GDDM

Using the Image Symbol Editor

Version 3 Release 2

GDDM

Using the Image Symbol Editor

Version 3 Release 2

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┌─ Note! ──────────────────────────────────────────────────────────────────────────────┐
│                                                                                        │
│   Before using this information and the product it supports, be sure to read the general information under "Notices" on page  vii.   │
│                                                                                        │
└────────────────────────────────────────────────────────────────────────────────────────┘
```

| **Second Edition (September 1996)**

This edition applies to the following IBM GDDM series of licensed programs:

Program number   Program name   Version   Release   Modification

| 5695-167   GDDM/MVS   3   2   0
| 5684-168   GDDM/VM   3   2   0
| 5686-057   GDDM/VSE   3   2   0

| GDDM/MVS as an element of OS/390 (program number 5645-001)

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Preface

The purpose of this book is to help you to use the IBM GDDM Image Symbol Editor.

Who this book is for

This book is intended for newcomers to, and existing users of, the Image Symbol Editor.

How to use this book

Newcomers should start at the beginning and work through the learning sections. Experienced users should use the appendixes for reference.

Note: Compared with the pictures in this book, there are slight differences in the Symbol Definition panel for some types of terminals. These differences can be ignored.

Latest GDDM information

For up-to-date information on GDDM products, check our Home Page on the Internet at the following URL:

```
http://www.hursley.ibm.com/gddm/
```

You might also like to look at the IBM Software Home Page at:

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```

GDDM publications

GDDM	*GDDM Base Application Programming Guide*, SC33-0867
Base	*GDDM Base Application Programming Reference*, SC33-0868
	GDDM Diagnosis, SC33-0870
	GDDM General Information, GC33-0866
	GDDM/MVS Program Directory, GC33-1801
	GDDM/VM Program Directory, GC33-1802
	GDDM/VSE Program Directory, GC33-1803
	GDDM Messages, SC33-0869
	GDDM Series Licensed Program Specifications, GC33-0876
	GDDM System Customization and Administration, SC33-0871
	GDDM User's Guide, SC33-0875
	GDDM Using the Image Symbol Editor, SC33-0920
GDDM-GKS	*GDDM-GKS Programming Guide and Reference*, SC33-0334
GDDM-IMD	*GDDM Interactive Map Definition*, SC33-0338
GDDM-IVU	*GDDM Image View Utility*, SC33-0479
GDDM-PGF	*GDDM-PGF Application Programming Guide*, SC33-0913
	GDDM-PGF Programming Reference, SC33-0333
	GDDM-PGF Interactive Chart Utility, SC33-0328
	GDDM-PGF Vector Symbol Editor, SC33-0330
	GDDM-PGF OPS User's Guide, SC33-1776

GDDM/MVS is an element of OS/390. GDDM-REXX/MVS and GDDM-PGF are
optional features of OS/390. For a complete list of the publications associated with
OS/390, see the *OS/390 Information Roadmap*, GC28-1727.

Summary of changes

The ADMPATTJ and ADMPATTL image symbol sets are supported. See Appendix C on page 47.

changes

Chapter 1. Introducing the Image Symbol Editor

The IBM GDDM Image Symbol Editor is used for creating and editing symbols such as company logos, shading patterns, alphanumeric characters, and marker symbols for charts. It forms part of the GDDM base licensed programs.

This chapter explains what an image symbol is, and introduces the two different ways you can use image symbols.

What is an image symbol?

An image symbol is a pattern of dots. It is of fixed size and can be either single-color or multicolored. Each dot corresponds to one *display point* (or *pixel*) on a device.

A display point is the smallest addressable area of a display screen (or printer), and can be visible or invisible. The display points are grouped into *character cells*, rectangular spaces in which symbols are displayed.
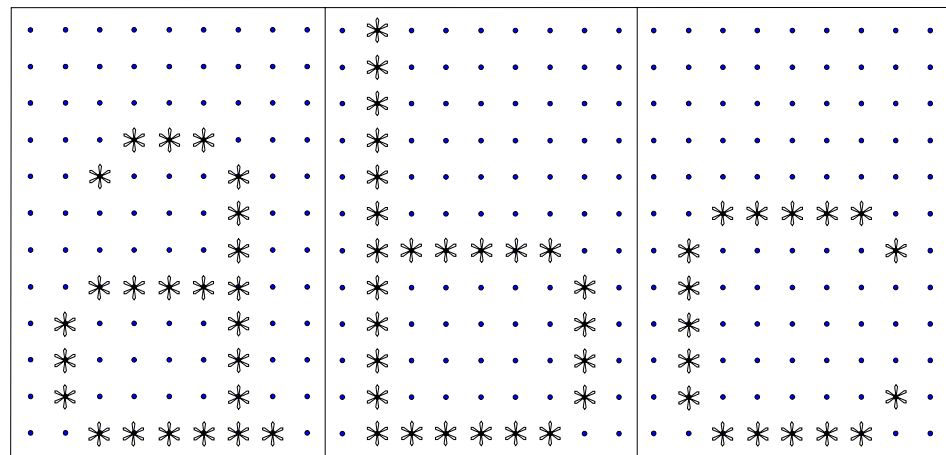
Figure 1. Examples of 9 x 12 character cells.   This figure shows three character cells, each of which is made up of a grid of 9 x 12 display points.   The asterisks mark the visible display points within a character cell that form the actual image symbol.

Note: You cannot change the size of image symbols in the GDDM-PGF Interactive Chart Utility (ICU), nor zoom in on them under GDDM User Control.

The two modes of image symbols

There are two ways you can use image symbols. They are called *mode-1* and *mode-2*.

Mode-1 image symbols

The character-cell size of the output device is the default setting for the character-cell size of the Image Symbol Editor. For example, a mode-1 image symbol for an IBM 3179 Model G Display, or a 3279 Color Display Station, is created on a grid of 9 x 12 points, which corresponds to the display's character-cell size.

Mode-1 image symbols are positioned in adjacent character-cell positions on the screen (or print positions on a suitable printer), and are used in the same way as the hardware character set built into the device. That is, they are equivalent to *programmed symbols* (PS). Application programs can load programmed symbols into devices with PS storage.

Figure 2 shows an example of a 9 x 12 mode-1 image symbol.
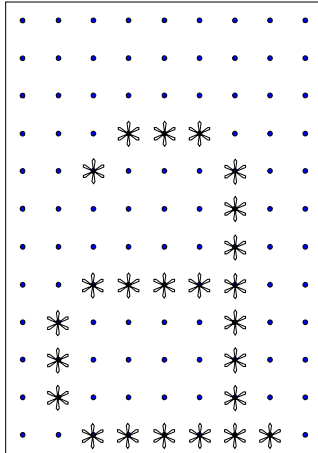
Figure 2. A mode-1 image symbol

Mode-2 image symbols
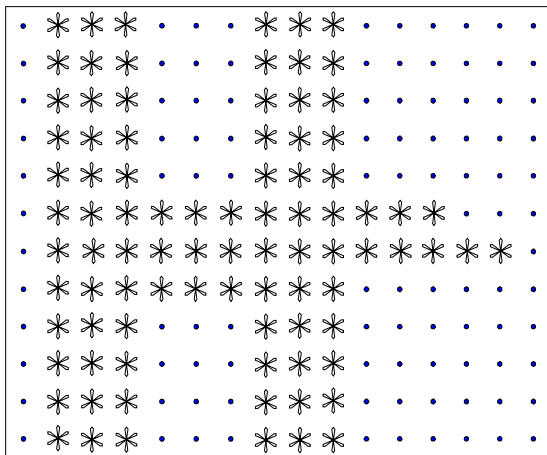
Figure 3. A mode-2 image symbol

A mode-2 image symbol differs in two ways from a mode-1 image symbol:

1. A mode-2 image symbol can be defined on a grid of a different size from that of the character cell on which it is to be used. For example, a mode-2 image symbol created on a grid 16 x 12 points can be displayed on a 3179-G terminal, even though that terminal's character-cell size is 9 x 12 points.

2. A mode-2 image symbol can be positioned anywhere on the screen by an application program. Mode-2 symbols do not have to be positioned in adjacent hardware character cells. This flexibility is illustrated in Figure 4 on page 3.

Mode 1 image symbols
(positioned in adjacent
character cells)

Mode 2 image symbol
(positioned to display-point
accuracy)
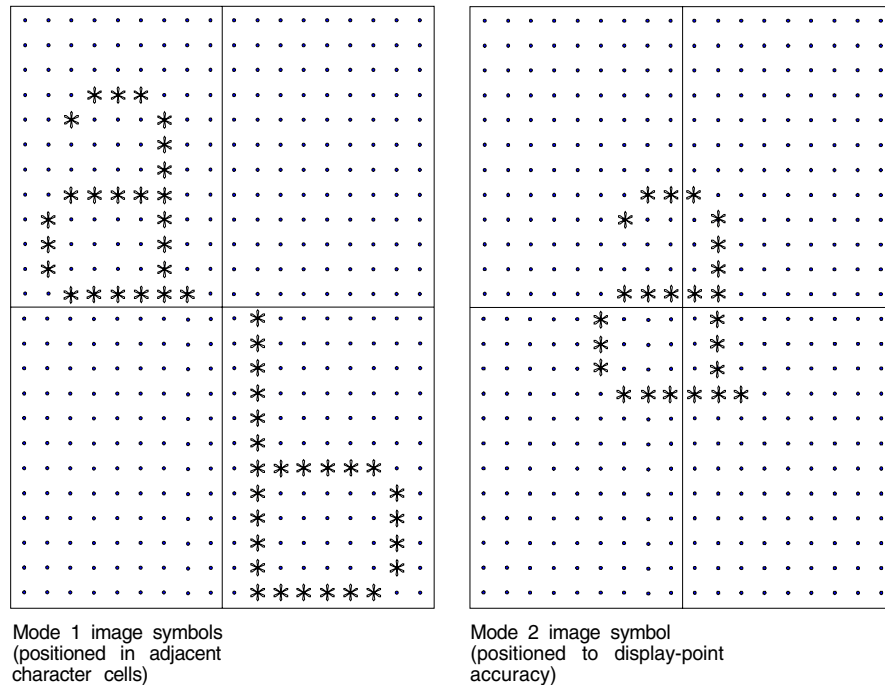
Figure 4. Mode-1 and mode-2 symbol positioning

Image symbol sets

Image symbols are held in collections known as *image symbol sets*. Each set has a name, and each symbol in the set is identified by a *character code*. The character code is the means of addressing the symbol in the set.

A character code is either a *hexadecimal* (hex) code or its character equivalent. For example, "X'81'" and its character equivalent "a" are both valid ways of expressing the character code of one particular symbol in the image symbol set.

Appendix C on page 47 contains a list of the image symbol sets that are supplied with the GDDM Image Symbol Editor. These image symbol sets include shading patterns, geometric patterns, and GDDM markers. You can use the Image Symbol Editor to create your own image symbols, either from scratch or by using a supplied image symbol set as a starting point.

The maximum number of image symbols that a symbol set can contain is 190.

For symbol sets using grids that are larger than the hardware character cells, you may have to define a smaller hexadecimal range. This is because the amount of storage available for each symbol set is limited. For a detailed explanation of the hexadecimal range and the storage available for symbol sets, see "Cell characteristics" on page 10.

In a full symbol set of 190 symbols, the maximum symbol size is 48 x 56 display points in a monochrome symbol set, and 38 x 24 points in a multicolor symbol set. To define larger symbols, you must make the number of symbols in the set smaller. The largest symbol you can draw is a monochrome symbol 255 x 255 points.

The limit for releases of GDDM before Version 3 Release 1 was lower, namely 36 x 36 display points for monochrome and 12 x 12 for multicolor symbol sets. Before you start work on defining an image symbol set that is larger than those previously supported, check that the application that is to use it can load the set.

Chapter 2. Starting and using the Image Symbol Editor

The procedure for starting the Image Symbol Editor varies depending on your computer system.

This chapter begins with a description of the ways in which the Image Symbol Editor is started under CICS, IMS, TSO, and VM using the GDDM-supplied names for the commands that start the Image Symbol Editor.

If the commands for starting the Editor are not suitable for your computer system, they may have been changed. In this case, you need to find out the name to use from your systems-support personnel.

Commands for starting the Image Symbol Editor

The start-up procedure for the Image Symbol Editor depends on the system you are using. Use the appropriate command for your installation.

When you start the Editor, the first screen to be displayed is the Step Selection panel. See Figure 6 on page 7 for an illustration of this panel.

CICS

Under CICS, the Image Symbol Editor is provided as a transaction with the name ADMI. You start the Editor by typing:

