settings can be changed using Tools Preferences commands, which are available for the system, each module, and your hardware configuration. Global and hardware preferences can be accessed from the Main Menu and within each module. Module preferences can be accessed only within a particular module. For example, if you are in ANGOSS Spreadsheet, Tools Preferences keyword options would be Spreadsheet, Global, and Hardware. If you are in ANGOSS Word Processor, your keyword options would be Word Processor, Global, and Hardware and so on. For the purpose of this documentation, the term "module" will refer to the current module.

## Selecting Definition Menus

When you execute a Tools Preferences command, a definition menu is displayed listing all the parameters that can be set for that aspect of ANGOSS. The definition menu for the Word Processor, for example, lists parameters such as pagination and paragraph format.

Detailed explanations about the definition menus for each module are available within each module manual. Global and hardware definition menus are explained below.

Global preferences affect all ANGOSS modules. They define default date, value, and time formats and data paths, as well as entry options that are used throughout the ANGOSS system. Individual menu items are explained in the ***System Command Reference*** chapter.

Default hardware preferences are initially set during installation. Tools Preferences Hardware allows you to change default settings for hardware from within any module. This includes settings for text and graphics screens, printer, communications, keyboards and networks.

## Changing Default Settings

Once you've selected one of the keyword options under Tools Preferences, a definition menu appears. The menu identifies items whose default settings are designated through prompts or option lists.

Prompts request that you enter a setting. Settings may already appear next to each prompt when you enter the menu. To change the setting for a particular prompt, move the pointer to the appropriate line and type the new information. In some cases, the Quick Key **F6** is available to "pop-up" a selection list for the setting. If you just want to edit the existing information, press the **F2** key to enter Edit Mode.

Option lists show alternatives to the right of the menu item, with one of the alternatives highlighted. The highlighted alternative is the current setting for that item. To change the setting, move the highlighter to the appropriate setting.

The entire list of preferences may be larger than a single screen. Use the keys listed in Table 2-3 to move the pointer and scroll through the definition menu to display additional preference items.

**Table 2-3**

<b>Key</b>	<b>Action</b>
<b>down arrow</b>	Moves the pointer down one line.
<b>up arrow</b>	Moves the pointer up one line.
<b>PgUp</b>	Moves the pointer up one screen.
<b>PgDn</b>	Moves the pointer down one screen.
<b>Home</b>	Moves the pointer to the top of the current screen.
<b>End</b>	Moves the pointer to the bottom of the current screen.
<b>Ctrl Home</b>	Moves the pointer to the top of the preferences definition menu.
<b>Ctrl End</b>	Moves the pointer to the very end of the preferences definition menu.
<b>Spacebar</b>	Moves the highlighter one option to the right on an option list.
<b>Backspace</b>	Moves the highlighter one option to the left on an option list.
<b>Esc</b>	Exits the preferences menu without saving any changes.

Table 2-4 lists the definition menu Quick Keys and corresponding actions that may be used to determine the appropriate settings.

**Table 2-4**

Key	Action Invoked
F1	Displays help information.
F2	Edits text on prompt line. (Use arrow keys to move cursor while editing.)
F3	Deletes the text currently on the prompt line.
F6	Displays valid responses to the prompt.
F10	Saves the information and exits the preferences definition menu.
Esc	Exits without saving.

For a detailed description of each menu item in either the Global or Hardware Preferences definition menu, refer to the **System Command Reference** chapter in this manual.

For a detailed description of each menu item in the module Preferences definition menu, refer to the command reference chapter in the appropriate module manual.

## Tools OS Command

ANGOSS allows you to perform operating system commands without leaving the system. The Tools Os command displays a prompt in the control area where you can enter one DOS command. To use this feature:

STEP 1: Select Tools Os.

STEP 2: Type the command after the prompt `Enter command:` and press **Enter**, or press **Enter** to go to the OS prompt.

Upon completion of the command, you are returned to ANGOSS. Or, if you pressed **Enter** to go to the OS prompt, type ***Exit*** to return to ANGOSS.

### **ANGOSS Text-Editor**

In ANGOSS you can create or edit text files within any module using the ANGOSS Text-Editor. The text editor works similarly to a word processor, but does not offer special formatting or printing features. The file produced will be text (alphanumeric characters), but without special fonts or other formatted characteristics.

### **Tools Edit-Printer Command**

Tools Edit-Printer allows you access to the Descriptor Editor in order to modify cartridge and printer descriptor files. For more information on using Tools Edit-Printer, read the ***Editing Descriptor Files*** chapter.

**NOTE:** This command is only available in the Main Module.

## **Using the Mouse**

### **Mouse Drivers**

Version 2.6 and higher has mouse support. To use the mouse, a mouse driver must be loaded prior to running ANGOSS SmartWare. Most suppliers of mouse hardware include a software driver on diskette. If you do not have a mouse driver on your system, please contact your dealer and request one. For proper operation, a Microsoft compatible mouse and driver must be used.

**NOTE:** If your mouse driver does not work correctly with ANGOSS but works fine in other packages, try using a small text driver (i.e., the 80x25 text driver) or obtain an updated mouse driver.

## General Use

Throughout the ANGOSS SmartWare manuals, commands and other actions are described in terms of keystrokes. In most cases however, the mouse can be used in place of the keyboard.

The following mouse functions are common to all modules in ANGOSS SmartWare. Details of mouse capabilities that are unique to a specific module are discussed in the corresponding manual. As a general guideline, the mouse can be used for the following actions:

- Menu selection
- Cursor location and scrolling
- Block marking
- Prompter selection
- Option Screen editing
- Button selection

## The Mouse Buttons

The primary mouse key is the left button. It is used to select and edit a variety of features including those listed previously. The right mouse button defaults to the **Esc** keystroke. Clicking it causes SmartWare to perform the same function as pressing the **Esc** key.

**NOTE:** It is possible to program the right button to execute a different keystroke. For details on programming this button, see the MOUSEINFO function later in the *Formula Reference* manual.

## Single and Double Clicking

When making selections, usually the mouse button is clicked only once. However, in some cases, a double click is required.

### **To single click a selection:**

Point the mouse cursor at the desired feature and click the left button once. As an example, try this on any command list item.

### **To double click a selection:**

Move the cursor onto an item and quickly click the mouse button twice. This is a feature of pop-up menus such as the file prompter.

## Selecting Commands

The mouse can be used to select command list items. Simply move the mouse cursor, place it on the desired command, and single click the left mouse button. Note that, since the right mouse button defaults to the **Esc** keystroke, you can usually click it once to return to the previous menu level.

## Switching Modes

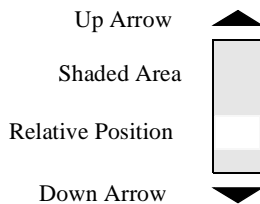
Again, because the right mouse button defaults to the **Esc** keystroke, you can switch between Command mode and Edit/Update mode with a single click. To return to the previous mode, click the right button once more. Note that, as with the keyboard, you must be on a top level menu to switch from Command mode.

## Cursor Movement and Scroll Bars

When editing or viewing a file, you can use the mouse to move the cursor to any valid position on the screen. To move the cursor to a new position, simply point to another location and single click the left mouse button.

In addition, there are two sets of Scroll Bars on the screen whenever the Database, Spreadsheet, Word Processor, or Text-editor is active. The vertical Scroll Bar on the right is used to control up/down movement while the horizontal Scroll Bar along the bottom controls left/right movement.

Shown below is an example of a vertical Scroll Bar:



To cursor up or down, click on the appropriate arrow. Notice that the highlighted area on the Scroll Bar shows the relative position of the cursor within the file. You can page up and down by clicking on the Scroll Bar above or below this highlighted area. To rapidly scroll through a file, click and hold the left mouse button on the highlighter and pull it along the Scroll Bar. The horizontal Scroll Bar behaves in a similar manner except that movement is from side to side.

**Note:** Scroll Bars are not active when the window border is off.

### Block Marking

Block marking is generally initiated by selecting certain commands (such as Edit Copy in the Word Processor). Once you are in block marking mode, perform the following steps:

- Point the mouse at the start of the block. Click and hold the left button in this position.
- Next, while holding the left mouse button down, move to the end of the desired block. Scrolling will occur if the mouse is moved to the bottom of the edit window.
- Release the left mouse button. The blocked area should be highlighted.

If you make a mistake, simply repeat these steps.

### Prompter Selection

Prompters, also called pop-up menus, are used to select files, fields, and other items from a list. To make a selection from a prompter, double click on an item with the left mouse button. Note that a single click will not complete a selection, but will move the pointer. However, some prompters (i.e., the field prompter in the Database SORT command) allow for multiple item selection. In this case, a single click will toggle the highlighter on and off for any item you point at. Double click the final item to complete this type of selection.

When there are more than two lines of items in a prompter, a vertical scroll bar will appear along the right side. You can use this to scroll the contents of the prompter up and down.

### Buttons

Any Quick Key list (i.e., the list found at the bottom of the screen during the Word Processor's Edit mode) can be referred to as a button set. To select a particular button, simply point at it and single click the left mouse button. Since no action is taken until the mouse button is released, you can move around on the list until you make a decision.

### Option Screens

Executing `TOOLS PREFERENCES HARDWARE` demonstrates a typical example of an Option Screen. Here, there are data entry fields, bar menus, prompters, and buttons. You can edit an option by clicking on it and making the appropriate change. Most data entry fields have an associated

## Chapter 2: Common System Features

prompter that can be activated by clicking on the **F6** button at the bottom of the screen. Bar menus are a special case: when you click on this type of option, the item you actually clicked is selected.

Click on the **F10** button to complete editing the Option Screen.

### Multiple Windows

Creating multiple windows and moving between them is more intuitive with the mouse than with the keyboard, particularly in the Database and Word Processor modules.

Switching to a split window can be accomplished by clicking the left mouse button anywhere in that window.

Using the mouse to split windows in the Spreadsheet module is similar to the keyboard operation; however, in the Database and Word Processor, a few features have been added. After selecting the appropriate WINDOW SPLIT option, you can either single click anywhere in the window and then click on the prompt or just double click.

### Miscellaneous Features

Other miscellaneous mouse features are:

- **Editing colors**

Some commands display a color bar menu along the bottom of the screen. To select a color, place the mouse cursor on the desired option and single click the left mouse button.

- **Making default selections**

Occasionally a command leads to a prompt that requests keyboard input. These prompts often default to a value when the **Enter** key is pressed. For example, the number of copies requested in the DOCUMENT PRINT command. To enter a default value, place the mouse cursor on the prompt itself and single click.

- **Acknowledging error messages**

When an error has occurred, a single click on its message will perform the same function as pressing the space bar.

- **Character prompts**

Character prompts require a response such as yes or no before allowing an activity to continue. For example, *Abandon changes? (y/n)*. In this case, select the desired option by single clicking one of the characters within the brackets.

# Chapter 3: Directory and File Management

Directories enable you to organize files in conveniently related groups. By organizing files into directories and subdirectories, you use storage space efficiently and locate files easily.

## Organizing Information

A computer disk drive is similar to a filing cabinet in that important information is organized for safe storage and quick, efficient retrieval. You may arrange information into related groups such as taxes, insurance, loan, bank, and so on. Each topic can be separated further for better organization as seen in Table 3-1. File folders usually contain individual documents, receipts, and other information relative to a topic.

**Table 3-1**

<b>Taxes</b>	<b>Insurance</b>	<b>Loan</b>	<b>Bank</b>
Income	Auto	Mortgage	Savings
State	Home	Auto	Checking
Local	Life	School	

By organizing your information in this manner, you can go directly to a specific folder in the filing cabinet to find information about your life insurance, as an example. This same concept is useful in organizing a disk drive into directories, subdirectories and files:

**Directories** are the major categories under which you keep files.

**Subdirectories** separate the information under each directory even further.

**Files** are the individual documents, worksheets, or data files stored within the directories and subdirectories.

Table 3-2 gives an example of directories and subdirectories organized similarly to the filing cabinet example mentioned previously.

**Table 3-2**

<b>Directories</b>	<b>Subdirectories</b>
taxes	income, state, local
insurance	auto, home, life, health
loan	mortgage, auto, school
bank	checking, savings

Once you have established the directories, you can store any related information in the appropriate location as seen in the following example:

Directory:            taxes  
Subdirectory:        income  
Files:                salary.ws  
                          business.ws  
                          salestax.ws  
                          interest.ws  
                          charity.ws  
                          misc.ws

Other ways to arrange files include separating them by software package, by user in a multi-user environment, by project, or by a combination of any of these structures. In these cases, each software package, user, or project would have a separate directory. Each directory could be divided into several subdirectories.

A typical arrangement for a directory organized by software and by user is shown in figure 3-1.

**Figure 3-1.** Directory Organization by Software**Example:**

```

ROOT
  DOS
  USERS
    ROB
    MARGO
      DB
      WP
      SS
    STEVE
      DB
  ANGOSS
    BIN

```

## Hierarchical Directories

Directories are organized in a hierarchy structure, similar to a tree. The root directory, the first level of the structure, is automatically created by the operating system during the formatting process. The terms "directory" and "subdirectory" both apply to the second level and below. For example, ANGOSS is a subdirectory of the root directory, and BIN is a subdirectory of the ANGOSS directory.

## Creating a Directory

The directories you create will be subdirectories of the root directory. The root directory of some drives contains system files the computer needs during startup, but it is not good practice to save other files to the root if more structure is available on the drive. Just as you would not want to dump papers randomly into a file drawer, you do not want to save documents, worksheets, and data files to the root directory of a large hard disk.

## Chapter 3: Directory and File Management

Once you've decided upon a directory structure, use Tools Directory Make to create directories. At the prompt, Enter a directory name, type a name for the directory you want to create.

If you want the new directory to be a subdirectory of the current directory, enter a subdirectory name. For example, to create a directory named "data" within the ANGOSS directory, make certain ANGOSS is the current directory, and type the name "data" at the prompt.

**NOTE:** To quickly determine the current path, select Tools Directory New-Directory and look at the *Path:* indicator at the left of the Status Line. Press **Esc** to cancel execution.

If you want to create a subdirectory in a location other than the current directory, you must enter a full pathname. The pathname includes a drive letter (DOS), directory name, and subdirectories. All directories in the pathname, except the last one, must already exist.

If the pathname you enter for the new directory has already been used, the message Unable to create the directory appears and you need to repeat the process using a different directory name or path.

**IMPORTANT:** For ANGOSS to display a prompter of directory names or filenames within a directory, you must enable the setting *Display of filenames for file prompting:* on the Tools Global Preferences menu. For more information, see **Using the File Prompter** later in this chapter.

Remember that you can also include a pathname in the *Data path:* prompt on your module Preferences menu to automatically save files to a particular location. Files will be saved to this path from within the module unless you change directories with the Tools Directory New-Directory command.

### Current Directory

The current directory is the directory from which you entered ANGOSS, unless you have defined a default data path on one of the Preferences menus. If you have defined a default data path, it becomes the current directory when you enter ANGOSS.

Any action performed in the current directory is saved in the current directory unless you specify otherwise. If you create and save a document without first changing directories or providing a different pathname at the filename prompt, that document is automatically saved in the current directory.

**NOTE:** To keep a hard drive well organized and to eliminate confusion, you should never save a document, worksheet, or data-file in the root directory or in the directory containing ANGOSS program files.

## The File Prompter

The file prompter displays the contents of the current directory. There are a few general rules to remember when using the prompter:

- dot slash (.\ in DOS and ./ in Unix) refers to the currently displayed directory.
- dot dot slash (..\ in DOS and ../ in Unix) refers to the parent of the currently displayed directory.
- slash (\ in DOS and / in Unix) refers to the root directory.
- items followed by a slash are subdirectories of the current directory.
- the remaining items, if they exist, are files.

## Changing Directories Using Tools Directory

You can make, display, and remove any directory, or change to a different directory, using ANGOSS commands. This section explains how to use ANGOSS commands to change directories from within ANGOSS.

As explained previously, you should make sure the current directory is appropriate for the actions you perform. For example, if you are saving a file without specifying a path, be sure the current directory is set to where you want it saved; otherwise, you may have difficulty finding the file later.

To change the current directory, use the Tools Directory New-Directory command. ANGOSS displays a prompter showing various directory levels.

Use the cursor keys to move the pointer to any item in the prompter. The **F7** or **Enter** key displays the new directory however, if the dot slash item is selected, ANGOSS completes the command assuming that this is the directory you want to make current. The **F10** key makes the selected directory (not the displayed one) current. You can also type the directory and press **Enter**. This will override the file prompter.

**NOTE:** You should use Tools Directory rather than Global Preferences to access a directory on a removable drive path (for example, a floppy diskette in Drive A or B).

If the directory you selected does not exist, the message `Not a valid pathname` appears, and the current directory is not changed.

## Searching for a File

You can search for the file by pressing **F4**, entering the filename, and pressing **Enter**.

If you specify a path with the filename, ANGOSS begins looking for the file in the directory specified, then searches through its subdirectories until the file is located. If you do not specify a path, ANGOSS begins looking for the file in the current directory, then searches its subdirectories.

When the file is found, the message `File was found in <location> - Continue searching? (y/n)` is displayed. Enter `n` if you do not want to search other directories for files with the same name. Enter `y` if you want to continue to search in another location. If the filename is not located in any other directories, the message `End of search, press any key` is displayed.

## Deleting a Directory

To delete a directory, use the Tools Directory Remove command. Enter a directory name at the prompt, `Enter directory name:`, or select one from the prompter. If you type the directory, be sure to include the full pathname if you have a directory with the same name in a different place.

ANGOSS will not allow you to remove a directory until all files and subdirectories have been removed from it. Otherwise, the message `Unable to remove the directory` will appear when you select Tools Directory Remove. See **Erasing Files** for more information.

## Displaying a Directory File List

The Tools Directory Display command displays file information such as filename, file extension, and file size for specific directories. It also identifies the date and time each file was last altered.

At the prompt, `Enter file specification:`, press **Enter** to display a list of files in the current directory. To display files in other directories, enter either a complete path, including filename (e.g., `c:\angoss\letters`), or wild card characters (`*` or `?`) to designate a specific group of files (e.g., `c:\angoss\*.doc`). If you enter wild card characters without specifying a pathname (e.g., `*.*`), files in the current directory are displayed. A sample directory is shown in Figure 3-2.

**Figure 3-2.** Tools Directory Display

Filename	Ext	Date	Time	Size	19 Files Sorted by Filename Extension
allmrks	doc	22-Sep-1988	16:54	2168	
check	txt	22-Sep-1988	8:49	298	
columns	doc	22-Sep-1988	13:09	3810	
index	doc	21-Sep-1988	13:13	1847	
letter	doc	11-Oct-1988	10:27	2135	
maylfin	doc	22-Sep-1988	11:14	3170	
paranumb	doc	21-Sep-1988	13:16	1053	
report	doc	22-Sep-1988	14:04	1275	
sort1	doc	13-Sep-1988	20:58	1016	
sort2	doc	22-Sep-1988	10:37	1223	
toc	doc	21-Sep-1988	13:12	1694	
weather	doc	21-Sep-1988	12:50	2477	
wp01_ms	txt	21-Sep-1988	9:25	5791	
wp02_ms	txt	21-Sep-1988	9:23	45882	
wp03_ms	txt	21-Sep-1988	9:22	44281	
wp04_ms	txt	21-Sep-1988	9:17	59162	
wp05_ms	txt	21-Sep-1988	9:16	31051	

First ⇒

F2 Sort by name    F3 Sort by date/time    F4 Sort by size    F5 Special    F6 Print

**Sorting Filelists**

Filenames in the directory are initially listed in alphabetical order. You can sort the list in several ways. The list of filenames can also be printed. For a list of directory function keys and the actions they perform, refer to Table 3-3.

**Table 3-3**

Key	Action
F2	Sorts the directory by filename in ascending order.
F3	Sorts the directory by date and time in ascending order.

Key	Action
<b>F4</b>	Sorts the directory by file size in ascending order.
<b>F5</b>	Performs a two-level sort (primary and secondary) on the directory. This option allows you to sort the files by a second criteria when two or more files have the same primary key information.

The **F5** option requests a primary key for an initial sort and a secondary key for a more specific sort. For example, if you sort files by extension (primary key), you will notice that many files may have the same extension (e.g., .ws, .doc). You can then choose filename as the secondary key to sort by filename.

When you press **F5**, the following option list is displayed:

Select primary key: **F2** Name **F3** Extension **F4** Date/Time **F5** Size

After pressing the function key for the primary key, the next option list appears:

Select secondary key: **F2** Name **F3** Extension **F4** Date/Time **F5** Size

When you select the secondary key, the new file list appears sorted first by the primary key, then by the secondary key.

You can move through the directory list using the keys listed in Table 3-4.

**Table 3-4**

Key	Action
<b>Home</b>	Displays start of the directory.
<b>End</b>	Displays end of the directory list.
<b>PgUp</b>	Scrolls up one screen through list.
<b>PgDn</b>	Scrolls down one screen through list.
<b>up arrow</b>	Scrolls up one line.

Key	Action
down arrow	Scrolls down one line.
Esc	Returns to the module menu.

## Performing File Operations

Disk file operations such as copying, deleting, renaming, and printing are performed with the Tools File commands. To perform these operations, you need a good understanding of pathnames.

**IMPORTANT:** When you perform file operations on a file stored on a floppy diskette, do not open the drive door while the file is being processed or remove the diskette until the file has been saved and unloaded. Usually a red warning light near the drive door is on while the drive is being accessed. Do not open the drive door and remove the diskette until the light is off and you have saved and unloaded the file, otherwise the files may be damaged and changes will be lost.

## Pathnames

An example of a complete pathname:

In DOS        d:\directory\filename.ext

In Unix        /usr/directory/filename.ext

where:

d:            is the drive

directory:   is the directory in which the file is located

filename:    is the name of the file

ext:          is the extension

### Filenames

Filenames have two parts: the name and an extension separated by a period. The name can contain from one to eight characters; the extension can contain from one to three characters. A period is used to separate the name and extension and cannot be used within the name. Filenames do not require extensions; but when you create a file in ANGOSS, a file extension is usually assigned to it, depending on what type of file it is. Each module manual lists file extensions assigned to the various files created in that module. **Appendix A** of this manual provides a comprehensive list of ANGOSS file extensions.

### Wild Cards

You can identify multiple files using "wild card" characters (\* and ?) within a filename or its extension.

The asterisk means "all". For example, \profiles\\*.txt refers to all files in the subdirectory "profiles" with a ".txt" extension.

The question mark means "any character". For example, \profiles\?an.txt refers to any three-letter text file in the subdirectory "profiles" whose last two characters are "an".

## Using the File Prompter

The setting `Display of filenames for file prompting:` on the Global Preferences menu controls whether a prompter of directories or files within a directory is displayed. When using the Tools File commands, a prompter listing all the files in the current directory is displayed, if the prompter has been enabled. You may use it to select a file, or you can type in filenames at any filename prompt. While the prompter is displayed, you can use **F4** and **F5** to select a file or directory.

### Searching for Specific Files

When you need to search for a specific file but you don't know its path, press **F4** and enter its name at the prompt `Enter the file specification.` If you do not specify a path, ANGOSS first looks for the file in the current directory and then searches its subdirectories. If you specify a path, ANGOSS looks first in that directory and then searches through its subdirectories until the file is found or there are no more subdirectories to search.

When the file is found, the message `File was found in <location> - Continue searching? (y/n)` is displayed. Enter **n** if you do not want to search other directories.

Enter **y** if you want to continue searching other directories for the file. When the filename is not located in any other directory, the message `End of search, press any key` is displayed.

## Displaying Directories Within a File List

If you select a directory and press **Enter**, a prompt displays files and subdirectories of the newly selected directory. The current path is identified on the Status Line. Move the pointer to the subdirectory you want and press **Enter**. Continue doing this until you have selected the appropriate directory. Select the file you want from the prompt or type the filename at the prompt.

## Marking Files

Some commands allow you to use the **F6** key to mark or unmark files displayed on the screen for copying and deleting. The **F6** key toggles the mark on a file on and off.

## Copying Files

Use Tools File Copy to copy files from one location to another. At the prompt `Enter the source filename:`, enter the name of the file you would like to copy, or select it from the prompt.

At the prompt `Enter the destination path or filename`, enter the full pathname of the location in which you would like to place the copy or copies. Typing `..` at the prompt will place the files in the current directory.

**NOTE:** The file being copied will overwrite a file of the same name at the destination. You must also be sure that the destination is a drive or directory. Otherwise the files being copied will be relocated one at a time at the same location, overwriting each other, and the only file saved will be the last file copied.

## Deleting Files

Use Tools File Erase to delete files. At the prompt `Enter the filename`, enter the pathname of the file you want to delete or mark it on the file prompter list. To delete several files at once, press **F6** to highlight all the files you wish to delete and then press **Enter**.

## Moving Files

Use Tools File Move to move files from one directory to another. This command copies the file to the new location and deletes the old copy. When you select Tools File Move, a prompter lists all available files in the current directory. You can select a file to move by pointing to it and pressing **Enter** or type in the name of the file.

To move several files at once, press **F6** to highlight all the files you wish to move and then press **Enter**. You are then prompted for a new path for the files. To place the files in a different directory, type in the complete pathname.

**NOTE:** The file being moved will overwrite a file of the same name at the destination.

## Renaming Files

Use Tools File Rename to change the name of a file. Enter the name of the file you want to rename at the prompt `Enter the filename:.` Include a full pathname if necessary. Enter the new name at the prompt `Enter a new filename:.`

## Printing Files

Use Tools File Print to print files that were created with the Tools Text-Editor or saved as textfiles in the Word Processor. When you use this command, the system does not interpret file information as text or non-text. The information printed is determined by how your printer interprets what's in the file. When you select Tools File Print, a filename prompter is displayed. Select a file or type in a filename and press **Enter**.

**NOTE:** This command should be used with textfiles only. Using Tools File Print with other file types may cause unexpected results.



## Chapter 3: Directory and File Management

## Chapter 4: Printing with ANGOSS

After creating a document, worksheet or database, you may wish to make a hard copy of the information by printing the file. Note that you can preview printed material on the screen prior to making a hard copy. Specific information about printing in each ANGOSS module is available in the individual module manuals.

Before learning this specific information, however, it is important that you understand some basic concepts about how printing works in ANGOSS. This information is presented in this chapter.

### Controlling the Hardware

When ANGOSS was installed on your system, you or your system administrator had to identify which printers would be available to ANGOSS. The Install program identified and installed printer descriptor files necessary to operate each specific printer. These files were automatically stored in a system or local resource library. For more information about resource libraries, see the *ANGOSS Install Manual*.

#### Printer Drivers

A printer driver is a file that controls the actions of the printer. Each printer driver controls a family of printers. These drivers are not an installable option but are contained within the ANGOSS SmartWare program.

The printer driver allows ANGOSS to control the printer. However, in order for ANGOSS to know the capabilities of individual printer models, one or more descriptor files must be installed.

#### Descriptor Files

A descriptor contains information about a particular printer's capabilities. ANGOSS gets many types of information, such as supported fonts, printer resolutions, valid paper sizes and paths, movement, and graphics capabilities from this file.

## Chapter 4: Printing with ANGOSS

Many printers have two descriptor files. A draft descriptor contains information on the printer's abilities in low resolution mode, and a quality descriptor details the printer's abilities in high resolution mode.

When ANGOSS uses a draft descriptor on a laser printer, graphics and smart-generated fonts are printed quickly, but at a lower resolution. On most dot matrix printers, all fonts are printed at a lower resolution. Because of the lower resolution, many fonts and graphics will have a rougher, less finished appearance.

If you do not need the highest quality output, using a draft descriptor file can greatly increase the speed of your print job. This is particularly useful for printing drafts or informal documents, worksheets or reports.

When ANGOSS uses a quality descriptor on a laser printer, graphics and smart-generated fonts are printed at a higher resolution. On most dot matrix printers, all fonts will be printed at a higher resolution. Higher resolution gives characters and graphics a more polished appearance. Printing can be considerably slower in this mode, and it is usually reserved for printing documents or worksheets for publication or formal presentations.

If your printer supports cartridge fonts or color printing, descriptor files that provide information about these features will also be available with the printer.

### Printing Speed

Print speed can fluctuate widely depending on your computer, printer, and the type of printing you are trying to do. Printing in color, with smart generated fonts, graphics, or combinations of the above can cause severe slowdowns in printing time. If you experience this type of problem, your printer may not be optimized to handle these types of printing with ANGOSS.

In order to get the best possible speed, it is recommended that you use the minimum descriptor file needed to get the job done.

### Adding Printer Capabilities

If you know that your printer supports a font or special feature that ANGOSS doesn't recognize, you can edit a descriptor file to include information about these capabilities.

Detailed information on how to edit descriptor files is available in the ***Editing Descriptor Files*** chapter.

## Changing Printers or Printer Modes

Before printing anything in ANGOSS there are several steps you must take to configure your printer. First, select the Tools Preferences Hardware command. This command can be accessed from any ANGOSS module or from the Main Menu. The Hardware Preferences screen is then displayed. Settings are available to control the operation of all hardware components of your system. For this discussion, we will only cover the items that relate to printing or plotting.

Figure 4-1 shows the printing related items on the Hardware Preferences menu.

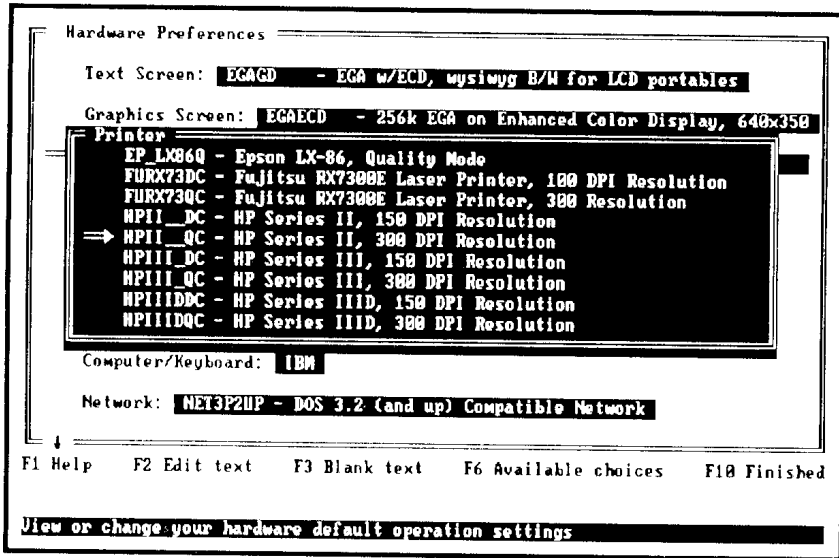
**Figure 4-1.** Hardware Preferences

```
==> Printer: HP11_QC - HP Series II, 300 DPI Resolution
Cartridge: NPCA_QC - HP A Cartridge, 300 DPI Resolution
Cartridge:
Default paper profile: Paper Tray, US Letter
Time-out (seconds): 20
Port: LPT1 LPT2 LPT3 COM1 COM2 PRN AUX
Word Processor Justification: Micro-Justify Space-Justify
```

### Selecting the Current Printer

First you must specify the printer or printer mode you want ANGOSS to use by selecting one of the descriptor files installed on your system. Press the cursor keys to move the arrow to the Printer: prompt. Then press **F6**. A prompter appears showing you all the descriptor files in the system or local resource library. Figure 4-2 illustrates this prompter.

Figure 4-2. Available descriptor files



Each descriptor file is identified by the printer name and a brief description of the mode it supports. Use the cursor keys to move the arrow to the descriptor you want and press **Enter**.

The prompter box disappears and your selection now appears at the **Printer** prompt. The printer indicated at this setting is referred to as the **current printer**.

It is easy to switch from one printer to another, or from a draft to a quality descriptor for the same printer. Usually, it is recommended that you select the printer and mode you will be using to print a document, worksheet, or report **before** creating it. Changing descriptor files after you have created the file could cause changes in word wrap or page breaks. You should look at your file to determine if any adjustments are necessary. This is particularly true if you are using proportional fonts in your file.

## Using Font Cartridges

If ANGOSS supports the use of font cartridges with the current printer, the prompt **Cartridge:** appears on the screen. If your printer has two cartridge slots, the prompt will

appear twice. Here you must select the descriptor that contains information about the cartridge you wish to use with your printer.

Press **F6** with the arrow pointing at `Cartridge:` to display a list of available cartridge descriptors. Move the arrow to the cartridge you want and press **Enter**. If no prompt appears, either your printer does not use font cartridges, or ANGOSS does not support any cartridges for this printer.

You or your system administrator specified which font cartridges you would be using when ANGOSS was installed. If the font cartridge you want is not listed there, or if you purchase additional cartridges in the future, use the Changes and Additions option of the Install program to install new cartridge descriptors. If you try to type in a cartridge letter that has not been installed, an error message will be generated.

Once a cartridge descriptor has been entered at this prompt, any fonts available on the cartridge will appear on the Font Selector menu. You can then select one of these fonts when creating new files, or change the fonts in existing files.

Selecting fonts is discussed later in this chapter.

## Default Paper Profile

A Paper Profile is made up of the page size and paper path you want to use to print a file. The paper path tells ANGOSS where the printer will find the paper for this job, and how it will move it through the printer. For example, you can specify the use of a tractor feed, or manual feed; choose between several paper trays; or specify the use of an envelope or single sheet feeder. Page size tells ANGOSS whether you will be printing an 8-1/2 by 11 inch page, an envelope or a custom page size.

Printing from the Word Processor, Spreadsheet and Database Reports will be controlled by Paper Profile settings within each module. Settings for the Word Processor and Spreadsheet are made on the Print Options screens. Settings for Database reports are made on the Page Definition menu under Report Create.

The paper profile on the Hardware Preferences screen will control the page size and paper path in the following situations.

- Pressing **Alt P** to print from within any editor such as the Text-editor, Project File Editor, Formula Editor, etc.
- Any printing from the Database EXCEPT reports
- Printing with Data Capture Print in ANGOSS Communications

- Executing Remember Tools Print
- Using LPRINT commands in a project file

The following steps explain how to select a paper profile.

STEP 1: With the cursor on Paper Profile:, press F6.

A two-column, pop-up box is displayed listing available paper paths and sizes. Figure 4-3 illustrates this box.

**Figure 4-3.** Paper profile selections

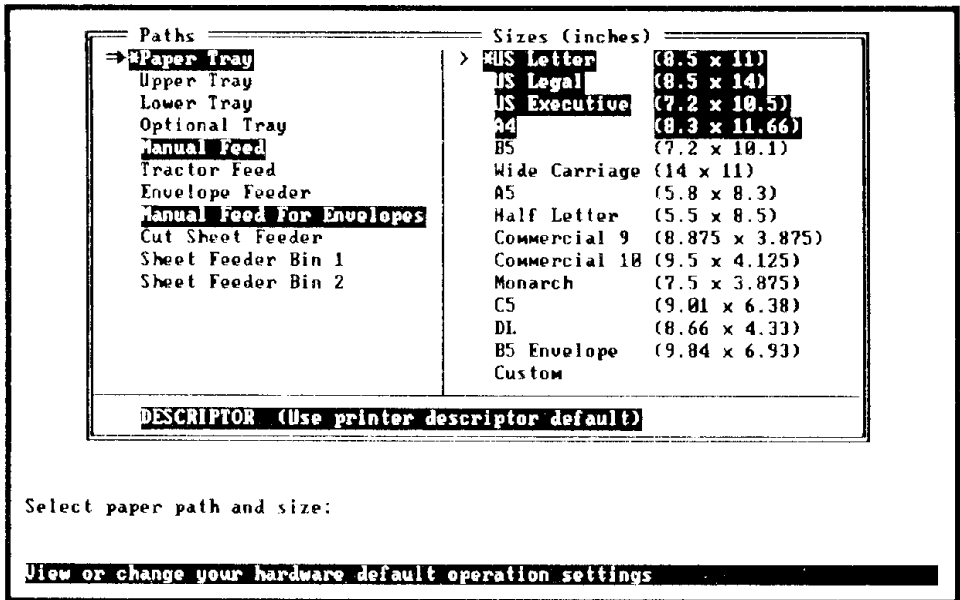


Table 4-1 explains the path selections in this box.

**Table 4-1**

<b>Path</b>	<b>Definition</b>
Paper Tray	If your laser printer has only one tray, select this path.
Upper Tray	Paper will be taken from the upper tray of a laser printer.
Lower Tray	Paper will be taken from the lower tray of a laser printer.
Optional Tray	If you have purchased a special attachment to allow you to add a second tray to your printer, select this path to use that optional second tray.
Manual Feed	Paper will be manually fed into the printer.
Tractor Feed	A tractor feed device will be used to move paper through the dot matrix printer.
Envelope Feeder Attachment	An attachment will be used to feed envelopes into the printer.
Manual Feed for Envelopes	Envelopes will be manually fed into the printer.
Cut Sheet Feeder Attachment	If your dot matrix printer has only one sheet feeder attached, select this option.
Sheet Feeder Bin 1	Paper will be coming from Sheet Feeder Bin 1 to a dot matrix printer.
Sheet Feeder Bin 2	Paper will be coming from Sheet Feeder Bin 2 to a dot matrix printer.

Paths that are appropriate for the current printer are highlighted. As you move the cursor down the list of paths, the appropriate paper sizes for that path are highlighted.

Notice that one path and one paper size are marked by an asterisk. This indicates that these are the default path and paper size as listed in the current descriptor file.

ANGOSS gets information about appropriate selections and the default path and page size from the currently selected printer descriptor file. If you wish to change the default settings, or if you know your printer supports a particular path or size that is not highlighted, you may want to edit the appropriate descriptor file. Read *Editing Descriptor Files* for more information.

**STEP 2:** Use **up arrow** or **down arrow** to move the pointer through the path selections. When the arrow points at the appropriate path, press **Enter** or **right arrow**.

If you wish to select the default path and paper size, move the arrow to the word **DESCRIPTOR** at the bottom of the box. Otherwise, select a highlighted path. The arrow then moves to the Page Size column.

**STEP 3:** Select one of the highlighted sizes and press **Enter**.

If you select **Custom** in the Size column, a prompt is displayed on the command line. Enter the width and length of the custom paper size in inches.

You are returned to the Hardware Preferences screen and your selections appear, separated by a comma, at the `Paper Profile:` prompt. If you select a size or path that is not supported by the current printer, a warning message will be generated when you execute a print command. You can abandon printing and change to a more appropriate profile, or continue. If you continue the print job, the printer driver will select the "default" profile for your printer as specified in the current descriptor file.

### Time-out

This option is not available in UNIX. For DOS users, enter the number of seconds you want ANGOSS to try to send a print job before notifying you that there are problems with the printer. If you are printing graphics, filled-area fonts or other complex jobs you may want to increase this number from the default of 20 seconds.

## Port

Select the port that will be assigned to the current printer. If you specify a serial COM port you must also configure that port by entering items at the following entries. Note that the Com port option is not available in Unix.

Baud Rate:

Data Bits:

Parity:

Stop Bits:

Handshaking:

Common default settings are provided for each prompt. Your printer manual should recommend settings to operate your printer most efficiently when attached to a COM port.

## Word Processor Justification

Here you can select the type of justification to be used when you print in the Word Processor. Select **Micro-Justify** to make minute adjustments in the horizontal placement of characters on a line. This option usually produces a more professional looking document. Most printers benefit from a setting of **Micro-Justify**.

Select **Space Justify** to adjust the placement of characters using whole spaces. Space justification processes more quickly than micro-justification. Using space justification can increase printing speed on some dot matrix printers, particularly if you are using the printer's internal fonts. Only a few older printers benefit from space justification.

**NOTE:** If you select space justification, proportional fonts will have a ragged right edge on justified paragraphs. You may also experience some problems if you mix monospaced and proportional fonts, mix fonts of different character sizes, or if you have a tab at a non-character position.

More information about fonts is provided later in this chapter.

## Configuring Your Plotter

Many of the same settings you made for your printer must also be made if you will be using a plotter to print graphics.

**Plotter.** At the `Plotter:` setting, press **F6** to display a list of installed plotter descriptor files. Use the cursor keys to point to the file you want and press **Enter**.

**Time out.** This option is not available in UNIX. Enter the number of seconds you want ANGOSS to try to send a job before notifying you that there are problems with the plotter. The default time is 20 seconds, but can be set as high as 120. If you are having trouble with your plotter timing out, raise this number.

**Plotter Configuration.** You must specify the computer port to which your plotter is attached. For DOS users it is recommended that you operate your plotter from a serial port with the following configuration.

Baud Rate: 9600

Word Length: 8

Parity: none

Stop Bits: 1

Some plotters are set to this configuration by the manufacturer. If yours is not, consult your plotter manual for information on changing your switch settings to achieve this configuration.

If you will be attaching your plotter to a COM port, you will also need to know what handshaking protocol your plotter supports. The following options for handshaking appear if you select a COM port for your plotter.

Hardware Xon/Xoff Enq/Ack

Your plotter manual should tell you which handshaking modes are supported by your plotter. For increased speed, it is recommended that you operate your plotter in the Hardware mode, if it is supported.

**Plotter Paper size.** Press **F6** to display a list of supported paper sizes. Select the size paper you will be using to plot graphs.

**Plotter Pen Speed.** Consult your plotter manual for the recommended pen speed. It should be entered in centimeters per second.

**Plotter Pen Widths.** Enter the width, in millimeters, for each pen you are using with your plotter. (For example, you would enter 0.3, 0.7 etc.)

**ANGOSS Pen Colors.** At this prompt you will see a list of colors supported by ANGOSS. These are the colors that ANGOSS uses to display graphs on the screen. You must decide which pen number will represent each ANGOSS color when the graph is plotted. Each ANGOSS color should be followed by the number of the pen that will be used to plot that color. You may want to write down your settings for future reference.

For example, assume you are using a plotter with four pens. If you wish to plot 16 colors, you might make the following settings:

Bright White	1	Gray	9
Blue	2	Light Blue	10
Green	3	Light Green	11
Cyan	4	Light Cyan	12
Red	5	Light Red	13
Magenta	6	Light Magenta	14
Brown	7	Yellow	15
White	8	Black	16

When you execute the Graph Xy-Plot command, you should have pens one through four in the machine. After ANGOSS has plotted any parts of the graph that use those colors, you will be prompted to change to the next four pens. Press **Enter** to signal that the pens have been changed and you are ready to proceed. Continue this process until all necessary colors have been plotted.

If you always use the same four colors for your graphs you can simplify this process by setting those colors to pens 1, 2, 3, and 4 as in the following example.

## Chapter 4: Printing with ANGOSS

Bright White	0	Gray	0
Blue	1	Light Blue	0
Green	2	Light Green	0
Cyan	0	Light Cyan	0
Red	3	Light Red	0
Magenta	0	Light Magenta	0
Brown	0	Yellow	0
White	0	Black	4

Now the pens you use to represent Green, Blue, Red, and Black are pens 1-4 and there is no need for pen changes.

Read ***Creating Graphs*** in ***ANGOSS Spreadsheet*** for more information about creating and plotting graphs.

## Module-Specific Print Options

After configuring your hardware, you must also tell ANGOSS how you want your page to look when you print a document, worksheet, or database report. This is done in each module by specifying page numbering schemes, paper profiles, and a number of other items. The commands for making these settings vary slightly from one module to another. For information specific to each module, see the module manuals.

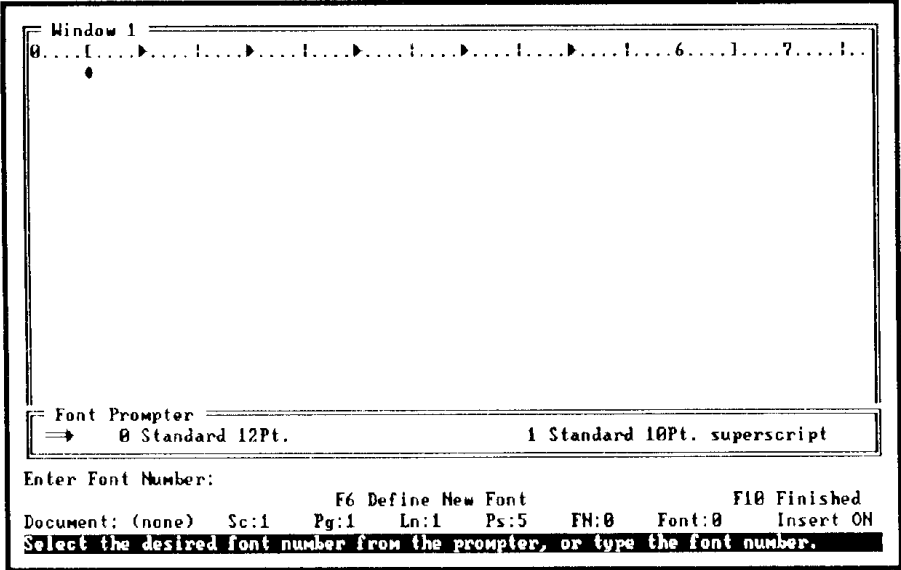
## How ANGOSS uses Fonts

The command used to specify fonts in a file varies slightly from one module to another. However, the same screens are displayed once the specific font command has been

executed. Information on specific module commands is available in each module manual. However, this discussion provides you with some basic information about using fonts in ANGOSS.

In each module, the font commands display a Font Prompter, such as the one in Figure 4-4.

**Figure 4-4.** Font Prompter

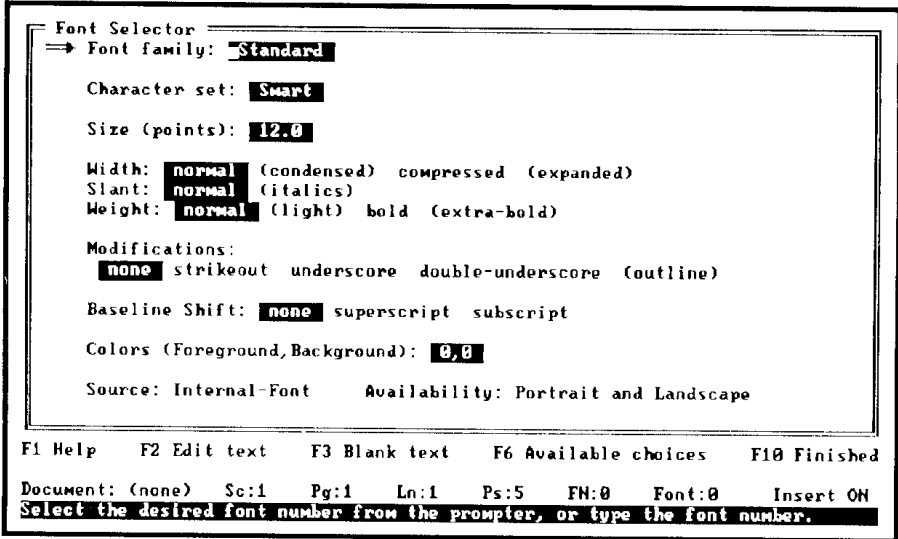


The Font Prompter displays fonts that are defined for the current file or module. When ANGOSS is shipped, most modules have only a Standard 12-point font defined. The exception is the Word Processor, which also has a 10-point Standard superscript font defined to be used for inserting footnote references.

The Standard font is your printer's internal default font. If you have a draft descriptor file selected, the standard font will be your printer's default draft font. If you have a quality descriptor file selected, the Standard font will be your printer's default near letter quality font. Your printer manual should indicate which fonts are the default.

If you want to use a font that does not appear on the Font Prompter, you can press **F6** to display the Font Selector. Figure 4-5 illustrates the Font Selector.

**Figure 4-5.** Font Selector



On the Font Selector menu are a number of prompts that allow you to customize a font to suit your needs. The following discussion explains how to make settings at each of these prompts.

**NOTE:** Information displayed on the Font Selector menu about available fonts or font attributes is taken from the currently selected printer descriptor file. If you know that your printer supports certain fonts or features that are not reflected on the menu, you may want to edit the descriptor file to enable those features. See the **Editing Descriptor Files** chapter for more information.

### Current Font Family

With the arrow pointing at the **Current Font Family:** prompt, press **F6** to display a list of the fonts supported by the current printer. This list includes internal printer fonts and filled-area fonts, which are generated by ANGOSS.

**Internal fonts.** An internal font is one that is resident in your printer, or comes from a font cartridge, rather than being created by ANGOSS. Printing with an internal font uses virtually no processing time for the ANGOSS program. ANGOSS simply sends a short command to the printer to select the font and then sends the text.

The internal fonts on this pop-up menu can be identified by the capitalized first letter.