```
ADMI symbol-set-name
```

IMS

Under IMS, the Image Symbol Editor is controlled by a GDDM transaction, which is normally named ADM. If the name is ADM, you start the Editor by typing:

```
ADM ISSE symbol-set-name
```

TSO

Before starting the Image Symbol Editor, check that you have allocated a data set suitable for storing a symbol set. If you do not, you need to allocate a partitioned data set with the following data control block (DCB) characteristics:

GDDM default file name	DCB characteristics		
	RECFM	**LRECL**	**BLKSIZE**
ADMSYMBL	F or FB	400	400 x n

You can then allocate the file name to the data set using the TSO ALLOCATE command. Alternatively, the file name can be allocated by DD statements in your TSO logon procedure, or by dynamic allocation routines in the application program.

The default name for the symbol set data set is ADMSYMBL. Both image symbol sets and vector symbol sets are contained in the same data set.

Under TSO, you start the Editor by typing:

```
CALL 'data-set-name(ADMISSE)' 'symbol-set-name'
```

where "data-set-name" is the name of the data set into which the image Symbol Editor has been installed.

VM

Under VM, if you are not using a saved segment, you must first issue the command:

```
GLOBAL TXTLIB ADMGLIB ADMHLIB
```

You start the Editor by typing:

```
ADMISSE symbol-set-name
```

Overview of the Image Symbol Editor

The Image Symbol Editor consists of four panels, the hierarchy of which is shown in Figure 5. These panels contain input fields, which you use to set up and define the characteristics of the image symbols.

In addition to the four main panels, the Image Symbol Editor also has online help panels. An explanation of these help panels is given under "Using the help panels" on page 16.
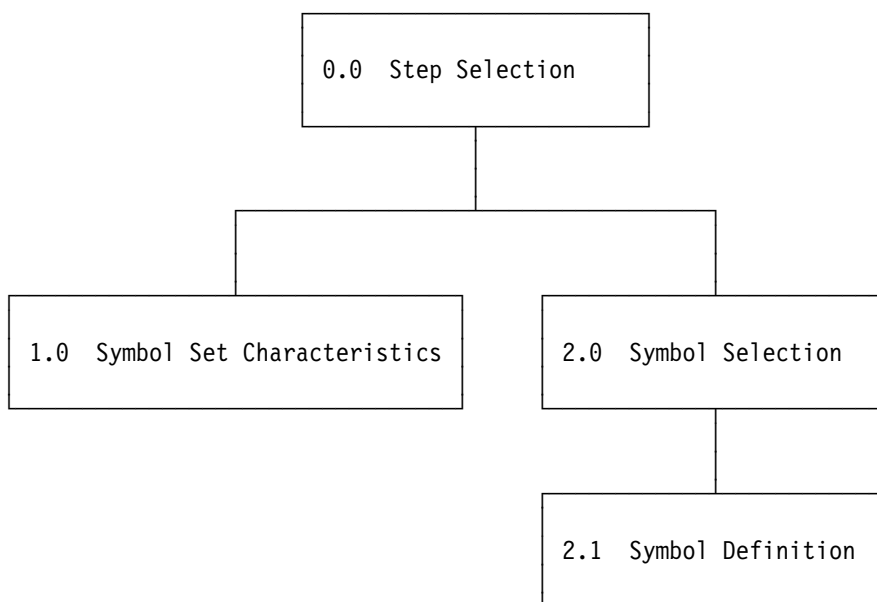
Figure 5. The Image Symbol Editor panel hierarchy

Program function keys

The Image Symbol Editor program function (PF) keys have various editing functions for use when creating an image symbol. Alternatively, the commands corresponding to the PF-key functions can be entered on the command line. A summary of the Image Symbol Editor commands is given in Appendix A on page 35. The PF keys are displayed on the screen as PF1/13, PF2/14, and so on.

The labeling of the PF keys depends on the type of display device you are using. On some display devices, the PF keys are labeled PF1 through PF12. Other display devices have two sets of PF keys: one set is numbered PF1 through PF12, the other set numbered PF13 through PF24. Use whichever set of keys you find most convenient. Other devices show F1 through F12.

You can set the PF keys to perform Image Symbol Editor commands, using the PFK command (see Appendix A on page 35 for details).

Cursor and tab keys

The cursor and tab keys are also used to select the various input fields and options that are available in the panels.

Selecting the next step

```
                    ┌──────────────────────────────────────────────────────────────┐
                    │      0.0 - IMAGE SYMBOL EDITOR -- STEP SELECTION ----------------------- 0.0
Messages appear here. ──────►
This is the command line. ──────► ==>
Type commands here.
                    │      ---------------------------------------------------------------------
Type the symbol set name here. ──────►  SYMBOL SET NAME  ==>

Choose option 1, 2, or 3 here. ──────►  OPTION  ==>         1 - DEFINE SYMBOL SET CHARACTERISTICS
                    │                                  2 - EDIT SYMBOL SET
                    │                                  3 - GENERATE OBJECT DECK


                    │                           PF  1/13 = HELP
This information reminds you of the ──────►     PF  2/14 = SAVE
PF key functions.                              PF  3/15 = END
                    │                           PF 12/24 = CURSOR SWAP


                    └──────────────────────────────────────────────────────────────┘
```

Figure 6. The Step Selection panel

The Step Selection panel is the main menu for the Image Symbol Editor. From this panel you can access the sub-panels, as shown in Figure 5 on page 6. To access the sub-panels, you must provide the name of the image symbol set in the SYMBOL SET NAME field. This can be a new name, a name of a symbol set you have previously defined, or a default name as supplied by GDDM. The name must not exceed eight characters. When you have done this, select one of the options shown on the panel screen. If you specified a symbol set name when you started the Image Symbol Editor, it is shown in the SYMBOL SET NAME field.

Note: There are naming conventions for symbol sets used as mode-1 symbols that apply if you intend to use your image symbol set in a program and load it into the programmed symbols (PS) store of a device. These conventions are described in Appendix B on page 41.

The three options on the Step Selection panel are:

OPTION ===> 1 - DEFINE SYMBOL SET CHARACTERISTICS
2 - EDIT SYMBOL SET
3 - GENERATE OBJECT DECK

Option 1 selects the Symbol Set Characteristics panel. This panel has input fields through which you determine things like the size of the character cell, and the range of the symbol set. This panel is described under the heading "Defining the characteristics of a new image symbol set" on page 9. Chose this option if you need to alter the characteristics of a symbol set or define them for the first time for a new set.

Option 2 selects the Symbol Selection panel. In this panel, you select the character code for the image symbol. If you are using an image symbol set as supplied by GDDM, type the name of the set, type the number 2 in the option field, and press Enter.

You use Option 3 on the Step Selection panel only if you want to generate an object deck of your symbol set to use in an application program.

Note: The main reason for saving your symbol set as an object deck is to replace the default symbol sets as described in the *GDDM System Customization and Administration* book. You can also use symbol sets saved in object-deck format by link-editing them into your program or load module, and identifying them using either the PSDSS or the GSDSS GDDM calls. These are described in the *GDDM Base Application Programming Reference* book.

Defining the characteristics of a new image symbol set

On the Step Selection panel, choose option 1 to get to the Symbol Set Characteristics panel. You use the Symbol Set Characteristics panel to define the characteristics of the image symbol set. This panel contains various input fields that must be altered to suit the characteristics of your intended image symbols.

Messages appear here. ──────

You type commands here. ──────

You specify the size of the symbol here. ──────

You specify whether the symbol is one color or multicolor ──────

You specify how the symbols will be stored. ──────

You specify the number of symbols in a set. ──────

You do not use this part of the panel in this session. It is explained in Appendix B.

This information reminds you of the PF key functions.

```
1.0 - IMAGE SYMBOL EDITOR -- SYMBOL SET CHARACTERISTICS - SSETNAME - 1.0

==>
----------------------------------------------------------------------
  SYMBOL CELL WIDTH  ==> 9
  SYMBOL CELL HEIGHT ==> 12
  MULTICOLOR         ==> NO      YES OR NO

  STORAGE FORM:
    CELL FORMAT       ==> 1        1 - HYBRID, 2 - COLUMN, 3 - ROW LOADING
    FIRST HEX CODE    ==> 41       > 40
    LAST  HEX CODE    ==> FE       < FF

  FOR SYMBOL SETS TO BE LOADED IN PS ONLY:
      CLEAR PS BEFORE LOAD   ==> YES      YES OR NO
      SKIP SUPPRESS          ==> NO       YES OR NO
      LOCAL CHARACTER SET ID ==> 00       41 TO FE
      PS STORE NUMBER        ==> 0        2 TO 7
      OPERATOR SELECTABLE    ==> YES      YES OR NO
  FOR 3287 PRINTER SETS ONLY:
      ALL POINTS USABLE      ==> YES      YES OR NO


       PF 1/13 = HELP    PF 3/15 = END    PF 12/24 = CURSOR SWAP
```

Figure 7. The Symbol Set Characteristics panel

If you are using an image symbol set name as supplied by GDDM, the symbol set characteristics are already defined for you. See Appendix C on page 47 for a list of the image symbol sets supplied with GDDM.

Using the Symbol Set Characteristics panel

In the Symbol Set Characteristics panel you normally need to alter only the top two sections. You need to alter the input fields under the title "FOR SYMBOL SETS TO BE LOADED IN PS ONLY" only if you are going to use your image symbol set in a program and load it into the PS store of a device. This section of the panel is explained in Appendix B on page 41.

The input fields in this panel automatically display the default values for the character-cell size of the output device you are using. (The defaults are the characteristics of a mode-1 image symbol.)

An example of the default settings for a mode-1 image symbol is shown in Figure 7. The character-cell-size settings shown here are for a 3179 Model G Color Graphics Display Station, or a 3279 Color Display Station. The image symbol would be drawn on a 9 x 12 grid. The symbol set would be one color. The symbol set could contain up to 190 symbols, with character codes in the range X'41' through X'FE'.

In contrast, the smallest number of image symbols a set could contain is 1. The character code might be X'41' to X'41' or X'77' to X'77', say.

Cell characteristics

The first two input fields of the Symbol Set Characteristics panel set the size of the character cell. The default setting shown is for use as a mode-1 image symbol set on the display you are using. Changing the cell size would make the symbol set suitable for use as a mode-2 symbol set on any display, or as a mode-1 set on any other device that matches the cell size specified.

```
SYMBOL CELL WIDTH    ===>  9
SYMBOL CELL HEIGHT   ===>  12
MULTICOLOR           ===>   NO   YES OR NO
```

If you wanted to create a multicolored image symbol, you would need to change the setting of the next input field from the default NO to YES. Creating color image symbols is explained in "Multicolored symbols" on page 24.

Storage form
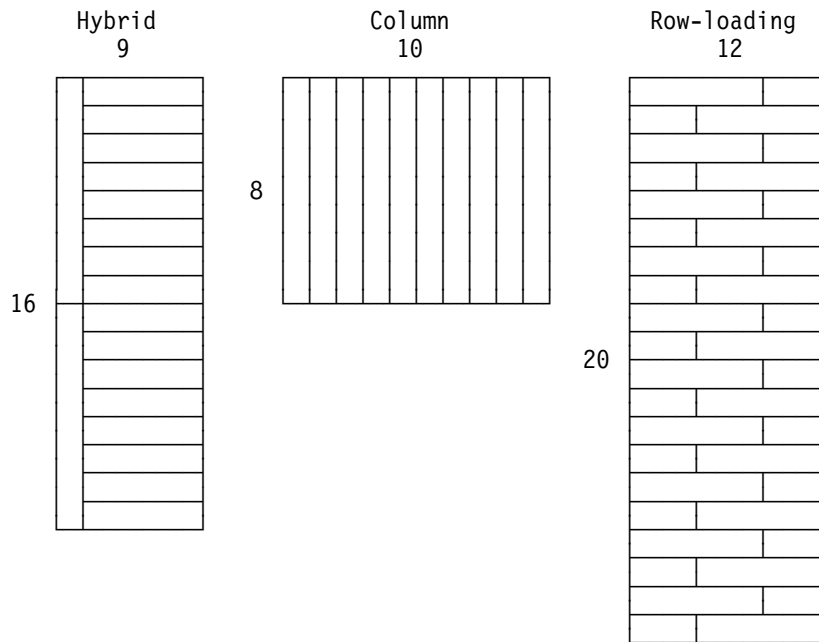
Figure 8. The three cell formats

The three input fields under the "STORAGE FORM" heading show the default storage format and storage size. These three cell format types are explained below.

Cell format
The CELL FORMAT field affects the way the symbol set is stored.

Hybrid: Specify **1** for symbols that you intend to load into a programmed symbol store of a display device (for example, a 3179, or 3279 display terminal) where the width is less than or equal to 9, and the height is less than or equal to 16. This is called hybrid format, because the symbols are broken into a mixture of horizontal and vertical bands when they are sent to a device.

Column: Specify **2** for symbols that you intend to load into a programmed symbol store of a printer (for example, an IBM 3287 Printer). Column format is so called because that is how the symbols are broken up for transmission to the printer.

Row loading: Specify **3** for symbol sets with a character width greater than 9, or a height greater than 16 (for example, those used on an IBM 3472 Model G that displays characters on a 9 x 21 grid).

This row-loading format is used for devices where the symbols are arranged into horizontal bands for sending to the device.

Character code range
The next two input fields (FIRST HEX CODE, LAST HEX CODE) specify the hexadecimal range of character codes in the symbol set. The maximum hexadecimal range is from X'41' through X'FE'. This is the default for a symbol set and gives you 190 symbols.

To illustrate this, if these two input fields had the settings:

CELL FORMAT   ==> **3**   1 - HYBRID, 2 - COLUMN, 3 - ROW LOADING
FIRST HEX CODE ==> **81**   > 40
LAST HEX CODE ==> **89**   < FF

there would be nine symbols in the symbol set, and the cell format would be row loading.

The image symbol sets characteristics are now defined.

Return to the Step Selection panel (PF3) and choose Option 2. The following message may be displayed on the message line:

```
ADM0824 W SYMBOL SET CHARACTERISTICS DO NOT MATCH DEVICE
          CHARACTERISTICS
```

This message warns you that either the symbol cell width or height you specified in the Symbol Set Characteristics panel does not match the cell size of the device you are using.

This message also appears if any of the other symbol set characteristics are different from those of the output device on which you are editing. For example, it appears if you edit a multicolored symbol on a monochrome output device, or if you edit a symbol with a different cell format from that of the device you are editing on. You can still continue to edit the symbol set, but you may not be able to view the symbols completely satisfactorily.

Figure 9 on page 12 shows an example of a Symbol Selection panel. The nine symbols in the symbol set are shown in white. You cannot select any of the character codes outside the range specified in the Symbol Set Characteristics panel. These nonselectable characters are shown in black on a white background.

The cursor is positioned under the first character code in the range. In this case, it is under the character "a" (X'81'). You may find it difficult to see the cursor, because it merges with the white background of the character underneath. If you are using a keyboard that has CURSOR BLINK and ALT CURSOR keys, you may find that using these keys makes it easier to see the cursor.

When you want to edit a symbol set that consists of large symbols, you have to make the hexadecimal range smaller. This is because the maximum amount of storage available for each symbol set limits the symbol size. In a full symbol set of 190 symbols, the maximum symbol size is 48 x 56 points in a monochrome symbol set, and 38 x 24 points in a multicolored symbol set. If you want to define larger symbols, you must make the number of symbols in the set smaller. The largest symbol you can draw is a monochrome symbol of 255 x 255 points.

```
   2.0 - IMAGE SYMBOL EDITOR -- SYMBOL SELECTION ---------- SSETNAME -- 2.0


      SELECT SYMBOL WITH CURSOR                 RANGE IS 41 TO 49
  -----------------------------------------------------------------------

         0 1 2 3 4 5 6 7 8 9 A B C D E F
         --------------------------------
    40 I  ▮                   ▮ ▮ ▮ ▮ ▮
    50 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    60 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    70 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    80 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮       PF 1/13 = HELP
    90 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮       PF 3/15 = END
    A0 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮       PF 6/18 = SWAP SYMBOLS
    B0 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    C0 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    D0 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    E0 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
    F0 I  ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮
```
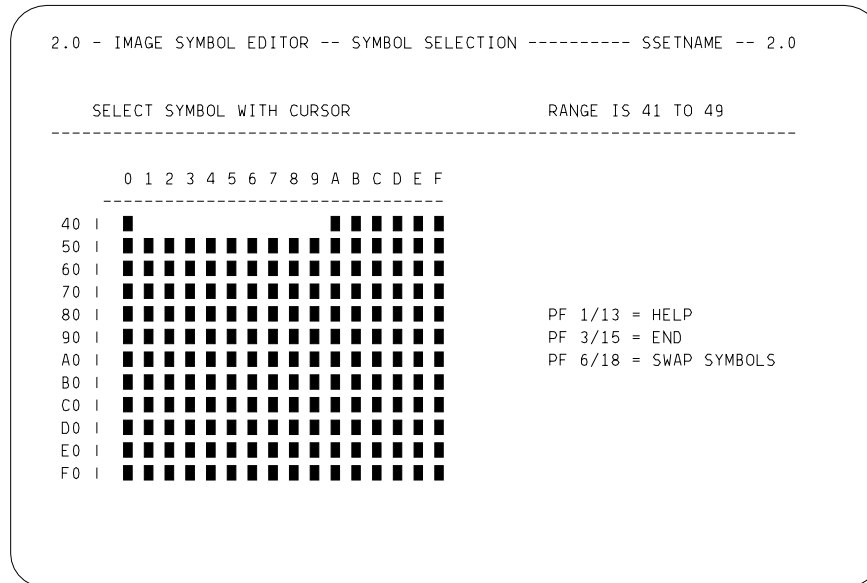
Figure 9. The Symbol Selection panel for a mode-2 symbol set

Selecting a symbol

The Symbol Selection panel shows the hexadecimal range of character codes and their character equivalents as defined in the Symbol Set Characteristics panel. To select the character code you want to edit, move the cursor to the character and press Enter. The new panel displayed is the Symbol Definition panel. This panel is explained under "Defining a symbol" on page 13.

Each of the hexadecimal characters displayed can be selected by positioning the cursor under the character. By pressing Enter you select the Symbol Definition panel where the image symbol can be defined. Each character code can contain a different image symbol, and these different image symbols form the image symbol set.

Unlike the display shown in Figure 10 on page 13, the character set display that you see may not show all the characters. This is because the characters displayed depend on the terminal you are using, and whether or not you are displaying APL characters.

Note: If the terminal is not displaying APL characters, you may see two uppercase alphabets. One corresponds to the normal positions of APL characters and the other corresponds to the normal positions of EBCDIC characters. The hexadecimal codes for the EBCDIC uppercase alphabet start at X'C1'.

```
   2.0 - IMAGE SYMBOL EDITOR -- SYMBOL SELECTION ---------- SSETNAME -- 2.0


        SELECT SYMBOL WITH CURSOR                    RANGE IS 41 TO FE
   --------------------------------------------------------------------

            0 1 2 3 4 5 6 7 8 9 A B C D E F
            -------------------------------
   40 |       * * * * * * * * ¢ . < ( + |
   50 |   & * * * * * * * * * ! $ * ) ; -
   60 |   - / * * * * * * * * ] , % _ > ?
   70 |   * * * * * * * * * * : # @ ' = "
   80 |   * a b c d e f g h i * * * * * *           PF 1/13 = HELP
   90 |   * j k l m n o p q r * * * * * *           PF 3/15 = END
   A0 |   * * s t u v w x y z * * * * * *           PF 6/18 = SWAP SYMBOLS
   B0 |   * * * * * * * * * * * * * * * *
   C0 |   { A B C D E F G H I * * * * * *
   D0 |   } J K L M N O P Q R * * * * * *
   E0 |   \ * S T U V W X Y Z * * * * * *
   F0 |   0 1 2 3 4 5 6 7 8 9 * * * * * *
```
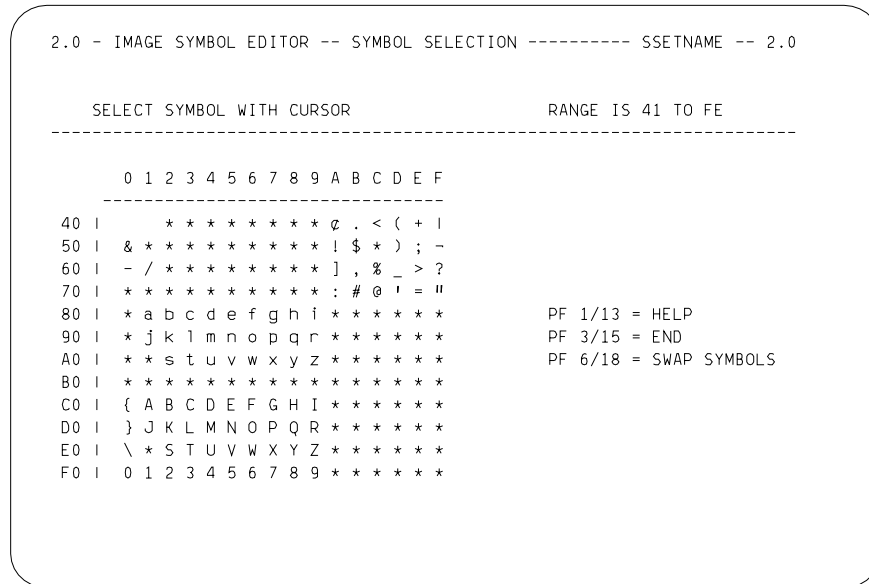
Figure 10. The Symbol Selection panel. This panel may vary slightly in appearance, depending on the type of terminal and the application code-page you are using.

If you are editing an existing symbol set and the characteristics of the symbols match those of the display you are using, you can see what characters it contains by pressing PF6 (symbol swap). (Question marks are displayed if the characteristics do not match.)

Defining a symbol

The row and column size of the grid are defined in the Symbol Set Characteristics panel. Figure 11 shows a grid with a 9 x 12 character cell. The grid is the area where you create or edit an image symbol.

Messages appear here.

You type commands here.

This is the context line. It indicates certain conditions. It is blank at the moment.

You identify the symbol you are editing here.

These are the row and column numbers.

```
   2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION -------------- SSETNAME -- 2.1

   ==>

       CHAR ==> G    HEX ==> C7


     1 2 3 4 5 6 7 8 9
    1 . . . . . . . . .            PF  1 = HELP      PF 13 = HELP
    2 . . . . . . . . .            PF  2 = COMPASS   PF 14 = COMPASS
    3 . . . . . . . . .            PF  3 = END       PF 15 = END
    4 . . . . . . . . .            PF  4 = PREVIOUS  PF 16 = PREVIOUS
    5 . . . . . . . . .            PF  5 = NEXT      PF 17 = NEXT
    6 . . . . . . . . .            PF  6 =           PF 18 =
    7 . . . . . . . . .            PF  7 = BACK      PF 19 = BACK
    8 . . . . . . . . .            PF  8 = FORWARD   PF 20 = FORWARD
    9 . . . . . . . . .            PF  9 = GRID      PF 21 = GRID
   10 . . . . . . . . .            PF 10 = LEFT      PF 22 = LEFT
   11 . . . . . . . . .            PF 11 = RIGHT     PF 23 = RIGHT
   12 . . . . . . . . .            PF 12 = CUR SWIT  PF 24 = CUR SWIT
```

This is the symbol definition grid. You draw your symbol here.

This information reminds you of the PF key functions.

Figure 11. The Symbol Definition panel

When you start to use the Symbol Definition panel, the Image Symbol Editor sets up the PF keys with the commands you are most likely to need to edit a symbol. Using these PF keys saves you typing commands on the command line. The commands assigned to the PF keys are displayed on the right of the panel.

To move the cursor to the definition grid, press PF12 or PF24. This is the CURSOR SWITCH command, which moves the cursor from the command line to the first position in the symbol definition grid. If you press PF12 a second time, the cursor returns to the command line. You can also move the cursor to the definition grid by using the cursor keys. See Appendix A on page 35 for further uses of the CURSOR command.

To create a new image symbol, you need to select the display points (periods) on the grid that define the shape of the symbol. By typing over the display points with any keyboard character except a period or blank (for example, "a") you create your image symbol. Figure 12 shows an image symbol made using the keyboard character "a".

Notes:

1. You cannot type in the spaces between the periods. Only the points marked by periods are display points.

2. If you make a mistake and turn the wrong point on, overtype the character with a blank or period.

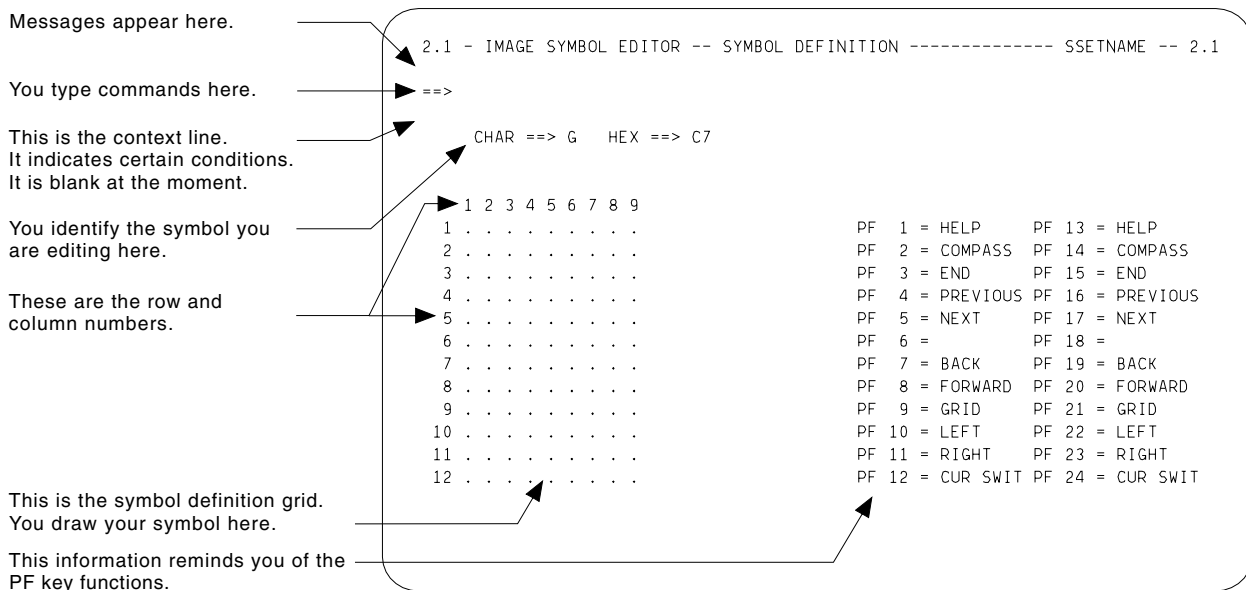3. The word ALT appears in the context line (the line under the command line) after you have pressed Enter or a PF key, to indicate that you have made an alteration in the symbol definition grid.

4. When editing a one-color symbol, you can type any character except a period or a blank to turn a point on in the symbol definition grid.