**Filled-Area Fonts.** A filled-area font, which is a font created by ANGOSS, is defined by a series of numbers that determine the coordinates of an area to be filled. You might imagine the coordinates as a series of dots to be connected. The connected dots, along with the filled area, form the character.

Filled-area fonts are easily stretched or shrunk and, therefore, can be created in a wide range of point sizes. However, because each character has to be drawn to the proper size each time you want to print, filled-area fonts require quite a bit of processing by ANGOSS before the characters are sent to the printer.

Filled-area fonts are displayed on the pop-up menu in all lowercase letters.

To select a font, use the cursor keys to move the arrow to the desired font family and press **Enter**. The pop-up menu disappears and your selection appears at the `Current Font Family:` prompt.

## Character Sets

A character set is a collection of letters, numbers, punctuation marks, and symbols. Some character sets are designed to print foreign language characters, while others include special characters required by a particular discipline, such as law or mathematics. Still others are built to suit a particular brand of printer. A Smart Character Set was developed in an attempt to accommodate ANGOSS users world-wide.

The Smart Character Set assigns letters, numbers, punctuation marks, and symbols to printable ASCII characters 33 - 255. **Appendix B** at the back of this manual shows you the characters and ASCII numbers that make up the Smart Character Set.

ANGOSS' filled-area fonts are fully mapped to the Smart Character Set. The Standard Font is also always mapped to the Smart Character Set, although it may not be a one-to-one mapping. You can control whether or not some internal printer fonts are mapped to the Smart Character Set.

If you are using internal printer fonts, there may be times when you want to have full use of the printer's native character set for a particular font. By pressing **F6** at the `Character Set:` prompt, you can display a list of valid character sets for the current font. You can select the Smart Character Set, or any other valid character set.

Using a native printer character set allows you to make use of special symbol cartridges, such as a math symbol cartridge. It also allows you to draw graphics, such as lines and boxes, using printer font characters instead of ANGOSS' line graphic or symbol fonts, which require a great deal more time and memory to print.

**NOTE:** You may see both Standard and your printer's equivalent of Standard in the `Current Font Family` pop-up box. For example, if the Standard font for your printer is Courier, both Standard and Courier appear on the pop-up box. That is because while Standard is always mapped to the Smart Character Set, Courier can be mapped to a number of character sets in some printers. There are times when selecting Courier will give you some capabilities that Standard will not.

### Size

The sizes that are available for the selected font depend on the type of font it is. Many printers offer their internal fonts only at a few fixed point sizes. If this is true of the current printer, and you have selected an internal printer font, you can press **F6** to display a pop-up menu of available point sizes. If you select an internal printer font and parentheses appear around the number at the `Size:` prompt, that point size is not available for the current font.

Other printers, such as PostScript printers and some laser printers, can scale their internal fonts. If you have selected this type of printer and an internal font, no pop-up box is available. Simply enter the point size you want.

If the current font is a filled-area font, you can enter any integer between 1.0 and 99.0, no fractional sizes are allowed. Since these fonts are drawn each time they are printed, they can be scaled to any point size in this range.

A point is a unit of measure in which 72 points equal one inch. However, a 72-point character will not always occupy one inch of space. A font height of 72 points means that the highest ascender and the lowest descender will fit within one inch of vertical space.

Remember that if you make a font taller, it also becomes wider. You must plan for this when creating your file. Sometimes, you will need to print the file and then make some adjustments to correctly position larger fonts.

Neither the Word Processor nor the Spreadsheet will adjust line placement for larger fonts. You must do this manually by leaving blank lines above the line containing larger characters. For example, since one line equals 12 points, leave five blank lines above a 72 point character to avoid overwriting other text. These blank lines must also be placed above large characters that are at the top of the page, or the line will not be printed.

The next four prompts allow you to control the attributes attached to the current font. Notice that some of the options have parentheses around them. Based on information in the

descriptor file for the current printer, ANGOSS has determined that these features are not available for the current font. If you select one of the invalid features, the font is classified as a **Dummy-Font**. When you print the file, ANGOSS will try to print a font as close to the Dummy-Font as possible.

**Width.** At the `width` prompt, specify the characters per inch (cpi) you want the font to be printed.

Normal	10 cpi
Condensed	12 cpi
Compressed	15-22 cpi
Expanded	5 cpi

**Slant.** Specify whether you want the font printed as normal or italic.

**Weight.** Specify whether you want the font printed as light, bold, or extra-bold.

**Modifications.** Specify if you want any modifications made to the font when it is printed. Choose between no modifications, strikeover, outline, underline or double underline.

**Baseline Shift.** Specify if you want the font printed on the same line with other text, or slightly above the text line (superscript) or slightly below the text line (subscript). If you select superscript or subscript, another prompt appears asking you exactly where you want to position the font. You can enter the number of points you want the font moved above or below the line. If you want ANGOSS to determine the proper position automatically, accept the word default.

**Colors.** You can also specify a foreground and background color for displaying this particular font on the screen. At the `Colors` prompt, press **F6**. You are prompted for a background color, and the available colors appear across the bottom of the screen. Enter the number of the color you want, and you are prompted for the foreground color. Again the colors are displayed across the bottom of the screen, this time showing against the background you selected. Enter the number of the foreground color.

If you have a color printer, the foreground color determines what color will be printed.

### **Source**

The `Source` prompt lets you know what type of font you have defined. Internal, filled-area, and dummy fonts have already been defined, but there are several other types of fonts you may see in this prompt. They are discussed later in this chapter.

### **Availability**

The `Availability` prompt lets you know whether each font is available for portrait printing, landscape printing, or both.

### **Prerasterized Fonts**

As discussed previously, drawing each filled-area font every time you print can take some time. If there are certain filled-area fonts you wish to use on a regular basis, it may be worthwhile to "prerasterize" them.

A prerasterized font, which is created by ANGOSS from a filled-area font, is defined using dots arranged on a grid or "raster". The density of the grid is determined by the resolution of the current printer when the font is created. The dots form the character in a fixed point size. These performed, fixed-size characters are then stored in the system or local resource library, ready for use. When you print this font, instead of having to redraw each character, ANGOSS just gets it from the file. This can greatly speed up the printing process.

Keep in mind that if you prerasterize a font for a 300 x 300 resolution printer, that rasterization will be meaningless if you try to print on a 100 x 100 resolution printer. ANGOSS reverts to using a filled-area font.

### **Filled-Area or Prerasterized?**

Whether to use a filled-area or prerasterized font is a decision that must be based on a number of factors. The most important of these are your speed requirements and the memory available on your system.

Filled-area fonts are generated at print time, before the file is sent to the printer. Thus, filled-area fonts take some time to process before printing can begin, but use little memory or disk space.

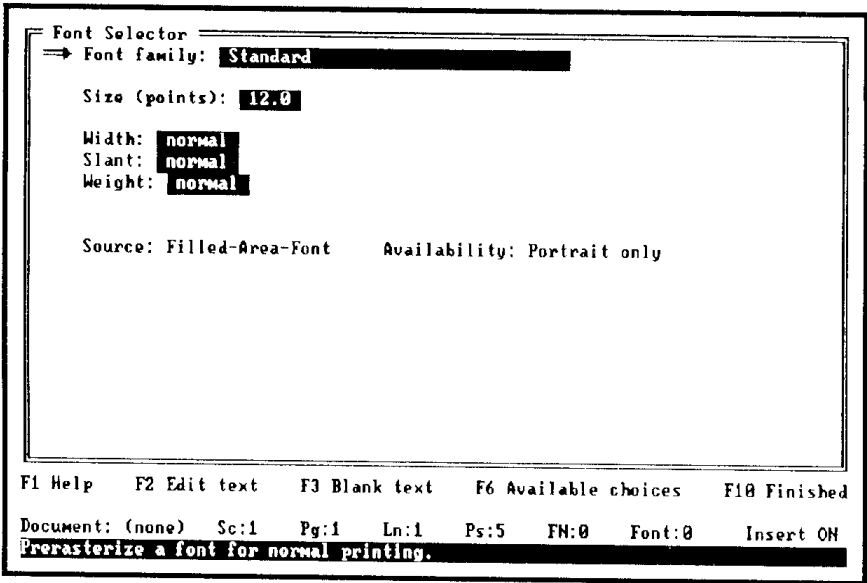
Prerasterized fonts are already formed and are available almost immediately. On the other hand, prerasterized font files take up disk space.

### Prerasterizing a Font

To rasterize a font, select Tools New-Font from the Main Menu. You must then specify whether you want to rasterize a normal or sideways font. Select Normal for most printers. Select Sideways only if you will be printing landscape on a printer that **does not** support landscape printing.

The screen illustrated in Figure 4-6 is then displayed.

**Figure 4-6.** Tools New-Font Screen



The prompts on this screen are similar to the ones on the Font Selector menu. Define the font you want to rasterize by making settings the same way you did on the Font Selector. When you press **F10** to leave the menu ANGOSS will begin rasterizing the font. You will then be prompted to specify whether the rasterized font should be placed in the system or local resource library or on a disk. Rasterized fonts must be stored in a resource library for ANGOSS to use them.

Once you have rasterized the font, you can go back to the Font Selector menu in any module and define the font again. This time, instead of saying Filled-Area at the Source :

prompt, it will say `Preraster-Font`. When you print a file containing this font, ANGOSS will automatically load the file containing the prerasterized fonts, rather than drawing them as filled-area fonts.

### Cartridge Fonts

Earlier in this chapter the installation and use of cartridge fonts was discussed. If you select a font that is on a cartridge, the `Source:` prompt will read `Cartridge-Font`. Cartridge fonts work just like other internal printer fonts.

## Print Commands

At some point in every print command, you must specify whether you want to print Draft or Enhanced. It is important that you understand the consequences of each choice. Each has specific uses and can give very different results.

### Printing Draft

Selecting the Draft option of a Print command uses your internal fonts to produce a "draft" of your file. Any filled-area fonts in the document will be replaced by the Standard font. For many printers, this will be 12-point Courier or a similar font. Using an internal printer font allows fast output, but graphics and font attributes other than boldfacing and underscoring will not be printed.

Using the Draft option with either a draft or quality descriptor file uses internal fonts at the lowest resolution. This will produce the fastest printing speed possible.

### Printing Enhanced

Selecting the Enhanced option of a Print command uses additional capabilities of the printer such as graphics and various fonts to produce a more impressive page. Any graphs or filled-area fonts you have placed in a file will be printed.

Using the Enhanced option with a draft descriptor file gives all the special features your printer is capable of at a lower resolution. Graphics and most filled area fonts will have a rough appearance.

Using the Enhanced option with a quality descriptor file gives you all the special features your printer is capable of at a higher resolution. This is the combination you should use to print high-quality graphs and filled-area fonts.

## Printing Special Characters

**Appendix B** at the back of this manual shows the special characters available with ANGOSS filled-area fonts. By selecting fonts such as dingbats, symbols, line graphics or bar graphics, you can print these special characters in your document, spreadsheet, graph, or data report. If your printer can print graphs, it should be able to print most of these characters.

To use the chart, locate the special character you wish to print. The column heading will tell you which font will give you that character. Select that font to be the current font. Now look at the decimal number to the far left on the same line as the character. To insert this character, hold down **Alt** and type the decimal number on the number keypad on your keyboard. This must be the calculator-style number keypad, not the numbers across the top of the regular keyboard.

The character that appears on your screen may not be the character you expected. The Smart Character Set is displayed if you are using a wysiwyg text driver, and the display adapter's native character set is displayed if you are using a character-based text driver.

Since these characters are filled-area fonts, you must use the Print Enhanced commands to print them, and they can take a long time to print.

If you wish to print special characters that are part of your printer's native character set, make sure you have chosen the proper font and character set on the Font Selector menu. Consult your printer manual to determine the proper ASCII code for the character you want.

### Character Generation Table

Another alternative for creating special characters, is to use the Character Generation Tables within descriptor files. By entering a string that controls printer movement, you can create a character that is not available in a character set. The advantage of creating a character this way is that it is a character, not a graphic, and can be printed faster than using a filled-area font character.

See *Editing Descriptor Files* for more information about character generation tables.

## Using HP4 Printers

Compiled printer descriptors (CPD's) are provided for 300 and 600 dpi (dots per inch) resolution, containing Line-printer (8.5) and Courier (10 and 12 point). Cartridge descriptors are used to provide access to the many fonts available. Versions are provided include 16 typefaces

## Chapter 4: Printing with ANGOSS

(fonts) with a selection of sizes at 300 and 600 dpi. Using cartridge descriptors does not mean that you need to have a physical cartridge. It is only a mechanism to provide the fonts.

The character set supported by most of the fonts is PC-8 code page 437. Additions include Line-printer and Courier which support additional character sets for compatibility with previous versions. PC-8 is used because this is the same as the full IBM ASCII character set. Two fonts exist with their own characters sets Wingdings and Symbol. Refer to HP printer manual for a complete character table for PC-8, Wingdings and Symbol.

The HP Laserjet 4L uses only one CPD (HP4L\_QC.CPD) and 9 CCD's. The 4L has a maximum resolution of 300 dpi and contains only a certain number of typefaces. The table below gives a list of the typefaces available. The 4Si is identical in the CPD and CCD's provided except that there is an additional paper tray provided for this printer. The point sizes 6,8,9,10,11,12,14,16,18,24,30,36 and 48 are supported.

The following table shows the file name, a description and which of the HP4 models the file is required for. This information is useful if you are building a resource library for HP4 users.s

<b>File Name</b>	<b>Description</b>	<b>HP4</b>	<b>HP4 Si</b>	<b>HP4 L</b>
hp4_300q.cpd	300 dpi HP Laserjet 4 printer	Y		
hp4_600q.cpd	600 dpi HP Laserjet 4 printer	Y		
hp4si3qc.cpd	300 dpi HP Laserjet 4Si printer		Y	
hp4si6qc.cpd	600 dpi HP Laserjet 4Si printer		Y	
hp4l__qc.cpd	600 dpi HP Laserjet 4 printer			Y
hpc3albe.ccd	300 dpi typeface Albertus	Y	Y	Y
hpc3anti.ccd	300 dpi typeface Antique Olive	Y	Y	Y
hpc3aria.ccd	300 dpi typeface Arial	Y	Y	
hpc3cgom.ccd	300 dpi typeface CG Omega	Y	Y	
hpc3cgtm.ccd	300 dpi typeface CG Times	Y	Y	Y
hpc3clar.ccd	300 dpi typeface Clarendon Condensed	Y	Y	

hpc3coro.ccd	300 dpi typeface Coronet	Y	Y	Y
hpc3cour.ccd	300 dpi typeface Courier	Y	Y	Y
hpc3gara.ccd	300 dpi typeface Garamond	Y	Y	
hpc3goth.ccd	300 dpi typeface Letter Gothic	Y	Y	Y
hpc3mari.ccd	300 dpi typeface Marigold	Y	Y	
hpc3ntmr.ccd	300 dpi typeface New Times Roman	Y	Y	
hpc3symb.ccd	300 dpi typeface Symbol	Y	Y	
hpc3unco.ccd	300 dpi typeface Univers Condensed	Y	Y	Y
hpc3univ.ccd	300 dpi typeface Univers	Y	Y	Y
hpc3wing.ccd	300 dpi typeface Windings	Y	Y	Y
hpc6albe.ccd	600 dpi typeface Albertus	Y	Y	Y
hpc6anti.ccd	600 dpi typeface Antique Olive	Y	Y	Y
hpc6aria.ccd	600 dpi typeface Arial	Y	Y	
hpc6cgom.ccd	600 dpi typeface CG Omega	Y	Y	
hpc6cgtm.ccd	600 dpi typeface CG Times	Y	Y	Y
hpc6clar.ccd	600 dpi typeface Clarendon Condensed	Y	Y	
hpc6coro.ccd	600 dpi typeface Coronet	Y	Y	Y
hpc6cour.ccd	600 dpi typeface Courier	Y	Y	Y
hpc6gara.ccd	600 dpi typeface Garamond	Y	Y	
hpc6goth.ccd	600 dpi typeface Letter Gothic	Y	Y	Y
hpc6mari.ccd	600 dpi typeface Marigold	Y	Y	
hpc6ntmr.ccd	600 dpi typeface New Times Roman	Y	Y	
hpc6symb.ccd	600 dpi typeface Symbol	Y	Y	

hpc6unco.ccd	600 dpi typeface Univers Condensed	Y	Y	Y
hpc6univ.ccd	600 dpi typeface Univers	Y	Y	Y
hpc6wing.ccd	600 dpi typeface Windings	Y	Y	Y

### Selecting and printing a character from the Wingdings or Symbol typeface

First look for the desired character on the table in the HP documentation that came with your printer. (Look under Symbol Set Tables in the Users Guide.) For example, the character of 'a' (decimal 97). Select the Wingdings font by selecting "Layout font select" point to Wingdings, if this is defined, or select this by pressing **F6**. Change the font family to Wingdings and then enter the letter 'a' when you want the Wingdings character to appear.

Make sure the character set shows "PC-8" and the "source" at the bottom of the definition shows "internal font". Press **F10** to finish selection. Type in the character. That is it! If you need a character that is not typeable then, holding down the **Alt** key, type in the numbers on the numeric key pad. (With numlock off). The character should appear on screen.

Note: you will not see a proper representation of the character until you print it, not even with WYSIWYG screens.

# Chapter 5: Editing Descriptor Files

The first part of this chapter explains descriptor files, the function of the Descriptor Editor, and how to use it. The remainder of the chapter explains each prompt within the Descriptor Editor, followed by two example tasks. It is recommended that you read the entire chapter before using the Editor. You should also read *Printing in ANGOSS* to gain a basic understanding of how printing works.

## Overview

The Descriptor Editor is a tool used to modify files called "descriptors." Descriptors "describe" the capabilities of a printer. There is at least one descriptor for each printer supported by ANGOSS. While every effort has been made to make the descriptors complete, your printer may support features that are not included in the descriptor file. You can include these features or modify existing features by editing the descriptor with the Descriptor Editor.

The following examples demonstrate why you might use the Descriptor Editor:

**Creating a custom character:** you can build a character from existing characters or change the meaning of a character using the Character Generation Table. A step-by-step example is given in the Character Generation Table discussion.

**Adding support for a printer that ANGOSS does not support:** if the unsupported printer emulates a printer that ANGOSS does support, you can load the descriptor for the supported printer, modify the necessary settings, and change the name of the descriptor file.

**Deleting unwanted fonts or font sizes:** this eliminates unnecessary information and decreases the memory used by the descriptor. The last section of this chapter, *Example Tasks*, provides step-by-step instructions for this task.

**Adding support for a cartridge font:** you can create font groups to support the fonts supplied on a cartridge.

**Changing the ribbon order for a color printer:** the order in which color ribbons are printed is usually from light to dark; however, you can alter this order to meet special color printing needs. The last section of this chapter, **Example Tasks**, provides step-by-step instructions for this example.

**IMPORTANT:** Remember that descriptor files **reflect** a printer's capabilities; they do not give your printer new capabilities. In order for you to add a feature to a descriptor file, your printer must support it. Your printer manual should tell you what your printer can and cannot do.

## Descriptor Files and Printer Drivers

Printer descriptors enable ANGOSS to output to a printer. Each time you execute a print job, ANGOSS interprets the information within the descriptor and then sends control commands to the printer.

The descriptors shipped with ANGOSS support many resolutions and features for each supported printer. Usually, two descriptors are installed with each kind of printer: a draft mode descriptor and a quality mode descriptor. For example, the descriptor

HP Series II, 100 DPI Resolution

describes the capabilities of a Hewlett Packard Series II printing at 100 dots per inch (dpi), which is considered draft mode. The following descriptor supports quality mode for the same printer:

HP Series II, 300 DPI Resolution

Regular printer descriptors have a .cpd extension. If your printer supports font cartridges or can produce color output, you may also have descriptors supporting these capabilities. Cartridge descriptors will have a .ccd extension. Color descriptors usually will be indicated with a "C" in the third character position of the descriptor name. (For many descriptors, the third character position is an underscore.)

While descriptors contain instructions for many printer capabilities, they are separated based on one feature, printer resolution. Printer resolution affects many descriptor file values. Vertical and horizontal resolution values determine not only the resolution with which graphics are printed, but the increments by which the print position moves (in most cases), and the number of pixels comprising the width of a character, which affects space tables. As you look through a descriptor, you will see the many effects of printer resolution. Refer to the sections **Movement and Graphics Commands** and **Printer Resolution** for more information on this topic.

## Storing Descriptors Files

Descriptors are stored, along with many other resources, in the Resource Library. Two types of libraries are possible: a system library and a local library. The system library is created automatically during installation and is placed in your system directory under the name `resource.srl`. The `.srl` extension indicates that it is the "system" Resource Library. A local library is named `resource.lrl`. The `.lrl` extension indicates that it is the "local" Resource Library.

Local libraries can be created by network administrators or individual users in network situations where someone uses descriptors and drivers that no one else uses. By storing these files in a local library, the system library remains uncluttered, and ANGOSS can run more efficiently.

When you load a descriptor into the Editor, it is pulled from a Resource Library and must be stored there again in order for ANGOSS to use it. When you finish editing a descriptor, you have the option of storing it in the system library or the local library or on disk. The prompt `Write file to disk, or local/system library (d/l/s)` is displayed.

If you copy the file to disk, it can be reincorporated into a library using the Tools Resource Modify command. Refer to the *ANGOSS Install Manual* for more information about this command. If you wish to store it in the local library, but have not created one yet, press **l** and a local library is created. The library is placed in your home path. Select **s** to store the file in the system library.

## Using the Descriptor Editor

This section covers the practical aspects of using the Descriptor Editor. It explains the major sections within the Editor; how to move around those sections; the kinds of information that can be entered into a descriptor; and the units in which values are measured.

### Descriptor Editor Sections

The Editor is divided into ten sections. Each section addresses an aspect of the printer's behavior. In most cases, you will need to modify information in only a few of these sections. The Quick Key **F9** displays an index listing each section, allowing you to select the section you need and move directly to it. Moving around the Editor is discussed more fully following Table 5-1.

**Table 5-1.** Descriptor Editor Sections

General Description	Summarizes printer behavior: type of printer and driver; comment lines; reset, start, and end sequences; and default paper information.
Paper Path(s)	Designates valid mechanisms used to feed paper into the printer.
Paper Size(s)	Designates valid paper sizes and portrait and landscape margins.
Font(s)	Defines all supported fonts: type and source; size; character sets; expanded, condensed, and compressed variations.
Proportional Space Table	Lists the width of each printable character for proportional fonts.
Character Generation Table	Allows you to change the meaning of a character or build a new one from existing characters.
Movement and Graphics Commands	Specifies the sequences and formats for vertical and horizontal positioning and graphics commands.
Font Sequences	Invokes font attributes and modifications.
Printer Resolution	Specifies the number of dots per inch to print and the order in which the data is sent to the printer.
Color Sequences	Specifies the color palette for color text and graphics.

## Moving Around the Descriptor Editor

Use the following keys to move around the Descriptor Editor and enter information.

### Tab Key

The **Tab** key moves the pointer forward through the Editor from one prompt to the next. Because **Tab** skips blank lines, it is more efficient than using **down arrow**.

## Shift Key

Use **Shift** in combination with **Tab** to move backwards through the Editor. **Shift Tab** moves from one prompt to the next, skipping blank lines.

## Enter Key

The **Enter** key has two uses. For most prompts it works just as **Tab** does in that it moves the pointer forward through the Descriptor Editor, from one prompt to the next. It cannot, however, be combined with **Shift** to move backwards through the Editor.

When you are working in one of the tables, **Enter** moves the cursor forward one cell at a time until it reaches the end of the row. It then moves the cursor to the next row.

## Escape Key

The **Esc** key aborts the current editing session. If you have not made any changes to the descriptor file, the file is unloaded automatically and the main menu is displayed. If you have made at least one change, the message `Cancel without update? (y/n)` is displayed. Pressing **y** aborts the editing session. Pressing **n** returns to the editing session.

## Arrow Keys

The **up arrow** and **down arrow** keys move the cursor vertically through the Editor from one line to the next. The **left arrow** and **right arrow** keys function differently based on the current field. If you are in a text field, **left arrow** moves the cursor left. **Right arrow** moves the cursor right. If you are pointing to a field that requires you to highlight one of several options, **left arrow** moves the highlighter backwards through the list. **Right arrow** moves the highlighter forwards through the list.

## Control Home/Control End

**Ctrl Home** moves the cursor to the first prompt in the Descriptor Editor. **Ctrl End** moves the cursor to the last prompt in the Editor.

## Quick Keys

Five Quick Keys are always available in the Descriptor Editor: **F1**, **F2**, **F3**, **F9**, and **F10**. Three others are available for some prompts: **F6**, **F7**, and **F8**. Table 5-2 lists the keys and their functions.

**COMMENT:** The Quick Key **F9** displays an index of the Editor's ten major sections. It is an excellent tool for moving around the Editor.

**Table 5-2.** Descriptor Editor Quick Keys

<b>F1</b>	Accesses help information.
<b>F2</b>	Moves the cursor into the first position of a text field if cursor is to extreme left; does nothing in fields that require you to highlight an option.
<b>F3</b>	Blanks the current field and puts the cursor in the first character position of the field; does nothing in fields that require you to highlight an option.
<b>F6</b>	Selects or deselects an option for prompts that can have more than one option highlighted.
<b>F7</b>	Duplicates a group of information; appears only if the group can be repeated.
<b>F8</b>	Deletes a group of information; appears only if the group can be deleted.
<b>F9</b>	Displays an index of the Editor's ten sections when a printer descriptor file is loaded; displays an index of five applicable sections when a cartridge descriptor is loaded.
<b>F10</b>	Writes the new file to the Resource Library or to disk.

Quick Keys **F6**, **F7**, and **F8** are available only for some prompts. Their functions are explained more fully in the discussions for relevant prompts.

## Entering Descriptor Information

There are three types of information you can enter into the Descriptor Editor:

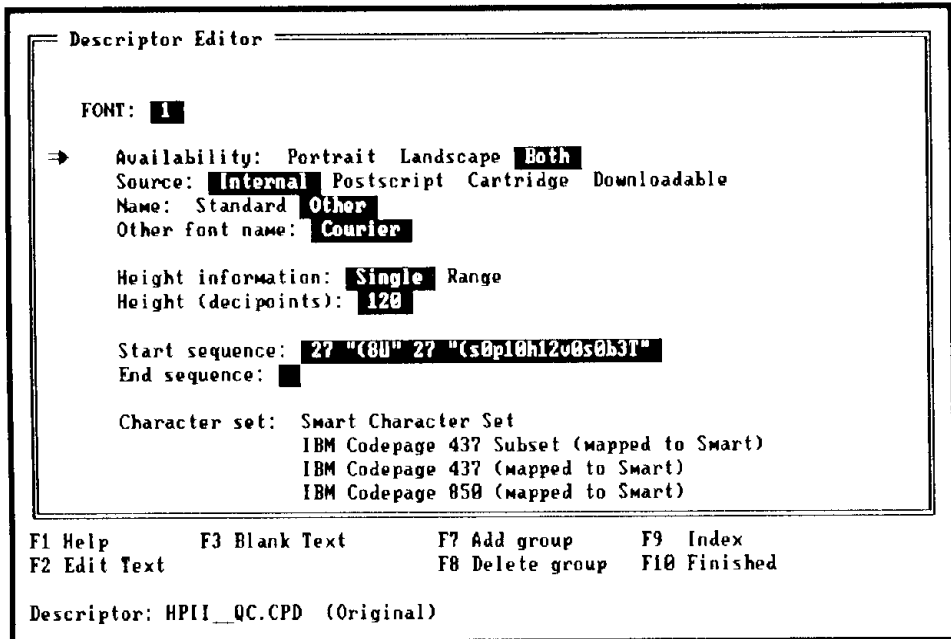
1. menu options
2. strings
3. values

## Menu Options

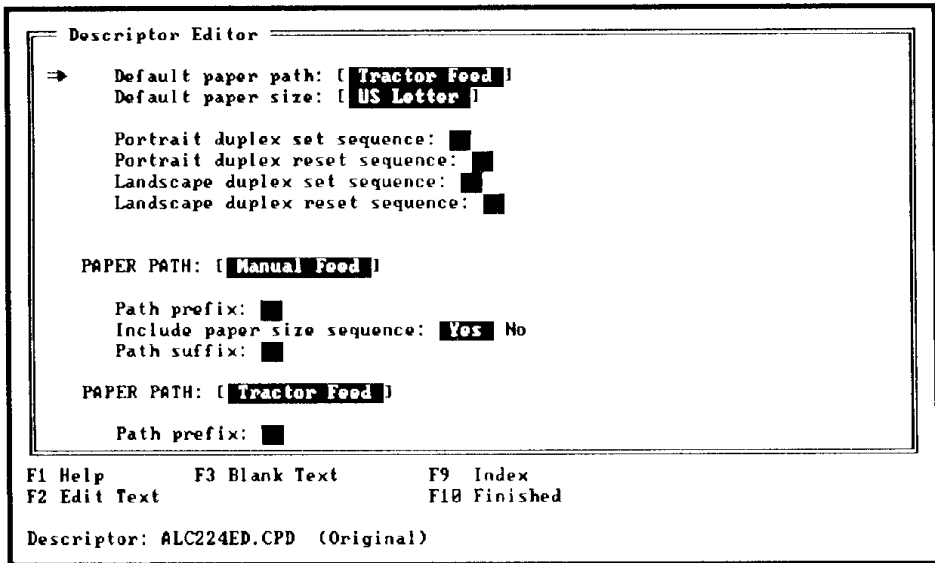
There are two different types of menus in the Descriptor Editor. One lists the options permanently on the screen (Figure 5-1); the other lists only the currently selected option, requiring you to cycle through the other options (Figure 5-2). The highlighted option in this latter type of menu is surrounded by brackets ([ ]).

In both cases, you use the arrow keys to move the highlighter to the option you want to select. In most cases, **left arrow** and **right arrow** are used to move the highlighter from one option to the next. The selection of some options produce another option menu.

**Figure 5-1.** The arrow is pointing to a menu type that lists options permanently on the screen.



**Figure 5-2.** The arrow is pointing to a menu type that requires you to cycle through options using **Spacebar** or **right arrow** and **left arrow**.



## Strings

Many prompts require that you enter a string of information. A string could be text or a printer control code.

**Text Strings.** Only a few prompts allow you to enter text strings, and they usually provide name or help information. For example, in the first section of the Descriptor Editor, both the printer description prompt and the comment prompts accept text strings. You may enclose the text strings in quotes if you like, but it is not necessary.

**Printer Control Codes.** Printer control codes cause the printer to perform some action, such as a executing a carriage return or invoking a graphics command. They are used throughout the Editor and usually consist of some combination of ASCII non-printable characters 0-31 and printable characters 32-127.

Many printer manuals refer to printer control codes as escape sequences because they frequently begin with the escape character (ASCII character 27). Your printer manual should specify the syntax rules for its printer codes.

You may enter these codes into the Editor using decimal, octal, or hexadecimal numbers. Regardless of how you enter the codes, the Descriptor Editor translates and displays the codes in its own format when you save the descriptor. Non-printable characters (0-31) will be displayed as decimal numbers and printable characters (32-255) will be displayed as characters enclosed in quotes. For example, the reset sequence for an HP Series II is an escape character followed by an "E." You can type the command using any of the following formats:

27 "E" - Descriptor Editor

27 69 - decimal

033 0105 - octal

0x1b 0x45 - hexadecimal

**NOTE:** It is recommended that you not use the octal format because it is easy to omit the leading zero. If you must use an octal format, you must include the leading zero.

## Values

Two kinds of values can be entered into the Descriptor Editor: non-negative integers (0, 1, 2 . . .) and positive real numbers (0.0, . . .).

The only time the Descriptor Editor will accept a real number is when the item is measured in inches. Prompts that use inches are followed by the word inches enclosed in parentheses (inches).

At all other times, the Descriptor Editor accepts non-negative integers. You can enter the integers in decimal, octal, or hexadecimal format; however, the Descriptor Editor will translate and display them as decimal numbers.

**NOTE:** The non-negative integers you enter for prompts that express ratios should be reduced to their lowest possible value.

## Units of Measure

There are three units of measure used in the Descriptor Editor:

- Pixels
- Inches
- Decipoints

**Pixels.** A pixel is the smallest unit of device resolution, the device being either a screen or a printer. Every measurement in the Descriptor Editor, from underscore thickness to character widths, is determined in pixels unless otherwise specified. Even printer resolution is measured in pixels per inch, which many printer manuals refer to as "dots" per inch.

**Inches.** Inches are used to measure the hard margins for landscape and portrait page sizes.

**Decipoints.** Decipoints are used to measure the height of a font. Traditionally, font heights are measured in points. A point equals 1/72 inch. To determine the correct decipoint value, simply multiply the height by 10. For example, a 12 point font would be 120 decipoints.

## Accessing the Descriptor Editor

The command Tools Edit-Printer from the main menu accesses the Descriptor Editor. This command is available only on the system menu. When you load a descriptor into the Editor, it is converted from a binary format to a database format to facilitate your editing. When you finish modifying the descriptor, the Editor automatically converts it to a binary format.

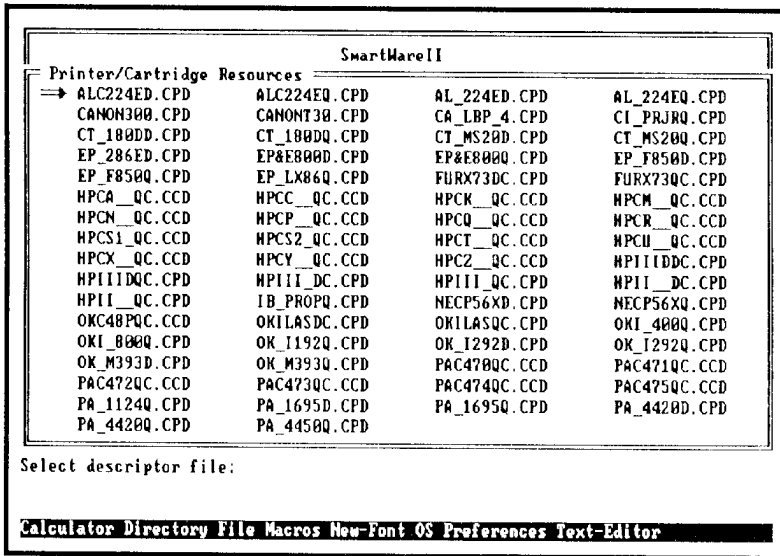
**IMPORTANT:** Before you attempt even a slight modification you should be very familiar with your printer's capabilities and the printer manual. Much of the information you will need to modify a descriptor can be found only in your printer manual.

The following steps explain how to access the Descriptor Editor:

**STEP 1:** Execute Tools Edit-Printer from the main menu.

A list of compiled cartridge and descriptor files is displayed. They will have either a .cpd or .ccd extension: compiled printer descriptor or compiled cartridge descriptor. Figure 5-3 shows an example prompter list.

**Figure 5-3.** In DOS, the descriptors listed in the prompter reflect the printer selections made during installation. In Unix, all descriptors are listed.



**STEP 2:** Point to the printer or cartridge descriptor you wish to edit and press **Enter**.

The message `Reading descriptor file. . .` is displayed. When it is finished reading the file, the Editor appears listing the descriptor information in a database form.

**STEP 3:** Make the changes to the file.

You may want to use **F9** to move directly to the section(s) you need to modify. Each prompt is explained in *Descriptor Editor Prompts*, which follows these steps.

**STEP 4:** Change the descriptor name.

It is recommended that you change the name of the descriptor before saving it so that the original descriptor is preserved. Even if you are making only minor changes to the file, it is a good idea to have an unaltered version of it.

STEP 5: Select **F10** when finished with the descriptor.

The message `Writing descriptor file. . .` is displayed.

STEP 6: Choose where to write the resource: disk, local or system Resource Library.

If you have only one Resource Library, pick System. Choose Local if you wish to create one or if you have already created one and wish to store this resource in it. If a file by the same name exists in the library you choose, the message `Resource file found. Overwrite?` is displayed. If you wish to overwrite the resource, press **y**.

To copy the resource to disk, select Disk. The descriptor will then be stored in the current directory. ANGOSS will not be able to use it until you copy it back into a Resource Library using the Tools Resource Modify command.

Upon making your selection, a second message is displayed indicating how many files are being written to the Resource Library. The message reads `Writing x out of x`. Eventually every resource is rewritten to the library. For example, if you just created a local library and the newly modified descriptor is the first and only resource stored in it, the message will read `Writing 1 out of 1`. The Resource Library is rebuilt each time it is modified so that the resources are packed as efficiently as possible.

If you press **Esc** before choosing where to write the resource file, you are prompted to abort the update.

**IMPORTANT:** You should test a modified descriptor before putting it in the network's system Resource Library for everyone to use.

## Descriptor Editor Prompts

This section explains each prompt in the Descriptor Editor. The information describes the relationship between the prompt and the printer's behavior and, when possible, how to determine the value that should be entered, syntax rules, and examples.

Because of the Editor's flexibility and the number of printers supported by ANGOSS, it is impossible to document all of the possible printer codes and answers. **Most of the information you need to respond to the prompts can be found only in your printer manual.**

The prompts are explained in the order in which they appear in the Editor. Prompts are occasionally combined in logical groups to prevent redundancy.

## Descriptor Name

Descriptor Name is the first prompt in the file. It lists the name of the descriptor you have loaded. It is recommended that you change the name of the descriptor before making any changes to the file. Doing so preserves an unaltered copy of the original descriptor.

To change the name of a descriptor, simply delete the current name and enter a new one. When you save the file, the edited descriptor is saved under the new name and the original remains unchanged.

**IMPORTANT:** If you edit the descriptor without changing the file's name, the original is altered. If you have made any mistakes in editing the descriptor, the only way to regain use of it is through the Install program.

## General Description Section

This section summarizes the printer's behavior. In the case of a cartridge descriptor, the only prompt displayed is Cartridge description:. Figures 5-4 and 5-5 compare the prompts displayed in both cases, respectively.

*Figure 5-4.* This is the General Description information for an HP cartridge.

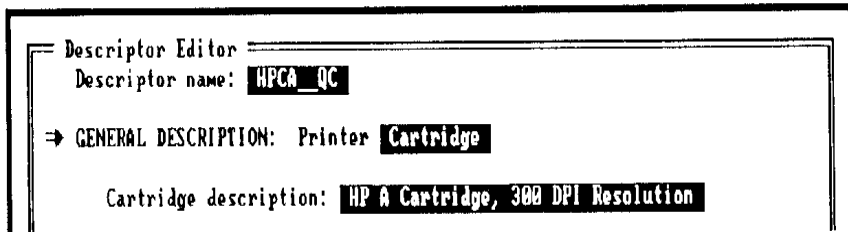
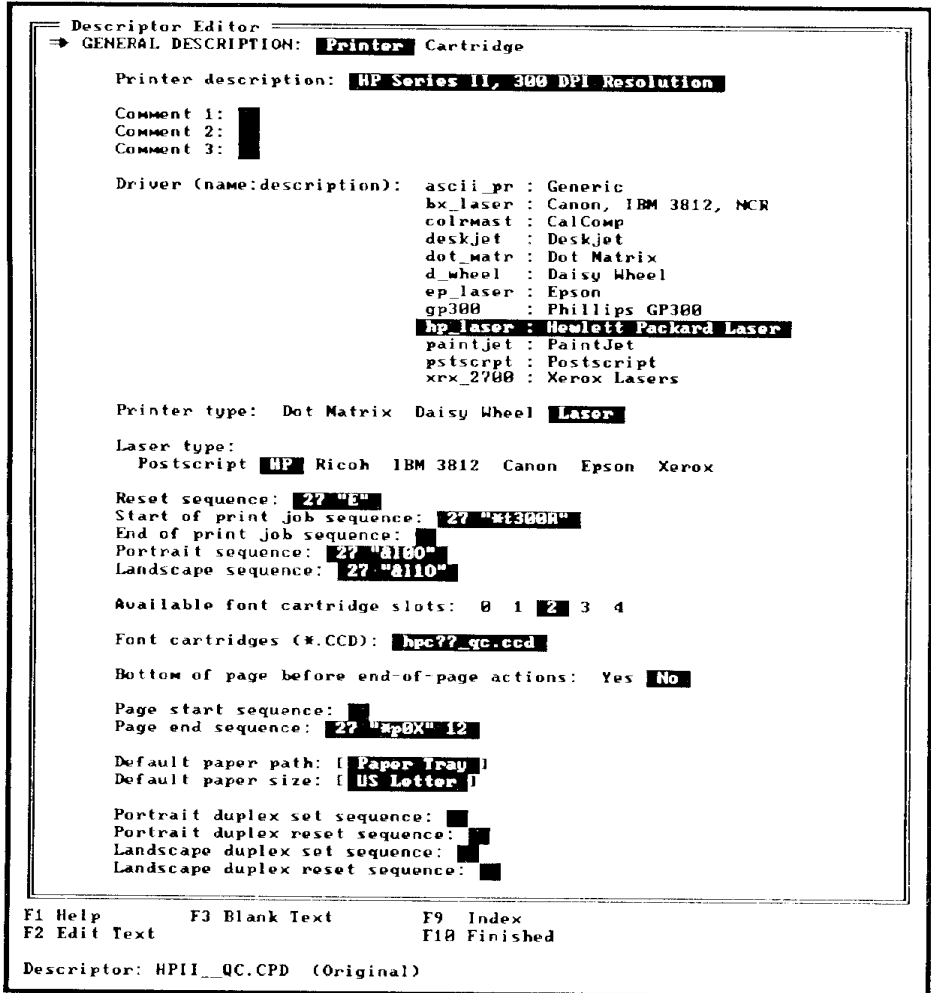


Figure 5-5. This is the General Description information for an HP printer descriptor



## Printer/Cartridge Description

This field describes the descriptor you have loaded. Descriptor names share a common format so that the Install program can recognize the text string. It is:

```
[name] [S] [model name] [comma] [other information]
```

When modifying descriptors for your own use, however, you can rename the files anyway you like.

## Comments 1, 2, 3

There are three comment lines; each can contain up to 255 characters. They are intended to supply helpful information about the descriptor. For example, if you were using a Canon Bubble Jet, you could use the comment lines to explain that space justification must be used in order for the printer to function correctly, as illustrated in Figure 5-6. You can put quotes around the text if you like, but it is not necessary.

**Figure 5-6.** Comment lines should contain helpful information about a descriptor

```

Descriptor Editor
=> Comment 1: must use space justification to ensure printer works
   Comment 2:
   Comment 3:

Driver (name:description):  ascii_pr : Generic
                           bx_laser : Canon, IBM 3812, NCR
                           colrmast : CalComp
                           deskjet  : Deskjet
                           dot_matr  : Dot Matrix
                           d_wheel   : Daisy Wheel
                           ep_laser  : Epson
                           gp300    : Phillips GP300
                           hp_laser  : Hewlett Packard Laser
                           paintjet  : PaintJet
                           pstscript : Postscript
                           xrx_2700 : Xerox Lasers

Printer type: Dot Matrix Daisy Wheel Laser

F1 Help      F3 Blank Text  F9 Index
F2 Edit Text F10 Finished

Descriptor: CA_LBP_4.CPD (Original)

```

**Driver (name:description)**

The printer driver is called each time you print a job. Drivers work with descriptors to control printer output. Drivers interpret the descriptor information and then send appropriate control codes to the printer.

The Descriptor Editor lists the currently available drivers. The correct driver for the current descriptor will be highlighted. To move from one printer driver to another, use **right arrow** to move forward through the list and **left arrow** to move backward through the list.

If you plan to create a new descriptor, you should choose the descriptor most like the one you are attempting to create and modify accordingly. Because drivers are so closely linked to descriptors, you will almost always select a descriptor that uses a printer driver appropriate for the descriptor you are creating.

Table 5-3 lists sample drivers and the printers controlled by each one.

**Table 5-3.** Sample Printer Drivers

ascii_pr	generic print driver
bx_laser	NCR 6416 laser printer, IBM 3812 printer, most canon laser printers
colrmast	CalComp ColourMaster printer
deskjet	HP DeskJet printers
dot_matr	all brands of dot matrix printers
d_wheel	all daisy wheel printers
ep_laser	Epson GQ-3500 laser printer
gp300	Phillips GP 300 printer
hp_laser	lasers that use Hewlett Packard Printer Command Language
paintjet	HP PaintJet
pstscript	all PostScript printers
xrx_2700	Xerox 4045 and 3700 laser printer and NCR 6426

**NOTE:** All descriptors that use `hp_laser.pdv` must have a begin and end graphics command and absolute horizontal and vertical movement commands. See the section titled **Movement and Graphics Commands** for more information about these commands.

## Printer Type

There are three possible printer types:

- Dot Matrix
- Daisy Wheel
- Laser

The correct type for the current descriptor will be highlighted.

**Laser Type.** If it is a laser printer, one of the following seven options will be highlighted:

- PostScript
- HP
- Ricoh
- IBM 3812
- Canon
- Epson
- Xerox

## Reset Sequence

The reset sequence restores a printer to its factory settings. In the case of laser printers, reset commands also move the print position to the left margin at the top of the next form.

Reset sequences differ also in that some restore the printer to its factory settings after printing everything in the print buffer, while others execute immediately, deleting anything that may be in the buffer. Read your printer manual carefully for this information. The Phillips GP300 is an example of a printer that executes the reset sequence immediately.

Reset sequences are sent at the beginning and end of a print job. It is recommended that you use them, particularly if you are working on a network where users may be using applications other than ANGOSS.

### Start of Print Job Sequence

The start job sequence prepares the printer for the beginning of a print job. The codes needed to prepare a printer for printing vary. Typical codes set the graphics resolution and emulation mode. Some printers do not require a start job sequence.

### End of Print Job Sequence

This sequence indicates when a print job is finished. Most printers do not require an end sequence.

### Portrait Sequence

This sequence is used to print a page in portrait orientation. Because portrait is the default orientation, many printers do not require a portrait command sequence. If, however, you plan to switch between portrait and landscape printing, the portrait sequence should be included.

**NOTE:** ANGOSS changes the orientation only when between pages. You cannot print part of a page in portrait and then switch to landscape to print the rest of the information. If your printer supports rotatable fonts, you cannot invoke a landscape font anywhere on a portrait page.

### Landscape Sequence

This sequence is needed for printing a page in landscape orientation. If this prompt is empty, ANGOSS will not change the printer to landscape mode.

**NOTE:** PostScript printers are the exception to this. They do not use this sequence to print in landscape orientation.

### Available Font Cartridge Slots

A cartridge font is a set of characters supplied on a read-only memory cartridge that plugs into a printer receptacle. If no cartridge descriptors were included in the Resource Library, enter **0** (even if your printer has cartridge slots.) If cartridge descriptors were included for your printer, enter the number of slots available on your printer. For example, if your printer has two cartridge slots and you have one cartridge descriptor, you should highlight **2**. The **left arrow** and **right arrow** keys move the highlighter through the list.

If you select one or more cartridge slots, `Font cartridges (*.ccd)` is displayed. This field lists a name template that generically represents all of the cartridge descriptors associated with that particular printer. For example, the printer descriptor PA\_4420Q

(Panasonic KX-P4420) lists the template `pac???qc.ccd`. This template associates any cartridges beginning with **pac** and ending in **qc** with the `PA_4420Q` descriptor. In this case, the cartridge descriptor `PAC470QC` is available.

### **Bottom of Page Before End-of-Page Actions**

For many printers, an end-of-page action is a form feed (FF). Other printers combine a form feed with a move to the left-hand margin.

Most printers do not need the print position to be at the bottom of the page in order to execute a form feed. In general, if your printer was manufactured after 1985, this setting will almost always be set to **No**. Some of the printers that would require the print position to be at the bottom of the page include:

- Generic IBM Graphics/Proprinter
- Generic Epson FX-80, draft and near letter quality
- Okidata ML-84 Step 2, low resolution graphics, high resolution graphics, and in character mode
- Diablo 630 Daisy Wheel
- Primage 90 Daisy Wheel
- NEC Spinwriter 8800, prop bold PS8 print wheel

### **Page Start Sequence**

The page start sequence sends a command to the printer indicating a new page. Most printers do not require a page start command.

### **Page End Sequence**

The page end sequence sends a command to the printer indicating the end of a page. All printers need such a command. For most printers, the sequence includes a carriage return and a form feed (CR, FF).

### **Default Paper Path**

This prompt lists the default mechanism by which paper is sent to the printer. The default is usually determined by the factory switch setting. This paper path must be represented in a Paper Path section.

## Default Paper Size

This prompt lists the default paper size. The default is usually determined by the factory switch setting. In the United States, the default is usually Letter. In Europe, the standard is A4. The default paper size must be represented in one of the Paper Size sections.

## Portrait Duplex Set/Reset Sequence

Duplex printing prints text and graphics on both sides of the paper. If your printer supports duplex printing, enter the control codes that set and reset this feature.

## Landscape Duplex Set/Reset Sequence

Duplex printing prints text and graphics on both sides of the paper. If your printer supports duplex printing in landscape orientation, enter the control codes that set and reset this feature.

## Paper Path Section

This section specifies the mechanism by which paper is sent to the printer. There can be as many paper path groups as there are valid paper paths. Example paper path groups are shown in Figure 5-7. ANGOSS refers to the paper profiles set for global and module use to determine which paper path group to use. Paper profiles are discussed in the ***Printing in ANGOSS*** chapter.

**Figure 5-7.** These paper path groups define valid paper paths for an Okidata Laserline.

```

Descriptor Editor
---
> PAPER PATH: [ Paper Tray ]
    Path prefix: 27 "&11H"
    Include paper size sequence: Yes No
    Path suffix:

PAPER PATH: [ Manual Env Feed ]
    Path prefix: 27 "&13H"
    Include paper size sequence: Yes No
    Path suffix:

PAPER PATH: [ Manual Feed ]
    Path prefix: 27 "&12H"
    Include paper size sequence: Yes No
    Path suffix:

F1 Help       F3 Blank Text   F7 Add group    F9 Index
F2 Edit Text  F8 Delete group F10 Finished

Descriptor: OKILASDC.CPD (Original)

```

Quick Keys **F7** and **F8** are displayed when pointing to any line within a paper path group. **F7** creates a new path group. The new group will be empty except for the path setting Paper Tray, which is displayed automatically. **F8** deletes the group to which you are pointing.

Using **right arrow** you can cycle forward through the possible paths. The **left arrow** key moves backwards through the options. The *Printing in ANGOSS* chapter discusses the paper path options.

### Path Prefix

The prefix sequence initiates the path command, informing the printer driver of which path to use to print the job. Your printer may or may not use a paper prefix command.

### Include Paper Size Sequence

If you respond **Yes** to this prompt, then the printer driver will use the size information it finds in the corresponding Paper Size group (discussed in the next section). If you respond **No**, the paper size information is not needed to set the path.

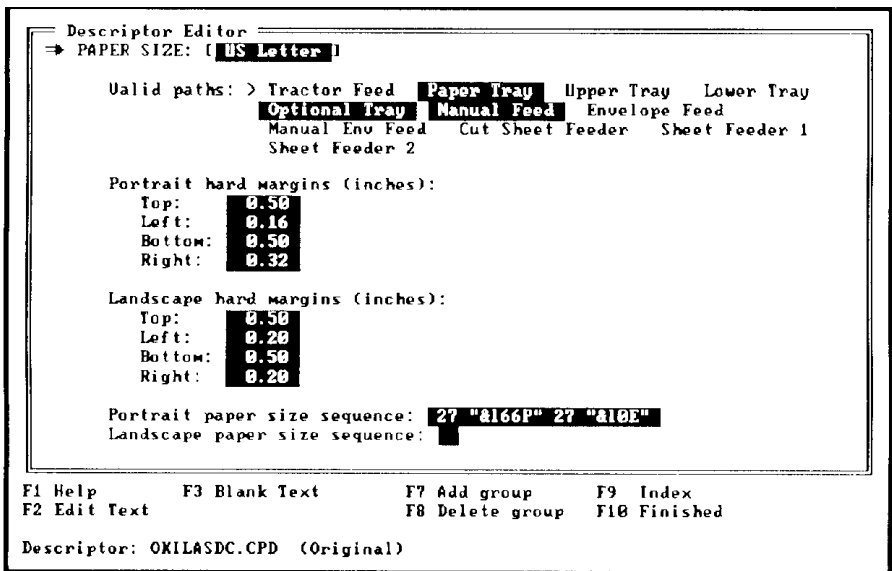
### Path Suffix

The suffix sequence ends the use of this paper path. Your printer may or may not require a suffix sequence.

### Paper Size Section

This section supplies the printer with size information, hard margins, and portrait and landscape margins and sequences. An example paper size group is shown in Figure 5-8. There can be as many paper size groups as there are valid paper sizes. ANGOSS determines which paper size to use by referring to the paper profiles set for global and module use.

**Figure 5-8.** This paper size group defines a valid paper size for the Okidata Laserline.



Quick Keys **F7** and **F8** are displayed when you are pointing to any line within a paper size group. **F7** creates a new size group. The new group will be empty except for the size setting US Letter, which is displayed automatically. **F8** deletes the group to which you are pointing.

Using **right arrow** you can cycle forward through the paper size choices. The **left arrow** key moves backwards through the list. The *Printing in ANGOSS* chapter explains each paper size.

### Valid Paths

The highlighted options indicate valid paths for the paper size described. If you have added or deleted a feed mechanism or tray, use **F6** to select or deselect the appropriate paths.

### Portrait/Landscape Hard Margins

Hard margins are preset boundaries outside of which no text or graphics can be printed. Laser printers commonly have hard margins, whereas dot matrix printers rarely do.

If your printer supports landscape as well as portrait printing, margins must be set for both orientations. The margin directions (top, left, bottom, and right) are absolute. That is, the top measurement should always reflect the side of the paper that runs parallel to the text.

The boundaries are measured in inches.

### Portrait Paper Size Sequence

This sequence contains the paper size information for portrait orientation. It is used only if a Paper Path group calls it, which is indicated in the second prompt of the Paper Path group, `Include paper size sequence:`

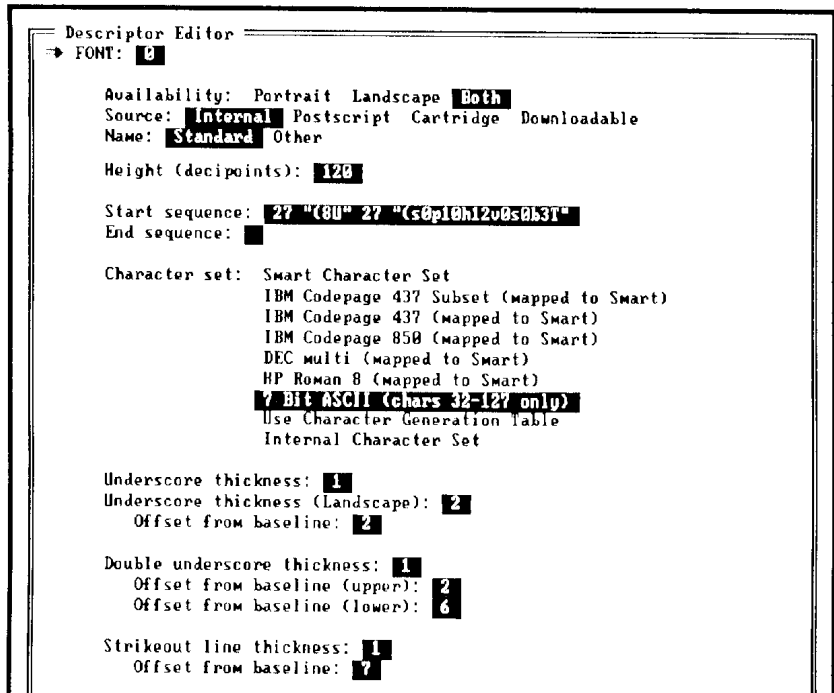
### Landscape Paper Size Sequence

This sequence contains the paper size information for landscape orientation. It is used only if a Paper Path group calls it, which is indicated in the second prompt of the Paper Path group, `Include paper size sequence:`. Whether the size sequence is used varies from printer to printer. Some printers such as the HP Series II use the same size sequence for both portrait and landscape orientation. Other printers such as the Canon Series II use a different sequence for each orientation.

## Fonts Section

A font is a set of characters, numbers, punctuation marks, and symbols with a consistent typeface, size, style, and weight. The fonts described in the Descriptor Editor are available to the printer and are reflected in the Font Prompter within ANGOSS. Each font is represented by a group of information beginning with an identification number and ending with font attribute information. "Font group" is used throughout this chapter to refer to one group of information. A font group is shown in Figure 5-9.

**Figure 5-9.** This font group describes the standard 12 point font for an Okidata Laserline.



(graphic continued on next page)

page)

```

Average character width: 15
Maximum character width: 15

Character up: 18
Normal font exists: Yes No

Attribute combinations:
Slant: > Normal Italics
Weight: > Normal Light Bold Extra-Bold
Modifications: > Strikout Underscore Dbl-Uscore Outline

Attribute combinations:
Slant: > Normal Italics
Weight: > Normal Light Bold Extra-Bold
Modifications: > Strikout Underscore Dbl-Uscore Outline

Condensed font exists: Yes No
Compressed font exists: Yes No
Expanded font exists: Yes No

F1 Help      F3 Blank Text   F7 Add group   F9 Index
F2 Edit Text F8 Delete group F10 Finished

Descriptor: OKILASDC.CPD (Original)

```

There are cases where one font group describes more than one font attribute, e.g., normal **and** bold. Generally, this is based on whether separate space tables, which specify the width of each character in a font, are needed to accommodate different attributes. That is, if a bold "a" is no wider than a normal weight "a," then separate font groups are not needed to describe the bold font and the normal font.

Monospaced fonts, which do not use space tables, require a separate font group for each different *size* of font, but not for each variation within the font. For example, two separate font groups would be required for an 8 point font and a 12 point font. But the bold version of either font would not require a separate font group. Proportionally spaced fonts, however, usually need separate font groups to represent different attributes as well as different sizes. More information about monospaced and proportionally spaced fonts is provided in the *Average Character Width* section.

The number that follows `Font` is an identification number between 0 and 65356. This number must be unique within the printer descriptor and any associated cartridge descriptors. This number is used to relate the valid proportional spacing tables and character generation tables to the font group.

## Availability

Availability refers to the font's orientation: Portrait, Landscape, and Both.

**Portrait.** Portrait fonts print parallel to the short side of the paper. For example, if you were using 8.5 x 11-inch paper, the 8.5-inch sides would be the top and bottom of the paper.

**Landscape.** Landscape fonts print sideways across a piece of paper, such that a line of text would run parallel to the long side of the paper. For example, if you were using 8.5 x 11-inch paper, the 11-inch sides would be the top and bottom of the paper.

**Both.** Font can print both ways.

## Source

Source refers to the storage location of a font. Four options are possible: Internal, PostScript, and Cartridge.

**Internal.** Fonts that reside within the printer. Sometimes these fonts are referred to as "native fonts."

**PostScript.** Fonts available only with PostScript laser printers. PostScript printers decode and interpret the PostScript page description language. To select PostScript, you must have a psft\*. \* file in your Resource Library. If you select PostScript, the prompt `Font filename:` is displayed. Enter the name of the psft\*. \* file.

**Cartridge.** Fonts supplied in a cartridge that plugs into a printer.

## Name

Name refers to the name of the font. There are two options.

**Standard.** A standard font is the default internal font that is mapped to the Smart Character Set. Each descriptor has one standard font. In many printers, the standard font is 12 point Courier.

**Other.** Select this option for any font that isn't the standard font, as defined above. When you select this option, the prompt `Enter other name:` appears. There are no syntax rules for this prompt. Simply enter a font name that has meaning for you.

## Height (decipoints)

The height of a character is measured in points. A point is a typographical unit used to measure the size of a character. One point equals  $1/72$  inch.

The Descriptor Editor requires that a font's height be entered as an integer. Because fonts frequently are sized at a more precise level than a whole number, the point size must be entered in decipoints.

For example, if you have an 8.5 point font, you would enter 85. See the section titled ***Units of Measure*** in this chapter for more information.

## Start Sequence

This command initiates the use of this font and must be sent to the printer before any characters can be printed. Refer to your printer manual for the command information.

## End Sequence

This command ends use of the current font. While many printers do not require end font sequences, two cases might require one. 1.) Some laser printers store or "cache" fonts that must be discarded before invoking a new font. 2.) Some dot matrix printers must return to a default state before invoking a new font.

## Character Set

A character set is a collection of letters, numbers, punctuation marks, and symbols. The same font may be available in several different character sets.

There are nine choices:

- Smart Character Set
- IBM Codepage 437 Subset (mapped to ANGOSS)
- IBM Codepage 437 (mapped to ANGOSS)
- IBM Codepage 850 (mapped to ANGOSS)
- DEC multi (mapped to ANGOSS)
- HP Roman 8 (mapped to ANGOSS)
- 7 Bit ASCII (chars 32-127 only)

- Use Character Generation Table
- Internal Character Set

The Smart Character Set is fully supported only by filled-area fonts. The other seven sets (IBM Codepage 437 Subset through the Character Generation Table) are all mapped to the Smart Character Set. Fonts using one of these sets will use as much of the ANGOSS set as possible. If the ANGOSS set defines a symbol that is not available in these sets, a space will be substituted.

If you choose **Internal Character Set**, your printer will use one of its native character sets. Your printer manual should list the printer's internal character sets.

**NOTE:** Remember that if you use one of your printer's internal character sets, the results will be reflected only in your output. The characters displayed on your screen may or may not match the set depending on the type of screen driver you have installed.

### Underscore Thickness

Underscores are continuous lines drawn below a portion of text. The lines are measured in pixels.

Underscores are drawn either by ANGOSS or automatically by the printer. This setting needs to be filled in only if the underscore is being drawn by an ANGOSS graphics command. While most printers support underscore capabilities, if any of the following are true, ANGOSS is responsible for drawing the underscore:

1. You are using a daisy wheel printer (d\_wheel.pdv).
2. An `Underscore set sequence` is **not** set in the Font Sequences section.
3. You have underscores in the last line of a microjustified paragraph.

### Underscore Thickness (Landscape)

Some printers have a different thickness for underscores printed in landscape orientation, (HP LaserJet printers.) If nothing is entered in this field, ANGOSS uses the same line thickness as for portrait printing.

**Offset from baseline.** This number determines how many pixels are placed between the underscore and the baseline. The baseline is the invisible line upon which the main body of typeset characters sits. See Figure 5-10.

**Figure 5-10.** The baseline is an imaginary line that runs along the bottom of the main body of typeset characters.



### Double Underscore Thickness

Double underscores are two continuous lines drawn under a portion of text. The lines are measured in pixels.

Just as with the single underscore, double underscores can be printed by ANGOSS or automatically by the printer. In order for ANGOSS to be able to draw a double underscore the descriptor must contain a graphics command and a thickness setting. If your printer *can* draw double underscores, the Double Underscores set and reset sequences must be set in the Font Sequences section of the Descriptor Editor.

**Offset from baseline (upper).** This number determines how many pixels are placed between the baseline and the first of the two underscores. The baseline is the invisible line upon which the main body of typeset characters sit (see Figure 5-10); this excludes descenders.

**Offset from baseline (lower).** This number determines the number of pixels between the baseline and the second of the two underscores.

### Strikeout Line Thickness

A strikeout is a continuous horizontal line drawn through text. The line is measured in pixels. The strikeout attribute can be drawn automatically by the printer or by ANGOSS. Most printers do not support automatic strikeout capability.

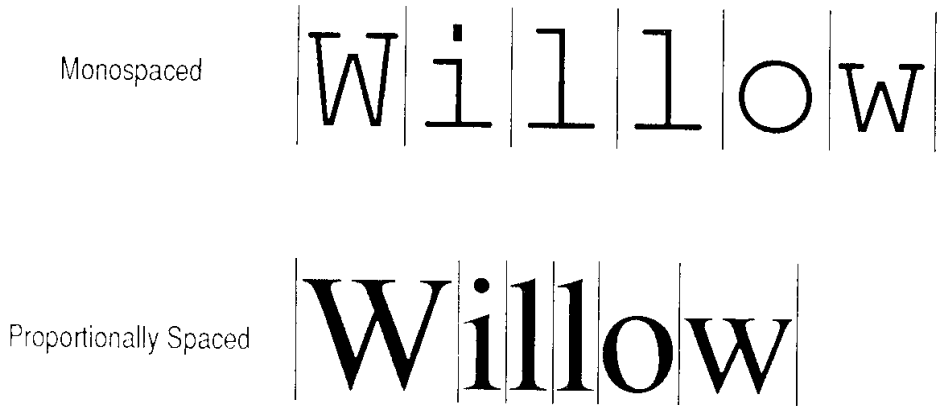
**Offset from baseline.** This number determines how many pixels are placed between the baseline and the strikeout line.

### Average/Maximum Character Width

Character width is measured in pixels and is determined by the font and the horizontal printer resolution.

Monospaced fonts allocate the same amount of horizontal space for every character, regardless of its width or shape. That is, an "i" is allocated the same amount of space as a "w". Each character in a proportionally spaced font is allocated a width proportional to its shape and width. An "i" would require much less space than a "w". Figure 5-11 demonstrates the difference between a monospaced font and a proportionally spaced font.

**Figure 5-11.** The difference between monospaced and proportionally spaced fonts is easily distinguished in a word containing both very wide and very thin characters.



In the case of a monospaced font, you can figure out the average and maximum character widths (they will be identical) by dividing the resolution of the printer by the characters per inch (cpi) measurement of the font. For example, assume you are printing a 10 cpi font at 300 dots per horizontal inch (dpi). This means the printer prints 300 pixels per horizontal inch. If you divide the horizontal resolution by cpi, the result will be the average and maximum character width.

$$300 / 10 = 30$$

Every character will be 30 pixels wide.

The variable nature of proportional fonts requires that you average all of the characters in the font to determine the average width. Using the information in the Proportional

Spacing Table, you can enter the widths for characters 32 through 255 into a worksheet and write a formula that averages the numbers. (Use **F9** to move directly to the Proportional Spacing Table category.) The maximum character will be the character with the largest width.

## Character Up

Dot matrix printers subtract this value from the vertical movement value (the y coordinate) to determine where to move the print head. The formula would look like this:

$$\text{vertical movement value} - \text{character up} = \text{destination}$$

Dot matrix printers also require a character up value to determine where to place a strikeout font.

## Normal/Condensed/Compressed/Expanded Font Exists

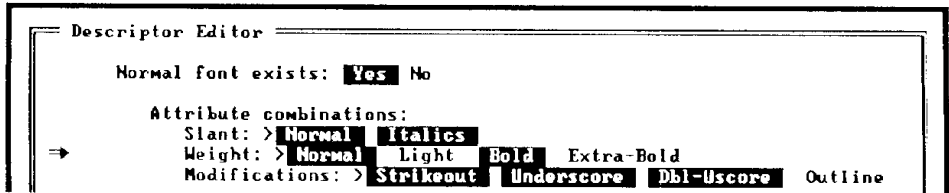
A normal font is not condensed, compressed, or expanded. Normal should be selected if the font is proportionally spaced or if the font is a 10 cpi monospaced font. Condensed, compressed, and expanded fonts are always monospaced fonts. A condensed font is 12 cpi. A compressed font is usually 15 to 17 cpi. An expanded font is usually 5 to 6 cpi. You can find more information about condensed, compressed, and expanded fonts in **Font Sequences**.

**Attribute Combinations.** The selection of any of these four prompts yields a subset of prompts, which together define the possible attributes of the current font. The attributes are divided into the following categories:

- Slant: normal, italic
- Weight: normal, light, bold, extra bold
- Modifications: strikeout, underscore, double underscore, outline

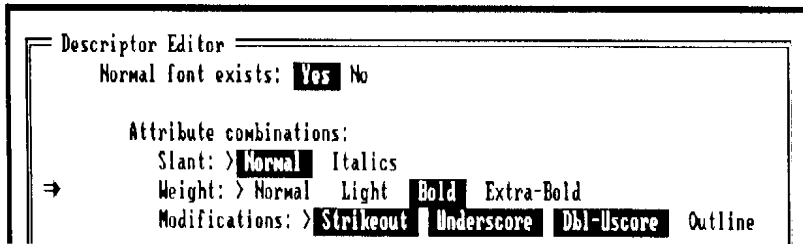
The number of attributes you can select in the slant and weight categories depends on the font. If the font's characters do not vary in width when their weight or slant is changed, then you may select every valid attribute. For example, if the group describes a 10 point monospaced font in which the bold characters require no more horizontal space than the normal weight characters, you could highlight both normal and bold in the weight category. See Figure 5-12.

**Figure 5-12.** More than one attribute can be highlighted in each category for many monospaced fonts



If the font's characters do vary in width when their weight or slant is changed, then you may select only one attribute from each category. For example, if the group describes a 12 point proportionally spaced bold font, you should highlight only normal slant and bold weight in the first group. In this case the bold characters will require more horizontal space than the normal weight because the font group describes a proportionally spaced font. See Figure 5-13.

**Figure 5-13.** Only one attribute can be highlighted in each category for proportionally spaced fonts.



The modifications category is independent of character width issues. You can select as many modifications as are supported by your printer or printer descriptor file.

## Proportional Space Table Section

Proportional space tables list the width in horizontal resolution units of each character of a proportional font. Space tables are not needed for monospaced fonts.

The field immediately following the prompt contains the font identification number. It is possible, though rare, that one proportional space table could describe more than one font. When you enter a number into this field, the table is displayed. Cells are available for ASCII characters 0-255. See Figure 5-14.

**Figure 5-14.** Cells are available for ASCII characters 0-255.

Descriptor Editor										
⇒ PROPORTIONAL SPACE TABLE for font(s): 10 11										
	0	1	2	3	4	5	6	7	8	9
0	30	30	30	30	30	30	30	30	30	30
10	30	30	30	30	30	30	30	30	30	30
20	30	30	30	30	30	30	30	30	30	30
30	30	30	30	18	30	30	30	36	36	18
40	24	24	30	30	18	30	18	30	30	30
50	30	30	30	30	30	30	30	30	18	18
60	30	30	30	30	36	36	36	36	36	36
70	36	36	36	24	30	36	36	42	36	36
80	36	36	36	36	36	42	36	42	36	36
90	30	24	30	24	30	30	18	30	36	30
100	36	30	24	36	36	18	24	36	18	42
110	36	30	36	36	30	30	24	36	36	42
120	30	36	30	24	18	24	30	0	36	36
130	30	30	30	30	30	30	30	30	30	18
140	18	18	36	36	36	42	42	30	30	30
150	36	36	36	36	42	30	30	36	42	30
160	30	18	30	36	36	30	30	30	30	30
170	30	30	30	18	30	30	30	30	30	30
180	30	30	30	30	30	30	30	30	30	30
190	30	30	30	30	30	30	30	30	30	30
200	30	30	30	30	30	30	30	30	30	30
210	30	30	30	30	30	30	30	30	30	30
220	30	30	30	30	30	30	30	30	30	30
230	30	30	30	30	30	30	36	30	30	30
240	30	30	30	30	30	30	30	30	30	30
250	30	30	30	30	30	30	30	30	30	30
	0	1	2	3	4	5	6	7	8	9

F1 Help            F3 Blank Text            F7 Add group            F9 Index  
F2 Edit Text            F8 Delete group            F10 Finished

Descriptor: PA\_1124Q.CPD (Original)

If you are editing a descriptor to add new font support, these numbers are usually supplied either on a floppy disk or in the printer manual.

## Character Generation Table Section

Character Generation Tables allow you to generate characters that are not available in your current character set. The numbers that follow the prompt Character Generation Table for fonts: are the identifier numbers of the fonts that will use the "generated" character. To display a table, assign a font identifier number. More than one font number can be used.

The table provides cells for ASCII characters 0-255. See Figure 5-15.

**Figure 5-15.** The **Enter**, **Tab**, and **Shift Tab** keys move the cursor position from one cell to the next or, in the case of **Shift Tab**, to the previous cell. The **up arrow** and **down arrow** will move the pointer vertically through the table.

Descriptor Editor

CHARACTER GENERATION TABLE for font(s): 0 1 2 3 4 5 6 7 8 9 10 11

	0/5	1/6	2/7	3/8	4/9
0					
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					
55					
60					
65					
70					
75					
80					
85					
90					
95					
100					
105					
110					
115					
120					
125			1		
130					
135					
140					
145					
150					
155	1		1	1	1
160					
165					1
170	228	227	1		
175		234	1	1	1
180	1		1	1	1
185	1	1	1	1	155
190	157	249	1	1	1
195	1	1	1	1	1
200	1	1	1	1	1
205	1	1	1	1	1
210	1	1	1	1	1
215	1	1	1	1	1
220	1	1	1	1	1
225		1	1	1	1
230			1	1	1
235	1	1	1	1	1
240	1	1		235	28
245	21		1		1
250	1	1	1	1	1
255					

F1 Help      F3 Blank Text      F7 Add group      F9 Index  
 F2 Edit Text      F8 Delete group      F10 Finished

One way you might use the Character Generation Table is to build a new character from existing characters. For example, if you wish to use a non-equal sign but do not have one available in your current character set, you can build it using a forward slash and an equal sign. To do this, you must create a string using the following syntax conventions:

\\ = insert a backslash

\- = move back to the beginning of the character cell

\+ = move forward one horizontal resolution unit

The following steps explain how to create a non-equal sign:

**STEP 1: Execute Tools Edit-Printer.**

**STEP 2: Load the descriptor you wish to edit.**

**STEP 3: Use the index Quick Key F9 to move directly to the Character Generation Table section.**

**STEP 4: Enter the number of the font that will use the new character.**

**STEP 5: Move to the character cell that will be replaced by the new character.**

Pick a character that you will not be using, for example, you may have no reason to use the @ sign. In the Smart Character Set this is character 64.

**STEP 6: Enter the string "\- \+ / \+ " and press Enter.**

The string would be translated as follows:

=	print an equal sign
\-	back up to the beginning of "="
\+ /	move forward one horizontal unit and print a forward slash
\+	move forward another horizontal unit

If you are creating a character that will be used as part of a proportional font, you will need to consider whether the character width needs to be adjusted. If you have built a

character that is wider than the original character, alter the width in the proportional space table to accommodate the new character.

## Movement and Graphics Commands Section

These commands determine how the print position movements and graphics are executed. Both commands rely on the horizontal and vertical resolution values. Movement commands use the resolution values to determine the increment by which to move the print position. Graphics commands rely on the resolution values to determine the number of dots to print per inch of image. Because each descriptor addresses only one resolution, only one vertical and horizontal positioning command is permitted in each descriptor.

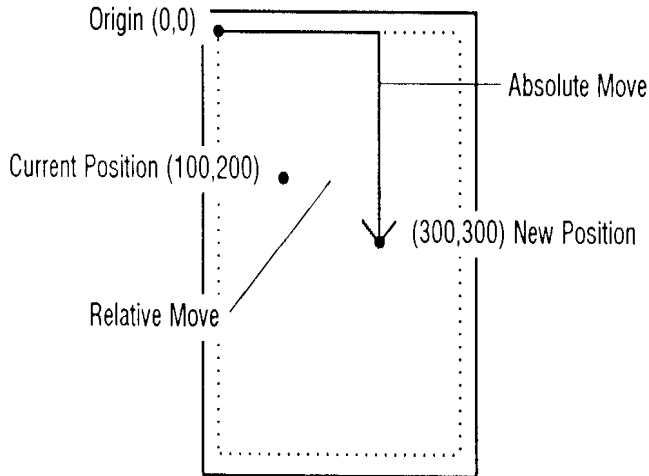
### Absolute/Relative Positioning

A printer's movement can be absolute or relative. A printer that uses absolute movement determines the distance of a movement by referencing the **original** print position (either the top of the physical page or the top of the printable area). A printer that uses relative movement determines the distance of a movement by referencing the **last** print position. Your printer manual will specify which kind of movement is supported by your printer.

The direction of movement can be vertical and horizontal. These movements can be used together to move the print position within the printable area. Laser and other page-oriented printers use absolute movement to move in both directions. Dot matrix printers usually use relative movement for vertical commands and absolute movement for horizontal commands.

The following example illustrates the difference between absolute and relative movement (see Figure 5-16). Assume the current print position is at 100 horizontal dots and 200 vertical dots (100,200). The next print position is at horizontal position 300 and vertical position 300 (300,300). If the printer uses absolute positioning, the printer driver will refer to the original position (0,0) and send a command to move to horizontal position 300 and vertical position 300. If the printer uses relative positioning, the printer driver will refer to the last position (100,200) and send a command to move 200 more horizontal dots and 100 more vertical dots.

**Figure 5-16.** Laser printers use absolute movement. Dot matrix printers usually use a combination of relative and absolute movement.



## Vertical Positioning

Vertical positioning controls any movement on the y axis. The value that indicates where to move on the y axis must be translated into a new format before it can be used by the printer. The prompts that allow you to specify the format will appear when you select either absolute or relative vertical positioning. The prompts are:

- Command Prefix:
- Format:
- Data Flag:
- Offset Value:
- Maximum Size Value:
- Command Suffix:

**NOTE:** These prompts are identical to the prompts that appear when you select horizontal motion index, absolute or relative horizontal positioning, form length, and the graphics command (with two exceptions). These prompts are explained only once.

**Command Prefix.** The command prefix informs your printer that a move command is being sent.

**Format.** Your printer uses a specific format to translate the information. It will use one of the following five formats:

- ASCII
- LSB/MSB (least significant byte/most significant byte)
- MSB/LSB (most significant byte/least significant byte)
- AMT Type
- Toshiba (available only for relative movement)

To determine the format used by your printer, look in your printer manual under the appropriate command, in this case the vertical movement command. An ASCII format is indicated if the documentation refers to digits or the examples show values enclosed in quotes or that begin with zeros. A binary format (LSB/MSB and MSB/LSB) is indicated if the documentation refers to binary values. Many printer manuals use the BASIC language to illustrate control codes. If CHR\$( followed by a value in parentheses (e.g., CHR\$(34)) is used, the format is binary. If you are using an AMT or Toshiba printer, you should choose the AMT or Toshiba format, respectively.

**IMPORTANT:** A different format could be required for each command that uses this set of prompts. Therefore, you will need to determine which format to select for each of the following commands: vertical and horizontal positioning, graphics begin and end, and form length.

**Data Flag.** The data flag indicates how many bytes make up the data portion of the command. In the case of vertical positioning, the data portion of the command tells the printer driver where or how far to move the print position.

The value you enter depends on the format you selected in the previous prompt. For an ASCII format, refer to the printer manual to find out how many digits are required by the printer driver for that particular command. If any number of digits may be sent, enter a **0**. If a specific number of digits must be sent, enter that number. In the latter case, the movement value will be padded to the left with zeros until that required number of ASCII digits is sent. For example, if your printer requires 3 digits, you

should enter **3**. If the printer driver sends a move command that moves the print position to row 78, your printer driver will send 078 to achieve the required 3 digits.

For an LSB/MSB format, you should enter 0 or 1. A 0 equals one byte and sends the least significant byte only. A 1 equals two bytes and sends the least significant byte first, followed by the most significant byte.

To determine whether to enter a 0 or a 1, look in the printer manual for this command and see whether the range a value can have is greater than 255. If it is, two bytes must be sent, in which case you would enter a 1. If a value's range is less than 255, one byte will be sent, in which case you should enter a 0.

The following formulas illustrate what information is sent as a result of your choice.

0 sends  $x \% 256$

1 sends  $x \% 256$  followed by  $x / 256$

where  $x$  represents data

$\%$  represents the modulus operator

$/$  represents integer division

If you choose MSB/LSB, you should also enter a 0 or 1. A 0 equals one byte, sending the most significant byte only. A 1 equals two bytes and sends the most significant byte followed by the least significant byte.

To determine whether to enter a 0 or a 1, look in the printer manual for this command and see whether the range a value can have is greater than 255. If it is, two bytes must be sent, in which case you would enter a 1. If a value's range is less than 255, one byte will be sent, in which case you should enter a 0.

There may be some cases when the printer expects two bytes even though the value fits in one byte. These cases will usually be indicated in your printer manual.

The following formulas illustrate what information is sent as a result of your choice:

0 sends  $x / 256$

1 sends  $x / 256$  followed by  $x \% 256$

where  $x$  represents data

$\%$  represents the modulus operator

$/$  represents integer division

If you select AMT Type, you should enter either 0 or 1. Just as with the LSB/MSB format, entering 0 sends the least significant byte and entering 1 sends the least

significant byte first followed by the most significant byte. The difference between the two formats is in the information sent as a result of your choice. AMT Type uses the following formulas:

0 sends  $x \% 128$

1 sends  $x \% 128$  followed by  $x / 128$

If you choose Toshiba, this field is ignored. Toshiba printers break the value into three 4-bit groups and convert each part into an ASCII character ranging between @ and 0.

**Offset Value.** Some printers may require that another value be added to the movement increments before the number is converted. If your printer does, enter that value in this field. Otherwise, leave it at 0.

**Maximum Size Value.** Some printers have a limit on the size of vertical movement that can be made in one command. If the distance exceeds the maximum, two or more commands will be sent until the distance is achieved. Your printer manual will indicate whether this is the case and list the maximum value.

**Command Suffix.** The command suffix ends the movement command. It may or may not be required by your printer; refer to your printer manual.

### Vertical Movement Command Causes Return to Left Margin

This prompt is used for older printers that move the print head to the left margin each time a vertical move is made.

### Horizontal Motion Index

This setting is used only for daisy wheel printers. The prompts that appear when you select it are identical to the vertical and horizontal positioning prompts. These prompts translate the horizontal movement values into the appropriate format.

### Horizontal Positioning

Horizontal positioning controls any movement on the x axis. The values that determine where or how far the print position moves must be translated into a new format before the printer can use them. The prompts that allow you to specify the format will appear when you select either absolute or relative vertical positioning.

## Graphics Prelude

This command sends all of the necessary information at the beginning of a graphics command. For HP printers, for example, the command essentially "drops anchor," prints the graphic data in that line, moves the print position automatically to the next line, prints the graphic data in that line, and so on until the last graphic data is sent. Not all printers use this command; refer to your printer manual.

## Graphics Command Start

The graphics start command signals to the printer that graphic data is going to be sent. Graphic data generates non-character images such as graphs, filled-area fonts, and double underscores.

Graphics commands are also sometimes used to control print position movement. If your printer does not use specific movement commands, you may need to set the graphics commands. If you use a daisy wheel printer, which does not print graphics, the graphics commands should be set to **No**.

If you set the graphics commands to **Yes** a set of prompts appears that is identical to the positioning prompts, except for two options: Double Three and Tandy. This information serves the same purpose: to translate the values into the appropriate format before they are sent to the printer.

Double Three and Tandy are explained in the following two paragraphs.

**Double Three.** Double Three is an option used for printers that do not send the number of graphic bytes in the begin graphics sequence. Instead, these printers send a unique combination of data to signal the end of the graphics data. Usually a "3" or "3,2" is used. When a single byte of graphics data with the value of "3" is being sent, a double three sequence "3,3" is sent. Early Okidata printers use Double Three.

**Tandy.** Tandy is valid only for dot matrix begin graphic commands. If you select Tandy, you can specify a 0, 1, or 2 in the Data Flag field. A 0 does nothing to the byte. 1 turns on bit 1. 2 turns on bit 2.

## Graphics Command End

The graphics end command signals to the printer the end of the graphic data. Many printers do not require this command because the graphics start command includes the number of graphic bytes being sent, implying the end of the graphic data.

## Form Length Set

Form length is the length of the page being used by the print job. This field will be blank for laser printers because they usually embed this information in the page size sequence command. But dot matrix printers must have a form length in order to print. You will also need to use this command when specifying a custom paper size.

Before the length value can be sent to the printer, the value must be translated into the appropriate format, just as the movement and graphics values must be. The set of prompts that translate this value is similar to that of the movement commands.

The `Form length multiplier:` is usually set to 6. This number is multiplied by the number of inches in the form to determine the actual length of the form. It is a good idea to include in the `Start of print job sequence` a control code that indicates that line feeds are 1/6 of an inch. Even if line feeds are 1/8 of an inch, ANGOSS translates them as 1/6.

## Font Resets

Font resets are available for older printers that require the default printer font to be re-invoked after certain characters or commands are executed. Daisy wheel printers, for example, usually need most of the prompts in this section set to **Yes**. If the character or command does not interrupt the standard font, the following prompts can be set to **No**.

- After carriage return character
- After line feed character
- After graphics command
- After absolute vertical position command
- Before horizontal movement

## Font Sequences Section

Font sequences define set and reset commands for a variety of font attributes. They could be thought of as on and off switches. In some cases, the font attributes listed here can be achieved automatically by the printer or using ANGOSS graphics commands. Font sequences should be completed only if the printer can automatically generate the attribute.

Attributes that represent "normal" printing, such as normal width, normal weight, and upright posture, usually do not require set and reset sequences.

### Normal Width Set/Reset Sequence

Normal width fonts are those that are not condensed, compressed, or expanded. These sequences will not be set for most printers.

### Condensed Set/Reset Sequence

Condensed fonts are always monospaced fonts. Most condensed fonts are 5/6 the width of a normal font or 12 cpi. If this is not the case, these prompts should be empty. You should also check the Font description groups to verify that the Condensed font exists: prompts are set to **No**.

**NOTE:** Because ANGOSS assumes that the size of a condensed font is always 5/6 that of the normal font, the condensed font setting does not need width ratios. Compressed and expanded fonts require that you enter values to determine the character widths.

### Compressed Set/Reset Sequence

Compressed fonts are always monospaced. Most compressed fonts are about 5/8 the width of a normal font or 15 to 17 cpi.

### Numerator/Denominator of Compressed/Normal Width Ratio

This ratio expresses the compressed to normal character width. Because printer manuals specify character width in characters per inch (cpi), rather than inches per character (ipc), you must convert characters per inch to width using the following formula:

$$\frac{\text{compressed width}}{\text{normal width}} = \frac{\frac{1}{\text{compressed cpi}}}{\frac{1}{\text{normal cpi}}} = \frac{\text{normal cpi}}{\text{compressed cpi}}$$

For example:

$$\frac{\frac{1}{15 \text{ cpi}}}{\frac{1}{10 \text{ cpi}}} = \frac{\frac{1}{15 \text{ cpi}}}{\frac{1}{10 \text{ cpi}}} = \frac{10 \text{ cpi}}{15 \text{ cpi}}$$

The resulting numerator should reflect the cpi measurement for the normal font. The resulting denominator should reflect the cpi measurement for the compressed font.

You must enter these values as integers. So, if the normal font is 10 cpi and the compressed font is 16.66, you would enter 1000 as the nominator and 1666 as the denominator.

### Expanded Set/Reset Sequence

Expanded fonts are always monospaced. They are usually 5 to 6 cpi.

### Numerator/Denominator of Expanded/Normal Width Ratio

This ratio expresses the expanded to normal character width. Because printer manuals specify character width in characters per inch (cpi), rather than inches per character (ipc), you must convert characters per inch to width using the following formula:

$$\frac{\text{expanded width}}{\text{normal width}} = \frac{\frac{1}{\text{expanded cpi}}}{\frac{1}{\text{normal cpi}}} = \frac{\text{normal cpi}}{\text{expanded cpi}}$$

For example:

$$\frac{\frac{1}{5 \text{ cpi}}}{\frac{1}{10 \text{ cpi}}} = \frac{\frac{1}{5 \text{ cpi}}}{\frac{1}{10 \text{ cpi}}} = \frac{10 \text{ cpi}}{5 \text{ cpi}}$$

The resulting numerator should reflect the cpi measurement for the normal font. The resulting denominator should reflect the cpi measurement for the expanded font. You must enter these values as integers.

### **Underscore Set/Reset Sequence**

Underscores can be drawn automatically by the printer or with an ANGOSS graphics command. While most printers have single underscore capability, there are circumstances under which ANGOSS must print underscores.

- When there are underscores in the last line of microjustified text
- When using a daisy wheel printer

If you are going to use ANGOSS to generate all underscores, this font sequence should be empty, a graphics command should be set, and a width should be specified for underscore thickness in the font groups.

In order for the printer to draw an underscore, this sequence must be set.

### **Outline Set/Reset Sequence**

Outline fonts are not supported by many printers. If your printer supports them, this sequence needs to be completed.

### **Double Underscore Set/Reset Sequence**

Most printers cannot automatically draw double underscores. As such, this sequence is usually empty, and a graphics command and a double underscore thickness are required.

### **Light Set/Reset Sequence**

Light fonts are lighter in weight than normal fonts.

### **Bold Set/Reset Sequence**

Bold fonts have a heavier stroke weight than the normal font.

### **Extra Bold Set/Reset Sequence**

Extra bold fonts have a stroke weight that is heavier than the bold font.

### **Strikeout Set/Reset Sequence**

Strikeout fonts have a continuous horizontal line drawn through the middle of text characters.

### **Normal Weight Set/Reset Sequence**

Normal weight fonts have a regular stroke weight. Most printers do not require that these sequences be set.

### **Italics Set/Reset Sequence**

An italic font slants to some degree to the right. The degree to which the characters slant depends on the typeface.

### **Normal Set/Reset Sequence**

A normal font has an upright posture; that is, straight up and down. Most printers do not require that these sequences be set.

### **Transparent Print Set/Reset Sequence**

This sequence prints characters that are usually interpreted as control codes by your printer. The command is used only by fonts that use one of your printer's native character sets.

For example, low ASCII characters, 0 to 31, are usually treated as unprintable characters; they instead cause a printer action such as a form feed or carriage return. The Transparent command will treat these characters as printable characters in files that use a native character set.

**Lowest/Highest Character.** These prompts allow you to specify the range of ASCII characters defined by your printer as unprintable.

## **Printer Resolution**

Printer resolution is the degree of sharpness of a printed character or image. It is measured in dots per inch (dpi) and requires a vertical and horizontal value. The horizontal and vertical values are independent of each other. Dot matrix printers frequently have different values for each measurement. Lasers usually use the same value for both measurements. For example, a laser printer using 300 dpi would print 300 dots per vertical inch and 300 dots per horizontal inch, resulting in 90,000 dots per square inch.

This section controls not only the number of dots used to print text and graphics, but where printing begins and in what order data is sent to the printer. Several of these prompts apply only to dot matrix printers.

## Vertical Resolution

This value determines the number of pixels (dots) printed per vertical inch. For example, a resolution of 100 means that the printer will print 100 dots per vertical inch.

The scale used for vertical resolution does not have to match that of the horizontal resolution. This is common in dot matrix printers.

## Horizontal Resolution

This number determines the number of pixels (dots) printed per horizontal inch. For example, a resolution of 100 would print 100 dots per horizontal inch.

## Vertical Dot Size Ratio Numerator/Denominator

The vertical dot size ratio expresses the spatial relationship between the vertical resolution and the diameter of the dot. Based on this information the printer driver determines the number of dots to print to achieve varying gray scales.

Without this information, some printers would create so much overlap between dots in a column that fill areas would be overly dense from excess ink.

To calculate the ratio, divide the vertical resolution by the dot diameter. For example, for a 9-pin printer with a vertical resolution of 1/216 in. and a pin diameter of 1/72 in., the formula would be:

$$216 / 72 = 3 \text{ or } 3/1$$

The result is entered as follows:

**Vertical pinsize ratio numerator: 3**

**Vertical pinsize ratio denominator: 1**

**NOTE:** Laser descriptors will always require these values to be 1.

## Horizontal Dot Size Ratio Numerator/Denominator

The horizontal dot size ratio expresses the spatial relationship between the horizontal resolution and the diameter of the dots. Based on this information the printer driver determines the number of dots to print to achieve varying gray scales.

Without this information, some printers would create so much overlap between dots in a column that fill areas would be overly dense from excess ink.

To calculate the ratio, divide the horizontal resolution by the pin diameter. For example, for a printer with 1/240 vertical resolution and a pin diameter of 1/72, the formula would be:

$$240 / 72 = 3.33 \text{ or } 10/3$$

The result is entered as follows:

Horizontal pinsize ratio numerator: 10

Horizontal pinsize ratio denominator: 3

**NOTE:** Laser descriptors will always require these values to be 1.

### Vertical/Horizontal Movement Resolution

These commands provide an alternative measurement for printers that cannot use the graphic resolution to move the print position. For example, the original HP LaserJet prints graphics at 300 dpi, but the vertical movement commands are measured in decipoints. In this case, `Vertical movement resolution (increments/inch):` would need to list **720**.

These values should be zero if the printer uses the vertical and horizontal resolution for movement commands as well as graphics commands.

### Number of Passes to Achieve Vertical Resolution

This value determines the number of passes needed to achieve the printer's vertical resolution. Some dot matrix printers require the print head to make more than one pass because the vertical resolution is a much finer increment than the space between the center of one dot to the center of the next dot.

For example, assume the vertical resolution is 1/216 inch and the space between the center of one dot to the next is 1/72 inch. If the print head made only one pass, the dots in each dot column would be spaced far enough apart that a vertical line or edge would appear rough. However, if the print head made more than one pass, each time moving down one vertical increment, in this case 1/216 inch, the dots would overlap sufficiently to create a smooth vertical line.

To determine the number of passes needed, divide the vertical resolution by the dot center to dot center spacing. For example:

$$216 / 72 = 3$$

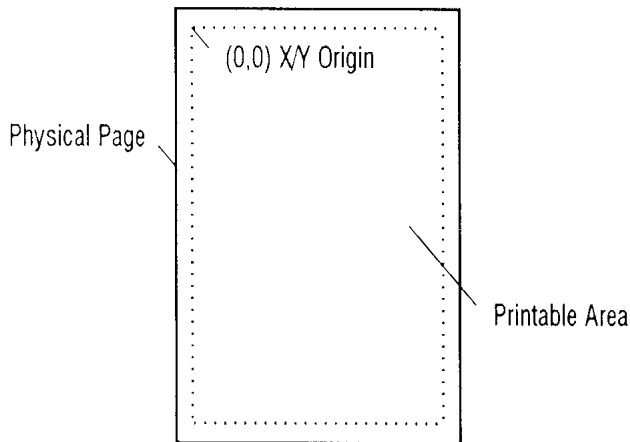
Three passes by the print head achieves the vertical resolution.

This number should be 1 for most printers that support graphics except dot matrix printers.

## X/Y Origin

The x/y origin is located at the top left-hand corner of either the physical page or the printable area. The physical page is defined by the edges of the paper. The orientation (portrait vs. landscape) of the paper determines which edges are used to locate the x/y origin of the physical page. The printable area is defined by the "hard margins," which are preset boundaries outside of which text and graphics will not print. The orientation of the paper affects which boundaries are used to locate the x/y origin. Figure 5-17 illustrates the difference between the physical page and the printable area and points out the x/y origin.

**Figure 5-17.** Generally, the x/y origin is at the top of the printable area for laser printers and at the top of the physical page for dot matrix printers.



## Top Pin that Fires in Graphics Mode

This prompt indicates which pin strikes the paper first. In many dot matrix printers the first pin does not fire in graphics mode. For example, a 24-pin printer may use 18 of its pins in graphics mode. These 18 pins may be centered among the 24 pins, leaving several unused pins on each end of the print head.

The top pin equals 0, the second pin should be 1, and so on. This field is ignored for laser printers.

### **Graphics Data Bits Sent to Printer**

This number indicates to the printer how many bits in each byte contain graphics data. If all eight bits contain data, they can be sent to the printer in their natural order. However, if fewer than eight contain graphics data, the following prompt appears:

Bit justification: LSB MSB

This second prompt determines whether the data bits are moved to the leftmost position, which is the least significant bit (LSB), or moved to rightmost position (most significant bit (MSB)).

### **Bit Controlling Top Pin**

This prompt determines which end of the graphics byte is sent to the printer first. If you select LSB, the least significant bit is sent to the topmost pin. If you select MSB, the most significant bit is sent to the topmost pin.

### **Number of Dot Positions in a Graphic Column**

This value represents the number of dot positions in a column. Two factors determine this number: the number of pins in the print head and the graphics mode.

A dot column can have as many potential dot positions as there are pins in the print head. Each position represents one data bit; each group of eight represents one byte of graphic data.

For example, a 24-pin printer would be divided into three groups of eight bits or 24 potential dot positions. What determines whether these dot positions are actually used is the current graphics mode. If, for example, you are using a 24-pin printer in 6-pin graphics mode, only a third of the potential dot positions will be used. That is, there will be eight dot positions. You would enter **8**. If the 24-pin printer were printing in 24-pin graphics mode, all 24 pins would be used, creating 24 dot positions. You would enter **24**.

### **Two Adjacent Horizontal/Vertical Dots Print in the Same Pass**

Some printers are limited mechanically from printing two dots in succession. This is commonly caused by the pins' inability to fire rapidly enough or the print head overheating from firing too rapidly.

## Database Report Line Thickness

This prompt should list the number of vertical and horizontal pixels that are used when ANGOSS creates any lines in a database report, such as the lines that you can select to enclose a report.