```
   2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION -------------- SSETNAME -- 2.1

   ==>

       CHAR ==> G    HEX ==> C7


    1 2 3 4 5 6 7 8 9
  1 . . . . . a a . . .                     PF  1 = HELP     PF 13 = HELP
  2 . . . . . a a . . .                     PF  2 = COMPASS  PF 14 = COMPASS
  3 . . . . . a a . . .                     PF  3 = END      PF 15 = END
  4 . a a a a a a a a                        PF  4 = PREVIOUS PF 16 = PREVIOUS
  5 . . . . . a a . . .                     PF  5 = NEXT     PF 17 = NEXT
  6 . . . . . a a . . .                     PF  6 =          PF 18 =
  7 . . . . . a a . . .                     PF  7 = BACK     PF 19 = BACK
  8 . . . . . a a . . .                     PF  8 = FORWARD  PF 20 = FORWARD
  9 . a . . a a . . a                        PF  9 = GRID     PF 21 = GRID
 10 . a . . a a . . a                        PF 10 = LEFT     PF 22 = LEFT
 11 . . a . a a . a .                        PF 11 = RIGHT    PF 23 = RIGHT
 12 . . . a a a a . .                        PF 12 = CUR SWIT PF 24 = CUR SWIT
```

Figure 12. Creating an image symbol

When you have finished creating your pattern, press Enter and all the keyboard characters that you typed in change to asterisks. These asterisks indicate that the

display points are now *on-points*. An on-point is a point displayed on your output device. Your finished symbol is made up of an arrangement of on-points.

```
  2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

  ==>
  ALT
       CHAR ==> G    HEX ==> C7


     1 2 3 4 5 6 7 8 9
   1         * *                             PF  1 = HELP     PF 13 = HELP
   2         * *                             PF  2 = COMPASS  PF 14 = COMPASS
   3         * *                             PF  3 = END      PF 15 = END
   4    * * * * * * * *                      PF  4 = PREVIOUS PF 16 = PREVIOUS
   5         * *                             PF  5 = NEXT     PF 17 = NEXT
   6         * *                             PF  6 =          PF 18 =
   7         * *                             PF  7 = BACK     PF 19 = BACK
   8         * *                             PF  8 = FORWARD  PF 20 = FORWARD
   9    *    * *      *                       PF  9 = GRID     PF 21 = GRID
  10    *    * *      *                       PF 10 = LEFT     PF 22 = LEFT
  11      *  * *    *                         PF 11 = RIGHT    PF 23 = RIGHT
  12        * * * *                           PF 12 = CUR SWIT PF 24 = CUR SWIT
```

Figure 13. An example of an image symbol, with the grid turned off

Figure 13 shows the a completed image symbol, with the display points on, and the grid points off.

Note: The PF9 key works like an on/off switch turning the display grid on or off, enabling your image symbol to be viewed more clearly.

Compass keys

The compass keys are a group of the standard PF keys that can be used as a special compass mode, which you select by pressing PF2. You can use them in the same way as cursor keys, to navigate the cursor around the definition grid. Each compass key moves the cursor in a particular direction on the grid.

The advantage of using the compass keys is that when the cursor is moved to a particular display point, it turns the display point on. There is no need to use a different keystroke.

PF keys 4 through 12 act as the compass keys. On some keyboards the PF keys are grouped on the right-hand side, on others, the PF keys are in one or two lines along the top. See Figure 14 on page 16 for an example of a keyboard with the PF keys on the right.

When you press PF2 to select the compass keys, the PF keys now have new functions. The PF key information on the screen changes accordingly. The word COMPASS appears on the context line to remind you that you are using the compass keys. To make the PF keys revert to their original functions, press PF2 (COMPASS SWITCH) again. (Alternatively enter the command COMPASS ON and COMPASS OFF on the command line.)
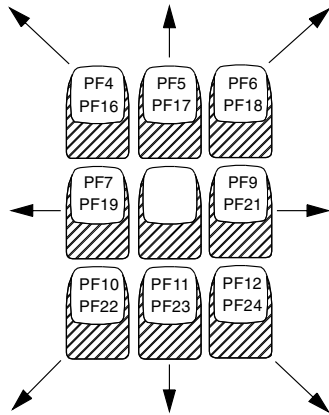
Figure 14. The compass keys

Displaying an image symbol

The Image Symbol Editor enables you to display an image symbol in its final size while you are designing it. On the command line of the Symbol Definition panel, type the command TEST ON. The word TEST appears in the context line, the PF key information disappears, and the symbol is displayed after the arrow at the bottom of the panel. The symbol is shown at its actual size. The command TEST OFF removes the image symbol, and restores the PF key information.

If you keep the test symbol on while you work, you can see the effect of your changes as you make them.

Saving an image symbol set and exiting the Image Symbol Editor

You can save your symbol set at any stage by issuing the SAVE command (PF2 from the Symbol Definition panel). You might want to do this to checkpoint any extensive changes you have made.

To leave without saving, use the CANCEL command.

Otherwise, PF3 takes you upwards in the hierarchy of panels (see Figure 5 on page 6), and saves your changes.

Using the help panels

The Image Symbol Editor has online help text that offers you more information on panels and commands.

To access the help panel for any of the panels you are working in, press PF1 or PF13. The help panel for whichever panel you are working in is displayed. To exit the help panels, press PF3 or PF15.

To get help for specific commands, type the following information on the command line:

HELP *command-name*

and press Enter. The help panel for the specified command is then displayed.

```
----- IMAGE SYMBOL EDITOR -- HELP FACILITY -----------------------

----------------------- STEP SELECTION PANEL ---------------------

The fields of the STEP SELECTION PANEL are listed in the order that
they are processed:

SYMBOL SET NAME    name of symbol set to be edited.  If not specified
                   when the symbol editor is called,  the name must
                   be  supplied  before  any other action  is taken.
                   Different symbol sets may be specified afterwards
                   and the symbols re-viewed on other panels. However
                   once changes  have been  made  to the symbol set,
                   no new name can be entered until  either  command
                   "SAVE", or command  "CANCEL Hold" has been issued

OPTION             selects one of three actions for the editor to
                   take:
                   1 - display the SYMBOL SET CHARACTERISTICS PANEL.
                   2 - display the SYMBOL SELECTION PANEL.
                   3 - generate an object deck for the symbol set.


      PF3/15 = END      PF7/19 = BACK      PF8/20 = FORWARD
```

Figure 15. A help panel

using the Image Symbol Editor

Chapter 3. Creating and editing image symbols

This chapter explains how to create image symbols. An explanation of mode-1 and mode-2 image symbol usage is given in "The two modes of image symbols" on page 1.

Defining an image symbol set

To create a new image symbol set, follow these steps:

1. In the Step Selection panel, type a new name for the image symbol set.

   If you intend to load the symbol set into a device, follow the naming conventions described in Appendix B on page 41.

2. After you have typed the new symbol set name in the Step Selection panel, press Enter.

   The following message should be displayed:

   `ADM0806 I NEW SYMBOL SET`

   If this message is not displayed, you have chosen the name of an existing image symbol set. Choose a different name for your image symbol set. If you get the message:

   `ADM0848 E THE REQUESTED SYMBOL SET IS NOT AN ISS`

   you have chosen the name of an existing vector symbol set. Both image symbols and vector symbols can be stored in the same data set (or have the same file type). Choose a different name for your image symbol set.

3. To create an image symbol set, you must define its characteristics in the Symbol Set Characteristics panel. Select this panel by choosing option 1 in the Step Selection panel. The Symbol Set characteristics panel is shown. The default characteristics for a monochrome mode-1 image symbol are displayed. These defaults settings are defined by the device you are using.

   For example, if you are using a 3279 display terminal, the cell width and height are 9 x 12, and the color option is set to NO.

   For the image symbol set to be used as a mode-1 set on this device, the cell width and cell height must remain the same.

4. Alter the cell width, and cell height as required, if you want to create a symbol set for mode-1 use on another device, or mode-2 use on any device.

   For example, the cell width and cell height can be altered as follows:

   SYMBOL CELL WIDTH   ===>   30
   SYMBOL CELL HEIGHT ===>   30
   MULTICOLOR   ===>   YES   YES OR NO

   See Figure 16 on page 20 for an illustration of this.

   The definition grid would be 30 x 30 points, and the image symbol set could be created using color.

19

```
   1.0 - IMAGE SYMBOL EDITOR -- SYMBOL SET CHARACTERISTICS - SSETNAME - 1.0

   ==>
   --------------------------------------------------------------------------
SYMBOL CELL WIDTH  ==> 30
SYMBOL CELL HEIGHT ==> 30
MULTICOLOR         ==> YES     YES OR NO

  STORAGE FORM:
     CELL FORMAT      ==> 1       1 - HYBRID, 2 - COLUMN, 3 - ROW LOADING
     FIRST HEX CODE   ==> 41      > 40
     LAST  HEX CODE   ==> FE      < FF

  FOR SYMBOL SETS TO BE LOADED IN PS ONLY:
     CLEAR PS BEFORE LOAD   ==> YES      YES OR NO
     SKIP SUPPRESS          ==> NO       YES OR NO
     LOCAL CHARACTER SET ID ==> 00       41 TO FE
     PS STORE NUMBER        ==> 0        2 TO 7
     OPERATOR SELECTABLE    ==> YES      YES OR NO
  FOR 3287 PRINTER SETS ONLY:
     ALL POINTS USABLE      ==> YES      YES OR NO


        PF 1/13 = HELP    PF 3/15 = END   PF 12/24 = CURSOR SWAP
```

Figure 16. Altering the cell width and height

5.

Next, you need to define the hexadecimal range. If you want to define a
symbol set that consists of large symbols, you have to make the hexadecimal
range smaller. This is because the maximum amount of storage available for
each symbol set limits the symbol size. In a full symbol set of 190 symbols, the
maximum symbol size is 48 x 56 points in a monochrome symbol set, and 38 x
24 points in a multicolor symbol set. If you want to define larger symbols, you
must define a set with fewer symbols. The largest symbol you can draw is a
monochrome symbol that is 255 x 255 points.

6. Figure 17 on page 21 shows an example of an image symbol set, where the
hexadecimal range has been changed to X'81' through X'89'. The cell
format has also been altered from the default setting of 1 to the new setting 3.

"Using the Symbol Set Characteristics panel" on page 9 gives a more detailed
explanation of these input fields.