## Color Sequences

The color sequences section determines the color palette for text and graphics. If your printer does not support color, none of the prompts following the first prompt `Color Printer: Yes No` are displayed. If your printer does support color, the section displays the prompts shown in Figure 5-18.

### Color On/Off Sequences (A, B, C, D)

A set of on and off sequences for colors A through D follow the first prompt. The on and off sequences are responsible for turning on or off each of the three or four colors that comprise a color ribbon. The colors vary depending on the kind of ribbon used by your printer. Process ribbons (yellow, magenta, cyan, black) and RGB ribbons (red, green, blue, black) are the most common.

A, B, C, and D do not represent specific colors. They represent an absolute order in which the four ribbon colors are printed. ANGOSS prints color A first, color B second, and so on. You determine which colors will be represented by A, B, C, and D by entering the appropriate control sequence in that field. That is, if your printer manual specifies that yellow is represented by ESC "r4" and you want yellow to be the first color printed, you should enter this code in the Color A field.

In most cases, it is best to print the lightest ribbon colors first and move progressively to the darker ribbons; this prevents the lighter ribbons from getting contaminated with ink from the darker ribbons. However, if you want a darker ribbon to print before a lighter ribbon, assign the darker ribbon to Color A.

Off sequences turn off a ribbon color. Not all printers use off sequences; instead they simply turn on black to turn off a color. Check your printer manual.

Figure 5-18

Descriptor Editor  
 => COLOR SEQUENCES

Color Printer: No **Yes**

Color A On Sequence: **27 "r" 4**  
 Color A Off Sequence:

Color B On Sequence: **27 "r" 1**  
 Color B Off Sequence:

Color C On Sequence: **27 "r" 2**  
 Color C Off Sequence:

Color D On Sequence: **27 "r" 0**  
 Color D Off Sequence:

Smart Color

Black:	> Color A	Color B	Color C	Color D
Blue:	> Color A	Color B	<b>Color C</b>	Color D
Green:	> Color A	Color B	Color C	Color D
Cyan:	> <b>Color A</b>	Color B	Color C	Color D
Red:	> Color A	<b>Color B</b>	Color C	Color D
Magenta:	> Color A	<b>Color B</b>	<b>Color C</b>	Color D
Brown:	> Color A	Color B	Color C	Color D
Off-White:	> Color A	Color B	Color C	Color D
Dark Grey:	> Color A	Color B	Color C	Color D
Lt-Blue:	> Color A	Color B	Color C	Color D
Lt-Green:	> Color A	Color B	Color C	Color D
Lt-Cyan:	> Color A	Color B	Color C	Color D
Lt-Red:	> Color A	Color B	Color C	Color D
Lt-Magenta:	> Color A	Color B	Color C	<b>Color D</b>
Yellow:	> Color A	Color B	Color C	Color D
White:	> Color A	Color B	Color C	Color D

Color Reflectivity (%)	Red	Green	Blue
No Ribbon:	<b>100</b>	<b>100</b>	<b>100</b>
Ribbon A:	<b>100</b>	<b>100</b>	<b>0</b>
Ribbon B:	<b>50</b>	<b>0</b>	<b>0</b>
Ribbon A+B:	<b>28</b>	<b>16</b>	<b>5</b>
Ribbon C:	<b>0</b>	<b>25</b>	<b>50</b>
Ribbon A+C:	<b>0</b>	<b>50</b>	<b>0</b>
Ribbon B+C:	<b>50</b>	<b>0</b>	<b>50</b>
Ribbon A+B+C:	<b>17</b>	<b>17</b>	<b>18</b>
Ribbon D:	<b>0</b>	<b>0</b>	<b>0</b>
Ribbon A+D:	<b>16</b>	<b>24</b>	<b>2</b>
Ribbon B+D:	<b>13</b>	<b>0</b>	<b>0</b>
Ribbon A+B+D:	<b>50</b>	<b>31</b>	<b>0</b>
Ribbon C+D:	<b>0</b>	<b>0</b>	<b>13</b>
Ribbon A+C+D:	<b>0</b>	<b>13</b>	<b>0</b>
Ribbon B+C+D:	<b>13</b>	<b>0</b>	<b>13</b>
Ribbon A+B+C+D:	<b>63</b>	<b>63</b>	<b>63</b>

F1 Help            F3 Blank Text            F9 Index  
 F2 Edit Text        F10 Finished

Descriptor: ALC224ED.CPD (Original)

## Color Text

The table following the on/off sequences defines the colors used to print text. The colors used to print text are defined by selecting different ribbon combinations to form the 16 ANGOSS colors.

**NOTE:** If you are using a PostScript printer, do not use this table. Use the second table to define colors for both text and graphics. See **Color Graphics**.

The ANGOSS colors are listed down the left-hand side of the table from black (0) to white (15). The first column represents Color A, the second represents Color B, the third represents Color C, and the fourth represents Color D. The color represented by each column is determined by the control sequence you entered in the on/off fields for each color. The **up arrow** and **down arrow** or **Tab** and **Shift Tab** keys move the pointer from one color to the next. The **right arrow** and **left arrow** keys move the selector from one column to the next. The Quick Key **F6** selects and deselects the color.

To create a color, highlight the color or combination of colors that create the desired color. For example, assume your printer uses a process ribbon and you have established that Color A is yellow, Color B is magenta, Color C is cyan, and Color D is black. For ANGOSS color green you would highlight Color A and Color C. On the other hand, if your printer used an RGB ribbon and you have established that Color A is red, Color B is green, Color C is blue, and Color D is black, you would highlight Color B only.

Tables 5-4, 5-5, and 5-6 will help you determine which ribbons to highlight to obtain ANGOSS colors. The three tables provide default settings for process, RGB, and RBY (Red, Blue, Yellow) ribbons. If you have a different kind of ribbon or are creating a custom color, you may need to experiment.

**Table 5-4.** Default Settings for a Process Ribbon\*

ANGOSS Colors	Ribbon Combinations			
	Color A	Color B	Color C	Color D
Black				highlight
Blue		highlight	highlight	
Green	highlight		highlight	
Cyan			highlight	

ANGOSS Colors	Ribbon Combinations			
	Color A	Color B	Color C	Color D
Red		highlight		
Magenta		highlight	highlight	
Brown	highlight	highlight		
Off-White				highlight
Dark Grey	highlight	highlight	highlight	
Lt-Blue			highlight	
Lt-Green	highlight		highlight	
Lt-Cyan			highlight	
Lt-Red		highlight	highlight	
Lt-Magenta		highlight		
Yellow	highlight			
White				highlight

- Color A is yellow; Color B is magenta; Color C is cyan; and Color D is black.

**Table 5-5.** Default Settings for an RGB Ribbon\*

ANGOSS Colors	Ribbon Combinations			
	Color A	Color B	Color C	Color D
Black				highlight
Blue			highlight	

<b>ANGOSS Colors</b>	<b>Ribbon Combinations</b>			
	<b>Color A</b>	<b>Color B</b>	<b>Color C</b>	<b>Color D</b>
Green		highlight		
Cyan			highlight	
Red	highlight			
Magenta	highlight		highlight	
Brown	highlight	highlight		
Off-White				highlight
Dark Grey				highlight
Lt-Blue			highlight	
Lt-Green		highlight		
Lt-Cyan			highlight	
Lt-Red	highlight			
Lt-Magenta	highlight			
Yellow		highlight		
White				highlight

- Color A is red; Color B is green; Color C is blue; and Color D is black.

**Table 5-6.** Default Settings for an RBY Ribbon\*

ANGOSS Colors	Ribbon Combinations			
	Color A	Color B	Color C	Color D
Black				highlight
Blue			highlight	
Green	highlight		highlight	
Cyan			highlight	
Red		highlight		
Magenta		highlight	highlight	
Brown	highlight	highlight		highlight
Off-White				
Dark Grey				highlight
Lt-Blue			highlight	
Lt-Green	highlight		highlight	
Lt-Cyan			highlight	
Lt-Red		highlight		
Lt-Magenta		highlight		
Yellow	highlight			
White				highlight

- Color A is yellow; Color B is red; Color C is blue; and Color D is black.

## Color Graphics

The second table defines the colors used to create graphics. The colors used for graphics are formed by the 16 possible combinations of ribbons A, B, C, and D. In the case of PostScript printers, colors used for graphics are formed by specifying an RGB value.

The table accommodates both PostScript and non-PostScript printers by listing the ribbon combinations down the left-hand side of the table and the ANGOSS colors to the right of the ribbon combinations. To the right of the column are three columns which together represent the reflectivity of each combination. Each column corresponds to one of three color spectra: red, green, and blue.

In the case of non-PostScript printers, each column lists values that specify the percentage of light reflected by the color that results from the ribbon combination. The red column specifies the percentage of red light reflected by each ribbon combination. The green column specifies the percentage of green light reflected by each ribbon combination. The blue column specifies the percentage of blue light reflected by each ribbon combination.

In the case of PostScript printers, each value represents the percentage of red, green, or blue used to create an ANGOSS color.

Valid percentages range from 0 to 100. Zero indicates that the combination reflects 0% of the light in that spectrum; 100 indicates that it reflects 100% of the light in that spectrum. For example, black has an RGB value of 0,0,0, which means it absorbs all (reflects none) red, blue, and green light, resulting in black. White would reflect 100% of the red, green, and blue light.

**NOTE:** In the case of non-PostScript printers, if there are ribbon combinations that you do not want your printer to use, assign them the same percentages as the first entry in the table. This first entry, *No Ribbon*, will usually list percentages of 100% in each column, describing white. White, which is the most common paper color, produces white on white. If you are using a different color of paper, the percentages in the *No Ribbon* category will have to reflect that color.

Table 5-7 lists typical percentages for common ribbon combinations for a process ribbon.

**Table 5-7.** Common Percentages for Ribbon Combinations (Process\*)

Color Reflectivity (%)		Red	Green	Blue
Normal	PostScript			
No Ribbon	Black	100	100	100
Ribbon A	Blue	63	63	0
Ribbon B	Green	60	0	60
Ribbon A+B	Cyan	60	0	0
Ribbon C	Red	0	60	60
Ribbon A+C	Magenta	0	60	0
Ribbon B+C	Brown	0	0	60
Ribbon A+B+C	Off-White	100	100	100
Ribbon D	Dark Grey	0	0	0
Ribbon A+D	Lt-Blue	0	0	0
Ribbon B+D	Lt-Green	0	0	0
Ribbon A+B+D	Lt-Cyan	0	0	0
Ribbon C+D	Lt-Red	0	0	0
Ribbon A+C+D	Lt-Magenta	0	0	0
Ribbon B+C+D	Yellow	0	0	0
Ribbon A+B+C+D	White	0	0	0

- Color A is yellow; Color B is magenta; Color C is Cyan; Color D is black.

## Example Tasks

This section provides step-by-step instructions for two example tasks.

### Task 1: Deleting Unused Fonts

If a descriptor contains fonts that you never plan to use, you may wish to delete the font from the file. To do so:

**STEP 1: Execute Tools Edit-Printer.**

**STEP 2: Select the descriptor you wish to edit by moving the arrow to it and pressing Enter.**

**STEP 3: Once the descriptor is loaded, select the Quick Key F9 to display the section index.**

**STEP 4: Select the Fonts section.**

**STEP 5: Using PgDn, page down until you reach the font you wish to eliminate.**

**STEP 6: Point to the font identifier number and select the Quick Key F8, which displays the message** Are you sure you want to delete the current group? (y/n).

**STEP 7: Select y.**

**STEP 8: The font group disappears.**

If you make a mistake and delete the wrong font, or you change your mind after you have already deleted the group, you may regain the font by pressing **Esc**. The message Cancel without update? (y/n) is displayed. By selecting yes, your descriptor will be returned to its original state.

### Task 2: Reordering Color Ribbons

In most cases, the order of a printer's ribbons should print from light to dark. For example, if you are using a process ribbon, the yellow ribbon prints first followed by magenta, cyan, and black. However, you may want to change the order to alter the way the colors mix. For example, you may want the cyan ribbon to print first, followed by yellow, magenta, and black.

This new order will change the colors used to print text and graphics. In the case of text, for example, the ANGOSS color green would no longer be achieved by highlighting ribbons A and C, but rather by highlighting ribbons A and B.

In the case of graphics, for example, combination C+A, which originally combined cyan and yellow, will no longer produce green, but will produce a violet blue color. This combination of cyan and magenta will differ from the original combination of cyan and magenta because of the order in which they are printed. With the original order, cyan and magenta were combined by printing magenta first and cyan second. With the revised order, the ribbons are combined by printing cyan first and magenta second. While both combinations will produce a color close to purple, the different order will affect the intensity of the color.

To alter the order in which ribbon colors are printed, follow these steps:

**STEP 1: Execute Tools Edit-Printer.**

**STEP 2: Select the descriptor you wish to edit by moving the arrow to it and pressing **Enter**.**

**STEP 3: Once the descriptor is loaded, select the Quick Key **F9** to display the index.**

**STEP 4: Select Color Sequences.**

**STEP 5: Using **down arrow**, move to Color A On Sequence and delete the current command.**

**STEP 6: Enter the sequence that turns on the cyan ribbon.**

**STEP 7: Move to Color B and delete the current sequence.**

**STEP 8: Enter the command that turns on the yellow ribbon.**

**STEP 9: Move to Color C and delete the current sequence.**

**STEP 10: Enter the command that turns on the magenta ribbon. ANGOSS will now print cyan first followed by yellow, magenta and black.**

## Modifying Descriptors Manually

Printer DESCRIPTORS are shipped with ANGOSS in a compiled binary form. These files have the extension .CPD for Compiled Printer Descriptor or .CCD for Compiled Cartridge Descriptor, and can be found in the resource library under the "Printer Descriptor" and "Cartridge Descriptor" sections respectively.

A printer CPD or CCD can be modified or created interactively with the TOOLS EDIT-PRINTER command on the Main-Menu. However, it is sometimes convenient to create or modify a printer descriptor in text form in an editor outside ANGOSS, or in the TOOLS TEXT-EDITOR. The following describes the format of these text files which are referred to as DSC (text version of CPD) and LSC (text version of CCD) files. Note that you must decompile a CPD or CCD file before you can edit it in this way.

## Decompiling and Compiling Printer Descriptors

Files with the extension .dsc and .lsc are source code files which describe how the software should talk to a printer. DSC files, which describe the printer, are compiled into files with .cpd extension. LSC files, which describe cartridges and additional internal fonts, are compiled to files with the .ccd extension.

Previous versions had a hidden compiler available at the main menu. This version provides a compiler and decompiler as executable commands.

The dscdcmp program is used to decompile CPD and CCD descriptors at the OS command line:

```
dscdcmp [-xit] [-o ofile] [file]
```

The parameters are:

- x display this explanation
- i inverted byte order
- t trace tags outputting offset of tags as read
- o ofile name of output file - defaults to stdout
- file file to be decompiled - default stdin

Generally, you will only use the output file and the file to be decompiled options. While it is not necessary for the decompile process, you should use the DSC or LSC extension in the output file name since these are recognized by the dsc-compile program.

## Chapter 5: Editing Descriptor Files

The `dsccomp` program is used to compile DSC and LSC source files at the OS command line:

```
dsccomp [-xT] [-o outfile] files ...
```

<code>-x</code>	display this explanation
<code>-T</code>	turn on the lexical trace
<code>-l</code>	file to be compiled is an lsc file (assumed if extension is .lsc)
<code>-d</code>	dumpinfo instead of writing it out
<code>-n</code>	suppress obsolete messages
<code>-o outfile</code>	name of output file. Defaults to <code>&lt;base&gt;.cpd</code> for DSC files or <code>&lt;base&gt;.ccd</code> for LSC files. <code>-o</code> is illegal if many files are specified.
<code>files</code>	list of files to process

The compiler will produce error messages if it encounters any syntax errors. Previous versions of the `dsc`-compiler cared little about syntax often leading to unpredictable results. Some other new features of the compiler are:

- The "escape on" key word will allow special characters within text strings. The "escape off" key word will turn off this feature after it has been invoked. (The default is off). The follow sequences are allowed when "escape on" has been encountered:

<code>\b</code>	back space
<code>\e</code>	escape
<code>\n</code>	new line
<code>\r</code>	carriage return
<code>\t</code>	tab
<code>\f</code>	form feed
<code>\&lt;digits&gt;</code>	an octal number
- Range checking is employed. Numbers outside of an expected range are reported.
- Null entries must be indicated by "".
- Within text fields a special tilde operator is used to specify characters between 128 and 255. For example a Ö can be produced by `~O`: â can be produced with `~a^`.

**NOTE:** `dscdcmp` and `dsccomp` takes standard input therefore, if you run either program using a standard input default (i.e. type the command name without specifying a file), the program will wait for you to type something in. If you're a DOS user, you can end the session by pressing **CTRL Break**; in Unix, use the interrupt key

## File Format

In a DSC file, each line of data begins with an ID number which is generally followed by more information. The ID number indicates to the compiler what information about the printer is contained on the line. Not all ID numbers are used, and some are only valid following a particular ID. The term GROUP will be used when talking about the ID numbers that can only follow another ID (for example, IDs 250 and 252 belong to the 5250 Group). Except for groups and any special cases noted in the text, IDs may be ordered as desired.

Overall DSC format:

ID 1	Printer reset
ID 2	Printer description text
ID 3	Printer type
ID 4	Portrait and landscape select
ID 5	Default paper size
ID 6	Default paper path
ID 7	Printer driver name
ID 9	Printer job start and end
ID 10	Set and reset 10 CPI
ID 11	Set and reset condensed
ID 12	Set and reset compressed
ID 13	Compressed width numerator
ID 14	Compressed width denominator
ID 20	Underscore on and off
ID 21	Outline on and off
ID 22	Double underscore on and off
ID 23	Light on and off

## Chapter 5: Editing Descriptor Files

ID 24	Bold on and off
ID 25	Extra bold on and off
ID 26	Strikeout on and off
ID 28	Italics on and off
ID 31	Expanded on and off
ID 32	Expanded width numerator
ID 33	Expanded width denominator
ID 40	Effect of carriage return on fonts
ID 41	Effect of line feed on fonts
ID 42	Effect of graphics mode on fonts
ID 43	Effect of line feed immediate on fonts
ID 44	Effect of horizontal movement on fonts
ID 50	Printer vertical resolution
ID 51	Printer horizontal resolution
ID 52	Number of head passes per line (graphics)
ID 53	Y origin position
ID 54	Dots printed in one graphics column
ID 55	Top pin to fire in graphics mode
ID 56	Number of bits per graphics byte
ID 58	Bit to dot mapping for graphics
ID 59	Adjacent horizontal pins ok
ID 60	Adjacent vertical pins ok
ID 61	Vertical movement resolution
ID 62	Horizontal movement resolution
ID 63	Horizontal printable area less than paper
ID 64	Vertical resolution/dot size numerator
ID 65	Vertical resolution/dot size denominator
ID 66	Horizontal resolution/dot size numerator

ID 67	Horizontal resolution/dot size denominator
ID 70	Color printing supported
ID 71	Color ribbon mapping
ID 72	Postscript red color values
ID 73	Postscript green color values
ID 74	Postscript blue color values
ID 75	Yellow color on/off
ID 76	Red (magenta) color on/off
ID 77	Blue (cyan) color on/off
ID 78	Black color on/off
ID 79	Top of form problems
ID 82	Database horizontal line thickness
ID 83	Database vertical line thickness
ID 90	Portrait duplex printing
ID 91	Landscape duplex printing
ID 94	Graphics prelude
ID 100	Transparent print on/off
ID 101	First transparent character
ID 102	Last transparent character
ID 435	Effect of vertical movement on head
ID 440	Multiplier for form length command
ID 500	Paper path group, repeated as necessary
ID 501	Placement of paper size sequence
ID 502	Paper path sequences
ID 550	Paper size group, repeated as necessary
ID 551	Paper paths using this size
ID 552	Portrait unprintable margins

## Chapter 5: Editing Descriptor Files

ID 553	Landscape unprintable margins
ID 554	Portrait paper size sequence
ID 555	Landscape paper size sequence
ID 2000	Page start
ID 2001	Page end
ID 5003	Font group, repeated as necessary
ID 201	Unique font number
ID 202	Font source
ID 203	Font name
ID 204	Point sizes
ID 205	Portrait/landscape availability
ID 206	Select/deselect font
ID 208	Postscript file name
ID 212	Printer supported character set
ID 214	Printer native character set
ID 219	Landscape underscore thickness
ID 220	Portrait underscore thickness
ID 221	Underscore line placement
ID 222	Double underscore thickness (2nd line)
ID 223	Double underscore placement (1st line)
ID 224	Double underscore placement (2nd line)
ID 225	Strikeout thickness
ID 226	Strikeout placement
ID 230	Average font width
ID 231	Maximum font width
ID 232	Maximum height above baseline
ID 5250	Normal font attribute group

ID 250	Normal font exist
ID 252	Valid normal attributes
ID 5260	Condensed font attribute group
ID 260	Condensed font exist
ID 262	Valid condensed attributes
ID 5270	Compressed font attribute group
ID 270	Compressed font exist
ID 272	Valid compressed attributes
ID 5280	Expanded font attribute group
ID 280	Expanded font exist
ID 282	Valid expanded attributes
ID 5299	End of 5003 font group
ID 5300	Proportional spacing group, as needed
ID 301	Font that use this table
ID 302	Character widths (repeated)
ID 5400	Character replacement group, as needed
ID 401	Fonts that use this table
ID 402	Character replacements (repeated)
ID 6000	Absolute vertical motion group
ID 1001	Prefix
ID 1002	Size field format
ID 1003	Size field length
ID 1006	Suffix
ID 1007	Size offset
ID 1008	Size limit
ID 6010	Relative vertical motion group

## Chapter 5: Editing Descriptor Files

ID 1011	Prefix
ID 1012	Size field format
ID 1013	Size field length
ID 1016	Suffix
ID 1017	Size offset
ID 1018	Size limit
ID 6020	Horizontal motion index group
ID 1021	Prefix
ID 1022	Size field format
ID 1023	Size field length
ID 1026	Suffix
ID 1027	Size offset
ID 1028	Size limit
ID 6030	Absolute horizontal motion group
ID 1031	Prefix
ID 1032	Size field format
ID 1033	Size field length
ID 1036	Suffix
ID 1037	Size offset
ID 1038	Size limit
ID 6040	Relative horizontal motion group
ID 1041	Prefix
ID 1042	Size field format
ID 1043	Size field length
ID 1046	Suffix
ID 1047	Size offset
ID 1048	Size limit

ID 6050	Graphics start group
ID 1051	Prefix
ID 1052	Size field format
ID 1053	Size field length
ID 1056	Suffix
ID 1057	Size offset
ID 1058	Size limit
ID 6060	Graphics end group
ID 1061	Prefix
ID 1062	Size field format
ID 1063	Size field length
ID 1066	Suffix
ID 1067	Size offset
ID 1068	Size limit
ID 6070	Set form length group
ID 1071	Prefix
ID 1072	Size field format
ID 1073	Size field length
ID 1076	Suffix
ID 1077	Size offset
ID 1078	Size limit
ID 9005	Comment
ID 9006	Comment
ID 9007	Comment
ID 9010	Cartridges usable by printer
ID 9020	Number of cartridges printer holds
ID 9998	Include file

ID 9999                      End of DSC file

## LSC Overview

A cartridge descriptor, or LSC file, is basically a subset of a DSC file, containing primarily ID 5003, 5300 and 5400 groups. These will be seen to describe font and character set information. For an LSC file, these groups describe the fonts found in one font cartridge. Printers that can use cartridge fonts then reference the cartridge descriptors (via the ID 9010 record).

## Overall LSC format

ID	9002	Cartridge name
ID	5003	Font group, repeated as necessary
ID	201->5299	Same as DSC file, above
ID	5300	Proportional spacing group, as needed
ID	301->302	Same as DSC file, above
ID	5400	Character replacement group, as needed
ID	401->402	Same as DSC file, above
ID	9999	End of LSC file

## DSC/LSC file basics:

Each line of text in a DSC/LSC file is one of three types.

1. Lines starting with a number (an ID) represent printer information.
2. Lines beginning with an exclamation point (!) are comments, and the entire line is ignored.
3. Blank lines are ignored, and may be used anywhere for readability.

Lines beginning with an ID number signal printer information. Most ID numbers are followed by a comma and then the data for that ID number. If an ID number requires no data, the comma should be left off (i.e. the 9999 ID). Sometimes an ID requires more than one piece (or field) of data. In this case, different fields are separated by commas.

Each individual line can be up to 255 characters long. Lines may NOT be continued (with the exception of the 302/402 IDs). A line may also have a comment following the data. This is started by a!, upon which the rest of the line is ignored.

Data required by an ID can be in the following forms:

# A positive integer number. Valid forms:

0 - 65535                      Decimal number

0x0 - 0xFFFF                  Hexadecimal number

0 - 0177777                    Octal number (0 prefix)

For example, an ESCape code can be any of the following:

27                      0x1B              033

In general, avoid octal numbers, as they are easy to confuse with decimals.

## A positive fixed point number

**Examples:**

0.0                      1.66              17.125

"text" A string of text, enclosed in double quotes. Each character in the text becomes a separate byte of data. The quotes are not part of the data, but only signal the beginning and end of the text.

**Examples:**

"Gothic"              "32"              ""

The last ("" ) indicates an empty or null string containing no characters.

<cs> A CONTROL SEQUENCE, which is a series of # and "text" separated by spaces. These become a consecutive set of bytes of data. Within a <cs>, any numbers (#) must be in the range 0-255, 0x0-0xFF or 0-0377, since each # becomes one byte of data. If required multiple <cs> on a line are separated by commas.

**Example:**

27                      "23"              3 0 1

Here there are 6 bytes of data (note that the text characters have been changed to their equivalent decimal value:

27 50 51 3 0 1

**Example:**

"#t56" 0, 0x1f 7, ""

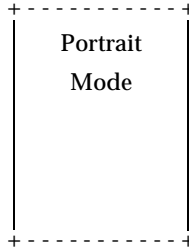
Here there are 3 <cs>, the first with 5 bytes of data, the second with 2, and the third with none:

35 116 53 54 0

31 7

**Other terms referenced:**

CPI	Characters Per Inch. A measure of how many fixed-width, monospaced printer characters can fit in one horizontal inch.
DPI	Dots per inch. Most printers form letters out of small dots, or pixels. The resolution of the printer defines how many of these dots will fit in one inch. Many printers have more than one resolution - the low resolution (few DPI) is the draft mode, and the high resolution is a near-letter quality.  The vertical resolution of a printer may be different than the horizontal resolution, so there may be different values for vertical DPI and horizontal DPI.
LPI	Lines Per Inch. A measure of how many lines of text will fit in one vertical inch.
Points	A "point" is 1/72 of an inch, and is used here when talking about the height of a letter. A letter 1 inch high would be 72 points. A 12 pt letter would be 12/72 or 1/6 inch high.
Font	A font is the set of characters printed with a certain appearance (Roman, Helvetica...) at a certain height, or point size.
Portrait	Text or graphics printed in portrait mode are oriented so that the long side of the paper is up:



**Landscape**      In landscape mode, text and graphics are oriented so that the short side of the paper is up.



**Print Job**      In ANGOSS, a print job generally encompasses the command that does a print, for instance printing a document or spreadsheet. If multiple copies are selected, that is still the same print job. However, two documents printed back-to-back with different commands (e.g., by choosing PRINT DOCUMENT twice) will be two separate print jobs. In project processing, a print job begins with the OPEN-PRINTER and ends with the CLOSE-PRINTER.

**Baseline**      The baseline of a font is the bottom of the capital letters.

## RECORD DESCRIPTIONS

This section describes the format and meaning of each ID record. Further information is available from the section on the Editing Descriptor Files in the System Manual. A good source of examples is to view other printer CPDs using the EDIT-PRINTER command. While the syntax is not the same, the information being provided is equivalent.

## Chapter 5: Editing Descriptor Files

ID: 1 ... PRINTER RESET

1, <cs to reset printer>

The printer reset control sequence is the first data sent to the printer at the start of a print job, and the last data sent at the end of the job. It is used to ensure the printer is in a state that will allow subsequent codes to work.

ID: 2 ... PRINTER DESCRIPTION TEXT

2, "printer description text"

A text description of the printer, as it will show up in TOOLS PREFERENCES HARDWARE.

ID: 3 ... PRINTER TYPE

3, 1, 1 For all dot matrix printers

3, 1, 2 For all generic printers

3, 2 For all daisy wheel printers

3, 3, # For all laser printers

Indicates the type of printer. For laser printers, the last number further qualifies the printer, as follows:

1 Postscript

2 HP Laser

3 Ricoh (BX\_LASER only)

4 IBM 3812(BX\_LASER only)

5 Canon (BX\_LASER only)

ID: 4 ... PORTRAIT and LANDSCAPE SELECT

4, <cs to select portrait>, <cs to select landscape>

The first control sequence is used to select portrait mode. The second is used when landscape is selected. The landscape sequence may be null (""), in which case landscape printing is not supported by the printer.

## ID: 5 ... DEFAULT PAPER SIZE SELECTION

5, #

Designates the normal printer paper size in effect when the printer is set to the factory defaults, generally Letter for the US and A4 for the UK. The number is a selection from the following table, but there must also be a corresponding ID 550 entry later on.

1	US Letter	(8.5 x 11 in)
2	US Legal	(8.5 x 14 in)
3	US Executive	(7.2 x 10.5 in)
4	A4	(8.3 x 11.66 in)
5	B5	(7.166 x 10.125 in)
6	Wide carriage	(13.6 x 11.0 in)
7	A5	(5.8 x 8.3 in)
8	Half letter	(5.5 x 8.5 in)
128	#10 envelope	(9.5 x 4.125 in)
129	Monarch envelope	(7.5 x 3.875 in)
130	C5 envelope	(9.01 x 6.38 in)
131	DL envelope(	8.66 x 4.33 in)
132	#9 envelope	(8.875 x 3.875 in)
133	B5 envelope	(9.84 x 6.93 in)

## ID: 6 ... DEFAULT PAPER PATH SELECTION

6, #

Designates the normal paper path for the printer when set to its factory defaults. The number is a selection from the following table, but must be a legal path for the paper size set in the ID 5 entry (paper size).

0	Normal or default paper path
1	Upper tray
2	Lower tray
3	Manual feed

## Chapter 5: Editing Descriptor Files

4	Tractor feed
5	Envelope feeder
6	Cut sheet feeder
7	Manual envelope feed
8	Single tray
9	Sheet feeder bin 1
10	Sheet feeder bin 2

ID: 7 ... PRINTER DRIVER NAME  
7, "driver filename"

The name of the printer driver (.PDV) that will be used. The name should be one of the following:

"ASCII\_PR.PDV"  
"HP\_LASER.PDV"  
"HP\_ORIG.PDV"  
"BX\_LASER.PDV"  
"DESKJET.PDV"  
"DOT\_MATR.PDV"  
"GP300.PDV"  
"PSTSCRPT.PDV"  
"PAINTJET.PDV"  
"D\_WHEEL.PDV"

Description on which driver should be used for various printers may be found in the Software System manual.

ID: 9 ... PRINTER SETUP and WRAP-UP SEQUENCES  
9, <cs to setup printer>, <cs to wrap up printing>

The first <cs> is the sequence sent to the printer at the start of a print job following the reset sequence (ID 1) and the second <cs> is the sequence sent to the printer at the end of a print job immediately preceding the final reset sequence.

ID: 10 ... SET/RESET 10 CPI  
 10, <cs to set 10 CPI>, <cs to reset 10 CPI>

Sequences for selecting and deselecting 10 CPI printing mode. These may often both be null, as 10 CPI is commonly the default printer state.

ID: 11 ... SET/RESET 12 CPI (CONDENSED)  
 11, <cs to set 12 CPI>, <cs to reset 12 CPI>

Sequences for selecting and deselecting 12 CPI printing mode. This is also known as condensed mode, and must always be 5/6 the width of the average character width (ID 5003:230). Condensed mode only applies to monospaced fonts.

ID: 12 ... SET/RESET 17 CPI (COMPRESSED)  
 12, <cs to set 17 CPI>, <cs to reset 17 CPI>

Sequences for selecting and deselecting 17 CPI printing mode. This is also known as compressed mode. Since 17 CPI can not be achieved exactly on many printers, the actual character width is determined by multiplying the average character width (ID 5003:230) by the ratio of ID 13 / ID 14 (see below). Compressed mode only applies to monospaced fonts.

ID: 13 ... COMPRESSED WIDTH (17 CPI) NUMERATOR

ID: 14 ... COMPRESSED WIDTH (17 CPI) DENOMINATOR

13, #

14, #

These numbers are used to form a fraction (ID 13 / ID 14) by which the average character width (ID 5003:230) of a font is multiplied to get the character width for the compressed mode. Any fractional part of the new width is ignored, since the character width is expressed in terms of dots.

ID: 20 ... UNDERSCORE ON/OFF  
 20, <cs to start underscoring>, <cs to end underscoring>

Sequences to begin and end printer-supported underlining. This only applies to internal fonts, and not to filled-area fonts, which are underlined by graphics commands. If there is a severe visual difference between underlining on internal and filled-area fonts, then these sequences may be left null, in which case all underlining will then be done using graphics commands. This will make the underlining consistent, but will also usually reduce print speed.

## Chapter 5: Editing Descriptor Files

ID: 21 ... OUTLINE ON/OFF  
21, <cs to select outline>, <cs to deselect outline>

If a printer supports outlined characters (the letters are traced in black, with white in the center), these sequences turn the outlining on and off.

ID: 22 ... DOUBLE UNDERSCORE ON/OFF  
22, <cs to start double uscore>, <cs to end double uscore>

Sequences to begin and end printer-supported double underlining. The same considerations detailed for single underlining (ID 20) also apply here.

ID: 23 ... LIGHT ON/OFF  
23, <cs to start light>, <cs to end light>

If the printer supports a light character mode (characters printed lighter than normal), these sequences turn the light printing on and off.

ID: 24 ... BOLD ON/OFF  
24, <cs to start bold>, <cs to end bold>

If the printer supports a bold character mode (characters printed darker than normal), these sequences turn the bold printing on and off.

ID: 25 ... EXTRA BOLD ON/OFF  
25, <cs to start extra bold>, <cs to end extra bold>

If the printer supports an extra bold character mode (characters printed much darker than normal), these sequences turn the extra bold printing on and off.

ID: 26 ... STRIKEOUT ON/OFF  
26, <cs to start strikeout>, <cs to end strikeout>

Sequences to begin and end printer-supported strikeout. The same considerations detailed for single underlining (ID 20) also apply here.

ID: 28 ... ITALICS ON/OFF  
28, <cs to start italics>, <cs to end italics>

If the printer supports an italics character mode (characters printed at a slant), these sequences turn the italics printing on and off.

ID: 31 ... EXPANDED PRINTING ON/OFF  
 31, <cs to begin expanded>, <cs to end expanded>

Sequences for selecting and deselecting expanded (wide character) printing mode. This is only valid for monospaced fonts. The actual character width is determined by multiplying the average character width (ID 5003:230) by the ratio of ID 32 / ID 33 (see below).

ID: 32 ... EXPANDED WIDTH NUMERATOR  
 ID: 33 ... EXPANDED WIDTH DENOMINATOR  
 32, #  
 33, #

These numbers are used to form a multiplier (ID 32 / ID 33) by which the average character width (ID 5003:230) of a font is multiplied to get the character width for the expanded mode. The multiplier must be 1 or greater (i.e., ID 32 must be larger than ID 33). Any fractional part of the new width is ignored, since the character width is expressed in terms of dots.

ID: 40 ... EFFECT OF CARRIAGE RETURN ON FONT ATTRIBUTES  
 ID: 41 ... EFFECT OF LINE FEED ON FONT ATTRIBUTES  
 ID: 42 ... EFFECT OF GRAPHICS MODE ON FONT ATTRIBUTES  
 ID: 43 ... EFFECT OF VERTICAL MOVE ON FONT ATTRIBUTES  
 40, #  
 41, #  
 42, #  
 43, #

Indicates the effect on font attributes (such as underscore, bold, compressed etc.) when the indicated character or command sequence is sent to the printer. The current valid selection for # are:

0: No bad effect, font attributes not changed.  
 1: All font attributes must be reset following the indicated character to ensure they remain in effect.  
 ID: 44 ... HORIZONTAL MOVEMENT PROBLEMS  
 44, #

## Chapter 5: Editing Descriptor Files

Indicates the effect on horizontal movement if other than normal (10 CPI) width font is currently selected. Some printers do not correctly move the specified horizontal distance under these conditions. The current valid selection for # are:

- 0: No problem.
- 1: Printer has problem. Print driver will shift to the default font, do the horizontal movement, then shift back to the font previously in effect (valid for dot matrix and daisy wheel printers only).

ID: 50 ... PRINTER VERTICAL RESOLUTION IN DPI  
50, #

The number of DPI the printer can achieve vertically for the graphics mode that will be used. All vertical measurements depend on this being accurate. See also ID 61.

ID: 51 ... PRINTER HORIZONTAL RESOLUTION IN DPI  
51, #

The number of DPI the printer can achieve horizontally for the graphics mode that will be used. All width and horizontal position calculations depend on this being accurate. See also ID 62.

ID: 52 ... NUMBER OF HEAD PASSES/LINE IN GRAPHICS MODE  
52, #

On some dot matrix printers, the distance between pins in the print head is greater than the vertical resolution, so to print the full resolution will require more than one pass of the head, moving down one vertical resolution increment each time.

If a printer can not do graphics, set this to 0. For other than dot matrix printers that can do graphics (such as lasers), set this to 1. For dot matrix printers that do graphics, the number of head passes depends on the graphics mode selected.

ID: 53 ... Y ORIGIN POSITION  
53, #

Indicates where the y-origin, or top page position for calculating vertical position is. Current values are:

- 0 Y origin is at top of physical page, such as for IBM 3812, Xerox 4045 and HP compatible lasers.

1 Y origin is at top margin, such as for all dot matrix and Canon lasers.

ID: 54 ... DOTS PRINTED IN ONE GRAPHICS COLUMN  
54, #

The number of dots printed in one vertical column in graphics mode. For dot matrix printers, this is as indicated in the manual for the selected graphics mode. For other printers, set this to 1.

ID: 55 ... TOP PIN TO FIRE IN GRAPHICS MODE  
55, #

Top pin on head that is used in graphics mode. For lasers this is 0. A few printers can not fire one or more of the top pins. Value is as follows:

0 Top pin can fire  
1 Second to top pin can fire etc.

ID: 56 ... NUMBER OF BITS PER GRAPHICS BYTE  
56, 8  
56, #, #

If a graphics byte contains 8 bits that are used to select pins to fire, then use the first form. If less than 8 bits are used, the first # is the number of bits (or pins) and the second # is as follows:

0 Bits are placed in least significant bits of byte.  
1 Bits are placed in most significant bits of byte.

The second number defaults to zero, so may be left off even on the second form if it would be zero anyway.

ID: 58 ... BIT TO DOT MAPPING FOR GRAPHICS  
58, #

Specifies how bits in a graphics byte control the dots printed in graphics mode. Values are:

0 LSB of graphics byte controls top dot on line.  
1 MSB of graphics byte controls top dot on line.



vertical and/or horizontal movement commands will be calculated using these resolutions rather than the ID 50/51 records.

ID: 63 ... HORIZONTAL PRINTABLE AREA < PAPER SIZE  
63, #

On some printers, notably some lasers, a portion of the page is unprintable on the left and/or right. This is often indicated as having "unprintable margins" or "absolute margins". In these cases, the printer can accept paper of a certain width, but not print completely from edge to edge. It is also possible on some dot matrix printers that a certain size paper can be rolled into the platen or tractor, but the head can not print completely across the paper.

This record indicates whether or not a printer has this restriction:

0	No restriction, printer can reach edge of paper.
1	Printer can not reach edge of paper.

ID: 64 ... VERTICAL RESOLUTION/DOT SIZE NUMERATOR  
ID: 65 ... VERTICAL RESOLUTION/DOT SIZE DENOMINATOR  
ID: 66 ... HORIZONTAL RESOLUTION/DOT SIZE NUMERATOR  
ID: 67 ... HORIZONTAL RESOLUTION/DOT SIZE DENOMINATOR

It is possible that the physical size of dot a printer places on the paper is wider than the printing resolution, or the distance the head moves between dots. This is most common on dot matrix printers, where a printer may be printing at (for example) 216 dots per inch, but the pin itself doing the printing is 1/72 of an inch. This means that adjacent dots are overlapping.

For graphs where a lighter shade of grey is trying to be achieved, some dots are purposely left out to reduce the darkness of part of the graph. If dots are overlapping, though, this may not have the desired effect. By using these ID records, the driver can be informed of this effect, and will compensate for the overlap. For printers where the print and dot resolutions are the same, all these IDs should have values of 1, or may be omitted.

To set these records, take the vertical or horizontal print resolution (from IDs 50 and 51) as the numerators, and the actual number of non-overlapping dots per inch as the denominator. Reduce these numbers to the lowest integer fractions and enter these numbers in the corresponding records. For example:

Vertical resolution of 216 DPI  
Horizontal resolution of 240 DPI  
Physical dot (pin head) size of 72 DPI

## Chapter 5: Editing Descriptor Files

Vertical ratio =  $216/72 = 3/1$

Horizontal ratio =  $240/72 = 10/3$

64, 3 ! Vertical numerator

65, 1 ! Vertical denominator

66, 10 ! Horizontal numerator

67, 3 ! Horizontal denominator

Note that the vertical/horizontal print resolutions may depend on the graphics mode selected.

ID: 70 ... COLOR PRINTING SUPPORTED

70, #

Set as follows to indicate color printing capability:

0: No color printing supported.

1: Color printing is supported.

ID: 71 ... COLOR RIBBON MAPPING FOR COLOR TEXT

71, #####

The sixteen (16) numbers indicate which color bands on a dot matrix ribbon should be used to generate the respective foreground color for text. Note that this is a case where the numbers are not separated by commas. For non-color (black) ribbons this may be omitted.

For color ribbon printers, the following numbers are used to indicate the four bands on a color ribbon. The printer commands to select the bands are set using ID numbers 75 through 78. To combine bands, add the numbers together. Which band represents which color on the ribbon depends on the sequences set up in IDs 75 to 78. For reference here, we refer to the bands as A, B, C and D. When printing, the bands are printed in that order with successive passes of the print head.

Band A: 1

Band B: 2

Band C: 4

Band D: 8

The sixteen numbers select the bands to map to the sixteen foreground colors, according to the following table. Also given are the suggested choices for the mapping for a

color process ribbon, assuming the bands have been selected as Yellow=A, Magenta=B, Cyan=C and Black=D.

Position #	FG Color	Suggestion	Mapping #
1	Black	D	8
2	Blue	B+C	6
3	Green	A+C	5
4	Turquoise	C	4
5	Red	B	2
6	Purple	B+C	6
7	Brown	A+B	3
8	Off-White	D	8
9	Grey	A+B+C	7
10	Light-Blue	C	4
11	Light-Green	A+C	5
12	Light-Turquoise	C	4
13	Light-Red	B+C	6
14	Pink	B	2
15	Yellow	A	1
16	White	D	8

If all suggestions were used, the record would be:

71, 8 6 5 4 2 6 3 8 7 4 5 4 6 2 1 8

## Chapter 5: Editing Descriptor Files

ID: 72 ... RED VALUES FOR POSTSCRIPT COLOR PRINTERS  
ID: 73 ... GREEN VALUES FOR POSTSCRIPT COLOR PRINTERS  
ID: 74 ... BLUE VALUES FOR POSTSCRIPT COLOR PRINTERS  
72, #####  
73, #####  
74, #####

Postscript color printers use a Red-Green-Blue (RGB) color representation. In this method, the value of each of the red, green and blue color components may be set to a number from 0 to 255. All the red color values for each foreground color (see table for ID 71) are set in ID 72, green in ID 73 and blue in ID 74.

For reference, each of the values set is divided by 255 and used as an argument to the Postscript "setrgbcolor" function. Refer to a Postscript manual for further information.

ID: 75 ... BAND A COLOR ON/OFF  
ID: 76 ... BAND B COLOR ON/OFF  
ID: 77 ... BAND C COLOR ON/OFF  
ID: 78 ... BAND C COLOR ON/OFF  
75, <cs to turn band A on>, <cs to turn band A off>  
76, <cs to turn band B on>, <cs to turn band B off>  
77, <cs to turn band C on>, <cs to turn band C off>  
78, <cs to turn band D on>, <cs to turn band D off>

Used to turn the respective colors on and off for the color ribbon bands picked in ID 71. These IDs must be present ONLY for non-Postscript color printers.

ID: 79 ... TOP OF FORM PROBLEMS  
79, #

Some printers lose track of the top of form position, particularly when doing small vertical movements in graphics mode. If this condition exists, it is necessary for the print driver to physically move the head to the top of the next page using vertical movement commands, rather than by issuing a (normally faster) form feed command. The # has the choices:

- 0: Printer does not have this problem, form feed can be used.
- 1: Printer has a problem, do not use form feed.

Because very few printers (generally older printers) have this problem, only the daisy wheel driver (ID 7 = "D\_WHEEL") currently supports this ID.

ID: 82 ... DATABASE HORIZONTAL LINE THICKNESS  
 ID: 83 ... DATABASE VERTICAL LINE THICKNESS  
 82, #  
 83, #

The thickness in dots of normal horizontal and vertical drawn lines, used in the database report generator. These are not used for underscore.

ID: 90 ... PORTRAIT DUPLEX PRINTING  
 ID: 91 ... LANDSCAPE DUPLEX PRINTING  
 90, <cs for portrait duplex on>, <cs for duplex off>  
 91, <cs for landscape duplex on>, <cs for duplex off>

Should be present only if duplex printing (printing on both sides of a page) is supported. By omitting these IDs, the printer will only support single-sided printing. If present, they are the control sequences to enable and disable duplex printing in the indicated print orientation.

ID: 94 ... GRAPHICS PRELUDE  
 94,<cs to begin graphic printing>

Sequence issued at the beginning of a graphics sequence.

ID: 100 ... TRANSPARENT PRINT ON/OFF  
 ID: 101 ... FIRST CHAR NEEDING TRANSPARENT PRINTING  
 ID: 102 ... LAST CHAR NEEDING TRANSPARENT PRINTING  
 100, <cs to being transparent printing>, <cs to end>  
 101, #  
 102, #

Some portions of a character set may not be directly printable, because those characters are interpreted as commands to the printer, rather than as a character. On dot matrix printers these are typically characters 7-15 and 27, which are commands such as carriage, line feed, form feed and escape.

On some printers, the printed character represented by these numbers (typically in the original IBM PC character set) can be printed by issuing a special "transparent print" command, which instructs the printer not to interpret the following character(s) as control codes.

If supported and necessary, ID 100 gives the sequences to shift into and out of transparent print mode, ID 101 is the numeric value of the first character to need transparent printing, and ID 102 is the numeric value of the last character. This only provides for one range of characters. Typically this would be from 0 to 31, such as for the PC-8 character set. The transparent on/off sequences are used for each character (never a group of characters).

ID: 435 ... EFFECT OF VERTICAL MOVEMENT ON HEAD  
435, #

Whether a vertical movement command derived from the ID 6000 or ID 6010 groups (discussed later) causes the print head to return to the left margin. Choices for #:

- 0: No, head is left at current horizontal position.
- 1: Yes, head is returned to left margin.

ID: 440 ... MULTIPLIER FOR FORM LENGTH COMMAND  
440, #

Refers to the 6070:1071 ID, discussed later. Since page length is specified in inches, but the printer command to set form length is usually in lines, this value indicates what to multiply the page length by to get the correct value to use to set the form length. This is normally the number of lines per inch for the printer. If set to 0, it is changed to 1 internally.

## PAPER PROFILES

A paper profile is a combination of two sets of information: the of the paper fed into the printer (tractor, bin, manual), and the paper size (letter, legal, etc.). The ID 500 indicates the valid paper paths for the printer, and the ID groups indicate the valid paper sizes for each path. These are repeated as necessary.

IDs: 500 ... PAPER PATH  
501 ... PLACEMENT OF PAPER SIZE SEQUENCE  
502 ... PAPER PATH SEQUENCES  
500, #  
501, #

502, <cs: paper path prefix>, <cs: paper path suffix>

The # for ID 500 is a code for a paper path. See ID 6 for a list of possible path codes. This must be followed by an ID 501 and ID 502 record.

ID 502 gives the sequences to select the paper path. They may be null if no special selection is necessary. ID 501 indicates whether to combine the paper size sequence from ID 554 or ID 555 (further on) with the paper path sequence. The choices for # are:

- 0: Don't use the ID 554 or ID 555 record. In this case the ID 502 prefix and suffix sequences will be sent out back-to-back when a path is to be selected.
- 1: Send out the ID 554 or ID 555 sequence between the ID 502 prefix and suffix. This allows the paper size sequence to be combined in any order with the paper path sequences.

IDs: 550 ... PAPER SIZE  
 551 ... PAPER PATHS USING THIS SIZE  
 552 ... UNPRINTABLE MARGINS FOR PORTRAIT MODE  
 553 ... UNPRINTABLE MARGINS FOR LANDSCAPE MODE  
 554 ... PAPER SIZE SEQUENCE FOR PORTRAIT MODE  
 555 ... PAPER SIZE SEQUENCE FOR LANDSCAPE MODE  
 550, #  
 551, #, # ...  
 552, ##, ##, ##, ##  
 553, ##, ##, ##, ##  
 554, <cs: paper size sequence for portrait mode>  
 555, <cs: paper size sequence for landscape mode>

For ID 550, the # is a paper size code. See ID 5 for a list of valid paper size codes. ID 550 is followed by ID 551 and 552, and optionally by 553 through 555. ID 551 indicates which paper paths can feed this size paper. The first # is a count of how many #'s follow on the line. Each successive # is a paper path code from the list in ID 6. There must have been an ID 500 group for each paper path referenced.

ID 552 is a set of four fixed point numbers indicating (in inches) any unprintable margins for this paper size in portrait mode. An unprintable margin is an area on an edge of the page the printer can not physically print on. The numbers are as follows:

552, top, left, bottom, right

If there were no unprintable margins, all would be zero, as follows:

552, 0.0, 0.0, 0.0, 0.0 ! No unprintable margins.

If there was 1/4 inch on top and bottom that could not be printed, the margins would be:

552, 0.25, 0.0, 0.25, 0.0 ! 1/4 inch top + bottom.

ID 553 has the same format as ID 552, but relates to landscape mode. If landscape mode is invalid, this ID should be left out.

IDs 554 and 555 are the sequences to select this paper size for portrait and/or landscape modes. They should only exist if the ID 501 is set to 1 in a paper path (ID 500) group this paper size is valid for. Also, ID 555 should only be used if landscape mode is valid.

## PAGE START/END

ID: 2000 ... PAGE START

2000, <cs: sequence to begin page>

Sent at the beginning of each page, following the sequences to change paper size and path (ID 500 and ID 550 groups). Generally null ("") except in special situations.

ID: 2001 ... PAGE END

2001, <cs: sequence to end page>

Sent to the printer at the end of each page to position to the top of the next page. For most printers, a carriage return and form feed are sufficient.

## FONT SPECIFICATION

A font is the combined set of attributes that make up the visual appearance of a character on the page. Some of these attributes are typeface (form of the character) and size. In the DSC, each individual font is defined by an ID 5003 group. There may be one or more 5003 groups for each internal fonts available for the printer (or cartridge fonts, for cartridge descriptors). Note that filled area and pre-rasterized fonts are automatically supported by the print drivers for printers which support graphics. The 5003 group may also reference, or be referenced by, two other groups.

The ID 5300 group specifies a proportional spacing table. Fonts come in two types: monospaced and proportional. In a monospaced font, the start of each character is spaced the

same from the character before or after it. Because of this, there are a fixed number of characters in an inch, and the "average character width" in ID 5300:230 is in fact the actual character width for every character. In a proportional font, each character may be a different width on the page (for example, an 'i' will take up less room than an 'm'). Because of this, it is necessary to individually specify the width for each and every character. For example, this allows the Word Processor to correctly figure how many characters will fit on a line when a proportional font is used. A proportional font is indicated by having an ID 5300 group reference that font.

The ID 5400 group specifies a character replacement table. The numerical value of each character refers to a character in one of the Smart character sets. The content of the Smart character set(s), which are detailed in the Software System manual, were chosen to represent a reasonably complete set of the characters used in market areas. However, the same character value that represents a character inside ANGOSS may NOT represent the same character when sent to a printer. This is handled in two ways in the DSC. The first is by using the ID 5003:212 record, which is used to indicate that a printer internally expects characters to be from a fixed industry standard character set. In this case, ANGOSS will automatically pick the correct internal printer characters when possible so that the appropriate character is printed. To allow for other possibilities, the ID 5400 group allows each character sent to the printer to be individually replaced by a different character (or command sequence).

ID:       5003 ... START OF FONT SPECIFICATION  
          5003

The signal that a font specification is beginning. This group is ended by the ID 5299 record. The IDs that follow are valid ONLY within a 5003 group

ID:       201 ... UNIQUE FONT NUMBER  
          201, #

A user-picked number that will be used in the ID 5300 and ID 5400 groups to refer back to this particular font. This number must be unique within all the 5003:201 records, and also within any 5003:201 records in included DSC files, and LSC files that will relate to this DSC.

ID:       202 ... FONT SOURCE  
          202, #

Specifies how the font is accessed inside the printer. Values can be:

- 1:           Internal, font is fixed within printer.
- 2:           Postscript, font is a fixed font within a Postscript printer, which can be usually be scaled to more than one size.

## Chapter 5: Editing Descriptor Files

3: Cartridge, font is in a plug-in laser cartridge.

ID: 203 ... FONT NAME

203, 1

203, "Font name"

The name that will be seen on the font selector screens for this font. The first form (203, 1) is a special case for the "standard" font for this printer. For language translations, this allows the word "standard" to be translated automatically by ANGOSS.

The second form is used to specify a name for the font. By convention, this name must have the first character capitalized, and only the first 31 characters will be retained. All-lowercase names are reserved for the provided filled-area fonts.

ID: 204 ... POINT SIZES

204, 1, #, # (...)

The point sizes (heights) that can be selected for this font. The first # is a count of the number of sizes to follow. Each successive number is a size in 1/10 points (i.e., the point size multiplied by 10). For example:

204, 1, 1, 120

This indicates 1 font at 12.0 points (remember that a point is 1/72 inch, so 12.0 points is 1/6 inch high).

ID: 205 ... PORTRAIT/LANDSCAPE AVAILABLE

205, #

Even if a printer supports portrait and/or landscape printing, it may not be able to do so for all fonts. For the current 5003 font record, this record indicates what is supported, as follows:

1: Portrait only

2: Landscape only

3: Both portrait and landscape

ID: 206 ... SELECT/DESELECT FONT

206, <cs to select font>, <cs to deselect font>

Sequences to enable and disable the font from printing. The deselect sequence is often null (""), unless it is necessary to perform some exit action before selecting another font.

ID: 208 ... POSTSCRIPT FILE NAME  
 208, "filename"

For non-Postscript printers, the filename should be null:  
 208, ""

For Postscript printers, the name is that of a file in the resource library that contains the proportional spacing tables for the font being described. Current choices are:

PSFT0000.013	Courier
PSFT4551.013	Courier
PSFT4552.013	Courier Oblique
PSFT4751.013	Courier Bold
PSFT4752.013	Courier Bold Oblique
PSFT5551.011	ITC Avant Garde Gothic Book
PSFT5552.011	ITC Avant Garde Gothic Book Oblique
PSFT5751.011	ITC Avant Garde Gothic Demi
PSFT5752.011	ITC Avant Garde Gothic Demi Oblique
PSFT4351.012	ITC Bookman Light
PSFT4352.012	ITC Bookman Light Italic
PSFT4751.012	ITC Bookman Demi
PSFT4752.012	ITC Bookman Demi Italic
PSFT5551.014	Helvetica
PSFT5552.014	Helvetica Oblique
PSFT5751.014	Helvetica Bold
PSFT5752.014	Helvetica Bold Oblique
PSFT5551.015	Helvetica Narrow
PSFT5552.015	Helvetica Narrow Oblique
PSFT5751.015	Helvetica Narrow Bold
PSFT5752.015	Helvetica Narrow Bold Oblique
PSFT4551.017	New Century Schoolbook Roman

## Chapter 5: Editing Descriptor Files

PSFT4552.017	New Century Schoolbook Italic
PSFT4751.017	New Century Schoolbook Bold
PSFT4752.017	New Century Schoolbook Bold Italic
PSFT4551.019	Times Roman
PSFT4552.019	Times Italic
PSFT4751.019	Times Bold
PSFT4752.019	Times Bold Italic
PSFT4551.018	Palatino Roman
PSFT4552.018	Palatino Italic
PSFT4751.018	Palatino Bold
PSFT4752.018	Palatino Bold Italic
PSFT6552.009	ITC Zapf Chancery Medium Italic
PSFT7551.009	ITC Zapf Dingbats
PSFT7551.007	Symbol
PSFT4551.021	ITC Korinna Regular
PSFT4751.021	ITC Korinna Bold
PSFT4552.021	ITC Korinna Kursiv Regular
PSFT4752.021	ITC Korinna Kursiv Bold
PSFT4351.020	ITC Garamond Light
PSFT4352.020	ITC Garamond Light Italic
PSFT4751.020	ITC Garamond Bold
PSFT4752.020	ITC Garamond Bold Italic
PSFT5351.016	Helvetica Condensed Medium
PSFT5352.016	Helvetica Condensed Oblique
PSFT5751.016	Helvetica Condensed Bold
PSFT5752.016	Helvetica Condensed Bold Oblique

ID: 212 ... PRINTER SUPPORTED CHARACTER SET  
212, #

Indicates what character set the printer supports internally, so the correct choices can be made for mapping the Smart character set to the printer's character set. The values of # are:

- 1: Full Smart character set
- 2: IBM Multi-lingual (Codepage 850)
- 3: IBM Character set II (Codepage 437)
- 4: IBM Character set I
- 5: DEC Multi-national
- 6: HP Roman 8
- 7: 7-Bit ASCII
- 8: Use character replacement table (ID 5400)
- 9: Native character set - see ID 214 record

Only filled-area fonts fully support the Smart character set. Other characters sets result in a subset of the Smart character set that can be correctly printed.

ID: 214 ... PRINTER NATIVE CHARACTER SET

214, #

If record ID 212 is not 9, then this record should be set to 1. Otherwise, a selection from the following list will indicate the actual character set the printer supports. Although no mapping to the Smart character is done in these instances, it is important that the selection be correct. The user-chosen font information (from the font selector screen is matched to the DSC provided information, so an erroneous value could result in the correct font not being chosen.

Number	Description
0	Smart
1	Smart subset
2	Roman 8
3	Math8
4	PC-8

## Chapter 5: Editing Descriptor Files

<b>Number</b>	<b>Description</b>
5	ECMA-94
6	PC-8DN
7	Char set II
8	Code Page 437
9	Code Page 850
10	Danish-Norwegian
11	United Kingdom
12	French
13	German
14	Italian
15	Swedish-Finnish
16	Spanish
17	HP-Legal
18	PiFont
19	Math8a
20	Math8b
21	Math7
22	Roman Ext
23	Ascii
24	Line Draw
25	PC Set 1
26	PC Extension

<b>Number</b>	<b>Description</b>
27	UPC
28	Special Bold
29	OCR-B
30	OCR-B Extended
31	Tax Line Draw
32	Pc Line

ID: 219 ... LANDSCAPE UNDERSCORE THICKNESS

ID: 220 ... PORTRAIT UNDERSCORE THICKNESS

219, #

220, #

The thickness, in dots, of the underscore lines drawn by ANGOSS. Landscape thickness is only relevant for the original HP LaserJet printer.

ID: 221 ... UNDERSCORE LINE PLACEMENT

221, #

Where, in dots below the baseline of the font, to place the underscore line if drawn by ANGOSS. The measurement is to the top dot of the underscore.

ID: 222 ... DOUBLE UNDERSCORE THICKNESS (SECOND LINE)

222, #

The thickness, in dots, of the second line of a double underscore. The first line thickness is controlled by ID 220.

ID: 223 ... DOUBLE UNDERSCORE PLACEMENT, FIRST LINE

ID: 224 ... DOUBLE UNDERSCORE PLACEMENT, SECOND LINE

223, #

224, #

## Chapter 5: Editing Descriptor Files

Where, in dots below the baseline of the font, to place the double underscore lines if drawn by ANGOSS. The measurements are to the top dot of each of the underscores.

ID: 225 ... STRIKEOUT THICKNESS  
225, #

The thickness, in dots, of the strikeout lines drawn by ANGOSS.

ID: 226 ... STRIKEOUT PLACEMENT  
226, #

Where, in dots above the baseline of the font, to place the strikeout line if drawn by ANGOSS. The measurement is to the top dot of the strikeout. In order to have an effect, this value must be less than or equal to the maximum height above baseline (ID 232).

ID: 230 ... AVERAGE FONT WIDTH  
ID: 231 ... MAXIMUM FONT WIDTH  
230, #  
231, #

The widths, in dots, of the widest character in the font, and the average of all characters in the font. For a monospaced font, the average and maximum should be the same.

ID: 232 ... MAXIMUM HEIGHT ABOVE BASELINE  
232, #

The height, in dots above baseline, of the top of the tallest character in the font (usually a capital letter). In the descriptor editor documentation this is referred to as the "character up" value.

IDs: 5250 ... NORMAL FONT ATTRIBUTE GROUP  
250 ... REQUIRED  
252 ... VALID NORMAL ATTRIBUTE COMBINATIONS

IDs: 5260 ... CONDENSED FONT ATTRIBUTE GROUP  
250 ... REQUIRED  
252 ... VALID CONDENSED ATTRIBUTE COMBINATIONS

```

IDs:  5270 ... COMPRESSED FONT ATTRIBUTE GROUP
      250 ...      REQUIRED
      252 ...      VALID COMPRESSED ATTRIBUTE COMBINATIONS

IDs:  5280 ... EXPANDED FONT ATTRIBUTE GROUP      _
      250 ...      REQUIRED
      252 ...      VALID EXPANDED ATTRIBUTE COMBINATIONS
      5250
      250, 1
      252, #, # ...
      5260
      260, 1
      262, #, # ...
      5270
      270, 1
      272, #, # ...
      5280
      280, 1
      282, #, # ...

```

Each of these groups indicates, for the current ID 5003 font group, which of the width modifications are valid. If a given modification is not valid for the current font, the entire attribute group should be left out.

Each attribute group is followed by two IDs. The first ID is redundant but required for historical purposes (IDs 250, 260, 270 and 280). Each must be followed by a 1. The second ID (252, 262, 272 and 282) indicates, for that width modification, which combinations of other attributes are valid. The first # in each ID is a count of how many #'s follow on the line.

Attribute combinations are indicated by bits set within a #. By expressing the # in hexadecimal, it is easy to separate the # into four (4) sets of 4 bits each. Each set of 4 bits is then one digit of a 4-digit hex number. The breakdown is as follows:

## Chapter 5: Editing Descriptor Files

	Lining	Weight	Slant	Width
	8 4 2 1	8 4 2 1	8 4 2 1	8 4 2 1
	S U D O	N L B E	- N I -	N D P E
Strikeout.....	+	+	+	+
Underscore.....	+	+	+	+
Double-Uscore.....	+	+	+	+
Outline.....	+	+	+	+
Normal.....	+	+	+	+
Light.....	+	+	+	+
Bold.....	+	+	+	+
Extra-Bold.....	+	+	+	+
(Unused)	+	+	+	+
Normal.....	+	+	+	+
Italics.....	+	+	+	+
(Unused)	+	+	+	+
Normal.....	+	+	+	+
Condensed.....	+	+	+	+
Compressed.....	+	+	+	+
Expanded.....	+	+	+	+

To select a set of attributes, set the appropriate bits, convert to a hex number, and add to the ID line. When font selection and matching is done, only combinations specified by these numbers will be valid. The following restrictions apply:

- Lining:** More than one of these attributes can be picked at font selection time. Also, more than one bit may be set if all combinations are valid with other selected bits.
- Weight:** Only one of these attributes can be picked at font selection time, but more than one bit may be set here if all selected weight are valid in combination with other attributes.

Slant: Same as for Weight.  
 Width: Only one bit may be set, and must indicate the same width as the group this is in (5250/5260/5270/5280). This is redundant, but again is necessary for coding reasons.

ID: 5299 ... END OF 5003 FONT GROUP  
 5299  
 Signals end of the current 5003 font group.

IDs: 5300 ... PROPORTIONAL SPACING TABLE GROUP  
 301 ... UNIQUE FONT NUMBER LIST  
 302 ... CHARACTER WIDTHS  
 5300  
 301, #, # ...  
 302, #, ## #...

A group specifying one proportional spacing table, which gives the widths (in dots) for each character. The first # in ID 301 is a count of how many numbers follow on that line. Each successive number is unique font number from the ID 5003:201 records. This indicates that this proportional table applies to those fonts.

Following the ID 301 is a number of ID 302 lines. There must be a total of 256 numbers on all the ID 302 lines in the group. The first number is the width (in dots) of character 0 and the last is the width of character 255. If a font does not support some of the characters, it is suggested that the width of a space be used as a filler.

**NOTE:** Comments may NOT be used on ID 302 lines.

IDs: 5400 ... CHARACTER REPLACEMENT TABLE GROUP  
 401 ... UNIQUE FONT NUMBER LIST  
 402 ... CHARACTER REPLACEMENT SEQUENCES  
 5400  
 401, #, # ...  
 402, #, <cs> <cs> <cs> ...

A group specifying one character replacement table, which gives the printer command sequences to be substituted for each character in a font. The first # in ID 401 is a count of how

many numbers follow on that line. Each successive number is a unique font number from the ID 5003:201 records. This indicates that this character replacement table applies to those fonts. Also, each 5003:212 record for the indicated fonts must have a value of 8, indicating a character replacement table is to be used.

Following the ID 401 is a number of ID 402 lines. There must be a total of 256 numbers on all the ID 402 lines in the group. The first number is the replacement sequence for character 0 and the last is the replacement sequence for character 255.

Two special sequences may be used:

- |    |  |
|----|--|
| "" | The null string indicates the original character should be used, with no substitution.   |
| 1  | A value of 1 indicates that there is no acceptable character for this position in the font. A space will be printed if this character is used. |

Within the replacement sequences, there are three special character combinations that may be embedded in text:

- |      |   |
|------|---|
| "\"" | This sends a single backslash to the printer.   |
| "\"" | This backs up to the beginning of the current character cell. It can be used to overstrike one or more characters.                                    |
| "\"" | This indicates to move forward one dot position in the printer resolution. It is used when overstriking to adjust for characters of different widths. |

For example, say one needs an "n" with a "~" over it. If the characters were the same width, the following would suffice:

"n\~"

However, if the "n" is 8 dots wide, while the "~" is only 6 dots wide, the following can be done to center the "~" and position the head correctly afterwards:

"n\-\+\~\+" or "\+\~\-\n"

**NOTE:** Comments may NOT be used on ID 402 lines.

#### MOVEMENT, GRAPHICS and SET FORM LENGTH GROUPS

The eight groups to be discussed here all have a common structure. Each printer command in this section may need to have a count, position or length encoded into the command sequence. There are a number of different methods that printers use to indicate counts or lengths. These groups allow the printer-specific encoding to be described.

The eight groups to be discussed are:

ID 6000:	ABSOLUTE VERTICAL MOTION
ID 6010:	RELATIVE VERTICAL MOTION
ID 6020:	HORIZONTAL MOTION INDEX (DAISY WHEEL ONLY)
ID 6030:	ABSOLUTE HORIZONTAL MOTION
ID 6040:	RELATIVE HORIZONTAL MOTION
ID 6050:	GRAPHICS START
ID 6060:	GRAPHICS END
ID 6070:	SET FORM LENGTH

Each group has six sub-IDs following. For each group, the sub-ID numbers are different, but follow a pattern. For group 60x0, the sub-ID records are (replace the 'x' with the third digit of the group number):

ID 10x1:	PREFIX SEQUENCE
	10x1, <cs: prefix to command>
ID 10x2:	SIZE FIELD FORMAT
	10x2, #
ID 10x3:	SIZE FIELD LENGTH
	10x3, #
ID 10x6:	SUFFIX SEQUENCE
	10x6, <cs: suffix to command>
ID 10x7:	SIZE OFFSET
	10x7, #
ID 10x8:	SIZE LIMIT
	10x8, #

For these types of commands, the full sequence sent is in three parts, in the following order:

Prefix, or the command leading up to the size information.

Size field, which will be produced by the print driver based on format, length and offset.

## Chapter 5: Editing Descriptor Files

Suffix, if necessary, to complete the command sequence. Often null ("").

The prefix and suffix are normal <cs> format. The size field format is selected from the following table:

<b>Size Format</b>	<b>Description</b>
1	Size will be 1 or 2 bytes binary, LSByte first, MSByte second (if present). The length ID (10x3) should be 1 for just LSByte, or 2 for LSByte and MSByte.
2	Size will be 2 bytes binary, MSByte first, LSByte second. Length ID should be 2.
3	Size will be a string of ASCII digits. Length field indicates how many digits to output, or is 0 if as many are needed to represent size should be used.
4	Double-3 format (6050 graphics start group only). This is for printers that use a binary 3 as a control byte in the graphics data. In this case, if a true binary 3 is needed for graphics data, two 3's in a row are sent. Mainly for some older Okidata printers. Length field should be 0.
5	Force bit on (6050 graphics start group only). This is for Tandy printers that require a certain bit in every graphics byte to be set. The length field indicates which bit from 0 (LSBit) to 7(MSBit).
6	Special for AMT office printer. One or two bytes output, where first byte is low 7 bits of size (size modulo 128), and second byte (if needed) is rest of size (size/128). Length field is 1 for just LSByte, or 2 for LSByte and MSByte.
7	Special for Toshiba printers which require size to be output as three characters of 4-bits each (for total of 12-bit binary number). Format = '@'+(size/256), '@'+(size/16 modulo 16), '@'+(size modulo 16). Length field should be 0.

The size length should be set as indicated in the size format table, above.

The size offset is used if the printer requires the size/position/length to be offset by some amount. For most printers this will be 0.

The size limit should be set to the largest size allowed by the printer, or 0 if there is no limit.

ID: 6000 ... ABSOLUTE VERTICAL MOTION  
6000  
1001 -> 1008

Group exists ONLY if printer is capable of moving to any vertical position on the page. The position will be indicated by the size field in the correct units for the printer, depending on the printer driver selected. If this group is used, do NOT use the 6010 relative vertical motion group.

ID: 6010 ... RELATIVE VERTICAL MOTION

Group exists ONLY if printer is capable moving down from the current head position. The amount to move from the current head position will be indicated by the size field in the correct units for the printer, depending on the printer driver selected. If this group is used, do NOT use the 6000 absolute vertical motion group.

ID: 6020 ... HORIZONTAL MOTION INDEX (DAISY WHEEL)

Group exists ONLY for daisy wheel printers. This is used for micro-justification, and sets the amount the head will move following each character. Size field is in dots.

ID: 6030 ... ABSOLUTE HORIZONTAL MOTION

Group exists ONLY if printer is capable of moving to any position on the current line. The position will be indicated by the size field in the correct units for the printer, depending on the printer driver selected. If this group is used, do NOT use the 6040 relative horizontal motion group.

ID: 6040 ... RELATIVE HORIZONTAL MOTION

Group exists ONLY if printer is capable of moving to the right of the current head position a selected amount. The amount to move from the current head position will be indicated by the size field in the correct units for the printer, depending on the printer driver selected. If this group is used, do NOT use the 6030 absolute horizontal motion group.

## Chapter 5: Editing Descriptor Files

ID: 6050 ... GRAPHICS START

Group exists ONLY if printer can output graphics data. The sequence is used to send a series of graphics bytes to the printer. The number of bytes is what will be encoded by the size field.

ID: 6060 ... GRAPHICS END

Group exists ONLY if printer can output graphics data. This is the sequence to terminate a series of graphics bytes begun with the 6050 graphics start sequence. If no special sequence is necessary (e.g., the graphics start specifies the entire graphics sequence), then this group should be left out.

ID: 6070 ... SET FORM LENGTH

Group exists for printers that need to have the form length set. The size field will encode the form length in inches, multiplied by the ID 440 form length multiplier.

**NOTE:** For laser and Postscript printers, use the ID 554 and ID 555 records instead. The set form length command will not be used by these drivers.

**NOTE:** For dot matrix printers, the set form length command will override the ID 554 and ID 555 records, so those fields may be left out.

CARTRIDGE INFORMATION and MISCELLANEOUS

ID: 9002 ... CARTRIDGE NAME

9002, "cartridge description text"

A text description of the cartridge, as it will show up in TOOLS PREFERENCES HARDWARE.

This exists ONLY in cartridge files (LSCs).

ID: 9005 ... COMMENT

ID: 9006 ... COMMENT

ID: 9007 ... COMMENT

9005, "comment text"

9006, "comment text"

9007, "comment text"

May be used as desired to add comments that will show up in the TOOLS EDIT-PRINTER command when this DSC is edited.

ID: 9010 ... CARTRIDGES USABLE BY THIS PRINTER  
 9010, #, "cartridge template" ...

Indicates the names of cartridge files (LSCs) that are supported by this printer. The # indicates how many templates follow. Each template is a filename, which may include DOS wildcard symbols (? and \*) that together all the cartridge names this printer can use.

Example: 9010, 2, "HPC\_\*.LSC", "HPD\_\*.LSC"

ID: 9020 ... NUMBER OF CARTRIDGES PRINTER HOLDS  
 9020, #

Indicates how many cartridges this printer can physically hold at one time. Valid entries are:

0	No cartridge support
1	1 cartridge at a time
2	2 cartridges at a time
3	3 cartridges at a time
4	4 cartridges at a time

ID: 9998 ... INCLUDE FILE  
 9998, "included filename"

Can be used to include the contents of another file as part of this DSC or LSC. If a large part of more than one printer is exactly the same, it may be convenient to put the common portion in a separate file (an extension of .INC is suggested), and then include that file using an ID 9998 record.

ID: 9999 ... END OF FILE  
 9999

Indicates the end of the DSC or LSC file. No lines past this line are processed. Must be last line in every DSC, LSC and included (ID 9998) file.

## Customizing Drivers and Other Descriptors

In addition to printer descriptors, there are a number of commands that are used to customize other system files. With these commands, you will be able to modify and create screen and graphic drivers as well as cct and font descriptor files.

Generally, you will need to create and/or edit a source file and then compile that file with a program. These command-line style programs are easy to use, providing good diagnostics when errors occur.

### Screen Driver

The system comes with a boiler plate file called `sdv.???` which you can copy and edit with a text-editor. After editing, you must compile the file using the `mksvd` program.

#### Boiler Plate for Screen Driver

<code>name</code>	<code>&lt;str&gt; ! name of the device</code>
<code>version</code>	<code>&lt;num&gt; ! version number</code>
<code>card_attrib</code>	<code>! one of {UNKNOWN,MDA,HGC,CGA,EGA,VGA,VESA} followed by ! zero or more of {COLOR,MONO,WYSIWYG,SNOW_CHK}</code>
<code>rows</code>	<code>&lt;num&gt;</code>
<code>columns</code>	<code>&lt;num&gt;</code>
<code>cursor</code>	<code>&lt;num&gt;/&lt;num&gt; &lt;num&gt;/&lt;num&gt; &lt;num&gt;/&lt;num&gt; &lt;num&gt;/&lt;num&gt;</code>
<code>screen_seg</code>	<code>&lt;num&gt;</code>
<code>screen_off</code>	<code>&lt;num&gt;</code>
<code>palette_map</code>	<code>&lt;num&gt; ... ! 16 to be specified</code>
<code>overscan_color</code>	<code>&lt;num&gt;</code>
<code>dac_map</code>	<code>&lt;index&gt; &lt;num&gt; &lt;num&gt; &lt;num&gt; ! 0 &lt;= index &lt;= 15 ! 0 &lt;= num &lt;= 63</code>
<code>dac_mask</code>	<code>&lt;num&gt;</code>
<code>wysiwyg</code>	<code>&lt;num&gt; &lt;num&gt; &lt;num&gt;/&lt;num&gt; ! h_res, w_res, and matrix ! WYSIWYG must have been specified on card_attrib line</code>

setup\_method ! one of {INT10,SKIP,GENERIC}  
 ! INT10 followed by 5 <num>s for ax, bx, cx, dx,  
 ! and page respectively  
 pre\_val\_method ! one of {INT10,SKIP,GENERIC}  
 ! INT10 followed by upto 10 <num>s  
 ! GENERIC followed by one of  
 {UNKNOWN,MDA,HGC,CGA,EGA,  
 ! VGA,VESA} and one of {TRUE,FALSE}  
 post\_val\_method ! one of {INT10,SKIP,GENERIC}

## Description

**Name.** This is a string value (it must be quoted).  
**Version.** Currently, a value of 1 is the only recognized entry.  
**Card\_attrib.** Enter one of the types in the first list (UNKNOWN, MDA, HGC, CGA, EGA, VGA, VESA). Optionally add one or more of the attributes from the second list (COLOR, MONO, WYSIWYG, SNOW\_CHK). Entries must be separated by a space.  
**Rows.** This is the number of rows on the screen (i.e. 25).  
**Columns.** The number of columns (i.e. 80).  
**Cursor.** The four pairs of numbers define: no cursor, underline cursor, half block, and full block.  
**Screen\_seg.** The start address of the screen memory segment. For color this is usually B800 hex and for mono it is usually B000 hex.  
**Screen\_off.** Select a screen page for this option. Generally it is set to 0.  
**Palette\_map.** For EGA and higher, you can map the standard 16 colors to any one of the 256 colors. Note that if you define one value, you must define all 16. To use the default values, do not include this line.  
**Overscan\_color.** This is the outside border of the screen. To use the default value, do not include this line.  
**Dac\_map.** This allows you to customize the 16 colors of the palette. Index refers to the number of the color (0-15) to be customized. The following three numbers control the intensity of red, green, and blue; each can have a value between 0 and 63. To use the default values, do not include this line.

## Chapter 5: Editing Descriptor Files

- Dac\_mask.** This number controls brightness. To use the default value, do not include this line.
- Wysiwyg.** If WYSIWYG is used in the `card_attrib` parameter, this option controls the number of horizontal and vertical pixels as well as the size and shape of characters. The first two numbers indicate the horizontal and vertical settings. The final pair of numbers describe the character matrix (i.e. 8x10).
- Setup Method.** Method used to set the video to the correct mode.
- Pre\_val\_method.** Method used to ensure that the video mode matches the hardware. True indicates the hardware must match precisely while False means the hardware must be equal to or better than the video mode.
- Post\_val\_method.** Currently, the value SKIP is the only recognized entry.

### Example:

```
name          "EGA/VGA 25x80 color text mode"
version       1
card_attrib   EGA COLOR
rows         25
columns      80
cursor       16/0 6/7 2/6 0/7
screen_seg    0xb800
screen_off    0
setup_method  INT10 3 0 0 0 0
pre_val_method  GENERIC EGA FALSE
```

## Compiling

Use the `mksdv` compiler at the command line to compile a screen driver source file:

```
mksdv [-xv] [-o outfile] [file]
```

The parameters are:

- x           display this explanation
- v           verbosely report major structure writes

-o outfile           output written to outfile - default mkstdv.out  
file                 file to be compiled - default stdin

## Graphics Driver

The system comes with a boiler plate file called gdv.??? which you can copy and edit with a text-editor. After editing, you must compile the file using the mkgdv program.

Boiler Plate for Graphics Driver:

```
name                <str> ! name of the device
version             <num> ! version number
card_attrib         ! one of {UNKNOWN,HGC,CGA,EGA,VGA,VESA} followed by
                    ! zero or more of {COLOR}

mode                ! one of {MRES4C,MRESNC,HRESNC,HERC,MRES16C,HRES16C,
                    ! ERESNC,VRES2C,VRES16C,MRES256C,URES256C,VRES256C,
                    ! SVRES16C,SVRES256C,XRES16C,XRES256C}

x-res               <num>
y-res               <num>
colors              <num>
palette_map         <num> ... ! 16 to be specified
overscan_color      <num>
dac_map             <index> <num> <num> <num> ! 0 <= index <= 15 ! 0 <= num <= 63
dac_mask            <num>
pre_val_method      ! one of {INT10,SKIP,GENERIC}
                    ! INT10 followed by upto 10 <num>s
                    ! GENERIC followed by one of {UNKNOWN,HGC,CGA,EGA,
                    ! VGA,VESA} and one of {TRUE,FALSE}
post_val_method     ! one of {INT10,SKIP,GENERIC}
```

## Description

Name.               This is a string value (it must be quoted).  
Version.             Currently, a value of 1 is the only recognized entry.

## Chapter 5: Editing Descriptor Files

**Card\_attrib.** Enter one of the types in the first list (UNKNOWN, HGC, CGA, EGA, VGA, VESA). Optionally add COLOR. Entries must be separated by a space.

**Mode.** Select one of the following modes:

<b>Mode</b>	<b>Size</b>	<b>Color</b>	<b>Adapter</b>
MRES4C	320x200	4	CGA,EGA,MCGA,VGA,SVGA
MRESNC	320x200	4	CGA,EGA,MCGA,VGA,SVGA
HRESNC	640x200	2	CGA,EGA,MCGA,VGA,SVGA
HERC	720x350	2	HGC
MRES16C	320x200	16	EGA,VGA,SVGA
HRES16C	640x200	16	EGA,VGA,SVGA
ERESNC	640x350	4	EGA,VGA,SVGA
VRES2C	640x480	2	MCGA,VGA,SVGA
VRES16C	640x480	16	VGA,SVGA
MRES256C	320x200	256	MCGA,VGA,SVGA
URES256C	640x400	256	SVGA
VRES256C	640x480	256	SVGA
SVRES16C	800x600	16	SVGA
SVRES256C	800x600	256	SVGA
XRES16C	1024x768	16	SVGA
XRES256C	1024x768	256	SVGA

X-res. This is the x-axis resolution.

Y-res. This is the y-axis resolution.

Colors.	This is the number of available colors.
Palette_map.	For EGA and higher, you can map the standard 16 colors to any one of the 256 colors. Note that if you define one value, you must define all 16. To use the default values, do not include this line.
Overscan_color.	This is the outside border of the screen. To use the default value, do not include this line.
Dac_map.	This allows you to customize the 16 colors of the palette. Index refers to the number of the color (0-15) to be customized. The following three numbers control the intensity of red, green, and blue; each can have a value between 0 and 63. To use the default values, do not include this line.
Dac_mask.	This number controls brightness. To use the default value, do not include this line.
Pre_val_method.	Method used to ensure that the video mode matches the hardware. True indicates the hardware must match precisely while False means the hardware must be equal to or better than the video mode.
Post_val_method.	Currently, the value SKIP is the only recognized entry.

**Example:**

```

name          "800 x 600 SVGA 16 color"
version       1   card_attrib  VGA COLOR
mode         SVRES16C
xres         800
yres         600
colors       16
pre_val_method  GENERIC VGA TRUE

```

**Compiling**

Use the mkgdv compiler at the command line to compile a graphics driver source file:

```
mkgdv [-xv] [-o outfile] [file]
```

The parameters are:

```
-x          display this explanation
```

- v                   verbosely report major structure writes
- o outfile           output written to outfile - default mkgdv.out
- file                 file to be compiled - default stdin

## Character Comparison Table

Since many languages sort the alphabet differently, CCT files define how the sort, key, and find options work as well as text comparisons in functions. Source files for the CCT files are shipped with the product. These files (with CCS extensions) can be copied, altered, and compiled:

- danish.ccs
- default.ccs
- european.ccs
- internat.ccs
- spanish.ccs
- swedish.ccs

You can access the CCS files using the Utilities Install Files by Name option on the install program. Once this has been performed, a file can then be loaded into the Text Editor or Word Processor for editing. Note that, depending on your terminal type, you may have problems displaying some characters.

The following information discusses the structure and content of each CCS file.

Each table has two sort sequences. The first is the "Smart sort" sequence, used in database keys and < > text comparisons in formulas. The second sequence is the "Dictionary sort". Characters are sorted in the order they appear in each section. Line format is arbitrary.

Special characters are:

- Spaces, CR (Carriage Return), LF(Line Feed), tabs, and commas are ignored unless preceded by the slash (/) as discussed below.
- !                    Comment - anything following this to the end of the line is ignored.  
  
The first line of a file should be a comment, and indicate what language the table is for. This is the text that is displayed when you press **F6** at the "Character Comparison Table" field on the Global preferences menu.

\$	End of section. This must be the last character in each of the two sort sections.
/x	Use "x" as character, where "x" is any character. Used to specify one of the special characters as a symbol, such as /! or /\$.
#dd	Use to specify a character as a decimal number. For instance, #32 is a space and #225 is the German á symbol.
*	All remaining characters. Listing any characters in the sort set after the asterisk will cause an error. All unspecified characters follow the specified characters sequentially in the order they appear in the Smart character set.
c-c	The dash indicates a range. Characters in the Smart character set between the two indicated characters (inclusive) are inserted in order. The character before the dash <b>MUST</b> be less than or equal to the character after the dash as far its position in the Smart character set. For instance, a-z will include all the lowercase letters. Do not use a range, if characters within that range have already been specified.

The following indicators can be used **ONLY** in the dictionary sort sequence.

()	A sort group. Characters within the parentheses are sorted together first as equals, then if necessary, sorted according to their order within the group. For instance, (aA) says that a and A are equal at first, but if everything else is the same, a comes before A. For example, adam will sort before Adam, but both will sort before bdam.
::	A null group. Characters within the colons are ignored at first, and are only used if all characters are equal, in which case order within the null group is used. All non-null characters take precedence over null characters. For example, if :+.: were specified, then the following is the correct sort order: +adam .adam adamx beta +..+
""	A multiple character letter. The character sequence within the "" is treated exactly as if it were a single letter. All desired variants on case must be specified separately. For example, in Spanish the "ll" and "ch" are individual letters of the alphabet. The alphabetic groups are: (ll) ("ll", "ll", "ll")

All occurrences of "ll" will sort after occurrences of a single "l", such as:

Laugh lzing llama

c=""

A single to multiple character expansion. Also c>"" and c<"". In this case, the single character c will be expanded to the sequence inside the quotes and sorted as if it were that multiple character sequence. For instance, the German á symbol must be sorted as an "ss" pair:

á = "ss" (where the a is actually #225 (octal 341))

All single-to multiple assignments MUST occur BEFORE a \* or \*: at the end of the sequence. Also, none of the characters in the quotes can be another expansion. For example, the following would fail:

a > "ll" l = "ae" \*BAD\*

If a multiple character expansion is matched exactly against the expansion, then what was the single letter will be sorted after for = and >, and before for. For instance:

abcde	@="ae"		<- If this is specified
abode	@c aero	@ro aes	<- This is the sort order
abcde	@<"ae"		<- If this is specified
abode	@c @ro	aero aes	<- This is the sort order

Notes:

- The null character can not be specified (#0) or an error will occur.
- At the end of the Smart sort sequence, an implied \* is assumed if not present.
- At the end of the Dictionary sort sequence, an implied \*: is assumed if not present.

## Compiling

Use the mkcct compiler at the command line to compile a character comparison source file:

mkcct [-xi] [-o outfile] [file]

The parameters are:

-x display this explanation

-i                    output to be in intel byte order  
-o outfile         name of output file - default stdout  
file                file to be compiled

After you have finished editing and compiling a .CCS file, you can add it to the resource library.

1. Execute Tools Resource Modify.
2. Specify whether to add the file to the Local or System library.
3. Select the Miscellaneous category.
4. Press **F7**.
5. Enter the name of the file you wish to add. Include the path if necessary.
6. The file should appear in the list with the word [add] next to it.
7. Press **F10**.

Once the file has been added, it will appear when you press **F6** at the "Character Comparison Table" field on the Global preferences menu.

## Chapter 5: Editing Descriptor Files

## Chapter 6: Creating and Using Macros

With ANGOSS you can automate often-repeated procedures or create template applications by "redefining" keys using keyboard macros.

By redefining a key, you can cause it to invoke commands, perform functions, move the cursor, or enter text and numeric values. Macros can be thought of as shorthand for the keyboard; they can "enlarge" a key so it performs the work of many normal keystrokes.

For example, ANGOSS initially recognizes **Alt P** as a Quick Key for invoking the Print command. However, **Alt P** only takes you to the command line. You must still make selections from a series of options before the document can be printed. To shorten the process, you can define **Alt P** to automatically print the document using the print options of your choice.

**IMPORTANT:** Any key except **Esc**, **F1**, **F10**, **Enter**, **Ctrl F10**, **Ctrl C**, **Ctrl M**, **Alt F10**, and **Shift F10** can be redefined. Don't redefine commonly used keys such as **A** or **B** unless you use them in a **Ctrl** or **Alt** combination. You should also consult the tables of Quick Keys in this manual or in the module manuals to make sure you aren't creating a macro that has already been defined for you or redefining a Quick Key that may be important to you.

### Creating Macros

Macros may be defined either by using Tools Macros Remember or Tools Macros Edit.

### Remembering Macros

Selecting Tools Macro Remember is the easiest way to create a macro. You manually step once through the process you want to automate. While Remember Mode is activated, ANGOSS records every keystroke you make and saves it as part of a macro definition. After the macro is completed and saved, every time you press the macro key combination, ANGOSS automatically executes all the remembered keystrokes for you.

To use Tools Macros Remember, enter the key you want to redefine at the prompt, `Press key to define:`. ANGOSS invokes Remember Mode and records your keystrokes until you execute Tools Macro Finish.

**COMMENT:** Remembering... appears in the lower right corner of the screen to indicate that ANGOSS is in Remember Mode.

Some of the keystrokes you use in the definition may not execute properly if they depend on ANGOSS being in a certain mode. For example, while in Remember Mode, it is better to use **Alt Y** to change to Enter Mode and **Alt Z** to change to Command Mode than to use Esc.

For example, if you press **Esc** to change to Enter Mode and then you enter text, both **Esc** and the text are recorded in the macro definition. If you then use the macro when you are in Enter Mode, **Esc** will cause a change from Enter Mode to Command Mode. Because ANGOSS is now in the wrong mode, the text cannot be interpreted correctly. In this case, it would be more appropriate to use **Alt Y** rather than **Esc** because **Alt Y** is the Quick Key for accessing Enter Mode, no matter which mode you start in. Similarly, **Alt Z** always accesses Command Mode regardless of your starting point.

**NOTE:** It is a good idea to begin any macro definition with **Alt Y** or **Alt Z** depending on which mode your macro needs for proper execution.

### Suspending Remember Mode

You can suspend Remember Mode by pressing **Ctrl F10** to keep specific keystrokes from being recorded in the macro. To reactivate Remember Mode, press **Ctrl F10** again.

When you press **Ctrl F10** to suspend the macro, Remembering Suspended... appears in the lower right corner of the screen.

### Finishing Macros

When you finish defining the macro, press **Ctrl F10** and select the Tools Macro Finish command. You may correct or enhance your macro using Tools Macro Edit.

### Editing Macros

Tools Macro Edit allows you to create or edit a macro by typing the definition on a screen. It is similar to using the Text Editor. When the prompt `Press key to edit:` appears, press the key you want to redefine. If a macro has not already been defined for that key, the prompt `No macro defined for that key - Continue? (y/n)` appears. Enter **y** and the Macro Editor is displayed on the screen. Type the macro definition. When you are finished, press **F10**.

If a macro has already been defined for that key, the Macro Editor displays this definition. You may add or delete keystrokes and commands to correct or update the macro.

The control area in the Macro Editor displays function keys that can facilitate the editing process. See Table 6-1 for a list of these function keys:

**Table 6-1.** Macro Editor Function Keys

<b>F1</b>	Help
<b>F2</b>	Fkey Help
<b>F3</b>	Find
<b>F4</b>	Replace
<b>F5</b>	Calculate
<b>F6</b>	Keys/Names
<b>F7</b>	Insert Line
<b>F8</b>	Delete Line
<b>F9</b>	Repeat
<b>F10</b>	Finish

**NOTE:** **F6** Keys/Names is a toggle that either executes or enters the name of the key you press. For example, if **F6** is toggled off, when you press **Backspace**, the cursor will move one space to the left. If **F6** is toggled on, however, the key name **Backspace** will be entered into the macro definition. ANGOSS will then execute the backspace when the macro is invoked.

Use the following guidelines when creating or editing a macro definition in the Macro Editor:

- Separate each term with a comma.
- Enclose text in quotes when it is not a keystroke or macro control term.
- End every line except the last line with a comma. The program recognizes a line with no comma at the end as the end of the macro definition. If you do not have a

comma at the end of a line, the error message Unrecognizable character at line # column # appears when you press **F10**.

For example, in ANGOSS Spreadsheet you want to use one keystroke (**Alt C**) to change to Command Mode (**Alt Z**) and execute the Layout Justify Right command ("lrb") for the block three rows to the right (Repeat,#3,right) and three rows down (Repeat,#3,down). You would define **Alt C** as follows:

**Alt Z**,"lrb",Repeat,#3,Right,Repeat,#3,Down,Enter

## Advanced Macro Terms

Besides keystrokes, a macro definition can contain character terms, activity control terms, and macro control terms. These terms can be used to create more sophisticated macro definitions. Each of these terms is briefly explained as follows. For more information, refer to the discussion of the Keys command in *Project Processing*.

### Character Terms

Character terms represent the characters associated with ASCII values 1-255. Each keyboard character, such as 0-9, a-z, is associated with an ASCII value. Characters with ASCII values below 32 or above 126 are not represented on the keyboard but may be produced using character terms. The higher value ASCII characters are useful for producing characters that cannot be produced with font changes such as international symbols. The ASCII characters between 7 and 27 produce printer control codes rather than printable characters. See Table 6-2 for more information on lower ASCII value characters.

To produce a character term, enter # followed by the ASCII value of the character, as a character in the macro. For example, to produce the character ♣, type #5 into your macro.

A single character may stand alone as long as it is separated from the previous and following terms by commas. Consecutive characters do not have to be separated from each other by commas; they may be enclosed, as a group, in quotation marks (e.g., "tpg"). A group of characters must be separated from the previous and following terms by commas. A comma can be output by a macro by using ",".

Table 6-2 identifies special character terms that can be used to produce selected ASCII characters.

**Table 6-2**

ASCII Value	Equivalent Character Term
7	aBell
8	aBs
9	aTab
10	aLf
11	aVtab
12	aForm
13	aCr
26	aEof
27	aEsc
255	aFF

### Activity Control Terms

Activity control terms are abbreviations for action keys. They do not produce characters. These keys include Quick Keys, function keys, and user-defined macro keys. **Ctrl** and **Shift** combinations of these keys are denoted by using ^ and s respectively.

Table 6-3 lists some activity control terms:

**Table 6-3**

Alt-1 to Alt-0	Alt-A to Alt-Z	Alt-	Alt=
Alt-F1 to Alt-F12	^2	^6	^a to ^g
^k	^l	^n to ^z	^-
^\ ^Home	^] ^End	^Bs ^PgUp	sTab ^PgDn
^Left	^Right	^Cr or ^Enter	^F1 to ^F12
F1 to F12	sF1 to sF12	Bs	Tab
Home	End	PgUp	PgDn
Up	Down	Left	Right
Ins	Del	Cr or Enter	Esc

### Macro Control Terms

Macro control terms are special words that expand the functionality of a macro definition but do not represent individual keys. Table 6-4 lists the macro control terms and provides a brief explanation of each.

**Table 6-4.** Macro Control Terms

<b>Term</b>	<b>Action</b>
Clear	Clears the keyboard buffer.
Comment, " ",Comment	Inserts comments into the macro definition. This enables you to identify reasons for defining macros in a particular way for future reference. Everything between the quotation marks is ignored by ANGOSS when the macro is executed. Although it does not affect the performance of a macro, a comment does take up memory.
DelayOff	Sets the execution speed of the macro to the default.
DelayOn,#?	Controls the speed at which the macro is executed. The speed is determined by #? where? is a number between 1 and 255 and represents the speed in 1/100ths of a second.
Key	Suspends execution of the macro until a key is pressed. The key not only resumes output of the macro, but is output as part of the macro.
Look	Uses the macro definition (if one exists) for the next keystroke following this term (e.g., Look,F3 will invoke the macro definition for <b>F3</b> ).
NoLook	Does not use the macro definition of the next keystroke following this term (e.g., NoLook,F3 uses the original output of <b>F3</b> ).
LookOff	Uses the original output of all the keystrokes following this term. <b>LookOff</b> is the default.
LookOn	Uses the macro definition for all the keystrokes in the macro definition following this term. Use it to reverse the LookOff term.