```
   1.0 - IMAGE SYMBOL EDITOR -- SYMBOL SET CHARACTERISTICS - SSETNAME - 1.0


    ==>
    ----------------------------------------------------------------------
 SYMBOL CELL WIDTH  ==> 30
 SYMBOL CELL HEIGHT ==> 30
 MULTICOLOR         ==> YES    YES OR NO

   STORAGE FORM:
      CELL FORMAT       ==> 3      1 - HYBRID, 2 - COLUMN, 3 - ROW LOADING
      FIRST HEX CODE    ==> 81     > 40
      LAST  HEX CODE    ==> 89     < FF

   FOR SYMBOL SETS TO BE LOADED IN PS ONLY:
      CLEAR PS BEFORE LOAD   ==> YES      YES OR NO
      SKIP SUPPRESS          ==> NO       YES OR NO
      LOCAL CHARACTER SET ID ==> 00       41 TO FE
      PS STORE NUMBER        ==> 0        2 TO 7
      OPERATOR SELECTABLE    ==> YES      YES OR NO
   FOR 3287 PRINTER SETS ONLY:
      ALL POINTS USABLE      ==> YES      YES OR NO


       PF 1/13 = HELP   PF 3/15 = END   PF 12/24 = CURSOR SWAP
```

Figure 17. Altering the storage format

7. Return to the Step Selection panel and select option 2. This selects the Symbol Selection panel.

8. Select the hexadecimal character code by positioning the cursor under the character code. Press Enter and the Symbol Definition panel is displayed.

Note: If you choose to restrict the character range, the Symbol Selection panel does not display the full hexadecimal range. See Figure 24 on page 28 for an example.

Creating a normal-sized image symbol

To create an image symbol, you must move the cursor to the definition grid. You can do this by one of two methods:

- Using the arrow keys

- Pressing the PF12 key (CURSOR SWITCH), which moves the cursor from the command line to the first position in the symbol definition grid.

To create your image symbol type over the display points (periods) of the definition grid with an alphabetic character. Your Image Symbol is created by moving the cursor to the desired point, and selecting an alphabetic character. For example, Figure 18 on page 22 is created using an arrangement of the alphabetic character "a".

```
  2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

  ==>

      CHAR ==> G    HEX ==> C7


    1 2 3 4 5 6 7 8 9
  1 . . . . a a . . .                        PF  1 = HELP      PF 13 = HELP
  2 . . . . a a . . .                        PF  2 = COMPASS   PF 14 = COMPASS
  3 . . . . a a . . .                        PF  3 = END       PF 15 = END
  4 . a a a a a a a a                         PF  4 = PREVIOUS  PF 16 = PREVIOUS
  5 . . . . a a . . .                        PF  5 = NEXT      PF 17 = NEXT
  6 . . . . a a . . .                        PF  6 =           PF 18 =
  7 . . . . a a . . .                        PF  7 = BACK      PF 19 = BACK
  8 . . . . a a . . .                        PF  8 = FORWARD   PF 20 = FORWARD
  9 . a . . a a . . a                         PF  9 = GRID      PF 21 = GRID
 10 . a . . a a . . a                         PF 10 = LEFT      PF 22 = LEFT
 11 . . a . a a . a .                         PF 11 = RIGHT     PF 23 = RIGHT
 12 . . . a a a a . .                         PF 12 = CUR SWIT  PF 24 = CUR SWIT
```

Figure 18. Selecting display points using the alphabetic character "a"

When you have created your symbol, press Enter, and the alphabetic characters you typed change to asterisks, indicating that these are now *on-points*. (An on-point is a point that is displayed on the chosen output device.) Your finished symbol or pattern, is an arrangement of on and off points. You can now press PF9 (the GRID command) to turn the definition grid off, enabling your image symbol to be viewed more clearly. Figure 19 shows a symbol with the on-points displayed.

```
  2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

  ==>
  ALT
      CHAR ==> G    HEX ==> C7


    1 2 3 4 5 6 7 8 9
  1        * *                              PF  1 = HELP      PF 13 = HELP
  2        * *                              PF  2 = COMPASS   PF 14 = COMPASS
  3        * *                              PF  3 = END       PF 15 = END
  4    * * * * * * * *                       PF  4 = PREVIOUS  PF 16 = PREVIOUS
  5        * *                              PF  5 = NEXT      PF 17 = NEXT
  6        * *                              PF  6 =           PF 18 =
  7        * *                              PF  7 = BACK      PF 19 = BACK
  8        * *                              PF  8 = FORWARD   PF 20 = FORWARD
  9    *   * *     *                         PF  9 = GRID      PF 21 = GRID
 10    *   * *     *                         PF 10 = LEFT      PF 22 = LEFT
 11     *  * *   *                           PF 11 = RIGHT     PF 23 = RIGHT
 12      * * * *                             PF 12 = CUR SWIT  PF 24 = CUR SWIT
```

Figure 19. The Symbol Definition panel showing an Image Symbol

Notes:

1. You cannot type in the spaces between the periods. Only the points marked by periods are display points.

2. If you make a mistake and turn the wrong point on, overtype the asterisk with a blank or a period.

3. To turn off all the display points in a symbol, use the CLEAR command.

4. The word ALT appears in the context line (the line under the command line), to indicate that you have made an alteration in the symbol definition grid.

Drawing a large symbol

You create large image symbols in the same way as standard image symbols. By using the compass and cursor keys, you create the image symbol by turning the display points on.

Using the SCROLL command

```
2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

==>

    CHAR ==> G   HEX ==> C7

                         1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3
         1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
     1 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     2 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     3 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     4 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     5 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     6 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     7 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     8 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
     9 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    10 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    11 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    12 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    13 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    14 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    15 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
    16 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```

Figure 20. The Symbol Definition panel showing a large character definition grid

When you create a large image symbol, the PF key information is not displayed. Use the PFK ON command to display them. If you are creating an image symbol with the definition area larger than your display terminal area, you need to use the scroll commands to view the entire definition area. The scroll commands are as follows: LEFT, RIGHT, BACK, and FORWARD. These same commands are also assigned to PF keys.

PF 7   = BACK   PF 19 = BACK
PF 8   = FORWARD   PF 20 = FORWARD
PF 10 = LEFT   PF 22 = LEFT
PF 11 = RIGHT   PF 23 = RIGHT

The scroll command moves the display 10 points (by default) in the specified direction. To change the default setting for all the scroll commands, type the following:

SCROLL (number)

and press Enter.

To change the default for a particular scroll direction type:

SCROLL (direction) (number)

and press Enter.

Notes:

1. The scrolling keys work only when the compass keys are switched off.

2. When you reach the edge of the definition grid, the following message appears:

   ADM0841 I EDGE OF SYMBOL

Multicolored symbols

The Image Symbol Editor enables you to change the characteristics of your symbol set, so that you can define a symbol in more than one color.

If your display device is monochrome, the colors are shown as the letter equivalent for that color. For example, the color red is shown as the letter **r**.

Before you can create your multicolored symbol, you must alter the fields in the Symbol Set Characteristics panel. From the Step Selection panel choose a name for your symbol set and select Option 1. Overtype the NO after the MULTICOLOR arrow with YES. You can now create image symbols in color.

```
  1.0 - IMAGE SYMBOL EDITOR -- SYMBOL SET CHARACTERISTICS - SSETNAME - 1.0

  ==>
  --------------------------------------------------------------------------
   SYMBOL CELL WIDTH  ==> 9
   SYMBOL CELL HEIGHT ==> 12
   MULTICOLOR         ==> NO      YES OR NO

  STORAGE FORM:
     CELL FORMAT       ==> 1       1 - HYBRID, 2 - COLUMN, 3 - ROW LOADING
     FIRST HEX CODE    ==> 41      > 40
     LAST  HEX CODE    ==> FE      < FF

  FOR SYMBOL SETS TO BE LOADED IN PS ONLY:
     CLEAR PS BEFORE LOAD   ==> YES      YES OR NO
     SKIP SUPPRESS          ==> NO       YES OR NO
     LOCAL CHARACTER SET ID ==> 00       41 TO FE
     PS STORE NUMBER        ==> 0        2 TO 7
     OPERATOR SELECTABLE    ==> YES      YES OR NO
  FOR 3287 PRINTER SETS ONLY:
     ALL POINTS USABLE      ==> YES      YES OR NO


       PF 1/13 = HELP    PF 3/15 = END   PF 12/24 = CURSOR SWAP
```

Figure 21. Altering the Multicolor option

Editing multicolored symbols

You create a multicolored symbol in the same way as you would any mode-1 or mode-2 image symbol. As you create the image, you overtype each display point with a particular keyboard character that defines the required color. For example, if you want the display point to be red, you overtype it with the letter *r* or *R*. When you press Enter, the display point is then shown as a red asterisk. The colors available on the Image Symbol Editor are as follows:

Color	*Upper case*	*Lower case*
Red	R	r
Green	G	g
Blue	B	b
Pink	P	p
Turquoise	T	t
Yellow	Y	y
Neutral	N	n

The default color for any of the other keyboard characters is neutral. If an image symbol you intend to create is to have one predominant color, you can change the default from neutral to that color.

For example, by typing *COLOR R* on the command line, and pressing Enter, the default color becomes red. This would be indicated by the red asterisk next to the color context line.

Now, when you create your image symbol, you do not have to use r (R) to turn a display point to red. You can use any of the other keys that do not have colors assigned to them.

This feature means that you can use the compass keys to draw the part of the symbol that will be in the selected (predominant) color.

Monochrome terminals

On a monochrome terminal the colors are shown as the keyboard character that defines the required color. These keyboard character and the corresponding color are shown in "Editing multicolored symbols."

Filling in areas of the symbol

The Image Symbol Editor enables you to color areas of an image symbol using the default colors or shading patterns. Three such symbol sets are supplied with the editor; they are:

- The GDDM shading patterns – ADMIPATC
- The GDDM geometric patterns – ADMPATTC
- The GDDM color shades – ADMCOLSD.

Note: It is possible that the support personnel at your enterprise have renamed or deleted these symbol sets. For an example of these patterns and color shades, see Appendix C on page 47.

To color an area, you first select the area with the cursor keys, and then use the INFILL command. You can color an entire image symbol in one particular color, or

have a mix of colors. If you have a mix of colors, different areas must be separated by a distinguishable border. The definition grid in Figure 22 is divided into four distinct areas. If you used the INFILL command in one area, the color would not flow into the other areas, because the on-points make a distinguishable border.

```
                        1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3
            1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
      1 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      2 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      3 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      4 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      5 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      6 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      7 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      8 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
      9 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     10 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     11 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     12 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     13 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     14 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     15 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
     16 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     17 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     18 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     19 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     20 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     21 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     22 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     23 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     24 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     25 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     26 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     27 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     28 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     29 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
     30 . . . . . . . . . . . . . . . * . . . . . . . . . . . . . .
```

Figure 22. A definition grid divided into four quadrants. An example of a mode-2 definition grid with a display area of 30 x 30 points.

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Figure 23. Examples of the patterns and shades available

To recreate Figure 23, do the following:

1. Enter the command INFILL R but do not press Enter. (The abbreviation R means red).

2. Position the cursor in the top left quadrant of the symbol area.

3. Press Enter; the area is filled with solid red shading.

The color identifiers you can use with this command are the same as you use to create points, namely blue, green, red, turquoise, pink, yellow, and neutral, with the same abbreviations.

For the top right quadrant you follow the same procedure. You use the command INFILL B 4 or INF B 4, (INF is an abbreviation for the INFILL command). "B" is the color blue, and "4" is the number for one of the GDDM shading patterns.

The GDDM shading patterns are numbered 1 through 16, and they are normally contained in a sample symbol set called ADMIPATC. If this symbol set has been renamed, ask your systems-support personnel for its new name.

GDDM also provides another symbol set for shading, called ADMPATTC. This symbol set contains 64 geometric shading patterns with pattern numbers from 65 to 128. See Appendix C on page 47 for an example of these shading patterns.

An example of a geometric pattern is shown in the bottom left quadrant of Figure 23 on page 26. To create this "infill" follow these steps:

1. Type the command PATTERN ADMPATTC and press Enter.

   This command selects the geometric patterns, instead of the shading patterns.

2. Enter an INF command and the number of the required geometric pattern, for example 85.

3. Position the cursor in the bottom left quadrant and press Enter.

In Figure 23 on page 26, the final bottom right quadrant of the image symbol is filled with one of the GDDM color shades from the ADMCOLSD symbol set . To select this symbol set, type PATT ADMCOLSD and press Enter. (PATT is an abbreviation of the PATTERN command). The pattern set name in the context line changes to ADMCOLSD.

To create this "infill," do the following:

1. Type the command COL N, and press Enter

   This makes the current color neutral. When the current color is set to neutral, the color used is the color of the color shading pattern in ADMCOLSD. If you do not change the color to neutral, the current color is used.

2. Type INF 98, move the cursor to the bottom right hand quadrant, and then press Enter.

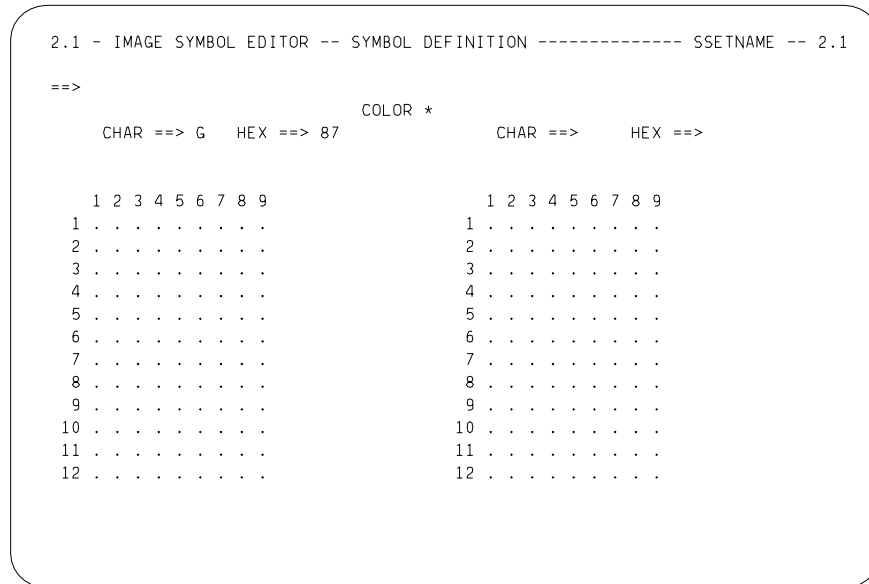The Definition Panel should now look like Figure 23 on page 26.

Notes:

1. When using color shades, the color context asterisk must be neutral. (The command COL N changes the current color to neutral.) If you do not change the color to neutral, the current color is used.

2. The command INF 98 is used to shade the bottom right quadrant.

3. When you are creating a symbol set with mode-2 image symbols, the Symbol Selection panel cannot display them. The image symbols do not match the character-cell size of the device. If you selected PF6 (SYMBOL SWAP), to view the image symbols in the set, a question mark is displayed. An example of this is shown in Figure 24.

4. The RETRACT command deletes the last change made with the INFILL command.

```
2.0 - IMAGE SYMBOL EDITOR -- SYMBOL SELECTION ---------- SSETNAME -- 2.0


     SELECT SYMBOL WITH CURSOR                 RANGE IS 41 TO 49
  --------------------------------------------------------------------

          0 1 2 3 4 5 6 7 8 9 A B C D E F
         --------------------------------
   40 I  ▉ ?                    ▉▉▉▉▉
   50 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   60 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   70 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   80 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉         PF 1/13 = HELP
   90 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉         PF 3/15 = END
   A0 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉         PF 6/18 = SWAP SYMBOLS
   B0 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   C0 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   D0 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   E0 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
   F0 I  ▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉▉
```

Figure 24. The Symbol Selection panel for a mode-2 symbol set

Using another symbol as the basis for a new symbol

When you are creating a complete typeface or a series of similar symbols, you may find the REF command useful. The REF command enables you to use another symbol as a reference symbol. The reference symbol can be copied to the definition grid and edited to create a different image symbol which is similar to the reference symbol. You can also use it to copy a symbol and to keep a temporary version of a symbol.

To start reference symbol mode, enter the command REF ON in the Symbol Definition panel. On a color display device, the reference grid is displayed on a blue grid to the right of the symbol you are editing. On a monochrome terminal, the reference grid is displayed lighter than the symbol you are editing.

```
  2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

  ==>
                               COLOR *
       CHAR ==> G   HEX ==> 87            CHAR ==>     HEX ==>


        1 2 3 4 5 6 7 8 9                  1 2 3 4 5 6 7 8 9
      1 . . . . . . . . .                1 . . . . . . . . .
      2 . . . . . . . . .                2 . . . . . . . . .
      3 . . . . . . . . .                3 . . . . . . . . .
      4 . . . . . . . . .                4 . . . . . . . . .
      5 . . . . . . . . .                5 . . . . . . . . .
      6 . . . . . . . . .                6 . . . . . . . . .
      7 . . . . . . . . .                7 . . . . . . . . .
      8 . . . . . . . . .                8 . . . . . . . . .
      9 . . . . . . . . .                9 . . . . . . . . .
     10 . . . . . . . . .               10 . . . . . . . . .
     11 . . . . . . . . .               11 . . . . . . . . .
     12 . . . . . . . . .               12 . . . . . . . . .
```

Figure 25. The Symbol Definition panel with the reference grid

You select the image symbol you want to copy or merge by entering its hexadecimal or character equivalent code in the input fields above the reference grid. This symbol is displayed in the reference grid.

```
  2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

  ==>
                               COLOR *
       CHAR ==> G   HEX ==> 87             CHAR ==>     HEX ==>


        1 2 3 4 5 6 7 8 9                   1 2 3 4 5 6 7 8 9
      1 . . . . . . . . .                 1 . . . . * . . . .
      2 . . . . . . . . .                 2 . . . * . * . . .
      3 . . . . . . . . .                 3 . . * . . . * . .
      4 . . . . . . . . .                 4 . * . . . . . * .
      5 . . . . . . . . .                 5 * * * * * * * * *
      6 . . . . . . . . .                 6 . . . . . . . . .
      7 . . . . . . . . .                 7 . . . . . . . . .
      8 . . . . . . . . .                 8 . . . . . . . . .
      9 . . . . . . . . .                 9 . . . . . . . . .
     10 . . . . . . . . .                10 . . . . . . . . .
     11 . . . . . . . . .                11 . . . . . . . . .
     12 . . . . . . . . .                12 . . . . . . . . .
```

Figure 26. The Symbol Definition panel showing a reference symbol

Copying a reference symbol

To copy the reference symbol into the definition grid, use the REF RECALL command. This is the method used to copy symbols within a symbol set.

```
   2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1

   ==>
                                    COLOR *
         CHAR ==> G   HEX ==> 87              CHAR ==>     HEX ==>


          1 2 3 4 5 6 7 8 9                   1 2 3 4 5 6 7 8 9
        1 . . . . * . . . .                 1 . . . . * . . . .
        2 . . . * . * . . .                 2 . . . * . * . . .
        3 . . * . . . * . .                 3 . . * . . . * . .
        4 . * . . . . . * .                 4 . * . . . . . * .
        5 * * * * * * * * *                 5 * * * * * * * * *
        6 . . . . . . . . .                 6 . . . . . . . . .
        7 . . . . . . . . .                 7 . . . . . . . . .
        8 . . . . . . . . .                 8 . . . . . . . . .
        9 . . . . . . . . .                 9 . . . . . . . . .
       10 . . . . . . . . .                10 . . . . . . . . .
       11 . . . . . . . . .                11 . . . . . . . . .
       12 . . . . . . . . .                12 . . . . . . . . .
```

Figure 27. Copying a symbol using the REF RECALL command

Shifting symbols

You can manipulate the symbol in the definition grid by using one of the four shift commands:

Command syntax	Abbreviation	Description
LSHIFT [n]	LS	Shifts the symbol left
RSHIFT [n]	RS	Shifts the symbol right
DSHIFT [n]	DS	Shifts the symbol downward
USHIFT [n]	US	Shifts the symbol upward

n = a number of rows or columns, the default being 1. For example, if you type *DSHIFT 5* and press Enter, the symbol in the definition grid moves down five points.

```
   2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION -------------- SSETNAME -- 2.1

   ==>
                              COLOR *
        CHAR ==> G   HEX ==> 87            CHAR ==>      HEX ==>


        1 2 3 4 5 6 7 8 9                  1 2 3 4 5 6 7 8 9
     1  . . . . . . . . .               1  . . . . * . . . .
     2  . . . . . . . . .               2  . . . * . * . . .
     3  . . . . . . . . .               3  . . * . . . * . .
     4  . . . . . . . . .               4  . * . . . . . * .
     5  . . . . . . . . .               5  * * * * * * * * *
     6  . . . . * . . . .               6  . . . . . . . . .
     7  . . . * . * . . .               7  . . . . . . . . .
     8  . . * . . . * . .               8  . . . . . . . . .
     9  . * . . . . . * .               9  . . . . . . . . .
    10  * * * * * * * * *              10  . . . . . . . . .
    11  . . . . . . . . .              11  . . . . . . . . .
    12  . . . . . . . . .              12  . . . . . . . . .
```

Figure 28. An example showing the effect of the command DSHIFT 5

You can also shift all the symbols in a symbol set by using any of these commands with the GLOBAL command. For example, to shift all the symbols in a symbol set downward two points, you would use the command GLOBAL DSHIFT 2 on the command line.

Note: If you use any of the shift commands to shift display points outside the symbol definition grid, you lose the points.

Merging symbols

The REF OVERLAY command merges the reference symbol with the image symbol in the definition grid. (You use the REF OVERLAY and not the REF RECALL command, because REF RECALL would replace the edited symbol with the reference symbol, and not merge the two together.)

```
 _____
/
|    2.1 - IMAGE SYMBOL EDITOR -- SYMBOL DEFINITION ------------- SSETNAME -- 2.1
|
|    ==>
|                                   COLOR *
|         CHAR ==> G   HEX ==> 87            CHAR ==>     HEX ==>
|
|
|          1 2 3 4 5 6 7 8 9                   1 2 3 4 5 6 7 8 9
|         1 . . . . * . . . .                 1 . . . . * . . . .
|         2 . . . * . * . . .                 2 . . . * . * . . .
|         3 . . * . . . . * . .               3 . . * . . . . * . .
|         4 . * . . . . . * .                 4 . * . . . . . * .
|         5 * * * * * * * * *                 5 * * * * * * * * *
|         6 . . . . * . . . .                 6 . . . . . . . . .
|         7 . . . * . * . . .                 7 . . . . . . . . .
|         8 . . * . . . * . .                 8 . . . . . . . . .
|         9 . * . . . . . * .                 9 . . . . . . . . .
|        10 * * * * * * * * *               10 . . . . . . . . . .
|        11 . . . . . . . . .               11 . . . . . . . . . .
|        12 . . . . . . . . .               12 . . . . . . . . . .
|
|
_____
```

Figure 29. An example of a merged image symbol

Mixing colors

When you are editing multicolor symbols, you can use the REF MERGE command to mix the colors of the symbols.

Changing the color of image symbols

When using the reference grid the Image Symbol Editor enables you to change the color of the symbol in the definition grid. For example, if you wanted to change the color of the symbol that was copied from the reference grid to the definition grid from blue to red, you would type CHANGE B R. The CHANGE command turns the color of the symbol in the definition grid from blue to red. The symbol in the reference grid remains blue.

The command REF SET updates the reference symbol to a copy of the edited symbol.

The command CHANGE can be abbreviated to CH.

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Figure 30. GDDM color mixing by the REF merge command

Figure 30 shows an example of the kind of results to expect when you use the REF MERGE command on multicolored symbols.

Unlike the REF MERGE command, the REF OVERLAY command does not mix the colors in the symbol. The colors of the points in the reference symbol replace the colors of the corresponding points in the definition grid.

Swapping symbols

Use the REF SWAP command to swap the symbol being defined and the reference symbol.

Updating the reference symbol

The REF SET command updates the reference symbol to a copy of the edited symbol.

creating and editing symbols

Appendix A. Summary of Image Symbol Editor commands

This appendix consists of a table listing the Image Symbol Editor commands in alphabetic order of command name.

Command syntax

Each command is listed with the syntax for using the command. These conventions have been used:

[ ]	Any parameter within brackets is optional.
	Any parameter not within brackets is required.
lowercase	A variable you supply.
UPPERCASE	Fixed keyword required, if the parameter is used.

Note: You can type commands in either uppercase or lowercase.

Abbreviations

Most, but not all, commands have abbreviations, which are usually the minimum number of characters necessary to identify uniquely the command (for example: N for NEXT, GR for GRID, and COL for COLOR). Any string longer than that, up to and including the full command, is also an acceptable abbreviation (for example: COL, COLO, and COLOR).

Note: You can type abbreviations for commands or parameters in either upper case or lower case.

Descriptions

The table gives a short description of each command. If you need a more detailed explanation of any command, refer to the online help panels. Just type HELP, together with the name of the command you want to read about, in the command area of the Editor panels.