Term	Action
Pause	Momentarily stops the macro and waits for a keystroke. The keystroke only resumes the macro execution and is not part of the macro output.
Repeat,#?,term	Repeats the term the specified number of times. #? determines the number of times the term is repeated where? represents any number between 1 and 255. A common use of Repeat is to repeat the arrow keys.
Result	Produces the result of the last calculation performed with the Text Editor, Project Editor, ANGOSS Calculator, or calculations made with math functions in the Word Processor.
ScreenOff	Prohibits repainting of the screen as keys are output.
ScreenOn	Enables screen repainting. This is the default and does not need to be used except to reverse the ScreenOff term.
Until,key	Suspends execution of the macro and ignores all keystrokes until the key specified is pressed. The specified key resumes macro execution and is included in the macro output.
WaitFor,key	Suspends execution of the macro and ignores all keystrokes until the key specified is pressed. The specified key resumes macro execution, but is not included in the macro output.

## Saving Macros

You may use a macro immediately after defining it by pressing the key you redefined. You can continue to use the macro as long as you don't leave the current module. The key's output reverts to its original definition once you leave the current module unless you save the macro definition prior to exiting.

Once the definition is saved in a macro file, the file can be loaded any time you are using ANGOSS, and ANGOSS will execute the macro definition when the key is pressed.

To save macro definitions, use the Tools Macros Save command. At the prompt, `Enter a macro filename:`, type the name of the macro file you want to save. Every key you redefined prior to saving is included in this macro file. Therefore, you should redefine the keys that are related to the same process and save them in one file. Likewise, you may want to save macro definitions that are unrelated in separate files.

For example, if you want to automate the process of formatting two types of business form letters that require different styles, you would create a macro file for form letter A and a macro file for form letter B. Macro set is saved under a unique file so that pressing the redefined keys reformats the document or enters appropriate text into the document. When you are typing letters using form A, you would load the appropriate macro file so that pressing the redefined keys reformats the document properly. Likewise, you would load the macro file that contains the macro definitions appropriate for form B when you are typing form B letters.

You can load and use an ANGOSS macro in any module, regardless of the module in which it was created. Of course, macro definitions may not necessarily make "sense" if they are used in another module.

**NOTE:** Macro files are stored as text files with the extension "MAC".

## Loading Macros

To reuse macro definitions, the macro file containing the definitions must be loaded. To load a macro file, select Tools Macros Load and specify which file you want to load.

You can load any number of macro files concurrently. If you load several macro files that redefine the same key, the most recently loaded macro definition for that key is used.

You can either load the files as needed, or they can be automatically loaded when you enter an ANGOSS module. To automatically load a file, enter the filename at the appropriate prompt on the Tools Preferences definition menu for that module. For more information, refer to the command reference chapter of each module manual.

## Tools Macro View

You can display a list of currently defined or loaded macros with Tools Macros View. A pop-up window appears listing all the macros currently being used and their definitions.

## Unloading Macros

To unload a macro from memory and use the original ANGOSS interpretation of the key, use the Tools Macros Clear command. At the prompt `One All`, enter **O** or highlight `One` if you only want to unload one macro. Identify the key when prompted. Enter **A** or highlight `All` if you want all current macros removed from memory.

ANGOSS will not ask `Are you sure? y/n` when you execute Tools Macro Clear.

**NOTE:** Tools Macro Clear does not delete macros from a saved file, it only removes them from memory. To delete a macro file, use Tools File Erase.

## Suspending Macros

You can suspend a macro definition for one keystroke by pressing **Shift F10**. The key immediately following **Shift F10** will output what ANGOSS originally interpreted for that key. After that, ANGOSS will revert to the macro definition when that key is pressed unless **Shift F10** is pressed again or the macro is unloaded.

## Chapter 7: Using the ANGOSS Calculator

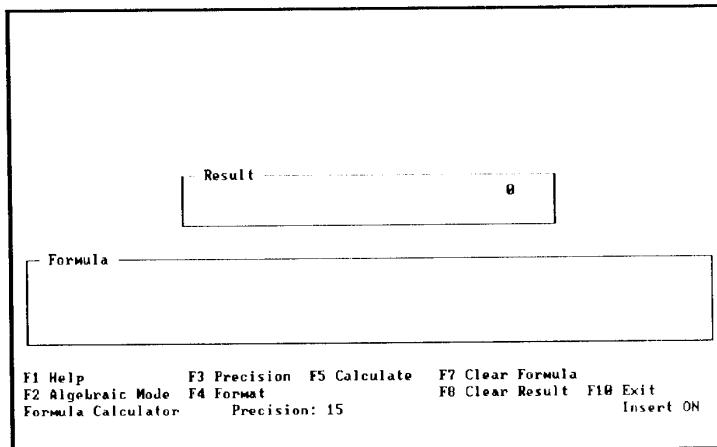
ANGOSS supports over 200 functions, giving it the most versatile formula calculation capabilities of any integrated or stand-alone software product available. In this chapter you will learn how to perform calculations using the ANGOSS Calculator.

Select Tools Calculator to display the ANGOSS Calculator. Notice in the Control Area that you can press **F2** to toggle between Formula and Algebraic Modes. Formula Mode allows you to enter a formula. Algebraic Mode works similarly to how a standard desktop calculator works.

### General Features

When you select the Tools Calculator command, the ANGOSS Calculator appears as shown in Figure 7-1.

**Figure 7-1.** Calculator in Formula Mode



**COMMENT:** **Alt K** is the Quick Key for activating the calculator in any module.

### Formula Window

The Formula Window displays the formulas you enter while the calculator is in Formula Mode. The Formula Window is not available in Algebraic Mode.

### Result Window

Calculation results are displayed in the Result Window in both Formula and Algebraic Modes. In Algebraic Mode, this window also serves as the calculation entry area.

### Function Keys

Two lines of formula function keys are displayed in the Control Area. These function keys can be used to perform a number of actions, such as changing the precision. This area is cleared to display prompts and messages as necessary.

**COMMENT:** Notice in Figure 7-1 that the defaults are Formula Mode, precision of 2, and Insert On. To toggle between Formula and Algebraic Modes, press **F2**.

### Status Line

In either calculation mode, the Status Line identifies the current calculator mode and the current precision setting. In Formula Mode it also indicates whether Insert Mode is on or off. In Algebraic Mode, it displays the value that is currently stored in memory.

**Precision.** The precision determines the number of decimal places a value has. To change the precision, press **F3** and enter a number 0 through 15. For example, if you set the precision at 4 and enter **1234**, the value displayed in the Result Window will be 1234.0000. If you set the precision at 2, the same number would appear as 1234.00. A number too large to display with all the defined decimal places is truncated from the right in order to show the most significant digits.

**COMMENT:** If the precision is set to 15, ANGOSS displays only the significant digits.

**Insert.** To toggle between Insert On and Insert Off, press **Ins**. When Insert Mode is on, characters are inserted at the cursor position, moving existing characters and the cursor to the right. When Insert Mode is off, the character you enter overwrites the character at the current position.

## Memory Storage

In Algebraic Mode values can be stored and recalled later. Press **F5** to store the value displayed in the Result Window in memory. When you want to use that value, press **F6** and the value is entered in the calculation.

## Math Format

Normally, the ANGOSS Calculator uses decimal numbers, but it can also use scientific notation, octal, or hexadecimal numbers. To convert values in the Result Window to a different math format, press **F4** repeatedly until you get the format you desire.

For example, ANGOSS initially uses the decimal format, then scientific notation, hexadecimal, and finally octal. If the current format is decimal and you want to use hexadecimal numbers, press **F4** twice. To use the decimal numbers again, press **F4** two more times. The value displayed in the Result Window is changed to the appropriate format each time you press **F4**. An abbreviation of the current format appears on the second line of the Result Window unless you are using the decimal numbers.

In decimal format, the base is 10 and any digit between 0 and 9 can be used for values. In scientific notation format, any digit 0 through 9 can be used in values along with the exponent character (E). In Algebraic Mode, the negative sign (-) will be inserted in the display only if the character to the left of the cursor is the exponent character. In hexadecimal format, the base is 16 and any digit 0 through 9 can be used in a value as well as letters A through F. In octal format, the base is 8 and any digit 0 through 7 can be used in values.

## Using Results

ANGOSS saves the calculator's last valid calculation in memory. Therefore, you can use it in the current module by pressing **Ctrl C** at the location where you would like the value entered. For example, in the ANGOSS Spreadsheet, you can move to a specific cell, press **Ctrl C** and the result of the last calculation made in the ANGOSS Calculator appears.

**NOTE:** The result of the last valid calculation is stored in the same location as the results of calculations made in the Text-Editor, Project Editor, Macro Editor, and the calculations made with the math functions in the Word Processor. Only one result from the last calculation made in any of these four places is saved. Therefore, the ANGOSS feature that was most recently used is the one from which the result will be drawn.

## Help

ANGOSS also provides on-line help for the calculator. To get help information, press **F1**. To leave help and return to the calculator, press **Esc**.

## Formula Mode

To use Formula Mode, first make sure `Formula Calculator` appears on the status line. Then type a formula in the Formula Window and press **F5** to evaluate it. The result is displayed in the Result Window if a valid calculation has been entered. Otherwise, an error message appears.

A formula can be as simple as  $1+1$  or as complex as you can make it in the area provided. You may include functions such as `AVG`, `DATE` and `DAYNAME`. For a detailed list of the available functions, refer to the Command Reference section of **ANGOSS Formula Reference**.

You may use public variables in Formula Mode and you can use the `LET` function to declare public variables within a formula. For example, if you need to calculate the percentage of the total for a number and you don't know the total, you can store the total in `$total` and then divide to calculate the percentages.

Formula	Result
<code>LET \$total = 20 + 17 + 43 + 33</code>	13
<code>43 / \$total</code>	38

The ANGOSS Calculator, in Formula Mode, will return and use a value or text from a Database field or Spreadsheet cell, including an external worksheet reference. For example, if you are currently in the Spreadsheet and require the value from cell `r1c1` in your formula, simply enter `r1c1` into the expression to be calculated.

Use the keys listed in Table 7-1 to move within the Formula Window and edit the formula.

**Table 7-1**

<b>Key</b>	<b>Edit Operation</b>
<b>Del</b>	Deletes the character at the current cursor position and the rest of the formula shifts left.
<b>Backspace</b>	Deletes character to the left of the cursor; the rest of the formula shifts left.
<b>up arrow</b>	Moves the cursor up one line.
<b>down arrow</b>	Moves the cursor down one line.
<b>right arrow</b>	Moves the cursor one space to the right.
<b>left arrow</b>	Moves the cursor one space to the left.
<b>Home</b>	Moves the cursor to the beginning of the first row in the Formula Window.
<b>End</b>	Moves the cursor to the beginning of the last line in the Formula Window.
<b>Tab</b>	Moves the cursor five spaces to the right.
<b>Shift Tab</b>	Moves the cursor five spaces to the left.
<b>Ctrl right arrow</b>	Moves the cursor to the end of the current line.
<b>Ctrl left arrow</b>	Moves the cursor to the beginning of the current line.
<b>Ctrl End</b>	Moves the cursor to the end of the formula.
<b>Ctrl Home</b>	Moves the cursor to the beginning of the formula.

Key	Edit Operation
<b>Ins</b>	Toggles between Insert On and Insert Off. When Insert Mode is on, a character is inserted at the current cursor position, moving the rest of the information and the cursor to the right. When Insert Mode is off, the character you enter overwrites the character at the current cursor position.
<b>F7</b>	Clears the Formula Window.
<b>F8</b>	Clears the Result Window.

## Algebraic Mode

In Algebraic Mode, the ANGOSS Calculator works similar to the way a desktop calculator works. Only the Result Window is used in Algebraic Mode. The Formula Window does not appear. As you enter numbers, they are displayed in the Result Window.

### Signed Numbers

Signed numbers cannot be entered directly. Instead, use the change sign function key (**F9**). For example you do not type  $-2$  to display a negative numeral 2. Instead, enter the number 2 and press **F9** to change the sign. The entry will be displayed as  $-2$  in the Result Window. Signed exponents may be entered.

### Arithmetic Operators

You can use any arithmetic operator in Algebraic Mode that you would with a calculator. To use Algebraic Mode, enter a number into the Result Window and then enter an arithmetic operator (+, -, \*, /). The operator appears to the right of the value. When you enter another number, the first number disappears from the screen, but remains in memory. When you enter either = or **Enter**, the values are calculated and the result is placed in the Result Window. This process may continue through successive arithmetic operations.

**Table 7-2**

Operator	Action
+	Add
-	Subtract
*	Multiply
/	Divide

**Example**

The following example illustrates how the Algebraic Mode is used. Set numeric precision to 2.

1. Enter **1** and press **+**. This produces the following display in the Result Window:  
1 +
2. Now enter **4** and press **\***. The following is displayed:  
5.00 \*
3. As long as you follow an entry with another arithmetic operator, the Calculator looks for another number to use. Enter **3** and press Enter. The following is displayed:  
15.00
4. Press either **Enter** or **=** to end the equation and display the result. Any numbers typed thereafter become part of a new calculation.
5. Press **F8** to clear the calculation. The Result Window is cleared and you may use it for another calculation.

**Using Percent**

While the calculator is in Algebraic Mode, you may solve equations using the percent (%) operator in any of four ways. Following is an explanation and example of each use.

**Finding a part of a whole.** The percent operator can be used to determine what number is a certain percentage of another number. For example, last year, 80,000 widgets were sold in the United States. ACME Widgets had a 45% market share. How many Widgets did they sell last year? The following equation allows you to find out what 45 percent of 80,000 widgets would be.

$$80000 * 45\% = 36000$$

**Percent that one number represents of a total.** The percent operator can also be used to determine what percentage one number represents of another number. For example if Industrial Widgets sold 13,345 of the 80,000 widgets sold last year, what was their market share? The following equation allows you to divide 13,345 by 80,000 and determine the percentage.

$$13345 / 80000\% = 16.68$$

**Percentage change.** The percent operator can also be used to determine a change in percentage. For example, if widget sales are projected to grow from 80,000 last year to 150,000 next year, what percent increase will the industry experience? The following equation subtracts 80,000 from 150,000 and determines the percent change.

$$150000 - 80000\% = 87.5\%$$

**Total given a number and a percent.** The percent operator also allows you to add, subtract, multiply or divide with a percent. For example, two years ago, ACME Widgets sold 20,000 widgets and had a 33 percent market share in the industry. How many widgets were sold industry-wide? The following equation divides 20,000 by 33 percent to determine how many widgets were sold.

$$20000 / 33\% = 60,606$$

The percent operator can be used only after you have entered a number, an operator and a second number. Different results are achieved, depending on the type of operation you are attempting.

For multiplying and dividing, the calculator interprets the % operator in the following way.

$$X * Y\% \text{ is interpreted } X * (Y/100)$$

$$X / Y\% \text{ is interpreted } X / (Y/100)$$

In addition and subtraction, the calculator interprets the % operator in the following way.

$$X - Y\% \text{ is interpreted } (X - Y) / Y * 100$$

$X + Y\%$  is interpreted  $(X + Y) / Y * 100$

### **Clearing the Result Window**

To clear a calculation and begin entering a new one, press **F8**. The Result Window is cleared and any number typed thereafter becomes part of a new calculation.

### **Exiting The Calculator**

To exit the ANGOSS Calculator and return to the module menu, press **F10** or **Esc**.

## Chapter 7: Using the ANGOSS Calculator

## Chapter 8: Using the Appointment Manager

The Appointment Manager allows you to create calendars for tracking the dates, times, and duration of appointments.

### Running the Appointment Manager

Because the ANGOSS Appointment manager was written in Smart Programming Language, you can run it by selecting Remember Execute from the Main Menu or from within any ANGOSS module. To enter ANGOSS, follow the instructions under the heading **Remember Execute**. If you wish to use the Appointment Manager without exiting a module, follow the instructions under the heading **Within Module**.

You may also access the Appointment Manager from a keyword on the menu, if the keyword Appointment-Manager appears on the Main Menu. If it does not appear and you wish to put it there, see **Placing Appointment-Manager on ANGOSS Menus**. Once the keyword is on the Main Menu, follow the instructions under the heading **Entering ANGOSS From Appointment-Manager**.

### From the Main Menu

The following steps access the Appointment Manager by executing the project file "am".

**STEP 1: Select Remember and then Execute.**

**STEP 2: Select am from the prompter.**

**STEP 3: Select In-Memory or From-File. The Appointment Manager is displayed.**

Running the file in-memory is faster but requires adequate memory space. Running the project from-file frees up memory space but is slower.

## Within Module

Because the Appointment Manager contains no module-specific project commands, it can be run from within any ANGOSS module.

To run the Appointment Manager from within a module:

**STEP 1: If the keyword Appointment-Manager appears on the module menu, select it.**

**STEP 2: If it is not on the module menu, select Remember and then Execute.**

**STEP 3: Type am.rf0 after the prompt and press Enter.**

**STEP 4: Select In-Memory or From-File.**

## Placing Appointment-Manager on ANGOSS Menus

If the keyword Appointment-Manager does not appear on your menu, you can add it by altering the contents of the SMART.MNU file. This file normally is located in the system directory.

To add Appointment-Manager to the module menus:

**STEP 1:** Create or edit a text file called SMART.MNU in the system directory. (Search the system directory and load the file into the text editor. If SMART.MNU does not exist, use the text editor to create a new file of that name.)

**STEP 2:** Include the following lines:

```
0,1,Appointment-Manager,path\am.rf0,Run the Appointment-Manager
1,1,Appointment-Manager,path\am.rf0,Run the Appointment-Manager
2,1,Appointment-Manager,path\am.rf0,Run the Appointment-Manager
3,1,Appointment-Manager,path\am.rf0,Run the Appointment-Manager
4,1,Appointment-Manager,path\am.rf0,Run the Appointment-Manager
```

**STEP 3:** Replace *path* in each line with the path to your system directory.

**NOTE:** For this procedure to be successful, alter a default setting in the Global Preferences Menu. The parameter that reads *Look for menu keyword file on entry to ANGOSS* must be set to **yes**. Or, you could

use a special command line switch that overrides the Global Preferences Menu. The -OM switch causes ANGOSS to look for the menu file SMART.MNU in both the current and system directory. The -OMfilename switch causes ANGOSS to look for the given filename, which may contain a path. For more information on this procedure and on adding options to ANGOSS menus in general, refer to the *ANGOSS Project Processing* manual.

## Using the Keyword Appointment-Manager

The following steps access the Appointment Manager using the keyword:

**STEP 1: Select Appointment-Manager.**

**STEP 2: Press Enter. The Appointment Manager is displayed on screen.**

## Exiting the Appointment Manager

To leave the Appointment Manager, select Quit from the keyword menu. The program returns to the menu from which you accessed the Appointment Manager.

## Operating Modes

You can operate the Appointment Manager in either Command Mode or Quick Key Mode. These modes vary slightly from the standard module modes in that the Quick Keys and cursor keys do not function when Command Mode is toggled on.

## Appointment Manager Help

On-line Help is available for the Appointment Manager by pressing the Quick Key **F1**.

When you access On-line Help, a text file is displayed on screen containing Appointment Manager help. Each time you access Help, the beginning of the text file is displayed, and you must scroll through the file to find the information you need.

## Calendars

The Appointment Manager allows you to create and maintain unique calendars for scheduling the time-related activities of individuals or groups. The calendars track two types of activities: meetings and tasks.

Meetings are scheduled by time and day and are listed on the screen in chronological order. Tasks are scheduled on a specific day but not at a specific time and are given priority numbers ranging from 1 to 99. Tasks are listed on the screen in order of priority.

## Appointment Manager Screens

Three screens are displayed by the Appointment Manager using the command Display:

- Day Screen
- Week Screen
- Month Screen

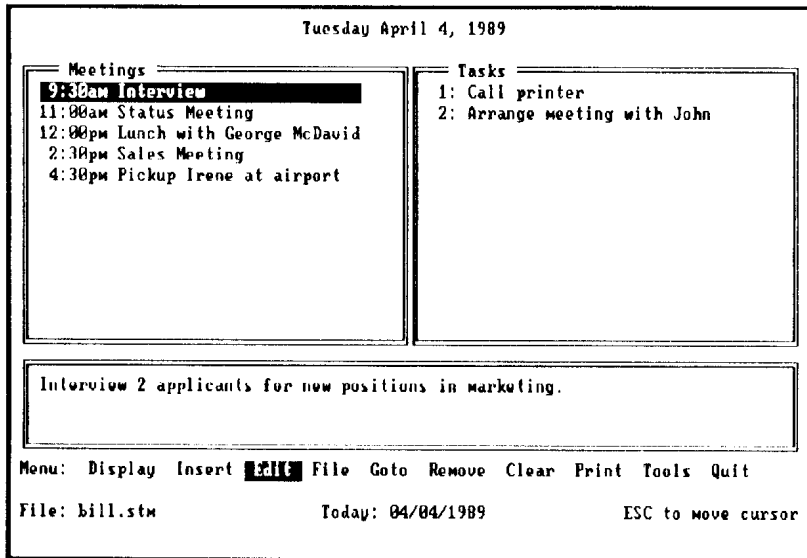
The Day Screen is the first screen you see when you enter the Appointment Manager. The Display command accesses the Week and Month Screens. Each screen displays a different view of a calendar. The Day Screen displays the day's appointments. The Week Screen displays a week's appointments. The Month Screen displays an entire month of appointments.

### Day Screen

The Day Screen is displayed when you enter the Appointment Manager and will contain only the current day and date, the top-level menu, and Status Line information, unless you specified an appointment file to be loaded automatically.

The Day, Week, and Month Screens are each divided into three areas: the Window Area, the Control Area, and the Status Line. The Day Screen is shown in Figure 8-1.

**Figure 8-1.** This Day Screen is in Command Mode. The Description Area contains information regarding the highlighted meeting



## Window Area

The Window Area is defined by the double-line border that surrounds the major portion of the screen. The Window Area is divided into three sections. The boxed area on the left contains meetings. The boxed area on the right contains tasks. The area across the bottom is the Description Area, where detailed information about the highlighted meeting or task is displayed.

Above the Window Area is the current day and date (the day for which information appears in the window). The date's format reflects the Date 3 format in the Global Preferences menu. You also have the option of placing a heading under the date to signify an event or holiday. Use the Heading command, found on the top-level menu, to place a heading under the date. (See the discussion of the Heading command later in this chapter.).

### Control Area

The two lines just below the Description Area make up the Control Area. It contains either a menu of keywords for manipulating the calendar or a list of Quick Keys. It also displays error messages and prompts.

### Status Line

The Status Line, located directly below the Control Area, indicates which appointment file is currently loaded, whether access to the file is general or private (password protected), the system date (Date 2 format), and either the system time (when in Quick Key Mode) or a reminder that the **ESC** key switches to the Quick Key Mode (when in Command Mode).

Table 8-1 lists the Quick Keys available when the Day Screen is in Quick Key Mode.

**Table 8-1.** Day Screen Quick Keys

Quick Key	Action
<b>F1</b>	Help
<b>Ctrl left arrow</b>	Back one day
<b>Ctrl right arrow</b>	Forward one day
<b>PgUp</b>	Back one month
<b>PgDn</b>	Forward one month
<b>Ctrl PgUp</b>	Back one week
<b>Ctrl PgDn</b>	Forward one week
<b>Alt W</b>	Display week calendar for current day
<b>Alt M</b>	Display month calendar for current day
<b>Alt I</b>	Insert meeting
<b>Alt T</b>	Insert task
<b>Alt E</b>	Edit currently highlighted meeting or task

Quick Key	Action
<b>Alt R</b>	Remove currently highlighted meeting or task
<b>Alt L</b>	Load an appointment file
<b>Alt S</b>	Save current appointment file
<b>Alt U</b>	Unload current file
<b>left arrow</b>	Toggle between Meeting and Task lists
<b>right arrow</b>	Toggle between Meeting and Task lists
<b>up arrow</b>	Up one item in list
<b>down arrow</b>	Down one item in list
<b>Home</b>	Top of list
<b>End</b>	Bottom of list

## Week Screen

You can access the Week Screen by selecting Display and then Week. Or, if Quick Key Mode is toggled on, press **Alt W**. See Table 8-4 later in this chapter for a list of Quick Keys available in the Week and Month Screens. When you switch to the Week Screen, the week containing the current day is displayed. The current day is highlighted.

Figure 8-2 shows the Week Screen. The first column contains a list of times from 7 a.m. to 7 p.m. The remaining seven columns represent the days of the week from Sunday through Saturday. Diamonds indicate hours in which meetings are scheduled. Hyphens indicate hours with no meeting. Diamonds on the task line indicate days on which tasks are scheduled. Asterisks on the last line indicate days that have headings.

**Figure 8-2.** This Week Screen shows scheduled meetings and tasks on Tuesday, Wednesday, and Thursday.

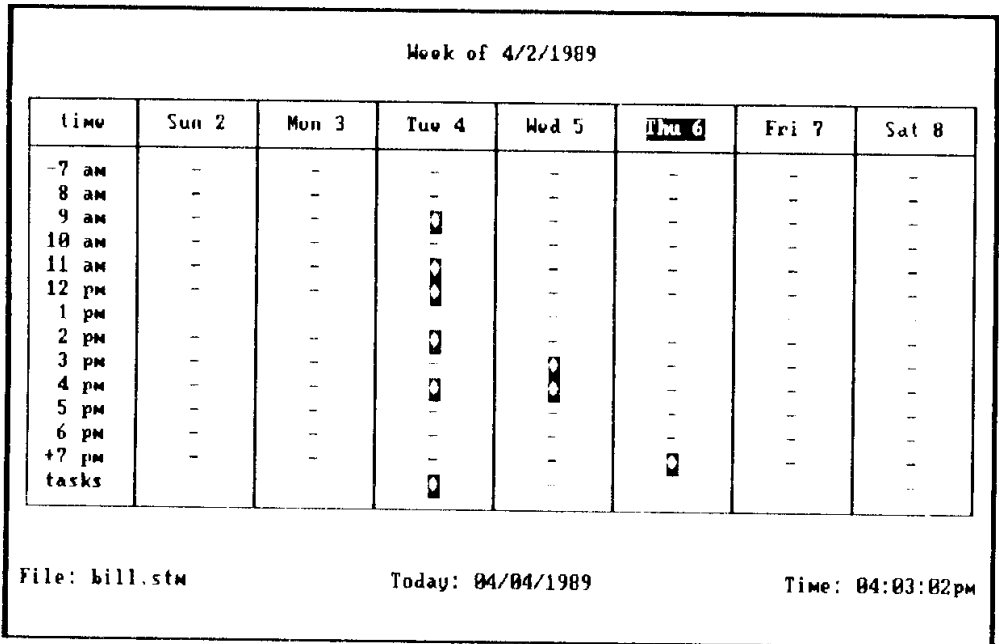


Table 8-2 lists the keys that move the cursor around the Week Screen.

**Table 8-2.** Week Screen Cursor Keys

Cursor Keys	Action
+, -	Moves the highlighter forward or backward, respectively, by one day within the month
right arrow, left arrow, Spacebar	Moves the highlighter a day at a time

Cursor Keys	Action
up arrow, down arrow	Moves the highlighter a week at a time
PgUp, PgDn	Moves the highlighter a month at a time
Home, End	Moves the highlighter to the first and last day of the month, respectively, changing weeks as necessary

If you press **Enter** while in the Week Screen, the Day Screen for the highlighted day is displayed. If you press **Esc** while on the Week Screen, the program returns to the Day Screen you were viewing before switching to the Week Screen.

## Month Screen

You can access the Month Screen by selecting Display and then Month, or by pressing **Alt M** in Quick Key Mode.

Figure 8-3 shows the Month Screen. Diamonds indicate days on which meetings or tasks are scheduled. Asterisks indicate days that have headings. A blank box indicates that no meeting or task is scheduled for that day.



**Table 8-3.** Month Screen Cursor Keys

<b>Cursor Keys</b>	<b>Action</b>
<b>+, -</b>	Moves the highlighter forward and backward, respectively, by one day within the month.
<b>right arrow, left arrow, up arrow, down arrow</b>	Moves the highlighter within the month in the direction indicated by the respective arrow key
<b>PgUp, PgDn</b>	Moves the highlighter a month at a time
<b>Home, End</b>	Moves the highlighter to the first and last day of the month, respectively

If you press **Enter** while the Month Screen is displayed, the Day Screen for the highlighted day is displayed. **Esc** returns to the Day Screen you were viewing before switching to the Month Screen.

Table 8-4 lists the Quick Keys available while the Week or Month Screen is displayed.

**Table 8-4.** Week and Month Screen Quick Keys

<b>Quick Key</b>	<b>Action</b>
<b>left arrow</b>	Back one day
<b>right arrow</b>	Forward one day
<b>up arrow</b>	Back one week
<b>down arrow</b>	Forward one week
<b>PgUp</b>	Back one month

Quick Key	Action
<b>PgDn</b>	Forward one month
<b>Home</b>	First day of current month
<b>End</b>	Last day of current month
<b>Enter</b>	Display Day Screen for highlighted day
<b>Alt W</b>	Display Week Screen for highlighted day
<b>Alt M</b>	Display Month Screen for current week
<b>Esc</b>	Return to previously-displayed Day Screen

## Setting Defaults

Tools Preferences commands access preference menus in which you can specify Appointment Manager, Global, and Hardware defaults. Refer to the discussion of the Tools Preferences command in ***Common System Features*** of this manual for information regarding global and hardware defaults.

To change the defaults in the Appointment Manager, select Tools Preferences Appointment-Manager. The menu lists five defaults.

**Automatic load of appointment file.** Allows you to specify a file to be loaded automatically upon entering the Appointment Manager. This feature is particularly useful when you maintain only one appointment file or when you work in one file more often than others. Enter the filename, then exit and reenter the Appointment Manager. The file will be loaded automatically.

**Data path.** Allows you to specify a default data path. This data path becomes the current directory each time you enter the Appointment Manager, until you specify a new directory or change the default data path. Your appointment files are saved in the default directory unless otherwise specified.

**Issue conflict warnings for meetings/tasks.** These two preferences allow you to specify whether you want warnings issued when you schedule overlapping meetings or tasks. If you specify yes, a message is displayed when you schedule a meeting at the same time as another meeting or a task with the same priority as another task.

**Duration Display.** This allows you to specify how to display scheduled meetings. You have the option of not displaying the duration of a meeting on the calendar by selecting **None**, or displaying the **Hours:Minutes** format or **Ending-Time** format. Remember that **None** affects only what is displayed on the calendar; the definition screen still contains a field for duration.

## Creating Calendars

Each file you create and maintain by the Appointment Manager contains a unique calendar. Just how you go about creating files depends on whose appointments you track and how many appointments are scheduled. You can dedicate each file to a particular group, person, or time line.

For example, if you are using the Appointment Manager to manage your own time, you may want to create files according to types of activities. You could create an appointment file that contains work-related appointments and one that contains personal activities. If, however, you are responsible for tracking the activities of several people, you could create a file for each person or for each quarter or month.

The first step in creating a file is to insert an appointment on the calendar.

## Inserting Appointments

You can insert appointments only in the Day Screen using the Insert command. The options for inserting both a meeting and a task are identical until you fill in specific information about the appointment.

To insert an appointment:

STEP 1: Select Insert from the menu.

STEP 2: Select either Meeting, Task, or Similar.

STEP 3: For Meeting or Task, choose whether the appointment is to occur on a daily, weekly, biweekly, or monthly basis. For Similar, choose a previously scheduled appointment to use as a template. This prevents you from having to fill in redundant information.

STEP 4: Enter the number of days, weeks, or months that the appointment is scheduled and press **Enter**.

STEP 5: Type in the information about the appointment.

STEP 6: Press **F10** to finish.

If you are inserting a meeting, the information listed on the definition screen includes a date, starting and ending time or starting and duration time, type of access (general or private), and a short and long description. See Figure 8-4.

Execute Tools Preferences Global to change the date format. The date can be entered in any of the three formats recognized by ANGOSS. The default date is the current day, but it can be replaced with any date from January 1, 1980, to December 31, 2079.

**NOTE:** For more information about Date Format, see *Common System Features* and *System Command Reference* in this manual.

A starting time is always listed on the Meeting Information screen. However, you have the option of displaying the ending time or the duration of the meeting. To include one of these options, use the Tools Preferences Appointment-Manager command. This command displays a definition screen containing three choices for the duration display: None, Hours:Minutes, and Ending-Time.

If you select **None**, you can still enter the duration. However, it is not displayed next to your meeting on the Day Screen. The **Hours:Minutes** option allows you to enter a starting time and the duration. The **Ending-Time** option lets you specify a starting and ending time, thereby implying the duration of the meeting.

The format for the starting time is determined by the setting chosen with the Tools Preferences Global command. You have the option of 24-hour time or a.m./p.m. (9-hour) time.

Access options determine whether an appointment's description information requires a password to be viewed. If you select General, the information can be viewed by anyone who loads the file. If you select Private, the file must be password protected and you must enter the password to view the information. (Passwords are explained in detail later in this section.)

There are two description fields, a short and long one. Both are optional. You may want to use the short description field (25 characters long) to name the meeting and the long description field (three lines of 75 characters each) to describe the contents or purpose of the meeting.

Task information includes the date, priority, type of access (general or private), a short description, and a long description. With the exception of priority, task fields are the same as meeting fields. The Priority field allows you to gauge the importance of each task with a number from 1-99. You cannot insert a task without assigning a priority number.

The appointment is placed on the specified day. A warning message is displayed if the meeting or task inserted overlaps with another scheduled appointment. The appointment is still placed on the calendar, but you are forewarned of the conflict. If you do not want to be

forewarned of conflicts, execute Tools Preferences Appointment-Manager and select no on the definition screen.

**NOTE:** After inserting an appointment, the Appointment Manager returns to the Day Screen that was current when you executed the Insert command, not the day that you just inserted. Therefore, if you executed the command while looking at March 2, 1990, and the appointment you inserted was on June 14, 1990, you would be returned to March 2.

**Figure 8-4.** When inserting a meeting, this definition screen is displayed.

Tuesday April 4, 1989

Meetings	Tasks
9:30am Interview 11:00am Status Meeting <b>12:00pm Lunch with George McDavid</b> 2:30pm Sales Meeting 4:30pm Pickup Irene at airport	1: Call printer 2: Arrange meeting with John

**Meeting Information:**

Date: **24/04/89**

Time: 12:00pm

Short Description: Lunch with George McDavid

Description:  
 Lunch with George McDavid at Tony's.  
 Remember to discuss Atlantic contract and new hires in Detroit.

Press F10 to finish, ESC to cancel.

## Naming and Saving Appointment Files

After scheduling at least one appointment, you can name and save the file using File Save in Command Mode or the Quick Key **Alt S** in Quick Key Mode. Saving a file stores a copy of the current file on disk. The Appointment Manager automatically attaches the extension ".stm" to the file when you save it.

**NOTE:** If you have used Smart version 3.10, your appointment files might have a .dtm extension. The updated Appointment Manager reads these files and also lists them in the prompter.

To save and name a file in Command Mode:

STEP 1: Select File and then Save.

STEP 2: Enter a filename from 1 to 8 characters after the prompt and press **Enter**.

To save and name a file in Quick Key Mode:

STEP 1: Press **Alt S**. The prompt `Enter filename:` appears.

STEP 2: If you want to save the current file and it already has a name, simply press **Enter**.

STEP 3: If the file is not named, give it a name and press **Enter**.

The file is stored in the current directory if you do not include a path when you name and save it. You can alter the current directory using Tools Directory New-Directory.

To place the file in a different directory when saving it, type in a full path and press **Enter**. To verify that the file was placed in the new directory, use the Tools Directory Display command and enter the path and filename. The file should be displayed in the directory listing.

## Attaching a Password

The Appointment Manager features a Password command to limit access to appointment files. The two-step process of attaching a password can be executed in several situations.

You can assign a password at several points during the file creation process. For example, if you know that the calendar is to contain private information, you can attach a password before inserting any appointments. If, on the other hand, you don't decide until you are ready to place the appointment on the calendar, you are prompted to attach a password at the time you are inserting private appointments.

To attach a password:

STEP 1: Select File; then, Password; then, Attach.

STEP 2: Enter a case-sensitive password no longer than 16 characters. It can begin with or contain letters, numbers, underscores, and symbols.

STEP 3: Press **Enter**.

STEP 4: Type the password again for verification and press **Enter**.

The password is attached and you are ready to begin placing meetings and tasks on the calendar.

If you have already begun to insert appointments and you designate one to be private, you are prompted with the message `File doesn't have a password. Attach a new password?`. Type in a password and press **Enter**. Also, if you edit a file that is not password-protected and you add a private appointment, you must add a password.

To remove the password from a file that you have loaded with private access, execute `File Password Remove`. However, if you have loaded a protected file with general access, follow these steps:

STEP 1: Select `File Password Remove`.

STEP 2: Enter the password and press **Enter**.

STEP 3: The message `Access mode of all private records will become general. Continue? (y/n)` is displayed. Answer yes.

**IMPORTANT:** Because you can create an unlimited number of protected files, you may want to keep a written record of the passwords in a safe place. If you forget the password of a protected file, there is no other means for accessing the private appointment information. The file can be loaded with general access, but private information is replaced with asterisks.

## Attaching a Heading

You can note events or holidays on your daily calendar using the `Heading` command. The heading is placed under the current day and date on the `Day Screen`. The heading can be no longer than 25 characters and can contain numbers, letters, underscores, and symbols.

To attach a heading:

STEP 1: Select `Heading` from the menu.

STEP 2: Enter the heading after the prompt and press **Enter**:

To delete or edit a heading:

STEP 1: Move to the day that contains the heading. (You can use the `Search` command to find the heading.)

STEP 2: Select `Heading` from the menu.

STEP 3: Edit the heading which is displayed after the prompt in the Control Area or press **F8** to delete it.

STEP 4: Press **Enter**.

## Accessing Calendars

Each calendar is stored in a separate appointment file and is accessed with the File Load command. When you first enter the Appointment Manager, no file is loaded unless you specified one using the Tools Preferences Appointment Manager command in an earlier session. The process of loading a file varies depending on whether it is password protected.

To load a file without a password:

STEP 1: Select File and then Load.

STEP 2: Choose a file from the prompter list and press **Enter**.

STEP 3: If the file is not listed, select <other>, enter the filename after the prompt and press **Enter**.

To load a file with a password:

STEP 1: Select File and then Load.

STEP 2: Choose or enter the file you wish to load and press **Enter**.

STEP 3: Select Private or General from the following option menu.

If you select Private, you must enter the password before it is loaded. If you select Private and the file is not yet protected, you are prompted to attach a password. If you select General for a password-protected file, all private information is replaced by asterisks.

You can use the File Access command to change the access of a file once it is loaded or while you are creating it.

To change the access of a file once it is loaded:

STEP 1: Select File and then Access.

STEP 2: Select General or Private.

If you are changing the access of a file from general to private, you need to enter the password, if it already has one, or add a password if it doesn't have one. If you are changing the access from private to general, all private appointment information is replaced by asterisks.

When you finish with a file, save and unload it.

To unload a file:

STEP 1: Select File and then Unload.

STEP 2: If the file has been modified and you have not saved the changes, save the file and then unload it.

## Managing Calendars

The Appointment Manager features several commands that allow you to manage the contents of your calendars. This section explains the following commands:

- Goto
- Edit
- Search
- Print
- Remove
- Clear

## Moving to Appointments

To move to a scheduled appointment, you can use either the Quick Keys associated with the three different screens or the Goto command. Goto is a flexible command that provides six ways to move directly to another day on the calendar. The six options are:

- First
- Last
- Previous
- Next

## Chapter 8: Using the Appointment Manager

- Relative-Date
- Specific-Date

Goto First and Goto Last move to the first and last days, respectively, on which meetings or tasks are scheduled.

Goto Previous moves backward on the calendar to the most recent day with a meeting or task. Goto Next works in a similar manner, moving forward to the next day with a scheduled meeting or task.

Relative-Date prompts you to enter the number of days before or after the current date. A positive number, which can be indicated with a plus sign, moves forward in the calendar. A negative number, indicated with a minus sign, moves backward in the calendar.

Specific-Date prompts you to enter the exact month, day, and year of the appointment you want to view. (The format you use for the date is dependent on which style you have selected in the Global Preferences menu.)

This command is very useful for finding the first appointment in a file. If you maintain many calendar files with varied month and year ranges, it can be time-consuming to find the first appointment in a calendar.

For example, assume you just unloaded a file in which the last appointment you viewed was scheduled on December 29, 1989. Then you load a file in which the appointments range from January 1990 to October 1990. The current date still reads December 29, 1989, even though the currently loaded file does not contain an appointment scheduled on that day. If you select Goto First, you are taken to the first appointment in the file.

To go to a specific appointment:

STEP 1: Select Goto from the top menu.

STEP 2: Select First, Last, Next, Previous, Relative-Date, or Specific-Date from the option menu.

STEP 3: If you chose Relative-Date or Specific-Date, enter the appropriate number and press **Enter**.

## Editing Appointments

You can alter the dates, times, and descriptions of scheduled appointments using the Edit command.

Remember that to edit a private appointment, the file must be loaded with private access, which requires that you know the password.

To edit an appointment:

STEP 1: Move to the day that contains the meeting or task that requires editing.

STEP 2: Select Edit from the top menu.

STEP 3: Highlight the meeting or task that requires editing and press **Enter**.

STEP 4: Make the necessary changes in the Meeting information screen and press **F10** to finish.

**NOTE:** If you use the Quick Key **Alt E**, highlight the meeting or task before executing the command.

## Deleting Appointments

As you create more calendars, deleting appointments and entire calendars becomes essential. The Appointment Manager features two commands that eliminate unneeded calendars and appointments: Remove and Clear.

The Remove command permanently deletes a highlighted meeting or task. The Clear command permanently removes a section of appointments, such as a week or month. (It does not clear headings.)

To remove an entry:

STEP 1: Select Remove.

STEP 2: Highlight the unwanted meeting or task and press **Enter**.

Unlike the Command Mode version of the Remove command, **Alt R** removes the current highlighted meeting or task directly.

**IMPORTANT:** The Remove command permanently deletes information from the calendar. Be certain you have selected the correct meeting or task.

To clear a section of appointments:

STEP 1: Select Clear.

STEP 2: Select Day, Week, or Month. Clear Day deletes all meetings and tasks from the current Day Screen. Clear Week and Clear Month delete the week and month associated with the current Day Screen.

**IMPORTANT:** The Clear command permanently deletes information from the calendar. Be certain you have selected the correct Day Screen before using it.

## Searching for Appointments

The Search command is a quick way to find a specific piece of information. You can search for just meetings, tasks, or headings, or you can search all items. You can also search for specific times, priority numbers, and text as well as approximate times and priority numbers.

Using the operators < (less than) and > (greater than), you can search for meetings that begin before or after a certain time, or you can search for tasks with priority numbers below or above a certain number. For example, specifying < **3** searches for tasks ranked with a priority of 1 and 2.

The day on which you execute the Search command is the point at which the Appointment Manager begins looking for matches. That is, the Search command only moves forward through the calendar.

To search for an item:

STEP 1: Select Search from the menu.

A definition menu appears listing fields in which to specify search criteria. The first search field is `Type`, listing All, Meeting, Task, and Heading. Other search fields appear depending on which of these options you select.

If you are searching for a **meeting**, the screen contains:

- Starting time
- Search text

If you are searching for a **task**, the screen contains:

- Priority number
- Text

If you are searching for a **heading**, the screen contains:

- Text

If you are searching for all types of appointments and headings, the screen contains all of these fields.

STEP 2: Select the type of information you are looking for and enter in the search criteria.

For example, if you want to find all staff meetings, specify **meeting** in the `Type` field and enter **staff** in the `Search Text` field. Because the search feature is not case sensitive, you

could type staff with a capital or lowercase s. But if you want to search only staff meetings that begin at 2 p.m., then you would fill in the information as above and enter **2 p.m.** in the Starting Time field.

STEP 3: Press **F10** to begin the search.

As each match is found, it is displayed and highlighted on screen. A message is displayed prompting you to continue or end the search. If you press **y** for yes, the Appointment Manager continues to search for matches until it finds no others. If no matching item is found, the message `Item not found` is displayed.

## Printing Appointments

You can print a list of your appointments for the day, week, or month. Meetings are printed at the top of the page in chronological order. Tasks are printed below the meetings in order of priority.

STEP 1: Select Print from the top-level menu.

STEP 2: Select Day, Week, or Month.

When you print your appointments for a single day, a list of meetings and tasks are printed for the highlighted day. When you print lists for the Week or Month, lists of meetings and tasks are printed a day per page.

STEP 3: Choose Short or Long description.

The short list contains only the short description for each meeting or task. A long list includes both the short and long description. See Figures 8-5 and 8-6. The printing process begins when you select either option.

**Figure 8-5.** A long list prints any long description you've included to explain the purpose of the meeting

Wednesday April 4, 1989  
-----

Meetings  
-----

9 : 30 am – Interview  
Interview 2 applicants for new positions in marketing.

11 : 00 am – Status Meeting  
Monthly status meeting with Sales Department.  
Remember to ask about projected opening date for Seattle office.

12 : 00 pm – Lunch with George McDavid  
Lunch with George McDavid at Tony's.  
Remember to discuss Atlantic contract and new hires in Detroit.

2 :30 pm – Sales Meeting

4 : 30 pm – Pick up Irene at airport  
Arrives on Continental flight 933 at 4:20.

Tasks  
-----

Priority 1 – Call printer  
Priority 2 – Arrange meeting with John

Wednesday April 4, 1989  
-----

Meetings  
-----

9 : 30 am - Interview  
11 : 00 am - Status Meeting  
12 : 00 pm - Lunch with George McDavid  
2 :30 pm - Sales Meeting  
4 : 30 pm - Pick up Irene at airport

Tasks  
-----

Priority 1 - Call printer  
Priority 2 - Arrange meeting with John

*Figure 12-6. A short list excludes the long descriptions.*

## Managing Directories and Files

The Appointment Manager features two commands that allow you to manipulate files and directories from within the accessory, Tools Directory and Tools File. These commands are identical to the Tools Directory and Tools File commands featured in all ANGOSS modules. For information regarding the use of these commands, refer to **Common System Features** and **System Command Reference** of this manual.

## Chapter 8: Using the Appointment Manager

# Chapter 9: System Command Reference

This chapter provides a brief explanation of the commands associated with Help, Remember, Tools, and Quit keywords.

## Help Commands

Help commands invoke various types of on-line help information. On-line help includes context-sensitive help information and help for error messages.

**NOTE:** To leave on-line help and return to the module menu, press **F10**.

**Help About-Help.** Displays information about using ANGOSS II's on-line help feature.

**Help Contents.** Displays a table of contents with first level headings for on-line help. Press **F4** to display five additional levels of headings until you reach the heading you want. There are six heading levels altogether. Move the pointer to the topic you are interested in and press **Enter**.

**Help Index.** Displays an index of topics for on-line help. Initially, only the first level of the index is displayed. To reach the second level, press **F3**. To return to the first level, press **Esc**. To select a topic, move the pointer to it and press **Enter**. To move to the table of contents, press **F4**.

**Help On-Error.** Displays help text for error messages. Press **Enter** to receive help for the last error that occurred, or enter a corresponding error message number to display the appropriate help information. ANGOSS error messages and their corresponding numbers, are listed in Appendix A of *Project Processing*.

**Help Tutorial.** Invokes the tutorial for the currently active module. Help Tutorial is not available from the Main Menu. Use the tutorial to learn about a particular feature, or step-by-step to learn the entire module. If you enter your name, ANGOSS will keep track of the lessons you have completed.

**IMPORTANT:** Because ANGOSS Tutorials run within the module they describe, you should unload all active files before entering the tutorial.

## Remember Commands

The Remember commands allow you to create, edit, and run project files. Introductory information about Remember commands is in the *ANGOSS Project Processing* manual.

## Remember Start

Remember Start activates Remember Mode which then records keystrokes or commands to create a project file.

**Commands.** Records every module command used while the program is in Remember Mode. Keys are not recorded.

**Keys.** Records every keystroke while the program is in Remember Mode.

**Both.** Keystrokes that are part of commands are recorded as commands. Keystrokes that are text information are recorded as keystrokes.

After you select an option and name your project file, the reminder Remembering commands... is displayed in the bottom left-hand corner of the screen. **Ctrl F10** suspends and reactivates Remember Mode. You may append additional commands and keys to existing project files using Remember Start. When prompted, enter the name of a project file you want to append to. Remember Mode will be activated and your actions will be recorded in the file.