Command syntax	Abbreviation	Description
BACK [n]	B [n]	Scrolls the symbol a number of rows upward to display rows with lower numbers. The default value for n is 1.
CANCEL	None	**Step Selection panel:** Ends the session and cancels any changes made to the symbol set without saving. **Symbol Definition panel:** Returns to the previous panel and cancels any changes made on the panel you were using.

Image Symbol Editor commands

Command syntax	Abbreviation	Description
CANCEL HOLD	CANCEL H	**Step Selection panel:** Continues the session and cancels any changes made to the symbol set. **Symbol Definition panel:** Keeps the panel you are using on the screen and cancels any changes made on the panel.
CHANGE color1 color2	CH color1 color2	Changes the color of display points in the symbol from color1 to color2. Valid values for color1 and color2 are: **B** Blue **G** Green **R** Red **T** Turquoise **P** Pink **Y** Yellow **N** Neutral **O** Off: refers to display points that are not turned on.
CLEAR	None	Turns off all the display points in the symbol.
COLOR color	COL color	Sets a color to use when display points are turned on with the compass keys or with characters other than the color characters. Valid color characters are: **B** Blue **G** Green **R** Red **T** Turquoise **P** Pink **Y** Yellow **N** Neutral
COMPASS	COM	Same as COMPASS SWITCH.
COMPASS ON	COM ON	Sets the compass keys on.
COMPASS OFF	COM OFF	Resets the PF keys to their initial settings.
COMPASS SWITCH	COM SWITCH	Sets the compass keys off if they are on, and on if they are off.
CURSOR	CU	Moves the cursor from the command line to its previous position in the symbol definition grid.
CURSOR FIRST	CU F	Moves the cursor from the command line to the first position in the symbol definition grid.

Command syntax	Abbreviation	Description
CURSOR LAST	CU LA	Moves the cursor from the command line to the lower right position in the grid.
CURSOR SWITCH	CU S	Moves the cursor from the current position in the symbol definition grid to the command line and the converse.
CURSOR LEFT [n] CURSOR RIGHT [n] CURSOR UP [n] CURSOR DOWN [n]	CU LE [n] CU R [n] CU U [n] CU D [n]	Moves the cursor n positions in the symbol definition grid in the direction specified. The default value for n is 1.
DSHIFT [n]	DS [n]	Shifts the display points in the symbol n positions downward. The default value for n is 1.
END	None	**Step Selection panel:** Ends the session and saves the symbol set. **Symbol Definition panel:** Returns you to the previous panel and saves any changes made on the panel you were using.
FORWARD [n]	F [n]	Scrolls the symbol a number of rows downward to display rows with higher numbers. The default value for n is 1.
GLOBAL LSHIFT [n] GLOBAL RSHIFT [n] GLOBAL DSHIFT [n] GLOBAL USHIFT [n]	GL LS [n] GL RS [n] GL DS [n] GL US [n]	Shifts all the symbols in the symbol set in the direction specified. The default value for n is 1.
GRID	GR	Same as GRID SWITCH.
GRID ON	GR ON	Indicates the off-points in the symbol definition grid with periods (.).
GRID OFF	GR OFF	Removes the periods from the symbol definition grid.
GRID SWITCH	GR SWITCH	Changes the current grid setting from on to off or the converse.
HELP	None	Displays the help panel for the editor panel currently displayed.
HELP command name	None	Displays the help panel for the specified command.
INFILL	INF	Fills an area in the symbol with a pattern of the current color, using the pattern specified in the PATTERN command.

Image Symbol Editor commands

Command syntax	Abbreviation	Description
INFILL color	INF color	Fills an area in the symbol with a pattern of the specified color, using the pattern specified in the PATTERN command. The color is specified as in the COLOR command.
INFILL pattern-number	INF pattern-number	Fills an area in the symbol with a pattern in the current color. The pattern may be a pattern number from the GDDM standard shading patterns (numbers 1 through 16) or a pattern number from a pattern set specified in the PATTERN command.
INFILL color pattern-number	INF color pattern-number	Fills an area in the symbol with a pattern in the color specified. The pattern may be a pattern number from the GDDM standard shading patterns (numbers 1 through 16) or a pattern number from a pattern set specified in the PATTERN command.
LEFT [n]	LE [n]	Scrolls a number of columns to the left to display columns with lower numbers. The default value for n is 1.
LSHIFT [n]	LS [n]	Shifts the display points in the symbol n positions to the left. The default value for n is 1.
NEXT	N	Moves to the next character code.
PATTERN [pattern-set-name] [pattern-number]	PATT [p-set-name] [p-number]	Specifies the name of the pattern set and the pattern number to use with the INFILL command. The default pattern-set name is the default for the device ("ADMIPAT.", where the period denotes the substitution character). The default pattern number is the first in the set.
PATTERN OFF	PATT OFF	Resets the pattern to the default (solid fill).
PFK n COMMAND subcommand	PF n C subcommand	Sets PF key n to the command specified in *subcommand*.
PFK n SYSTEM	PF n S	Returns to the system definition of the PF key.
PFK n PFK m	PFn PFm	Sets PF key n to the same setting as PF key m.

Command syntax	Abbreviation	Description
PFK ON	PF ON	Displays the PF key reminder information.
PFK OFF	PF OFF	Removes the PF key reminder information.
PREVIOUS	PRE	Moves to the previous character code.
QUIT	None	**Step Selection panel:** Cancels any changes made to the symbol set, and ends the session without saving the symbol set. **Symbol Definition panel:** Cancels any changes made to the symbol set, and returns you to the previous panel.
REF ON	None	Displays the reference symbol.
REF OFF	None	Removes the reference symbol.
REF MERGE	None	Merges the reference symbol point-for-point with the edited symbol. If a point is on in both symbols, the color of the point will be a mixture of the two colors.
REF OVERLAY	None	Overlays the reference symbol point-for-point on the edited symbol. If a point is on in both symbols, the color of the point in the reference symbol will be used.
REF RECALL	REF REC	Makes the symbol you are editing an exact copy of the reference symbol.
REF SET	None	Causes the reference symbol to become identical to the symbol being edited.
REF SWAP	None	Swaps the symbol you are editing with the reference symbol.
RENAME newname	REN newname	**Step Selection panel:** Renames the symbol set.
RETRACT	RET	Deletes the last change made with the INFILL command.
RIGHT [n]	R [n]	Scrolls a number of columns to the right to display higher-numbered columns. The default value for n is 1.
RSHIFT [n]	RS [n]	Shifts the display points in the symbol n positions to the right. The default value for n is 1.

Image Symbol Editor commands

Command syntax	Abbreviation	Description
SAVE	None	Saves the symbol set and continues the session.
SCROLL	SC	Displays the current settings for the scrolling commands.
SCROLL BACK [n] SCROLL FORWARD [n] SCROLL LEFT [n] SCROLL RIGHT [n]	SC B [n] SC F [n] SC L [n] SC R [n]	Sets the number of rows or columns to be scrolled for the direction specified. The default value of n is 10.
SCROLL n	SC n	Sets the number of rows and columns to be scrolled, for all the scroll commands, to the value specified in n.
TEST ON TEST OFF	None	Displays or removes the test symbol. The test symbol shows the symbol at its actual size.
USHIFT [n]	US [n]	Shifts the display points in the symbol n positions upward. The default value for n is 1.

Appendix B. Programmed symbol loading

This appendix gives the naming conventions and symbol set characteristics that you should use if you intend to load your image symbol set into the programmed symbol (PS) store of a device by an application program. For further information on the GDDM calls required to load the symbol set, see the *GDDM Base Application Programming Guide*.

Generally, downloading is not supported by GDDM for laser printers, personal computers, or ASCII devices, nor for other devices without programmed symbol storage.

Naming conventions

When you use image symbol sets as programmed symbols, it is very useful to use the GDDM naming conventions. You use the last letter in the symbol-set name to indicate which device you intend the symbol set to be used on. These naming conventions are used by the GDDM symbol-set loading calls in an application program.

You create several versions of the same symbols on different-size grids to match different devices. The symbol-set loading calls used in your application program replace the last letter of the symbol-set name with the period character, ".". GDDM then selects the appropriate symbol set for the device being used from the last letter in the symbol-set name. Therefore, the same code can be used for several devices. Figure 31 shows the GDDM naming conventions.

Figure 31 (Page 1 of 2). GDDM naming conventions for mode-1 symbol sets			
Last letter	**Matrix size**	**Monochrome or multicolor**	**Suitable devices**
A	9 x 16	Monochrome	3278 Display Station Models 2 and 3, 8775 Display Terminal Models 1 and 11, 8775 Display Terminal Models 2 and 12 (can be either 9 x 16 or 9 x 12), 3270 PC Workstation (symbol size is 9 x 14), 3270 PC/G Workstation, 3290 Information Panel display, all models 3472-G InfoWindow Display
C	9 x 12	Monochrome Multicolor	3278 Display Station Model 4, 8775 Display Terminal Models 2 and 12 (can be either 9 x 16 or 9 x 12), IBM PC EGA high-resolution display adapter, IBM Personal System/2 display adapter, 3179-G Color Display Station, 3192 Color Graphics Display Station, Model G
D	9 x 12	Multicolor	3179 Color Graphics Display Station, Model G 3279 Color Display Station, all models 3192 Color Graphics Display Station, Model G 3472 InfoWindow, Model G 3472 InfoWindow, Model M IBM PC CGA display adapter IBM PC EGA low-resolution display adapter

Figure 31 (Page 2 of 2). GDDM naming conventions for mode-1 symbol sets

Last letter	Matrix size	Monochrome or multicolor	Suitable devices
E	9 x 10	Monochrome	3270 PC/G alphanumerics only
G	10 x 8	Monochrome	3268, 3287 Printers, all models
H	10 x 8	Multicolor	3268, 3287 Printers, all models
J	32 x 32	Monochrome	4250 Printer (high-resolution symbol sets, 400 pixels per inch or greater)
K	20 x 18	Monochrome	4224 Printer
L	32 x 32	Monochrome	3800 Printing Subsystems (medium-resolution symbol sets, less than 400 pixels per inch)
M	32 x 32	Monochrome	3800 Printing Subsystems (medium-resolution symbol sets, less than 400 pixels per inch)
N	8 x 16	Multicolor	3270 PC/G, all models (graphics only)
O	32 x 32	Monochrome	3800 Printing Subsystems (low-resolution symbol sets, less than 100 pixels per inch)
Q	24 x 30	Monochrome	3812 Pageprinter Model 2 3816 Printer
R	12 x 20	Multicolor	3270 PC/GX, all models
	12 x 24		5550 Multistation IBM Personal System/2 8514/A display adapter
S	9 x 21	Monochrome	3472-G InfoWindow Display
T	12 x 16	Monochrome	4234 Dot Band Printer

Further fields in the Symbol Set Characteristics panel

If you intend to load your symbol set in the programmed symbol (PS) store of a device, you may need to change some of the fields on the Symbol Set Characteristics menu. The characteristics you may have to change are under the heading "FOR SYMBOL SETS TO BE LOADED IN PS ONLY" on the screen. Look at that section on the Symbol Set Characteristics menu shown in Figure 32 on page 43.

```
    1.0 - IMAGE SYMBOL EDITOR -- SYMBOL SET CHARACTERISTICS - SSETNAME - 1.0

    ==>
    ------------------------------------------------------------------------
      SYMBOL CELL WIDTH  ==> 9
      SYMBOL CELL HEIGHT ==> 12
      MULTICOLOR         ==> NO     YES OR NO

     STORAGE FORM:
        CELL FORMAT      ==> 1       1 - HYBRID, 2 - COLUMN, 3 - ROW LOADING
        FIRST HEX CODE   ==> 41      > 40
        LAST  HEX CODE   ==> FE      < FF

     FOR SYMBOL SETS TO BE LOADED IN PS ONLY:
        CLEAR PS BEFORE LOAD   ==> YES      YES OR NO
        SKIP SUPPRESS          ==> NO       YES OR NO
        LOCAL CHARACTER SET ID ==> 00       41 TO FE
        PS STORE NUMBER        ==> 0        2 TO 7
        OPERATOR SELECTABLE    ==> YES      YES OR NO
     FOR 3287 PRINTER SETS ONLY:
        ALL POINTS USABLE      ==> YES      YES OR NO


         PF 1/13 = HELP    PF 3/15 = END   PF 12/24 = CURSOR SWAP
```

Figure 32. The Symbol Set Characteristics panel

The fields you change depend on the device into which you want to load the symbol set. Here are descriptions of the fields that you may need to change.

CLEAR PS BEFORE LOAD ==> **YES YES OR NO**
Specify YES or NO to indicate whether or not the PS store is to be cleared before the symbol set is loaded.