## Remember Finish

Remember Finish deactivates Remember Mode, saves the project file, and compiles it.

## Remember Tools

Remember Tools performs various file maintenance and debugging activities and creates custom menus and option lists. Tools options are listed below:

### Remember Tools Compile

Remember Tools Compile produces an executable version of a project file that was created using the Text-Editor or Word Processor. For example, if you create a project file in the Text-Editor you would use Remember Tools Compile to convert it from a text version to a runtime version. When you select this command, you must specify one of the following options:

**Debug.** Compiles the runtime version with the text statements included in the project file. This is advantageous in the debugging process, however, this compile option creates a larger, slower project than the No-Debug option.

**No-Debug.** Creates a smaller, faster runtime file because it compiles without the text included. Your file will be protected because other users will not have access to the text version of commands.

**NOTE:** Do not use No-Debug if you are using the Quiet Execution or Single-Step project execution because these options require the text file commands during project execution.

### Remember Tools Edit

This command allows you to create or modify project files. To create a project file, enter a file specification not currently used for a project file. To modify an existing project file, enter the file specification when prompted.

### Remember Tools Print

This command prints a project file with its name, date, and time at the top of the project. Pages are numbered and each line in the project is numbered.

### Remember Tools Delete

Remember Tools Delete erases both runtime and text versions of a specified project file from disk.

## Remember Tools Trace

This command allows you to determine conditions to identify possible errors and determine the current value of variables. When an error condition exists, project file execution is interrupted and two small windows are displayed. The first window identifies the current status of project execution. The second window displays the variables or conditions used to trap the error.

## Remember Tools Input-Screen

Remember Tools Input-Screen allows you to design custom menus and option lists to use in projects, as well as custom data entry screens for databases and spreadsheets. For more information about creating input-screens, see the *ANGOSS Project Processing* manual. Three options are displayed:

**Define.** Allows you to define a new input-screen or edit an existing one.

**Load.** Displays a list of existing input-screens. At the prompt, select one you want to load and press Enter.

**Undefine.** Displays a list of existing input-screens. At the prompt, select one or more files you wish to erase.

## Remember Execute

Remember Execute runs a project file. Select a file to run from the list of existing project files. **F8** is the Quick Key used to initiate the Remember Execute command. Choose whether the project file should be run In-Memory or From-File.

**In-Memory.** Places the entire runtime version of a project file into memory before running it. This allows commands to be executed more quickly. This option is normally used for small project files that will not use much memory.

**From-File.** Executes the runtime version from disk. The project will be executed more slowly than it would using the In-Memory option. From-File is normally used for large project files to save memory. If you choose In-Memory and your file is too large to fit into memory, ANGOSS will default to the From-File option.

## Remember Load

Remember Load executes a project file, keeping it available for use with other project files. Any public variables or functions within the project can be used during execution of another project.

## Remember Unload

Remember Unload closes a project file and removes it from memory.

## Tools Commands

The Tools commands allow you to perform calculations, create and use directories, perform file operations, set defaults, create and use macros, and manipulate printer fonts.

Options for Tools includes the following:

## Tools Calculator

Tools Calculator activates the ANGOSS Calculator, which has two modes: Formula Mode and Algebraic Mode. To change modes, press **F2**.

**Formula Mode.** Evaluates a formula using the standard rules for the calculation order and displays the results in the Result Window. If the formula is not valid, an error message appears.

**Algebraic Mode.** Works similarly to a standard desktop calculator to perform mathematical operations. For more information, refer to the *Using the ANGOSS Calculator* chapter.

## Tools Directory

Tools Directory is used to get file information for a directory, make or remove a directory, or change the current data path.

### Tools Directory Display

Tools Directory Display lists the file information for any available directory in alphabetical order. You may use wild cards to represent a specific group of files. If you enter wild card characters with no pathname (e.g., \*.\*), files in the current directory are displayed. You may change the sort order using the following function keys:

Key	Action
F2	Sorts by filenames in ascending order.
F3	Sorts by date and time in ascending order.
F4	Sorts by file size in ascending order.
F5	Sorts on primary and secondary levels so you specify criteria when two or more files have the same key information.
F6	Prints a list of files in the directory.

### Tools Directory Make

This command creates a directory without exiting ANGOSS. At the prompt, Enter a directory name:, enter the name for your new directory.

### Tools Directory New-Directory

This command temporarily changes the current data path without exiting ANGOSS. At the prompt Enter a new directory name:, either type the path specification or use the prompter to select one. The data path is changed only while you are in ANGOSS. Once you exit the current module, the original data path from which you entered ANGOSS, or the data path set in Global Preferences, becomes the current data path again.

## Tools Directory Remove

Tools Directory Remove deletes a directory without exiting ANGOSS. When prompted, type a directory name or select one from the prompter. Any files or subdirectories that exist within the directory must be erased first using Tools File Erase, or you will receive an error message when attempting to remove a directory.

## Tools File

Tools File is used to copy, rename, move, erase, or print a file. After selecting one of the File commands listed below, type or select a filename when prompted then press **Enter** to execute the command. With most File commands, wild card characters can be used to specify a group of files to be acted upon. For example, \*.doc means all files with a doc extension. Be careful when using wildcards to list files, especially when using permanent file operations like Erase.

### Tools File Copy

This command copies specified files from one disk to another or from one directory to another.

### File Erase

Tools File Erase deletes specified files. Wild cards may be used to specify a group of files, but they should be used with caution. The files are deleted when you press **Enter**. Use the **F6** key to highlight multiple files to erase.

### File Move

Tools File Move copies specified files and moves them to a new directory. Use the **F6** key to highlight multiple files to move.

**IMPORTANT:** If you move a file into a directory that already contains a file with the same name, the file you are moving will overwrite the existing file, deleting its data.

### File Rename

Tools File Rename changes the name of a file. After entering or selecting a file to rename, type in a new filename and press **Enter**. The filename is changed.

## File Print

Tools File Print prints everything within a file whether it is text or coded non-text information. You may use this command to quickly print text files from the Main Menu or when you have been performing other functions within Tools File.

**NOTE:** This command was intended for use with text files. Printing other file types with this command can give unexpected results such as ASCII characters in place of letters and numbers.

## Tools Macros

Tools Macros allows you to redefine a key to perform a series of tasks. Any key except **Esc**, **F1**, **F10**, **Enter**, **Ctrl F10**, **Ctrl C**, **Ctrl M**, **Alt F10**, and **Shift F10** can be redefined. For more specific information on defining macros, refer to *Creating and Using Macros* in this manual.

### Macros Clear

Tools Macro Clear removes macros from memory.

**One.** Removes one macro from memory after you identify the redefined key to be removed.

**All.** Removes all currently loaded macros from memory.

### Tools Macros Load

This command retrieves a macro file from disk and loads it into memory. Within the Tools Preferences menu for each module you may type the name of a macro file for automatic loading under the `Automatic load of macro file` prompt.

### Tools Macros Remember

Tools Macro Remember records your keystrokes for a macro definition. You may suspend and reinvoke Remember Mode by pressing **Ctrl F10**.

## Tools Macros Save

Tools Macro Save stores macro definitions to disk as text files that can be edited using any text editor. If you define a macro but do not save it prior to leaving the current module, the macro will be erased.

## Tools Macros View

This command displays all macros that are currently defined or loaded.

## Macros Edit

Tools Macros Edit enables you to manually create a macro or edit one that has already been defined.

## Macros Finish

Tools Macros Finish ends the macro definition and stops the Remember Mode. The macro definition is then saved in memory but it is not stored on disk until you save it using Tools Macros Save.

## Tools New-Font

Tools New-Font, available at the Main Menu, enables you to manage the set of fonts you defined within your modules. With Tools-New Font you can prerasterize a set of fonts for faster printing. For information on how fonts are used, see the ***Printing in ANGOSS*** chapter.

The fonts defined in modules may not print as quickly as expected if the fonts are not internal to your printer. If this is the case, ANGOSS forces the printer to print the font as a filled-area font. A filled-area font creates a character by defining a set of coordinates to be filled in.

Tools New-Font allows you to prerasterize a set of fonts from the previously defined filled-area fonts. If you frequently use several filled-area fonts, you may want to prerasterized them to speed up printing. When you prerasterize a font, the filled-area font is drawn to a specific size and printer resolution. This font information is then stored in a file. When you print a file using this font, the predrawn font is used. This is much faster than having to scale each font individually. The following Tools New-Font commands are available:

### Tools New-Font Normal

This command prerasterizes a set of fonts for normal (portrait) printing.

### Tools New-Font Sideways

This command creates a set of fonts for landscape printing. Sideways fonts work only in graphics mode for most printers.

After choosing either New-Font Normal or New-Font Sideways, select from the following items:

- Font family. Identifies the font family. Press **F6** for a prompter of available choices.
- Size. Identifies the font size in points.
- Width. Identifies the font width.
- Slant. Identifies normal or italicized characters.
- Weight. Identifies normal or bold face characters.

After you have defined the font you want to rasterize press **F10**. A message is displayed telling you the font is being rasterized. You will then be prompted for a location for the newly rasterized font. In order for ANGOSS to find and use the font you have just rasterized, it must be stored in a resource library.

Enter **s** to store the font in your system resource library, or **l** to store it in your local resource library. You can also enter **d** if you want to place the file on a floppy or on a network. If you select **d** you will be prompted to enter a path specification for the file. You can then exchange this file with another person using ANGOSS, or move it to another machine. Remember, before it can be used, it must be placed in a resource library.

### Tools OS

Tools OS temporarily accesses the operating system. You can then perform one command without exiting ANGOSS. At the prompt, enter the DOS command you want to perform and press **Enter**. Press any key to return to the location in ANGOSS at which you began the command.

You may also access DOS from Tools OS by pressing **Enter** at the prompt. Your ANGOSS screen will be replaced with a blank screen and DOS prompt. Type **Exit** to return to the ANGOSS screen. **Ctrl O** is the Quick Key for Tools OS.

The `-r` entry option in standard ANGOSS allows you to reserve a specific number of kilobytes of memory for use with Tools OS. For example, typing `angoss -r 24`, reserves 24KB of RAM access for DOS within ANGOSS. However, the amount of RAM available to ANGOSS is decreased by 24KB. This will not work when running ANGOSS in protected mode. See **Common System Features** for more information on entry options.

**IMPORTANT:** Running some memory-resident programs from DOS may use memory that ANGOSS needs, causing a memory error message.

## Tools Preferences

Tools Preferences is used to select default settings that determine how the program will operate. Using these commands, you determine the default settings for the entire system, each module, and applicable hardware.

### Tools Preferences Module

This command determines module specific default settings, such as Paragraph Format and Pagination in the Word Processor. For more information on individual module settings, refer to the appropriate module manual.

### Tools Preferences Global

Tools Preferences Global determines default system settings for entry and for work within all the ANGOSS modules. When you select Preferences Global, a definition menu appears. Each menu item is explained below.

- **Autohelp.** Toggles the display of the Autohelp Line to on or off. The Autohelp Line is a single line of help information regarding menu keywords that appears at the bottom of the screen. When toggled on, it always displays a help message concerning the highlighted keyword.
- **Beeper.** Activates or deactivates the beep feature. A low pitch beep warns the operator of an invalid entry or an error condition. A high pitch beep sounds to get the operator's attention. If you want the program to beep when it encounters an error or seeks your attention, select the **ON** option, otherwise select **OFF**.

- **Display of Filenames.** Determines whether filenames are displayed in a prompter when you are performing an action that requires you to enter a filename (e.g., when you load a file). The filenames listed are the available files in the current directory. If you want filenames to appear, select **YES**. If you do not, select **NO**.
- **Automatic File Backup.** Determines whether ANGOSS automatically makes duplicate copies of files you revise. The previous version of a revised file is given a three-letter filename extension associated with the program that produced it (i.e., .bws is the extension for a back-up worksheet file). This feature always retains a version that is one revision previous to the current document, but is not a substitute for a regular document save routine.
- **Quiet Execution.** Determines whether project file commands are displayed or “echoed” on the line above the Status Line as a project file is being executed. Select **YES** if you do not want each command to be displayed during project file execution. Select **NO** if you do want the commands to be displayed.
- **Single-step Execution.** Determines whether a project file pauses before executing each line of a project file. Select **YES** if you want projects to pause between commands. Select **NO** if you do not want projects to pause between commands.

**NOTE:** When creating a project file, do not use No-Debug if you are using the Quiet Execution or Single-Step project execution because these options require the text file commands during project execution. For more information on Single-step and Quiet Execution, Refer to **Project Processing**.

- **Time Format.** Displays time in either a 12-hour (conventional) or a 24-hour (military time) format. Select **AM/PM** if you want to display conventional time formats. Select **24-HOUR** if you want to display military time formats.
- **Date Style.** Determines whether ANGOSS interprets the month, day and year in date entries as: American (MMDDYY), European (DDMMYY), or International (YYMMDD). For example, if you type 01-05-90, ANGOSS will recognize the date as January 5, 1990 if you chose American style. If you chose European style, ANGOSS will read the date as May 1, 1990. Date Style does not determine how a date will be displayed.
- **Date Format.** Determines how dates are displayed system-wide. The formats you determine can be used in formulas, in worksheets, or inserted with quick keys into documents. Date2 is the default format for date fields in the Database unless a display mask is defined when the field is created. The three formats you determine are:

Date1 Format	dd month yy
Date2 Format	mm/dd/yyyy
Date3 Format	month dd, yyyy

The date formats you specify can be customized to display abbreviations and whole words as listed below.

mon	first three letters of month
mm	two-digit month
dd	two-digit day
yy	two-digit year
yyyy	four-digit year
day	day-of-the-week
Row:month dd	Col:month and two-digit day

For example, if you want a date displayed with text and numbers, you can customize a date format as ***day, month dd, yyy***. This will display a date such as ***Thursday, August 16, 1990***.

**NOTE:** Use lower case letters when setting date formats, otherwise date fields within imported databases may not be imported correctly.

- **Currency Symbol.** Determines the appropriate symbol for a particular country's currency up to four text characters.
- **Symbol Location.** Determines whether the currency symbol is placed before or after a currency amount.

- **Decimal Separator.** Specifies whether decimals will be separated with a comma or a period. If you specify a comma, formula arguments must be entered in a slightly modified format. Refer to ***ANGOSS Formula Reference*** for details.
- **Thousands Separator.** Determines what character (comma, period, or blank) is used to indicate thousands separators in numeric displays.
- **Division By Zero.** Specifies whether a zero or an error will be returned when a division by zero occurs.
- **Default Letter Size.** This determines the default paper size used in printing. Valid options are US-letter and A4 (European).
- **Default Data Path.** Determines the default path specification. It is a good idea to store data files in a directory different from ANGOSS program files. The default data path becomes the current directory when you enter ANGOSS, no matter what directory you entered from.
- **Project File On Entry.** Specifies a project file to be automatically executed every time you enter ANGOSS.
- **Project File On Exit.** Specifies a project file to be automatically executed every time you leave ANGOSS.
- **Drives on which to close files during editing.** Documents, worksheets, and text-editor files on specified drives can be kept closed during editing.
- **Optimized Screen Refresh.** This is a Unix only option. When the option is on, ANGOSS checks for any pending keystrokes before refreshing the screen waiting until the last keystroke is processed, thus saving needless screen repainting. For example, this would prevent waiting for the screen to catch up if you "lean" on a **down arrow** with a slow terminal. Optimized refresh does have some disadvantages. For instance, if the machine is busy, you may not see characters as you type them, causing a noticeable lag before being printed.
- **Display Lead-in Keystrokes.** This is a Unix only option. When on, this option displays lead-in characters on the lower right corner of the terminal. For example, to obtain an **Alt L**, the **Esc** key is pressed followed by the **L** key. The **Esc** key represents the lead-in character.
- **Text-editor Expand Tabs Into Spaces.** Tab characters can be converted into the number of spaces tab characters represent. Setting this option to Yes if you want the text-editor to work the same way as previous versions. If it is set to No, tabs will be preserved.

- **Spaces Per Tab.** The "number of spaces per tab character" determines the how many spaces a tab will represent when viewing, modifying, or printing a file in the text editor.
- **Horizontal Scrolling.** The text-editor optionally supports smooth horizontal scrolling. With smooth scrolling, the screen will shift one column at a time when moving the cursor off the edge of the screen.

## Tools Preferences Hardware

Tools Preferences Hardware allows you to change the default settings for your hardware that were set through the Install program. On many items you may press **F6** for a list of installed drivers or descriptor files. For more information, refer to the *ANGOSS Install Manual*. Each menu item is briefly explained below. For detailed information about printer and plotter settings see the *Printing in ANGOSS* chapter.

Hardware preferences are split into DOS and UNIX sections.

### For DOS

**Text Screen.** Determines the default screen driver that supports your display adapter. This is automatically detected when the field is left blank.

**Graphics Screen.** Determines the default screen driver that supports your graphics adapter. This is automatically detected when the field is left blank.

**Printer.** Determines the default configuration for your current printer. For best results, use the configuration recommended by your printer manufacturer. At the menu item `Printer`, press **F6** for a list of installed printers, then make selections for the following items:

- **Cartridge.** Appears only when the default printer is one with font cartridges. This menu item is used to select cartridge related descriptor files.
- **Paper Profile.** Specifies paper size and paper path. This controls paper size and path when printing from within any editor, from within the Database (except reports), when executing Tools File Print, or when using LPRINT commands in a project file. Printing from the Word Processor, Spreadsheet, and Database reports, will be controlled through Paper Profile settings in each module.
- **Time-out (seconds).** Specifies the number of seconds ANGOSS should attempt to print before an error message is generated.

- **Port.** Specifies the computer port to which your printer is attached.
- **Justification.** Activates one of two types of justification features if supported by your printer: **Micro-Justify** which makes minute adjustments in the horizontal placement of characters on a line, producing a more professional looking document; or **Space-Justify**, which adjusts the placement of characters using whole spaces and processes a little more quickly than micro justification.

**Plotter.** Determines the configuration for your current plotter. For best results use the configuration recommended by your plotter manufacturer. For detailed information on plotter settings, consult the *Printing in ANGOSS* chapter.

**Network.** Specifies the network operating system you are using. Network selection offers a generic setting which will work on most networks.

## For Unix

### Printer.

- **Cartridge.** Same as DOS.
- **Paper Profile.** Same as DOS.
- **Port.**

**Spooler.** Sends printer output to the spooler. Specify a spooler in the Print Spooler field below or leave it blank to use the default. You can optionally print a banner page each time you print by switching the Print Banner option on. If there are any other options that you want to send to the printer, enter these into the Additional options field.

**Direct.** Sends printer output directly to the specified printer. Select the appropriate settings with the Printer Port Device, Baud Rate, Data Bits, Parity, Stop Bits, and Handshake fields.

**Custom.** Allows you to customize the print output by entering a command into the Custom Command Line field. For example: `cat >> ./print.out` would append print output to the print.out file in the current directory.

**File.** Sends printer output to a file. Enter the name of the file in the File Name field.

- **Plotter.** Same as DOS.

## Tools Resource

Tools Resource gives you access to the Resource Library commands. The Resource Library is a file created automatically during installation. It is stored in the system directory under the name **resource.srl**. The Resource Library stores items such as driver, descriptor, and font files. Its purpose is to speed up those activities that must open and read these resources in order to execute, such as entering ANGOSS.

For more information on using Tools Resource commands to customize the resource library, refer to the **ANGOSS Install Manual**.

### Tools Resource Extract

Tools Resource Extract allows you to copy a resource from the current library into another directory, or copy it to disk so that it can be placed into another resource library.

### Tools Resource Modify

Tools Resource Modify allows you to add and delete resources from the current library.

### Tools Resource View

Allows user to view the resources in the current library.

## Tools Text-Editor

Activates the Text Editor so you can create or edit files. At the prompt, enter the name of a file you wish to create and an empty Text-Editor screen appears. Or select a file from the prompter list and a pre-existing file is displayed for editing. This is a simple text editor without word processing features such as word wrap, margin control, etc. For a list of keys available to use in the Text Editor move the highlighter to the word Text-Editor and press **F1**.

## Tools Edit-Printer

Tools Edit-Printer allows you to modify or create cartridge and printer descriptor files. For more information on using Tools Edit-Printer, read the ***Editing Descriptor Files*** chapter.

## Quit Commands

The Quit commands allow you to transfer from one module to another, go to the Main Menu, or return to DOS. These commands vary depending upon which module you are leaving. The module you are leaving will not appear among the Quit options on the screen. If you decide that you do not want to leave the current module after you have selected Quit, press **Esc**. Following is an option list:

### Quit Options

**Quit.** Returns to DOS.

**Main-Menu.** Returns to ANGOSS's Main Menu.

**Communications.** Leaves the current module and enters ANGOSS Communications.

**Database.** Leaves the current module and enters ANGOSS Database.

**Spreadsheet.** Leaves the current module and enters ANGOSS Spreadsheet.

**Wordprocessor.** Leaves the current module and enters ANGOSS Wordprocessor.

# Chapter 10: ANGOSS Directory Structure

## How ANGOSS Finds Its Files

This section discusses how ANGOSS locates the message files, program files, default files, etc. that it requires. This applies to v2.6 and higher.

### Main System Directory

The main system directory is the root of the directory tree created when ANGOSS is installed. Typically this is C:\ANGOSS, or, if using Unix, /usr/angoss. Finding this directory, is the first step to finding other files.

To find the main system directory, the following steps are executed:

1. First, the system checks to see if the `-s` parameter has been used. The `-s` flag indicates where ANGOSS has been installed. (E.g. `angoss -s c:\angoss`)
2. Then, if step one does not reveal the file, the directories in the `PATH` environment variable are searched. As with step two, the trailing 'bin' characters are removed.
3. Next, the system checks to see if the environment variable `ANGOSS` is set. This environment variable may contain more than one path, separated by a colon. When more than one path is provided, the system will try to find the file in the first path. If it does not find the file there, the next path is checked.
4. Finally, if steps 1, 2 and 3 fail to find the file, the system checks the first argument of the command line used to start ANGOSS. In DOS, and sometimes under Unix, the first argument will contain the full path of the executable. The system then moves one directory up, to obtain the main system directory. (Executable files are stored in the `bin` subdirectory.) This allows you to run ANGOSS by only typing the path and file name of executable.

### Message files

The message files (\*.aif), and various other system files, determine which spoken language ANGOSS Office Automation presents itself in.

To find a message file, ANGOSS will perform two broad steps; first it finds the main directory (see above) and then it locates the message files subdirectory within the main directory (typically `/usr/angoss/oasys`). Once the main system directory has been identified, ANGOSS locates the appropriate subdirectory in the following manner:

1. The system first checks to see if the ANGLANG environment variable is set. If it is set, then its contents are appended to the string "oasys" to calculate subdirectory name. This is useful if the English message files exist in one directory (e.g. `/usr/angoss/oasys`) and the German message files exist in another (e.g. `/usr/angoss/oasys_ge`). In this example, to specify that the German product is required, set ANGLANG to "`_ge`".
2. If the ANGLANG environment variable is not set, then ANGOSS will assume the files are in the oasys subdirectory.

### **Default files (\*.def)**

When finding a .def file (default files contain information such as preferences, print preset options, etc.) the following steps are executed.

1. First, the directory in which ANGOSS was started is searched for the desired file.
2. Next, if the file was not found in the start up directory, the home directory of the current user, as specified by the value of the HOME environment variable, is checked for the file.
3. If the file is not found in steps one and two, the oasys directory is checked. For details on how the oasys directory is found see the previous section Message Files.

### **Local Resource File (resource.lrl)**

In DOS, the ANGOSS start up directory is searched for the resource.lrl file. In Unix, the home directory of the current user, as specified by the value of the HOME environment variable, is checked for the file.

If resource.lrl cannot be found then only the system resource file is used. If it is found, both the system and local resource libraries are used.

## **System Resource File (resource.srl)**

The resource.srl (system resource library) must be in the resource subdirectory within the main system directory (usually /usr/angoss/resource). On how ANGOSS locates the main system directory, refer above to the Main System Directory section.

## **Extended Terminal Information (etic files)**

The Unix version of ANGOSS uses etic files (Extended Terminal Information files) to configure itself for use with particular terminals. Normally, the etic files are found in the tinfo subdirectory with main system directory (e.g. /usr/angoss/tinfo). However, the ETICINFO environment variable can also be used to specify where to find the etic files.

## Chapter 10: ANGOSS Directory Structure

# Appendix A: File Extensions

## File Extensions in Alphabetical Order

Extension	File Type	Module
.###	filled area font	System
.aif	executable program file	System
.asc	file exported in ascii format	Spreadsheet
.bdc	backup document	Word Processor
.bdf	backup definition	System
.bfr	backup report definition	Database
.bfs	backup sort definition	Database
.bft	backup transaction definition	Database
.bfw	backup cross-tab	Database
.bfx	backup relate definition	Database
.bky	backup keyboard	Communications
.bp0	backup project file	Main Menu
.bp1	backup project file	Spreadsheet
.bp2	backup project file	Word Processor
.bp3	backup project file	Database
.bp4	backup project file	Communications

## Appendix A: File Extensions

<b>Extension</b>	<b>File Type</b>	<b>Module</b>
<b>.btx</b>	backup textfile	Word Processor
<b>.bvs</b>	backup standard view	Database
<b>.bvww</b>	backup custom view	Database
<b>.bws</b>	backup worksheet	Spreadsheet
<b>.ccd</b>	compiled cartridge descriptor	System
<b>.cdv</b>	Communications driver	Communications
<b>.cgm</b>	computer graphics metafile	Spreadsheet
<b>.cpd</b>	compiled printer descriptor	System
<b>.csf</b>	data format definition	Communications
<b>.dat</b>	file exported in ANGOSS format	Spreadsheet
<b>.db</b>	data-file	Database
<b>.dbf</b>	file exported in Dbase format	Database
<b>.dbq</b>	backup query definition	Database
<b>.def</b>	definition file	System
<b>.dfq</b>	query definition	Database
<b>.dfr</b>	report definition	Database
<b>.dfs</b>	sort definition	Database
<b>.dft</b>	transaction definition file	Database
<b>.dfw</b>	cross-tab definition	Database
<b>.dfx</b>	relate definition	Database
<b>.dif</b>	file exported in Dif format	System
<b>.doc</b>	document file	Word Processor

<b>Extension</b>	<b>File Type</b>	<b>Module</b>
<b>.dtm</b>	appointment file	Appointment Mgr
<b>.exc</b>	dictionary file	System
<b>.exe</b>	executable program	System
<b>.gdb</b>	business graphs	Spreadsheet
<b>.gdc</b>	composite graph	Spreadsheet
<b>.gde</b>	elevation graph	Spreadsheet
<b>.gdf</b>	pre 1.5 graph definitions	Spreadsheet
<b>.gdh</b>	high-low graphs	Spreadsheet
<b>.gdn</b>	graph definition file	Spreadsheet
<b>.gdq</b>	quick graph file	Spreadsheet
<b>.gds</b>	scientific graph	Spreadsheet
<b>.gdt</b>	text graphs	Spreadsheet
<b>.gdv</b>	graphics screen driver	System
<b>.gmf</b>	pre 1.5 graph metafiles	Spreadsheet
<b>.hdv</b>	hardware driver	System
<b>.hud</b>	dictionary file	System
<b>.hyp</b>	dictionary file	System
<b>.idx</b>	index	Database
<b>.iff</b>	temporary merge file	Word Processor
<b>.is1</b>	input screen	Spreadsheet
<b>.is2</b>	input screen	Word Processor
<b>.is3</b>	input screen	Database

## Appendix A: File Extensions

<b>Extension</b>	<b>File Type</b>	<b>Module</b>
<b>.is4</b>	input screen	Communications
<b>.key</b>	key definition file	Database
<b>.key</b>	keyboard definition	Communications
<b>.lex</b>	dictionary file	System
<b>.lrl</b>	local resource library	System
<b>.mac</b>	macros	All
<b>.mbk</b>	backup macros	All
<b>.mdv</b>	modem definition	Communications
<b>.mnu</b>	menu keywords	System
<b>.msg</b>	intro display file	System
<b>.ndv</b>	network driver	System
<b>.pdv</b>	printer driver	System
<b>.pf0</b>	project source code	Main Menu
<b>.pf1</b>	project source code	Spreadsheet
<b>.pf2</b>	project source code	Word Processor
<b>.pf3</b>	project source code	Database
<b>.pf4</b>	project source code	Communications
<b>.pix</b>	physical index	Database
<b>.prn</b>	report printed to disk	Spreadsheet
<b>.prt</b>	report printed to disk	Database
<b>.psc</b>	plotter descriptor	System
<b>.rdf</b>	report definition	Spreadsheet

<b>Extension</b>	<b>File Type</b>	<b>Module</b>
<b>.rf0</b>	runtime project File	Main Menu
<b>.rf1</b>	runtime project file	Spreadsheet
<b>.rf2</b>	runtime project file	Word Processor
<b>.rf3</b>	runtime project file	Database
<b>.rf4</b>	runtime project file	Communications
<b>.sdv</b>	text screen driver	System
<b>.sff</b>	screen font	System
<b>.srl</b>	resource library	System
<b>.stm</b>	appointment file	Appointment Mgr
<b>.ths</b>	dictionary file	System
<b>.txt</b>	text file	Word Processor
<b>.ucp</b>	communications profile	Communications
<b>.udc</b>	custom dictionary	Word Processor
<b>.vw</b>	custom view	Database
<b>.vws</b>	standard view	Database
<b>.wk1</b>	Lotus 123 worksheet, rel. 2	Spreadsheet
<b>.wks</b>	Lotus 123 worksheet	Spreadsheet
<b>.ws</b>	worksheet	Spreadsheet

## File Extensions by Module

<b>Module</b>	<b>Extension</b>	<b>File Type</b>
All	<b>.mac</b>	macros
	<b>.mbk</b>	backup macros
Appointment Mgr	<b>.dtm</b>	appointment file
	<b>.stm</b>	appointment file
Communications	<b>.bky</b>	backup keyboard
	<b>.bp4</b>	backup project file
	<b>.cdv</b>	Communications driver
	<b>.csf</b>	data format definition
	<b>.is4</b>	input screen
	<b>.key</b>	keyboard definition
	<b>.mdv</b>	modem definition
	<b>.pf4</b>	project source code
	<b>.rf4</b>	runtime project file
	<b>.ucp</b>	Communications profile
Database	<b>.bfr</b>	backup report definition
	<b>.bfs</b>	backup sort definition
	<b>.bft</b>	backup transaction definition
	<b>.bfw</b>	backup cross-tab
	<b>.bfx</b>	backup relate definition

<b>Module</b>	<b>Extension</b>	<b>File Type</b>
Database	<b>.bp3</b>	backup project file
	<b>.bvs</b>	backup standard view
	<b>.bvw</b>	backup custom view
	<b>.db</b>	data-file
	<b>.dbf</b>	file exported in Dbase format
	<b>.dbq</b>	backup query definition
	<b>.dfq</b>	query definition
	<b>.dfr</b>	report definition
	<b>.dfs</b>	sort definition
	<b>.dft</b>	transaction definition file
	<b>.dfw</b>	cross-tab definition
	<b>.dfx</b>	relate definition
	<b>.idx</b>	index
	<b>.is3</b>	input screen
	<b>.key</b>	key definition file
	<b>.pf3</b>	project source code
	<b>.pix</b>	physical index
	<b>.prt</b>	report printed to disk
	<b>.rf3</b>	runtime project file
	<b>.vw</b>	custom view
	<b>.vws</b>	standard view

## Appendix A: File Extensions

<b>Module</b>	<b>Extension</b>	<b>File Type</b>
Main Menu	<b>.bp0</b>	backup project file
	<b>.pf0</b>	project source code
	<b>.rf0</b>	runtime project file
Spreadsheet	<b>.asc</b>	file exported in ASCII format
	<b>.bp1</b>	backup project file
	<b>.bws</b>	backup worksheet
	<b>.cgm</b>	computer graphics metafile
	<b>.dat</b>	file exported in ANGOSS format
	<b>.gdb</b>	business graphs
	<b>.gdc</b>	composite graph
	<b>.gde</b>	elevation graph
	<b>.gdf</b>	pre 1.5 graph definitions
	<b>.gdh</b>	high-low graphs
	<b>.gdn</b>	graph definition file
	<b>.gdq</b>	quick graph file
	<b>.gds</b>	scientific graph
	<b>.gdt</b>	text graphs
	<b>.gmf</b>	pre 1.5 graph metafiles
	<b>.is1</b>	input screen
	<b>.pf1</b>	project source code
	<b>.prn</b>	report printed to disk
	<b>.rdf</b>	report definition

<b>Module</b>	<b>Extension</b>	<b>File Type</b>
Spreadsheet	<b>.rfl</b>	runtime project file
	<b>.wk1</b>	Lotus 123 worksheet, rel. 2
	<b>.wks</b>	Lotus 123 worksheet
	<b>.ws</b>	worksheet
System	<b>.###</b>	filled area font
	<b>.aif</b>	executable program file
	<b>.bdf</b>	backup definition
	<b>.ccd</b>	compiled cartridge descriptor
	<b>.cpd</b>	compiled printer descriptor
	<b>.def</b>	definition file
	<b>.dif</b>	file exported in DIF format
	<b>.exc</b>	dictionary file
	<b>.exe</b>	executable program
	<b>.gdv</b>	graphics screen driver
	<b>.hdv</b>	hardware driver
	<b>.lrl</b>	local resource library
	<b>.mnu</b>	menu keywords
	<b>.msg</b>	intro display file
	<b>.ndv</b>	network or file driver
	<b>.pdv</b>	printer driver
	<b>.psc</b>	plotter descriptor
	<b>.sdv</b>	text screen driver

Appendix A: File Extensions

<b>Module</b>	<b>Extension</b>	<b>File Type</b>
System	<b>.sff</b>	screen font
	<b>.srl</b>	resource library
Word Processor	<b>.bdc</b>	backup document
	<b>.bp2</b>	backup project file
	<b>.btx</b>	backup textfile
	<b>.doc</b>	document file
	<b>.hud</b>	dictionary file
	<b>.hyp</b>	dictionary file
	<b>.iff</b>	temporary merge file
	<b>.is2</b>	input screen
	<b>.lex</b>	dictionary file
	<b>.pf2</b>	project source code
	<b>.rf2</b>	runtime project file
	<b>.ths</b>	thesaurus file
	<b>.txt</b>	text file
	<b>.udc</b>	custom dictionary

# Appendix B: ANGOSS Special Characters

## ANGOSS Special Characters

The chart in this appendix will show you the special characters available with ANGOSS. By selecting fonts such as dingbats, symbols, line graphics, or bar graphics, you can print these special characters in your document, spreadsheet, graph, or data report. (You may not be able to print all of these characters, depending on the capabilities of your printer.)

To use the chart, locate the special character you wish to print. The column heading will tell you which font will give you that character. Select that font to be the current font. Now look at the decimal number to the left on the same line as the character. To insert this character, hold down **Alt** and type the decimal number on the number keypad on your keyboard. (This must be the calculator number keypad, not the numbers across the top of the regular keyboard.)

The character which appears on your screen will probably be different from the one you selected. When you print your file however, the proper character should appear.

**NOTE:** The dingbat1 font has a special function in ANGOSS Spreadsheet Graphics. These characters can be used as bullets quickly and easily using the %b option. Read the discussion of the Graph commands in the **ANGOSS Spreadsheet** manual for more information.

## Appendix B: ANGOSS Special Characters



## Appendix B: ANGOSS Special Characters



## Appendix B: ANGOSS Special Characters

## Appendix B: ANGOSS Special Characters

## Appendix B: ANGOSS Special Characters



## Appendix B: ANGOSS Special Characters

# Appendix C: Character Set Chart

## Character Set Chart

This chart can help you determine if your printer's internal fonts support any of the special characters offered by ANGOSS. Across the top of the chart you will see a number of character sets supported by different printers. You can determine which set your printer supports by reviewing the Printer Supported Feature Screen within the Install program.

Locate the symbol you want to print in the Smart Character Set column to the left. Then read over to the column under the character set supported by your printer. If the space is blank, your printer's internal fonts will not support that character with ANGOSS. You can still print this character with many printers, by using filled-area fonts. For more information on fonts, consult the individual module manuals and the discussion of the Tools New-Font command in *ANGOSS Software System*.

## Appendix C: Character Set Chart



## Appendix C: Character Set Chart



## Appendix C: Character Set Chart



## Appendix C: Character Set Chart



## Appendix D: Hardware Worksheet

### Plotters

Manufacturer / Model

---

---

---

---

---

---

---

---

---

---

### Computers

Manufacturer / Model

---

---

---

---

---

---

---

---

---

---

**Display**

Adapter Card / Monitor Type

---

---

---

---

---

---

---

---

---

---

---

## Appendix D: Hardware Worksheet

# Appendix E: User Directory Worksheet

## User Directory Worksheet

Up to 16 user directories can be defined and created at once with the Install program. However, all directories created at one time have to have the same hardware default requirements. This worksheet can help you group all users with similar hardware together, thereby speeding up the creation process.

### Group 1

List path and name for each user directory in this group:

User 1: \_\_\_\_\_

User 2: \_\_\_\_\_

User 3: \_\_\_\_\_

User 4: \_\_\_\_\_

User 5: \_\_\_\_\_

User 6: \_\_\_\_\_

User 7: \_\_\_\_\_

User 8: \_\_\_\_\_

User 9: \_\_\_\_\_

User 10: \_\_\_\_\_

User 11: \_\_\_\_\_

User 12: \_\_\_\_\_

User 13: \_\_\_\_\_

User 14: \_\_\_\_\_

User 15: \_\_\_\_\_

User 16: \_\_\_\_\_

## Appendix E: User Directory Worksheet

Hardware Preferences for this group:

Computer: \_\_\_\_\_  
Display: \_\_\_\_\_  
Printer: \_\_\_\_\_  
Plotter: \_\_\_\_\_

### Group 2

List path and name for each user directory in this group:

User 1: \_\_\_\_\_  
User 2: \_\_\_\_\_  
User 3: \_\_\_\_\_  
User 4: \_\_\_\_\_  
User 5: \_\_\_\_\_  
User 6: \_\_\_\_\_  
User 7: \_\_\_\_\_  
User 8: \_\_\_\_\_  
User 9: \_\_\_\_\_  
User 10: \_\_\_\_\_  
User 11: \_\_\_\_\_  
User 12: \_\_\_\_\_  
User 13: \_\_\_\_\_  
User 14: \_\_\_\_\_  
User 15: \_\_\_\_\_  
User 16: \_\_\_\_\_

Hardware Preferences for this group:

Computer: \_\_\_\_\_  
Display: \_\_\_\_\_  
Printer: \_\_\_\_\_  
Plotter: \_\_\_\_\_

**Group 3**

List path and name for each user directory in this group:

User 1: \_\_\_\_\_  
User 2: \_\_\_\_\_  
User 3: \_\_\_\_\_  
User 4: \_\_\_\_\_  
User 5: \_\_\_\_\_  
User 6: \_\_\_\_\_  
User 7: \_\_\_\_\_  
User 8: \_\_\_\_\_  
User 9: \_\_\_\_\_  
User 10: \_\_\_\_\_  
User 11: \_\_\_\_\_  
User 12: \_\_\_\_\_  
User 13: \_\_\_\_\_  
User 14: \_\_\_\_\_  
User 15: \_\_\_\_\_  
User 16: \_\_\_\_\_

## Appendix E: User Directory Worksheet

Hardware Preferences for this group:

Computer: \_\_\_\_\_

Display: \_\_\_\_\_

Printer: \_\_\_\_\_

Plotter: \_\_\_\_\_

### Group 4

List path and name for each user directory in this group:

User 1: \_\_\_\_\_

User 2: \_\_\_\_\_

User 3: \_\_\_\_\_

User 4: \_\_\_\_\_

User 5: \_\_\_\_\_

User 6: \_\_\_\_\_

User 7: \_\_\_\_\_

User 8: \_\_\_\_\_

User 9: \_\_\_\_\_

User 10: \_\_\_\_\_

User 11: \_\_\_\_\_

User 12: \_\_\_\_\_

User 13: \_\_\_\_\_

User 14: \_\_\_\_\_

User 15: \_\_\_\_\_

User 16: \_\_\_\_\_

Hardware Preferences for this group:

Computer: \_\_\_\_\_

Display: \_\_\_\_\_

Printer: \_\_\_\_\_

Plotter: \_\_\_\_\_

## Appendix E: User Directory Worksheet

# Appendix F: Recommended Directory Structures

## Directory Structures

This appendix illustrates the possible directory structures for two types of DOS networks.

### Novell

```
\angoss
  \users
    \user1
      \cmdef.def
      \cmformat.def
      \cmkeybrd.def
      \cmmodem.def
      \cmpref.def
      \dbpref.def
      \dbtemplt.def
      \smartfnt.def
      \smarthdw.def
      \smartprf.def
      \sscurent.def
      \ssdefault.def
      \sspref.def
      \ssreport.def
      \wpdoc.def
      \wppref.def
```

## Appendix F: Recommended Directory Structures

```
        \wpprint.def
    \user2
        (same as user1)
    \user3
        (same as user1)
    \ss
    \dm
    \wp
    \cm
```

### Other Networks

For networks that utilize various volumes to establish the rights of the sharenames within their network, a minimum of three volumes is recommended. The following example shows how those volumes might be set up. Volume identification letters are provided for illustration only; your letters may be different. The rights for each volume may also be different in your situation.

<b>Drive</b>	<b>Contents</b>	<b>Rights</b>
<b>F:</b>	ANGOSS program files	Read Only
<b>G:</b>	Shared data files	Read, Write, Create
<b>H:</b>	User home directories	Read, Write, Create

Users will logon to their home directory volume H. Their path will include the directory containing ANGOSS program files on volume F, and their default data paths in Angoss will be set to the appropriate directories on volume G.

Obviously, additional volumes and any number of subdirectories in these three volumes can be created to meet your needs.

## Appendix G: Conversion From Older Versions

This chapter discusses the steps required to convert data, programs, applications and configuration files from previous versions of ANGOSS and SmartWare. A section exists for each previous version that requires conversion.

### ANGOSS 2.4x (Unix)

If you are upgrading from Unix ANGOSS 2.4x, you will need to recompile all project files. The format of the resource library and configuration files (smarthdw.def, etc.) has also changed. If local copies of these have been created, you should recreate them. Various system changes to the directory structure and environment variables may also require some changes to the .profile, .login and/or .cshrc. Refer to the installation documentation for complete details.

### SmartWare II version 1.5x or ANGOSS 2.30 (DOS)

Converting SmartWare II 1.5x or ANGOSS 2.30 data files and programs to ANGOSS 2.5x is not necessary because they are compatible. Project files do NOT need to be recompiled. Some reconfiguration is required and, if you are an application developer, some exciting new options exists.

### Reconfiguration

The location of the executable programs that start ANGOSS Office Automation has changed. This will require changes to your PATH statement. The PATH is usually set in the AUTOEXEC.BAT, and should now include the ANGOSS bin directory (e.g. C:\ANGOSS\BIN).

The program names and start up parameters have also been changed from previous versions. The command 'angoss' starts ANGOSS in 286 protect mode. The command 'angossx'

starts ANGOSS in 386 protect mode. Use the -x parameter (i.e. 'angoss -x') for a list of valid flags.

Refer to the *ANGOSS Install Manual* and the *Enhancements* section, earlier in this book, for details on setting the path, memory configuration, etc.

The layout of the smarthdw.def and smartprf.def files have been changed. If you have local copies (usually for different users on a LAN), you should copy new versions of these files to each user directory and make the necessary changes by running ANGOSS from the directory where the .def files are and using the TOOLS PREFERENCES command. The format of the resource libraries have also been changed. If you have local resource libraries, (resource.lrl) they should be rebuilt with the TOOLS RESOURCE command at the Main Menu. The system resource library (resource.srl) will be automatically built during the installation.

## Enriched Applications

If you have created Enriched applications, using the 2.30 Developer System, some minor changes will need to be made to the start up batch file and angoss.cfg file. Besides these minor adjustments, no modifications are required. The following changes should be made to the start up batch file:

- Change the path of the ANGOSS shell (previously known as the Environment). The line that reads "set ANGIIDVR=<old path>" should be changed to "set ANGIIDVR=C:\ANGOSS\APSYS\SHELL". Adjust this accordingly for different install locations.
- Change the start up program name. The line that reads "set SMTCMD=<old command>" should be changed to use the new program name. For example, "set SMTCMD=angossx -vm" indicates 386 mode using virtual memory. Note that the previously line (if not "%SMTCMD% ...") tests to see if SMTCMD already has a value and, if so, skips the assignment. Delete this line in all start up batch files if you want to run different applications with different versions of ANGOSS O.A.. To blank SMTCMD's value so that the assignment takes place, at the DOS prompt, type "set SMTCMD=".
- Remove the phrase "in-memory" from the start up lines. There should be no lines that start with "%SMTCMD% d -oi ...". The phrase "in-memory" appears at the end of these lines and should be removed.

After modifying the start up batch file, you should edit the `angoss.cfg` file and update the location of the ANGOSS Developer System. The line that starts “`$$sdev`” should be changed to use the new path “`C:\ANGOSS\APSYS\DEV\`”. Adjust this path accordingly. The lines that start with “`$$spsys`” and “`$$dirsep`” can be removed as they will be automatically calculated.

## Project Processing Applications

If you have applications written with the SmartWare II project processing language, you have the option of converting your applications to use the ANGOSS Developer System and ANGOSS Shell. The ANGOSS Developer System is a revolutionary tool which dramatically reduces development time and costs while delivering applications which offer unprecedented administration and end user functionality.

Briefly, some advantages of using the Developer System are:

- Dramatically reduced development time
- Reduce or eliminate programming
- Empowerment of end users in a safe and controlled environment.
- Determine which commands and modules different users can run
- Automatic documentation and road map generation
- Development, user, and processing audits
- Multilingual application support
- Relational archiving
- User procedures and job streams

For details on converting a project processing based application to ANGOSS, refer to **Appendix E** of the *ANGOSS Developer Manual*.

## SmartWare II 1.00 to 1.02

Most files created with SmartWare II version 1.00 to 1.02 can be reconverted by loading and saving when running the new version. A special conversion routine is supplied for

converting graph definitions. Project files must be recompiled. If you are running applications, you should also consider the ANGOSS Developer System. See the **Applications** section above.

## Communications

No conversion is necessary on files from SmartWare II versions 1.0 - 1.02.

## Database

Data files created in SmartWare II versions 1.0 - 1.02 can be automatically converted by loading them into ANGOSS Database with the File Load command.

**NOTE:** If you use the File Modify command to edit a view once it has been loaded into ANGOSS, you will no longer be able to load that view in SmartWare II versions 1.0 - 1.02.

## Spreadsheet

To convert worksheets created in SmartWare II version 1.0 - 1.02, you need only to load and save them into the ANGOSS Spreadsheet. You do this by executing the File Load command. You will then be prompted for the name of a file to Load. In Unix, only 3.0 and higher versions can be automatically converted.

You can either type in the complete filename, including the path, or use the **F5** key to display files in any directory. When you find the file you want, select it from the menu.

When the file has been loaded it will be displayed on the screen. Fonts that were defined in the old worksheet will still be identified by the same number. However, in ANGOSS, any font description can be mapped to any number. Use the Layout Set-Font Edit Current-Sheet command to ensure the number signifies the font you want.

When saving the ANGOSS worksheet, you may use the same name as the old worksheet, or assign a new name. When prompted for the name of the file to save, type only the filename without the path or extension. The worksheet will then be stored in the current directory or the directory set by your data path.

## Passwords on Smart Files

When you load a file with a password to be converted, you must use the password that has save permission. Unlike early versions of Smart, the ANGOSS Spreadsheet allows only one password per worksheet. When you save your converted file, the save permission password will be the password for the ANGOSS worksheet. Any other passwords are lost.

## Graphs

SmartWare II 1.00 -> 1.02 graph definition files (.GDFs) are not compatible with this version. A project file has been supplied to convert the old format .GDF files to the new format definition files. The new files have extensions based on the graph type:

.GDB	Business graph
.GDH	Hi-Low graph
.GDC	Composite graph
.GDS	Scientific graph
.GDE	Elevation graph
.GDT	Text graph

The graph definition converter project is named GDF\_CONV.RF1. It has been placed in the system directory (\ANGOSS\OASYS) by the Install process. To execute the project, you must be in the spreadsheet. Select REMEMBER EXECUTE (or F8) from the command menu, and enter the full path to the system directory, followed by the project name. For example, if your system was installed in C:\ANGOSS, press F8 then enter:

```
C:\ANGOSS\OASYS\GDF_CONV
```

Select the IN-MEMORY choice after the name is entered.

When the converter runs, you will be asked for the path containing your old (.GDF) graph definition files. Type in the directory path, or press ESC to leave the project. For example, if your files were in a directory SSDATA , you would enter:

```
C:\SSDATA
```

A list of all .GDF files in the supplied path will be displayed. You may pick one individually, or may choose the [ALL] option. If [ALL] is selected, the project will step through the entire list, converting each one in turn. While the list of files is displayed, you may also press ESC to return to the path prompt.

If you receive a message stating that a file already exists, then there is already a file in the directory with the name of the 1.5 graph definition (that is, the name of the .GDF file, but with one of the six new extensions listed above). You may have already created a new 1.5 graph definition of the same name, or previously have run the converter project. You are asked whether to overwrite the existing file or not.

## Appendix G: Conversion From Older Versions

The conversion project does NOT rename or delete your old .GDF files. They will remain untouched. Once you are certain that the new definition files are ok, you may delete the old .GDF files if you choose. Because of the many new options available in the graphics package, you should examine each converted definition file. It may be necessary or desired to adjust some of the choices.

The GDF\_CONV project converts the graph DEFINITION files (.GDFs), not the generated graph files (.GMFs). The old .GMF files may be used in this version without change, if desired. Graphs generated in this version from the new definition files will now have the extension .CGM.

## Word Processor

Documents created in SmartWare II 1.0 - 1.02 can also be converted by simply loading and saving them in the ANGOSS Word Processor. Execute the File Load command. You will then be prompted for the name of a file to load.

You can either type in the complete filename, including the path, or use the **F5** key to display the files in any directory. When you find the file you want, select it from the menu.

When the document has been loaded, it will be displayed on the screen. Fonts that were defined in the document will still be identified by the same number. However, in ANGOSS any font description can be mapped to any number. Use the Layout Font Edit Current-Document command to ensure the number signifies the font you want.

When saving the ANGOSS document, you may use the same name as the old document, or assign a new name. When prompted for the name of the file to save, type only the filename, not the path or extension. You must type in the name; do NOT just press **Enter**. The document will then be stored in the current directory or the directory set by your data path.

## Printer Descriptor Files

A number of differences exist with the file format of ANGOSS printer descriptor files. The files are now in binary format instead of text format as they were in version 1.0 - 1.02. Additionally, ANGOSS descriptor files contain information on a number of new features, such as paper profiles, which are not addressed in earlier descriptors.

Because of these changes, 1.02 descriptors will not work with ANGOSS. For most people, this will cause no problem. They will be able to use the new descriptor files provided with ANGOSS.

However, some people may have edited their 1.02 descriptors to customize their printer's performance, or to provide support for a printer that otherwise was not supported by SmartWare II. In this case, there are a number of alternatives.

1. Try the ANGOSS descriptor for your printer. The information contained in the new format may take care of any problems you originally had with the earlier descriptors.
2. If you wish to customize the performance of the ANGOSS descriptor, or your printer is not supported, you can use the Descriptor Editor to modify a descriptor. If your printer is not supported, pick a descriptor that is similar to your printer and modify it as necessary. Information on using the Descriptor Editor is provided in the ANGOSS Software System manual.
3. If you have invested a great deal of time and effort in customizing your earlier descriptor files, you may prefer to make the necessary changes in the existing text file and then convert the file to the proper binary format. For more information on this procedure, please read the chapter on printer descriptors in the **ANGOSS Software System**.

## Project Files

Project files created in SmartWare II 1.0 - 1.02 must be recompiled in ANGOSS. You will need to review your project files to determine if any of the commands referenced have changed. This will be limited mostly to printing, graphics and some options screens. If you have made extensive use of keys statements, you will need to make sure items on option menus have not been moved or deleted.

If your project files deal with advanced issues such as real mode memory access be aware that ANGOSS 2.50 is a protect mode product.

## SmartWare 2.0 - 3.10

The product has changed dramatically since SmartWare 2.0 and 3.10, especially in the database and programming language. Data conversion from the spreadsheet, word processor and communications is straight forward. Converting simple programs and database files is also simplistic, however converting complicated data structures and applications can be a fairly involved process.

## Applications

If you have developed applications in SmartWare 3.10 or earlier, you may wish to use the ANGOSS Developer System to recreate the application under ANGOSS. This approach is often faster than converting all of the project files and leads to higher quality application.

If you decide to use the Developer System, you must translate all data files and screens as described later in this chapter. It may also be useful to convert some project files, such as reports or processing routines.

Using the Developer System, you must create a new application (by running the MAKENEW program) and then copy the converted files into the FILES subdirectory. The old menu structure must then be recreated.

For more details on this process refer to the **ANGOSS Developer Manual**. **Appendix E** is a description of how to convert a SmartWare II, project processing based application. This may be useful to Smart 3.10 users, however, be warned that cross tab definitions are not compatible and that field numbers are used in converted report definitions.

## Communications

Communications profiles and custom key definition files can be automatically translated to ANGOSS.

Profiles created in previous versions of Smart Communications have the extension .ucp. Copy the .ucp files you wish to translate to the data path directory for ANGOSS Communications in ANGOSS. Use the command Set-Terminal Settings Define to review and then save the old file. Once it has been saved, it has been translated.

**IMPORTANT:** Do not execute Set-Terminal Settings Load on the old profile until AFTER executing the Set-Terminal Settings Define command. The file is not translated until after it has been defined.

For custom key definitions, copy your files with the extension .key to the new directory. ANGOSS can use the files as they are, but performance may be improved by translating them. This is done by using the Set-Terminal Keyboard Define command to review and then save the old definition.

**IMPORTANT:** Do not copy the following files to Communications in ANGOSS: ansi.key, vt100.key, and vt52.key. Only your custom defined key files should be copied over.

## Database

Data files created in SmartWare II versions 1.0 - 1.02 can be automatically converted by loading them into ANGOSS Database with the File Load command.

**NOTE:** If you use the File Modify command to edit a view once it has been loaded into ANGOSS, you will no longer be able to load that view in SmartWare II versions 1.0 - 1.02.

Data files created in Smart version 2.0 or later can be updated by importing the file into the Database in ANGOSS. If you have created custom screens for your data files, you can convert them and the data file in one step by using the database Screen Converter. Detailed instructions on using this converter are provided later in this chapter.

If you have no custom screens to convert, you can convert your files by executing the File Import 310-Smart command. You will then be prompted for the name of a file to import.

You can either type in the complete filename, including the path, or use the F5 keys to display files in any directory. When you find the file you want, select it from the menu.

You will then be prompted for a new name to give your ANGOSS data-file. You can keep the same name or give it another name. You do not need to type the entire path or the extension, just the filename. The data-file will then be stored in the current directory or the directory set by your data path.

Once the file is imported, you will see the records from the data-file displayed on the screen in a standard view format.

**IMPORTANT:** Your old data-files are not destroyed when they are imported. It is recommended that you keep your old files until you become familiar with the ANGOSS Database.

## Database Screen Converter

ANGOSS includes a project file that converts screen files created in earlier releases of Smart Database to view files that can be used in the ANGOSS Database.

Prior to the release of SmartWare II, Smart databases were limited to a standard screen and up to nine custom screens, all stored in a single file. In ANGOSS, each view is stored in a separate file. Thus, the conversion of a screen file can result in up to nine view files (\*.VW). The file for the standard view (\*.VWS) is created when the database is imported to ANGOSS.

**NOTE:** All screen files created in early releases of Smart must be converted before the custom screens they contain can be used with ANGOSS.

Converted files are placed in the current data path. If a path is specified in Database Preferences, files are stored there. Otherwise, the default data path in Global Preferences is used. If no path is specified in either Global Preferences or Database Preferences, files are stored in the current DOS directory.

## The Conversion Process

To convert a screen file to ANGOSS view files:

STEP 1: Remove password protection from all Smart 3.10 databases to convert.

STEP 2: Enter the ANGOSS Database and set the data path.

Select Tools Preferences Database, type the complete path in the field next to "Default data path:", and press **F10**. This tells ANGOSS where to put the converted files, and where to look for the conversion project.

STEP 3: Select Remember Execute and run DBS\_CONV.

If a file prompter appears when you select Remember Execute, move the pointer to DBS\_CONV and press **Enter**. If no prompter appears, or if DBS\_CONV does not appear in the prompter, type it, specifying the path to the ANGOSS system directory.

For example:

```
c:\angoss\oasys\dbs_conv
```

STEP 4: Specify the Smart 3.10 data file directory.

When the conversion project is run, you are prompted to enter the complete path to your Smart 3.10 data files. Type in the path and press **Enter**.

STEP 5: Select the database to be converted.

When the Smart 3.10 data path has been entered, a file prompter appears containing a list of existing databases. Move the pointer to the database you want to convert and press **Enter**.

**STEP 6:**Select the conversion option.

If the database has not been imported to ANGOSS using the File Import 310-Smart command, select the first option and (if required) enter a new name for the converted database. If the database has already been imported and you need only to convert the screen file, select the second option.

**STEP 7:**Specify which screens to convert.

If you want to convert all the screens in the screen file, select option one. If you want to convert only certain screens, select option two and confirm each screen as it comes up for conversion.

**STEP 8:**Rename views as necessary.

In early versions of Smart, custom screens could have names up to 20 characters long. Custom screens with names longer than eight characters must therefore be renamed when they are converted to views. Similarly, a custom screen with a name that is identical to that of an existing view must also be renamed. In either case, the existing name is displayed on the screen, and you are prompted to enter a new one.

Depending on the number of screens, their complexity, and the speed of your machine, conversion of an entire screen file can take as little as a few minutes or as much as several hours to complete. To cancel conversion, press **Ctrl Z**.

## Temporary Project File

DBS\_CONV does not actually convert screen files. Instead, it creates a temporary project that does the conversion. When the temporary project file has been created, it is compiled and run. During this time, you can see the views as they are created in the View Definition Window.

The temporary project file normally is erased once conversion is complete. If conversion fails (or is canceled) prior to completion, the temporary project file may remain in the ANGOSS system directory. It has the name "\$tempN.pf3" or "\$tempN.rf3" (where N is a number between 1 and 999), and may be deleted.

If conversion fails (or is canceled) after the temporary project file has been created, but before its execution is complete, the View Definition Window remains on the screen. Press **Esc** to return to the keyword menu for ANGOSS Database.

**NOTE:** Since the only date format available in Smart 3.10 was MM/DD/YY, that is the format assigned to all date fields in the conversion process.

### Converting Calculated Fields

When you convert an existing screen created in Smart versions 2.0 - 3.10, calculations are copied into a newly created ANGOSS view. Calculations in a particular screen are verified after that screen is converted.

If there is an error in a calculation, an error message will be displayed, and the conversion project file will be suspended. ANGOSS will then display the View Definition Window where you can edit the calculation on your screen.

**IMPORTANT:** If you are converting several screens at once, make certain that you notice the name of the screen containing the error, so you will know which screens were converted when the error occurred. Screens are converted in order of filename.

Once you have edited the calculation, press **F10**. If there are any other calculation errors in that screen, you will receive another error message. Repeat the process until all errors have been corrected.

Once you have pressed **F10** to complete your modifications, ANGOSS displays the Database module menu. To finish the conversion of your screens, press **F8** to resume execution of the conversion project file.

**IMPORTANT:** Please note the following important information:

If you specify that you want all screens attached to a particular data-file to be converted, and an error was generated, the screens following the one containing the error will not be converted when the project finishes executing.

Once you have corrected the errors in the current screen and have finished converting it, you will have to convert the remaining screens. First, select the database you want to convert, and then specify that you want to convert custom screens only (option 2). Then, on the next screen select the option Select screens to convert. The screen filenames will be displayed one at a time, and you must specify whether or not to convert each one. Type y at the prompt if you wish to convert a screen. If you choose not to convert, type n at the prompt, and the program skips that screen and displays the next screen. Continue answering prompts until you have selected all screens you want to convert.

As an example, say you are converting four screens named accts, cust, inv, and rec, appearing in that order on the converter option screen. If an error occurred in a calculation in the cust screen, you should now convert the inv screen, followed by the rec screen. Using the options mentioned previously, specify only these two screens. You can assume that accts was already converted because it falls before the cust screen. However, you can also verify which

screens were converted by selecting File Load Custom-View in the ANGOSS Database. Any screens that were converted should appear on the prompter.

## Spreadsheet

To convert worksheets created in Smart version 2.0 or later, you need only to load and save them into the ANGOSS Spreadsheet. You do this by executing the File Load command. You will then be prompted for the name of a file to Load. In Unix, only 3.0 and higher versions can be automatically converted.

You can either type in the complete filename, including the path, or use the **F5** key to display files in any directory. When you find the file you want, select it from the menu.

When the file has been loaded it will be displayed on the screen. Fonts that were defined in the old worksheet will still be identified by the same number. However, in ANGOSS, any font description can be mapped to any number. Use the Layout Set-Font Edit Current-Sheet command to ensure the number signifies the font you want.

When saving the ANGOSS worksheet, you may use the same name as the old worksheet, or assign a new name. When prompted for the name of the file to save, type only the filename without the path or extension. The worksheet will then be stored in the current directory or the directory set by your data path.

## Passwords on Smart Files

When you load a file with a password to be converted, you must use the password that has save permission. Unlike early versions of Smart, the ANGOSS Spreadsheet allows only one password per worksheet. When you save your converted file, the save permission password will be the password for the ANGOSS worksheet. Any other passwords are lost.

## Word Processor

Documents created in Smart version 2.0 - 3.10 can also be converted by simply loading and saving them in the ANGOSS Word Processor. Execute the File Load command. You will then be prompted for the name of a file to load.

You can either type in the complete filename, including the path, or use the **F5** key to display the files in any directory. When you find the file you want, select it from the menu.

## Appendix G: Conversion From Older Versions

When the document has been loaded, it will be displayed on the screen. Fonts that were defined in the document will still be identified by the same number. However, in ANGOSS any font description can be mapped to any number. Use the Layout Font Edit Current-Document command to ensure the number signifies the font you want.

When saving the ANGOSS document, you may use the same name as the old document, or assign a new name. When prompted for the name of the file to save, type only the filename, not the path or extension. You must type in the name; do NOT just press **Enter**. The document will then be stored in the current directory or the directory set by your data path.

### Custom Dictionaries from Smart 2.0 - 3.10

Custom dictionaries created in earlier versions of Smart are not automatically translated to ANGOSS. To create a new user dictionary, you can use the Smart 3.x command to create a new user dictionary.

```
DICTIONARY CUSTOM LIST filename.clm OUTPUT pathname\newname.udc
```

The filename.clm in this command is the name of the 3.x custom dictionary you wish to convert. Pathname is the path where your ANGOSS files are located. Newname.udc is the name you assign to your converted file. It must include the extension .udc. An example might be:

```
DICTIONARY CUSTOM LIST mycust OUTPUT c:\myfiles\mycust.udc
```

This will create a text file with the extension .udc.

In the ANGOSS Word Processor, press **Alt X** to edit the last command. If there is a command on the edit line, remove it by pressing **F8**. You should see "Edit Command: ". Type `udc-conv "filename"`. You must enclose the filename in quotation marks; do not include the extension. This command will complete the conversion of your custom dictionary.

### Graphs

Graph areas are retained when a document is converted and both the document and graph metafile should print correctly.

## Project Files

Significant changes in Project Processing, as well as ANGOSS command syntax, make it necessary to translate project files written in Smart 2.0 -3.10 to ANGOSS format. A translation utility, entitled “translat”, has been provided to aid you in this process.

“Translat” will convert all project files to ANGOSS format. However, it may not achieve a perfect translation for the following two reasons:

1. There is no counterpart for some early Smart commands in ANGOSS.

This is not always a problem. In the case of some commands with no counterpart, their job has already been performed by other commands. For example, when you update a database file in ANGOSS, Key Update is automatically executed. Therefore, the fact that the command Key Update cannot be translated does not affect proper execution of the project files.

2. Conventions in ANGOSS have changed and cannot be translated automatically.

An example of this is Cerror values. The values have changed in ANGOSS and “translat” has no way of confirming any value as representing a Cerror value. You must go into the project file and change the old Cerror value to the ANGOSS Cerror value. An appendix in the Project Processing manual will provide you with Cerror values for ANGOSS.

When either of these conditions occurs, a comment line is inserted in the appropriate place in the project file to bring your attention to it. In many cases, the comment offers possible solutions for the condition.

### The Translat Utility

“Translat” is a utility that runs directly from the operating system. You must have your search path set to the directory where you installed ANGOSS.

The format of the command under DOS is:

```
translat [oldfile] [newfile]
```

Either the old filename or the new filename may require the whole filename, including the path and the extension. If the old file is located in a directory other than the current directory you must use the complete path to tell “translat” where to look for your file. Similarly, if you wish the new file to be stored in a directory other than the current directory you must type in the path where you would like it stored. To avoid confusion, you should place your translated file in a different directory than the original project file. If you want them in the same

## Appendix G: Conversion From Older Versions

directory, you must give the new file a different name. As some ANGOSS files have the same extension as files created in Smart, it is important to keep them in separate directories.

Global filenames may be used if you are translating a number of files at the same time. If you use a global characters in the destination path for your translated files, you must use a trailing backslash (\) to indicate this is a directory, not a file.

For example, the path `c:\angoss\oasys\newfiles\` will put your translated project files in that directory. If you type `c:\angoss\oasys\newfiles`, the utility will attempt to create a file named `newfile` in the ANGOSS system directory for each of the projects you are translating.

The format of the command under Unix is:

```
translat [-xvf] [-p proto OR -d dir] [files ... [target]]
```

While this command can be used with a simple format such as `translat [oldfile] [newfile]`, there are other command line options. Executing the `translat` program with the just the `-x` parameter will display the following options:

**-xdisplay this explanation**

**-vverbosely report passes**

**-ndo not perform translation - just show what would happen**

**-fforce creation even if target file exists**

**-ppflag pattern used to create output file name see below**

**-ddir put output files in directory dir equivalent to**

**-p dir/%f files ... files to be processed - this form assumed if only one argument or either -p or -d specified target if neither -p or -d specified and there are multiple arguments, last argument taken as target. If target is existing directory, equivalent to specifying -d target. If target is '-', output written to stdout. If two or more files specified target must be '-' or directory. If only one file given, target assumed to be name of output file**

The `-p` argument may use following escapes to specify name of the output file using components of input file name:

**%%literal**

**%character**

**%ddirectory of input file**

**%ffile of input file (minus directory)**

**%bbasename of input file (minus directory and suffix)**

**%ssuffix of input file (minus application number)**

**%aaapplication number of input file**

all other characters are taken literally, except that value of '-' indicates file sent to stdout.

## After Translation

If a command or string cannot be translated, it is commented out and followed by an appropriate message as to why it was not translated. Following translation, a control line containing the total number of messages written is displayed on the screen. This control line is also displayed at the end of the translated file.

You can look at your translated file in the project file editor. To get to the editor, execute the Remember Tools Edit filename command.

As you look at your new project file, here are a few things to keep in mind.

1. The parameter variables such as %1, %2, etc., no longer exist. They have all been replaced by the project variables per1, per2, etc.
2. The variables encountered in version 3.10 code are now declared at the beginning of the ANGOSS code.
3. The project compiler in ANGOSS is far more particular than in early smart versions. In some cases messages will be inserted to warn you of a possible conflict.

For example, the command "GOTO name" is translated to:

```
SHEET GOTO CELL name
```

```
`*** msg#1:***^ if name represents worksheet, (a) change the  
'keyword CELL to SHEET and (b) enclose the name in double quotes
```

This message tells you that in ANGOSS, you must type in more than just "name". You must specify whether you are referencing a worksheet or a cell reference.

In another example, the command "if cerror = 3002 then exit" is translated to:

```
IF cerror = 3002 exit
```

```
`*** msg#2: ***^value tested for Cerror may have to be changed
```

## Appendix G: Conversion From Older Versions

END IF

This message tells you the numerical value for the Cerror could not be confirmed and you should check it.

In a final example, the Smart 3.10 command “FONT CHANGE 11b ROWS 2” is translated to:

```
LAYOUT SET-FONT CHANGE ROWS 2 11b
```

```
`*** msg#1: ***^font number has to be changed
```

Because any font description can be mapped to any number in ANGOSS, Translate cannot know if the font currently mapped to the number 11 is the font you want. You will need to check and make sure that font 11 is what you want.

### Correcting Problems

If there are syntax or other errors in your file before translation, they will not translate correctly. You can fix the problem in the ANGOSS version of the project file, or fix it in the smart 3.10 version and then translate it.

If you choose to retranslate a project file, follow all the steps just as you did before.

#### Example:

The following example shows a section of a project file written in ANGOSS version 3.10. By comparing it with its ANGOSS translation, you may get a feeling for what some of your project files may look like once they are translated.

Smart version 3.10 project file.

```
input text1 Enter compare date
```

```
if text1 <> NULL
```

```
    call cmpdates
```

```
endif
```

```
end
```

```
procedure cmpdates
```

```
    %1 = days(today) - days(text1)
```

```
    message %1 days between date entered and today
```

```

return
  ANGOSS project file.
PUBLIC text1, perl
SCREEN SHORTINPUT text1 "enter compare date"
IF text1 <> NULL
  cmpdates()
END IF
RETURN
END

FUNCTION _cmpdates()
  perl = days(today) - days(text1)
  MESSAGE ""|str(perl)|" days between date entered and today"
RETURN
END ` ***** 0 messages were written *****

```

## Database Project Files

If your project file calls for the execution of a predefined Database sort, transaction, relate, or summary or involves a Database custom screen, a warning message will be printed when your file is translated. If the project file refers to a database created in Smart, the data-file must first be converted to ANGOSS format, and all Database fields previously referenced by number should be referenced by field name. Otherwise, the converted project file may not operate correctly in ANGOSS. (See Database section of this chapter.) Since custom screens, sorts, transactions, relates, and summaries are not automatically translated, you must recreate them before executing a project file referring to them.

## Converting Other Definitions

Note that there is a translation utility available which translates files that ANGOSS will not automatically translate and assists in the conversion process in other ways. Please contact us for more details.

## Appendix G: Conversion From Older Versions

# Index

## Numerics

7 Bit ASCII 5 - 27

## A

Absolute movement, vertical 5 - 36

Accessing

- Appointment Manager from module 8 - 2

- Descriptor Editor 5 - 10

- DOS 2 - 15

- on-line help 2 - 8

Addition in the ANGOSS Calculator 7 - 6

Algebraic Mode 7 - 6, 9 - 5

Alternative movement command 5 - 48

ANGOSS

- entry options 2 - 1-??

- features 2 - 6

- leaving 2 - 5

- resource library 2 - 12

ANGOSS Calculator

- Algebraic Mode 7 - 1, 7 - 6

  - using arithmetic operators 7 - 6

  - using percent 7 - 7-7-9

- calculation results 7 - 2

- change sign function key 7 - 6

- Formula Mode 7 - 1, 7 - 4

- Formula Window 7 - 2, 7 - 6

- function keys 7 - 2

- Insert 7 - 2

- leaving 7 - 9

- math format

  - decimal 7 - 3

  - hexadecimal 7 - 3

  - octal 7 - 3

  - scientific notation 7 - 3

  - memory 7 - 3

  - on-line help 7 - 3

  - precision 7 - 2

  - Quick Key for 7 - 2

  - Result Window 7 - 2-7 - 4, 7 - 6

    - clearing 7 - 9

  - signed numbers 7 - 6

  - Status Line 7 - 2

  - using formulas 7 - 4

  - using functions 7 - 4

  - using public variables 7 - 4

  - using results 7 - 3

ANGOSS Character Set 4 - 15, 4 - 21

  - unexpected results 5 - 28

ANGOSS Programming Language 2 - 7, 8 - 2

ANGOSS Spreadsheet 1 - 1

ANGOSS Word Processor 1 - 2

Application development 2 - 7

Appointment Manager

- accessing

  - from a Module 8 - 2

  - from Remember 8 - 1-8 - 2

  - from the Main Menu 8 - 1

  - with keyword 8 - 1, 8 - 3

- appointment files

  - naming 8 - 15

  - passwords 8 - 16

  - saving 8 - 15

- calendar commands

  - Clear 8 - 21

  - Goto 8 - 19-8 - 20

  - Remove 8 - 21

- calendars

  - attaching a heading 8 - 17

  - creating 8 - 4, 8 - 13

  - deleting a heading 8 - 17

  - editing a heading 8 - 17

  - loading automatically 8 - 12

- meetings 8 - 4
- naming 8 - 15
- saving 8 - 15–8 - 16
- tasks 8 - 4
- Clear Command 8 - 21
- Day Screen 8 - 13
  - Control Area 8 - 4–8 - 6
  - Quick Keys 8 - 6
  - returning to 8 - 15
  - Status Line 8 - 4–8 - 6
  - Window Area 8 - 4–8 - 5
- deleting appointments 8 - 21
- description of 8 - 1
- directory and file management 8 - 25
- editing appointments 8 - 20
- exiting 8 - 3
- File Access
  - changing 8 - 18
  - General 8 - 18
  - Private 8 - 18
- File Load 8 - 18
- File Password 8 - 16
- File Save 8 - 15
- File Unload 8 - 18–8 - 19
- help 8 - 3
- Insert Command 8 - 13
- inserting an appointment 8 - 15
- Inserting Appointments
  - Meeting Command 8 - 13
  - Task Command 8 - 13
- loading an appointment file 8 - 18
- meetings
  - conflict warning 8 - 12, 8 - 14
  - description fields 8 - 14
  - duration display 8 - 13, 8 - 14
- Month Screen 8 - 9
  - Cursor Keys 8 - 10–8 - 11
- moving to an appointment, first in calendar 8 - 20

- operating modes 8 - 3
- Print Command 8 - 23
- printing appointments 8 - 23
- Remove Command 8 - 21
- running 8 - 1–8 - 3
- screens 8 - 4
- Search Command
  - search criteria 8 - 22
  - using operators 8 - 22
- searching for appointments 8 - 22
- setting defaults
  - calendar 8 - 12
  - conflict warnings 8 - 12
  - data path 8 - 12
  - duration display 8 - 13
- tasks
  - conflict warnings 8 - 12
  - priority settings 8 - 14
- Tools Directory 8 - 25
- Tools File 8 - 25
- unloading an appointment file 8 - 18
- Version 3.10 Files 8 - 15
- Week Screen 8 - 7
  - exiting 8 - 9
- Appointment Manager keyword 8 - 3
  - placing on menus 8 - 2
- Arithmetic operators 7 - 6
- ASCII characters 6 - 4
  - printing 4 - 21

## **B**

- Baseline 5 - 28
- Beginning a print job 5 - 18
- Boldface Fonts 4 - 17
- Building commands 2 - 5–2 - 6
- Building new characters 5 - 34

## C

- Cached fonts 5 - 27
- Calculated Field Conversion G - 12
- Calculation 7 - 1
- Calculator
  - algebraic mode 9 - 5
  - formula mode 9 - 5
- Calculator. See ANGOSS Calculator
- Calendars
  - naming 8 - 15
  - naming extensions 8 - 15
  - saving 8 - 15
  - saving in a different directory 8 - 16
- Cartridge description prompt 5 - 15
- Cartridge fonts 4 - 20, 5 - 26
- Changing, directories 3 - 5, 9 - 6
- Character generation table 5 - 34
  - syntax rules 5 - 35
- Character sets 4 - 15
  - selecting in Descriptor Editor 5 - 27
- Character up prompt 5 - 31
- Character width 5 - 30, 5 - 32
  - determining 5 - 30
- Characters per inch 4 - 17
- Clearing Macros 9 - 8
- Color graphics 5 - 51
- Color text 5 - 51
- Color, assigning to a font 4 - 17
- COM ports 4 - 9
- Command line options 2 - 1--??
- Command reference 9 - 1
- Commands, building 2 - 5--2 - 6
- Comment lines 5 - 15
- Communications
  - Conversion G - 3
- Compiled cartridge descriptor (.ccd) 5 - 10
- Compiled printer descriptor (.cpd) 5 - 10
- Compiling project files 9 - 3

- Compressed font 4 - 17, 5 - 31
  - width ratio 5 - 43
- Condensed fonts 4 - 17, 5 - 31
- Conversion G - 1
  - Communications G - 3
  - Data Base G - 9
  - Printer Descriptors G - 6
  - Project Files G - 15
  - Spreadsheet G - 13
  - Word Processor G - 6, G - 13
- Converting movement values 5 - 37
- Copying files 3 - 11, 9 - 7
- CPI 4 - 17
- Creating
  - a project file 9 - 2
  - directory 3 - 3, 3 - 4
  - Input-Screens 9 - 4
  - macros 6 - 1
- Creating Calendars in the Appointment Manager 8 - 13
- Creating new characters 5 - 34
- Current
  - directory 3 - 4
  - font family 4 - 14
  - printer 4 - 3
- Custom Dictionary Conversion G - 14

## D

- Daisy wheel printer, horizontal motion 5 - 40
- Data Base Conversion G - 9
- Data Base Screen Converter G - 10
- Data Path, Appointment Manager default 8 - 12
- Database report line, determining thickness 5 - 51
- DEC multi 5 - 27
- Decipoints, used in the Descriptor Editor 5 - 10

## Default

- data path 3 - 4, 9 - 14
- paper path 5 - 19
- paper profile 4 - 5
- paper size 5 - 20

## Default settings

- changing 2 - 13
- for each module 2 - 13
- for the whole system 2 - 13
- Global 9 - 11
- hardware 9 - 15
- in Appointment Manager 8 - 12
- module specific 9 - 11
- returning printer to 5 - 17
- setting 2 - 13

## Definition menu

- accessing 2 - 13
- option lists 2 - 13
- Quick Keys 2 - 13

## Deleting

- appointments 8 - 21
- directories 3 - 6, 9 - 7
- files 3 - 12
- project files 9 - 3

## Descriptor Editor 2 - 16

- arrow keys 5 - 5
- bit controlling top pin 5 - 50
- bold font set/reset 5 - 45
- character generation table 5 - 34
- color section 5 - 51
- compressed set/reset 5 - 43
- condensed set/reset 5 - 43
- data flag for translating movement value 5 - 38
- database report line thickness 5 - 51
- default paper path 5 - 19
- default paper size 5 - 20
- double underscore set/reset 5 - 45
- end print job 5 - 18

ending a page 5 - 19

enter key 5 - 5

escape key 5 - 5

expanded set/reset 5 - 44

extra bold font set/reset 5 - 45

font attribute combinations 5 - 31

font cartridges 5 - 18

font end sequence 5 - 27

font height 5 - 27

font resets prompt 5 - 42

font sequences 5 - 42

font start sequence 5 - 27

fonts 5 - 24

graphics data bits sent to printer 5 - 50

groups, general description 5 - 13

italic font set/reset 5 - 46

landscape size command 5 - 23

light font set/reset 5 - 45

major sections 5 - 3—5 - 4

menus 5 - 7

movement and graphics section 5 - 36

movement command prefix 5 - 38

movement command suffix 5 - 40

movement format 5 - 38

moving around the 5 - 4

normal weight font set/reset 5 - 46

normal width set/reset 5 - 43

number of dot positions in a column 5 - 50

outline font set/reset 5 - 45

overview 5 - 1

paper path commands 5 - 21

paper path group 5 - 20

paper size group 5 - 22

pixels 5 - 10

portrait size command 5 - 23

printer control codes 5 - 8

printer resolution section 5 - 46

printing landscape 5 - 18

- printing portrait 5 - 18
- prompts 5 - 12
- proportional space tables 5 - 32
- Quick Keys 5 - 5-5 - 6
- reasons to use 5 - 1
- renaming a descriptor 5 - 11
- selecting character set 5 - 27
- selecting the top pin in Graphics Mode 5 - 49
- setting double underscore thickness 5 - 29
- setting form length 5 - 42
- setting hard margins 5 - 23
- setting strikeout thickness 5 - 29
- setting underscore thickness 5 - 28
- shift key 5 - 4
- start a new page 5 - 19
- strikeout set/reset 5 - 45
- tab key 5 - 4
- text strings 5 - 8
- underscore set/reset 5 - 45
- units of measure 5 - 10
- upright font set/reset 5 - 46
- valid values 5 - 9

Descriptor files

- comment information 5 - 15
- editing 4 - 2
- extensions 5 - 10
- features included 5 - 2
- for color printing 4 - 2
- for font cartridges 4 - 2
- format 5 - 10
- how they work 5 - 2
- loading 5 - 11
- location stored 5 - 3
- printer resolution 5 - 2
- renaming 5 - 11
- testing 5 - 12
- writing 5 - 12

- writing to disk 5 - 12
- Destination 3 - 11-3 - 12
- Directory 3 - 1
  - changing 3 - 5, 9 - 6
  - current 3 - 4
  - deleting 3 - 6, 9 - 7
  - displaying 3 - 11
  - hierarchical 3 - 3
  - making a new 9 - 6
  - root 3 - 2-3 - 5
  - tree structure 3 - 3
- Displaying
  - files in a directory 3 - 6
  - files in a particular directory 9 - 6
  - on-line help 2 - 8
- Division in the ANGOSS Calculator 7 - 6
- DOS
  - accessing 2 - 15, 9 - 10
- Dot positions in a column 5 - 50
- Dots per inch 5 - 46
- Double underline font 4 - 17
- Double underscores 5 - 29
- Draft
  - printing 4 - 2, 4 - 20
  - resolution 4 - 2
- Dummy font 4 - 16

## E

- Edit Commands, Appointment Manager 8 - 20
- Editing
  - descriptor files 4 - 2
  - macros 9 - 9
  - project files 9 - 3
- Editor
  - descriptor 2 - 16
  - text 2 - 16
- EMS 2 - 6

End of job sequence 5 - 18

Enhanced Printing 4 - 20

Entry options 2 - 1-??

Erasing

files 9 - 7

project files 9 - 3

Erasing files 3 - 12

Error messages

help 2 - 12

Executing commands 2 - 5-2 - 6

Executing project files 9 - 4

Exiting ANGOSS 2 - 5

Expanded fonts 4 - 17, 5 - 31

width ratio 5 - 44

Extracting resources 9 - 17

## **F**

File

access options defined 8 - 14

copying 3 - 11, 9 - 7

deleting 3 - 12

descriptor 2 - 12

driver 2 - 12

erasing 3 - 12, 9 - 7

font 2 - 12

management 9 - 7

marking 3 - 11

moving 3 - 12, 9 - 7

names 3 - 10

operations 3 - 9

organizing 3 - 1-3 - 2

pathname, using wild cards 3 - 10

printing 3 - 12, 9 - 8

prompter 3 - 6, 3 - 10

renaming 3 - 12, 9 - 7

specification 3 - 9

text 2 - 16

File Load, Appointment Manager 8 - 18

File Save 8 - 15

File Unload, Appointment Manager 8 - 18-8  
- 19

Filled-area Fonts 4 - 15

Finishing Macros 9 - 9

Finishing Remember Mode 9 - 2

Font 2 - 7

assigning colors 4 - 17

attributes 4 - 16

command sequences to turn on and  
off 5 - 42

sequences 5 - 42

slant 5 - 31

weight 5 - 31

bold 5 - 45

cartridges 4 - 20, 5 - 18, 5 - 26

adding 4 - 5

selecting 4 - 4

character sets 4 - 15

compressed 4 - 17, 5 - 31, 5 - 43

condensed 4 - 17, 5 - 31, 5 - 43

customizing 4 - 14

default 5 - 26

defining 4 - 14

defining in the Descriptor Editor 5 - 24

descriptors for font cartridges 4 - 2

double underline 4 - 17

end sequence 5 - 27

expanded 4 - 17, 5 - 31, 5 - 44

extra bold 5 - 45

filled-area 4 - 15

height measurement, see decipoints 5 -  
10

identification number in Descriptor Edi-  
tor 5 - 25

internal 4 - 15, 5 - 26

italic 5 - 46

italics 4 - 17

landscape orientation 5 - 26

- light 5 - 45
- measuring in Descriptor Editor 5 - 27
- monospaced 5 - 30
- normal weight 5 - 46
- normal width 4 - 17, 5 - 31
- outline 5 - 45
- point size 4 - 16
- portrait orientation 5 - 26
- PostScript 5 - 26
- prerasterized 4 - 18
- Prompter 4 - 13
- proportionally spaced 5 - 30
- rasterizing 9 - 9
- re-invoking default 5 - 42
- scaling 4 - 16
- Selector 4 - 14
- Sideways 9 - 10
- sizes 4 - 16
- sources 4 - 18
- standard 4 - 13
- start sequence 5 - 27
- strikeover 4 - 17
- subscript 4 - 17
- superscript 4 - 17
- underline 4 - 17
- using 4 - 12
- weight 4 - 17

Form length 5 - 42

Formula Mode 7 - 4, 9 - 5

Formula Window 7 - 2

Formulas 7 - 4

Function keys, ANGOSS Calculator 7 - 2

Function, using in ANGOSS Calculator 7 - 4

## **G**

- Global Preferences 2 - 13, 2 - 15
- Goto, Appointment Manager 8 - 19–8 - 20
- Graphics command

- end sequence 5 - 41
- start 5 - 41

Graphics mode

- bit controlling top pin 5 - 50
- determining which pin fires first 5 - 49
- number of graphic data bits 5 - 50

## **H**

- Hard margins 5 - 23
- Hardware Preferences 2 - 13
- Hardware Settings 9 - 15
- Headings
  - attaching to calendar 8 - 17
  - deleting from a calendar 8 - 17
  - editing in a calendar 8 - 17
- Help
  - accessing 2 - 8
  - displaying 2 - 8
  - for error messages 2 - 12
  - index 2 - 8, 2 - 11
  - on-line 2 - 8, 7 - 3
    - ANGOSS Calculator 7 - 3
  - on-line common 2 - 8
  - on-line module 2 - 8
  - related topics 2 - 9
  - searching help text 2 - 9
  - table of contents 2 - 8–2 - 10
  - text 2 - 9
- Help Commands 9 - 1
  - About-Help 9 - 1
  - Contents 9 - 1
  - Index 9 - 1
  - On-Error 9 - 1
  - Tutorial 9 - 1
- Horizontal printer movement 5 - 40
- Horizontal resolution 5 - 47
- HP Roman 8 5 - 27

## I

IBM Codepage 437 and Subset 5 - 27  
IBM Codepage 850 5 - 27  
Inches, used in the Descriptor Editor 5 - 10  
Input-screens, loading 9 - 4  
Integration 2 - 6  
Internal character set  
    affect on output 5 - 28  
    affect on screen display 5 - 28  
Internal character sets supported 5 - 28  
Internal fonts 4 - 15, 5 - 26

## J

Justification  
    micro 4 - 9  
    space 4 - 9

## K

Keys command 6 - 4  
Keywords, selecting 2 - 5–2 - 6

## L

Landscape  
    fonts 5 - 26  
    sequence 5 - 18  
    size sequence 5 - 23  
Leaving ANGOSS 2 - 5  
Loading  
    a project file 9 - 5  
    an input-screen 9 - 4  
    macros 6 - 9, 9 - 8  
Local resource library, storing a descriptor in  
    5 - 12

## M

Macro  
    activity control terms 6 - 5–6 - 6  
    Advanced Terms 6 - 4  
    character terms 6 - 4  
    clear 9 - 8  
    creating 6 - 1  
    definition of 6 - 1  
    editing 9 - 9  
    editor  
        function keys 6 - 3  
        guidelines 6 - 3  
    finishing 9 - 9  
    loading 6 - 9, 9 - 8  
    macro control terms 6 - 6  
    remember 6 - 1, 9 - 8  
        finish 6 - 2  
        suspending 6 - 2  
    saving 6 - 8–6 - 9, 9 - 9  
    temporarily suspending 6 - 10  
    unloading 6 - 10  
    viewing 9 - 9  
    viewing a list 6 - 9  
Main Menu 2 - 5  
Making a new directory 9 - 6  
Managing files 9 - 7  
Marking files 3 - 11  
Measuring fonts 5 - 27  
Meetings  
    date formats 8 - 14  
    time formats 8 - 14  
Memory  
    ANGOSS Calculator, storing values in 7  
        - 3  
    expanded 2 - 6  
Micro-justification 4 - 9  
Modifying resources 9 - 17  
Monospaced fonts 5 - 30

Month Screen, Quick Keys 8 - 11  
Moving files 3 - 12, 9 - 7  
Multiplication in the ANGOSS Calculator 7 - 6

## N

Native fonts. See internal fonts

## O

On-line help, in Appointment Manager 8 - 3  
Operating Modes, Appointment Manager 8 - 3  
Operating System, accessing 9 - 10  
Option lists 2 - 14  
Organizing files 3 - 1-3 - 2  
Orientation, changing 5 - 18

## P

Page end sequence 5 - 19  
Page size 4 - 5  
Page start sequence 5 - 19  
Paging 2 - 6  
Paper path 4 - 5

- commands 5 - 21
- default 5 - 19
- selecting in Descriptor Editor 5 - 20

Paper profile default 4 - 5  
Paper size

- choices 5 - 23
- default 5 - 20
- selecting in Descriptor Editor 5 - 22

Password

- attaching appointment files 8 - 16
- protected files
  - access options for 8 - 14

Appointment Manager 8 - 16

- removing from appointment file 8 - 17
- tracking for appointment file 8 - 17

Path 8 - 16  
Pathname 3 - 4, 3 - 6, 3 - 9-3 - 11  
Pen Colors 4 - 11  
Pen Speed 4 - 10  
Pen Width 4 - 11  
Percent in the ANGOSS Calculator 7 - 7-7 - 9  
Physical page 5 - 49  
Pixels, used in the Descriptor Editor 5 - 10  
Plotter

- configuring 4 - 10
- paper size 4 - 10
- pen colors 4 - 11
- pen speed 4 - 10
- pen width 4 - 11
- time out 4 - 10

Point Size 4 - 16  
Portrait fonts 5 - 26  
Portrait sequence 5 - 18  
Portrait size sequence 5 - 23  
Ports 4 - 9  
PostScript fonts 5 - 26  
Preferences, Global 2 - 13-2 - 15  
Prerasterized fonts 4 - 18  
Preset printer margins. See hard margins  
Print head movement 5 - 31  
Print Options 4 - 12  
Printable area 5 - 49  
Printer

- configuring 4 - 3
- selecting a port 4 - 9
- selecting current 4 - 3
- time-out 4 - 8

Printer control codes

- entering in Descriptor Editor 5 - 8
- format used in Descriptor Editor 5 - 8

- Printer description prompt 5 - 15
- Printer Descriptor
  - Conversion G - 6
- Printer descriptor sections 5 - 3–5 - 4
- Printer drivers 4 - 1
  - explained 5 - 16
  - extensions 5 - 16
  - functions 5 - 2
  - prompt 5 - 16
  - sample 5 - 16
  - selecting 5 - 16
- Printer features supported 5 - 2
- Printer movement
  - absolute 5 - 36
  - converting movement values 5 - 37
  - daisy wheel printer 5 - 40
  - horizontal 5 - 36, 5 - 40
  - relative 5 - 36
  - vertical 5 - 36
- Printer resolution
  - achieving vertical resolution 5 - 48
  - controlling number of dots printed 5 - 47
  - horizontal 5 - 47
  - setting in Descriptor Editor 5 - 46
  - vertical 5 - 47
- Printer type prompt 5 - 17
- Printing
  - a project file 9 - 3
  - appointments 8 - 23
  - color 5 - 51
  - commands 4 - 20
  - controlling the printer 4 - 1
  - descriptor files 4 - 1
  - descriptors for color printing 4 - 2
  - draft 4 - 20
  - draft resolution 4 - 2
  - enhanced 4 - 20
  - files 3 - 12, 9 - 8
  - general information 4 - 1

- quality resolution 4 - 2
- special characters 4 - 21
- speed 4 - 2
- Project files
  - appending to an existing file 9 - 2
  - compiling 9 - 2–9 - 3
  - creating 9 - 2
  - debugging 9 - 4
  - deleting 9 - 3
  - editing 9 - 3
  - executing in memory 9 - 4
  - input-screen 9 - 4
  - loading 9 - 5
  - printing 9 - 3
  - saving 9 - 2
  - unloading 9 - 5
- Project processing 2 - 7, 6 - 4
- Prompts 2 - 13
- Proportional space table 5 - 32
- Proportionally spaced fonts 5 - 30

## Q

### Quality

- printing 4 - 2
- resolution 4 - 2
- Quick Keys 2 - 7, 2 - 15
  - in the Day Screen 8 - 6
  - in the Month Screen 8 - 11
  - in the Week Screen 8 - 11
- Quit Commands 9 - 18

## R

- Rasterized fonts 4 - 18
- Rasterizing fonts 9 - 9
- Redefining keys 6 - 1
- Relative movement, vertical 5 - 36

- Remember Command, accessing Appointment Manager 8 - 1-8 - 2
- Remember Commands, Start 9 - 2
- Remember Mode 9 - 2
  - finishing 6 - 2
  - macros 6 - 1-6 - 2
  - suspending 6 - 2
- Remembering, macros 9 - 8
- Removing a Password 8 - 17
- Renaming a descriptor file 5 - 11
- Renaming files 3 - 12, 9 - 7
- Reset sequence 5 - 17
- Resource
  - extracting 9 - 17
  - modifying 9 - 17
  - viewing 9 - 17
- Resource Library 2 - 12
  - descriptor files 5 - 3
- Result Window 7 - 2
- Root directory 3 - 2-3 - 5

**S**

- Saving macros 6 - 8-6 - 9, 9 - 9
- Screen, Appointment Manager 8 - 4
- Searching for a particular file 3 - 6
- Selecting descriptor menu options 5 - 7
- Setting defaults, Appointment Manager 8 - 12
- Setting module defaults 2 - 13
- Sideways Fonts 9 - 10
- Sorting
  - filelists 3 - 7
  - files 9 - 6
- Space Justification 4 - 9
- Special Characters
  - displaying 4 - 21
  - printing 4 - 21
- Spreadsheet Conversion G - 13

- Standard font 4 - 13, 5 - 26
- Start of job sequence 5 - 18
- Status Line, ANGOSS Calculator 7 - 2
- Storing descriptor files 5 - 3
- Strikeouts 5 - 29
- Strikeover font 4 - 17
- Subdirectory 3 - 3-3 - 4
- Subscript fonts 4 - 17
- Subtraction in the ANGOSS Calculator 7 - 6
- Superscript fonts 4 - 17
- Suspending a macro 6 - 10
- System resource library, storing a descriptor in 5 - 12

## T

- Text strings, entering in Descriptor Editor 5 - 8
- Text tiles 2 - 16
- Text-Editor 2 - 16
- Time-out 4 - 10
  - printer 4 - 8
- Tools
  - Calculator 7 - 1
  - Directory
    - Display 3 - 5, 3 - 6
    - Make 3 - 5
    - Remove 3 - 5, 3 - 6
  - File
    - Copy 3 - 11
    - Erase 3 - 12
    - Move 3 - 12
    - Print 3 - 12
    - Rename 3 - 12
- Tools Commands 3 - 9
  - Calculator 9 - 5
  - Directory 3 - 3, 9 - 6
    - Make 3 - 4
    - New-Directory 3 - 4

- Edit-Printer 9 - 18
- File 9 - 7
- Macros 9 - 8
- New-Font 9 - 9
- OS 9 - 10
- Preferences 2 - 13, 9 - 11
- Resources 9 - 17
- Text-Editor 9 - 17
- Tools Edit-Printer 2 - 16
- Tools Macro
  - Clear 6 - 10
  - Edit 6 - 2-6 - 3
  - Load 6 - 9
  - Remember 6 - 1
    - finishing 6 - 2
    - suspending 6 - 2
  - Save 6 - 9
  - view 6 - 9
- Tools OS 2 - 15
- Tools Preferences 8 - 16
  - Appointment Manager 8 - 12, 8 - 14
- Tools Text Editor 2 - 16
- Translat Utility G - 15

## U

- Underline font 4 - 17
- Underscores, printed landscape 5 - 28
- Units of measure, used in Descriptor Editor 5
  - 10
- Unloading
  - macros 6 - 10
  - project files 9 - 5
- Upright font 5 - 46

## V

- Values, valid numbers in Descriptor Editor 5

- 9
- Vertical printer movement 5 - 37
- Vertical resolution 5 - 47
- Viewing
  - a resource 9 - 17
  - macros 9 - 9

## W

- Week Screen, Quick Keys 8 - 11
- Word Processor Conversion G - 6, G - 13
- Writing descriptors to disk 5 - 12

## X

- X origin 5 - 49

## Y

- Y origin 5 - 49