If you specify YES, the PS store is cleared–all the display points in the PS store are turned off before the symbol set is loaded. This is the condition expected by GDDM.

If you specify NO, the PS store is not cleared.

SKIP SUPPRESS ==> **NO YES OR NO**
Specify YES or NO to indicate whether or not the interline skip is suppressed, on rows containing the symbols from the set, when the set is loaded into a PS store device.

LOCAL CHARACTER SET ID ==> **00 41 TO FE**
Use this field to specify the identifier associated with the symbol set. This must be hex 00 or hex 41 through hex FE. It is used to identify the symbol set in defining an equivalent set for local copy on a printer.

The Image Symbol Editor checks that this identifier is valid and stores it with the symbol set. GDDM does not use this identifier. It may be used if methods other than GDDM are available to load the symbol set.

PS STORE NUMBER ==> **0 2 TO 7**
Use this field to specify the PS store into which the symbol set is to be loaded in the device. It must be either 0 or in the range 2 through 7. The Image Symbol Editor checks that the number specified is valid and stores it with the symbol set. GDDM does not use this information, because the PS store number is supplied by the symbol-set loading call. It may be used if methods other than GDDM are available to load the symbol set.

OPERATOR SELECTABLE ==> **YES YES OR NO**

Specify YES or NO to indicate whether or not the symbol set is to be selectable via the PS selection keys after being loaded into the PS store in the device.

ALL POINTS USABLE ==> **YES YES OR NO**

Specify YES or NO to indicate whether or not all the display points of each symbol may be used.

You specify NO in this field only for symbols defined with a cell format of 2 (that is, symbols you intend to use on a printer). When you specify NO, the following restrictions are checked by GDDM:

- No two adjacent points (in a symbol grid row) can be on.

- Points in the last three symbol grid columns (the intercharacter gap) must be off.

This enables the symbols to be printed in one pass of the print head and can speed up printing significantly.

Summary of characteristics for PS sets to be loaded by GDDM

This section summarizes the characteristics that are appropriate for a symbol set that is to be loaded into the PS store of a device by GDDM.

1. Name the symbol set to indicate the device you intend it to be used on, as described in "Naming conventions" on page 41.

2. Specify the CELL WIDTH and CELL HEIGHT to match the cell size of the intended device:

Device	Models	Cell width	Cell height
3179 Display	G1, G2	9	12
3192 Display	G1	9	12
3270 PC Workstation	All	9	14
3270 PC/G Workstation	All	9 8	10 or 16 (selectable) 16 (graphics only)
3270 PC/GX Workstation	All	12	20
3268 Printer	2C	10	8
3278 Display	2, 3 4	9 9	16 12
3279 Display	All	9	12
3287 Printer	All	10	8
3290 Information Panel display	All	9	16
3472 InfoWindow Display	All	9	12, 16, or 21 (selectable)
4224 Printer	All	20	18
4234 Dot Band Printer	All	12	16
5550 Display	All	12	24
8775 Display	1, 11 2, 12	9 9	16 12 or 16 (selectable)

3. Specify MULTICOLOR = NO unless a multicolor symbol set is to be created for use on an appropriate device.

4. Specify CELL FORMAT as 1 for display devices, 2 for printers (or 3 for displays with cell sizes larger than 9 x 16).

5. Specify FIRST HEX CODE and LAST HEX CODE as required. A full set is advisable if your application program enables the terminal operator to select the set by using a PS selection key.

6. Leave CLEAR PS BEFORE LOAD at its default (YES).

7. Leave SKIP SUPPRESS at its default (NO), except in special circumstances, such as when you want to make large symbols by using two adjacent rows of symbols.

8. Leave LOCAL CHARACTER SET ID at its default (00).

9. Leave PS STORE NUMBER at its default (0).

10. If the operator using GDDM is allowed to select the set by using a PS selection key. Leave OPERATOR SELECTABLE at its default (YES). If the symbol set is to be used by GDDM only for output, specify NO.

11. Leave ALL POINTS USABLE at its default (YES), unless single-pass printing on the 3287 printer is required.

Summary of characteristics for PS sets to be loaded by other methods

If you intend that the PS set is to be loaded by some means other than GDDM the set should be generated as an object deck. You do this by selecting option 3 on the Step Selection panel. The characteristics for the set should be the same as for symbol sets to be loaded by GDDM, with the following exceptions:

- Set LOCAL CHARACTER SET ID as required to refer to the symbol set in data-stream commands. It can also be used in local-copy operations to identify a similar printer symbol set.

- Specify PS STORE NUMBER by entering the number of the PS store into which the symbol set is to be loaded. This enables PS selection keys to be used to select the set. The first PS store number available is 2, which corresponds to the PS A key.

programmed symbols

Appendix C. Image Symbol Sets supplied with GDDM

This appendix lists the symbol sets provided with GDDM:

- The default shading patterns
- The geometric shading patterns
- The color shades
- The GDDM markers.

The last letter of each symbol set conforms to the following conventions:

Last character	Cell size and color	
A	9 x 16	monochrome
C	9 x 12	monochrome
D	9 x 12	multicolor
E	9 x 10	monochrome
G	10 x 8	monochrome
J	32 x 32	monochrome
K	20 x 18	monochrome
L	32 x 32	monochrome
M	32 x 32	monochrome
N	8 x 12 or	monochrome
	8 x 16	monochrome
Q	24 x 30	monochrome
R	12 x 20	monochrome
S	9 x 21	monochrome
T	12 x 16	monochrome
V	24 x 16	monochrome

The image symbol sets are as follows:

ADMDHIIA ADMDHIIC ADMDHIIE ADMDHIIG ADMDHIIK ADMDHIIN ADMDHIIQ ADMDHIIR ADMDHIIS ADMDHIIT	Contain characters that correspond to the symbol-set defaults built into GDDM.
ADMDHIMA ADMDHIMC ADMDHIMG ADMDHIMJ ADMDHIMK ADMDHIMN ADMDHIMQ ADMDHIMR ADMDHIMT	Contain ten markers that correspond to the defaults built into GDDM. See Figure 36 on page 50.

ADMDHIPA ADMDHIPC ADMDHIPG ADMDHIPJ ADMDHIPL ADMDHIPM ADMDHIPO ADMDHIPN ADMDHIPR	Contain 17 shading patterns that correspond to the defaults built into GDDM. See Figure 33 on page 49. ADMDHIPJ is for use on a high-resolution printer ADMDHIPM is for use on a medium-resolution printer, and ADMDHIPO is for use on a low-resolution printer.
ADMDHIPK	Contains eight patterns that can be used to produce color masters. For further information on this symbol set, see the description of color-separation master tables in the *GDDM System Customization and Administration* book.
ADMIPATA ADMIPATC ADMIPATG ADMIPATN ADMIPATR	Contain 17 shading patterns that correspond to the defaults built into GDDM. See Figure 33 on page 49. There is no difference between these five symbol sets and ADMDHIPA, ADMDHIPC, ADMDHIPG, ADMDHIPN, and ADMDHIPR.
ADMITALA ADMITALC ADMITALG ADMITALK ADMITALS	Contain sample italic characters.
ADMPATTA ADMPATTC ADMPATTG ADMPATTJ ADMPATTL ADMPATTN ADMPATTR	Contain 64 geometric shading patterns. See Figure 34 on page 49.
ADMCOLSA ADMCOLSC ADMCOLSD ADMCOLSN ADMCOLSR	Contains shading patterns that create the appearance of 64 color shades. See Figure 35 on page 50.
ADMIKxx	Contain sample double-byte character set image characters. "xx" is in the range X'41' through X'68'.
ADMDISKA ADMDISKC ADMDISKG	Contain image symbols for use with Katakana displays and printers.
ADMDISKN ADMDISKR	Contain Katakana image symbols for use with the 5550 Model E (8 x 16, ADMDISKN) and Model H (12 x 24, ADMDISKR).

35SC0329G4

Figure 33. GDDM shading patterns—ADMIPATC

35SC0329G5
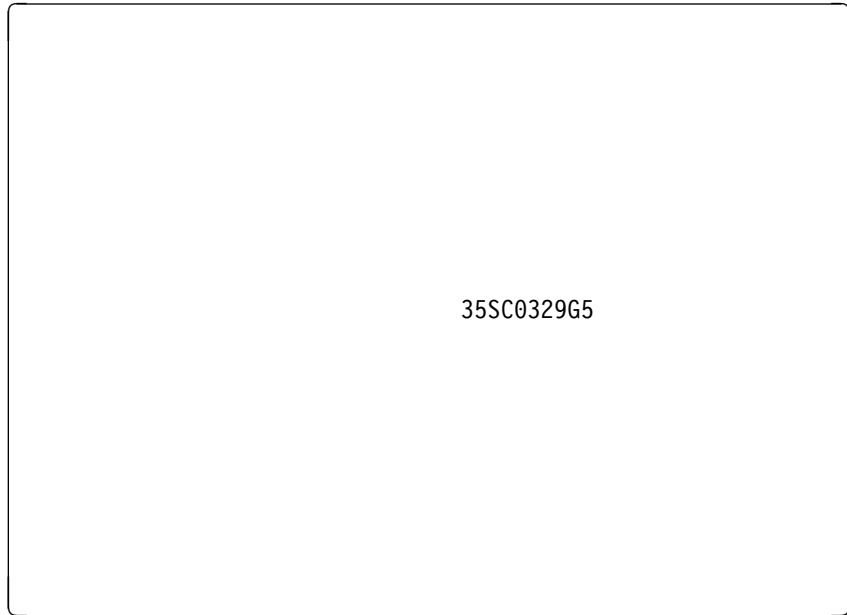
Figure 34. GDDM geometric shading patterns—ADMPATTC

35SC0329G6

Figure 35. GDDM color shades—ADMCOLSD

0   The drawing default

System-defined   markers:
1   ✕
2   +
3   ◇
4   □
5   ✳
6   ✳
7   ◆
8   ■
9   •
10   ○

User-defined markers:
65 through 254
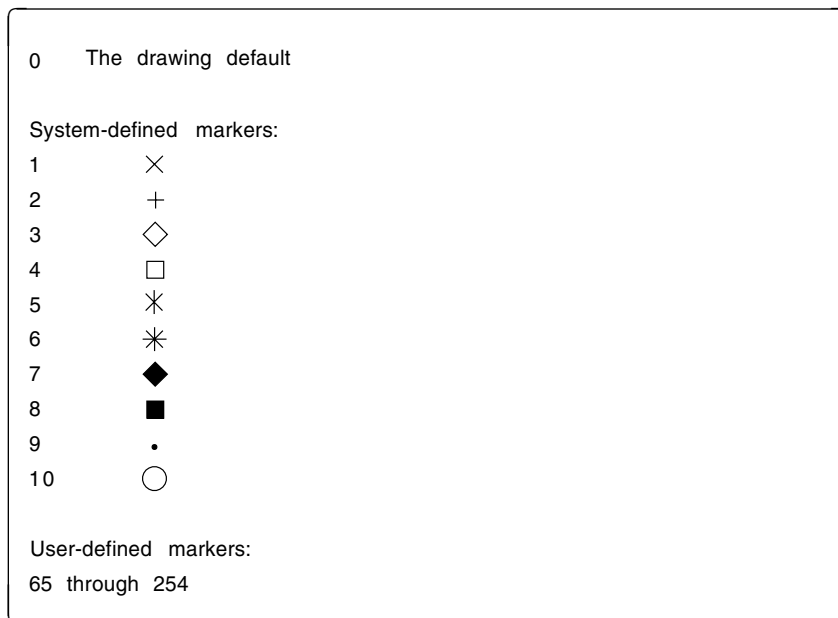
Figure 36. GDDM markers—ADMDHIMC

Glossary

This glossary defines technical terms used in GDDM documentation. If you do not find the term you are looking for, refer to the index of the appropriate GDDM manual or view the *IBM Dictionary of Computing*, located on the Internet at:

```
http:\\www.networking.ibm.com/nsg/nsgmain.htm
```

A

AAB.   Application anchor block.

ACB.   Application control block.

active operator window.   In GDDM, the operator window with the highest priority in the viewing order.

active partition.   The partition containing the cursor. Contrast with *current partition*.

advanced function printing.   The ability of licensed programs to use the all-points-addressable concept to print text and illustrations.

adjunct.   In mapped alphanumerics, one of a set of optional subfields in an application data structure that specifies some attribute of a data field; for example, that it is highlighted. An adjunct enables the attribute to be varied at run time.

ADMGDF.   See *graphics data format (GDF)*.

ADS.   Application data structure.

AFPDS.   Advanced-function presentation data stream.

AIC.   Application interface component.

alphanumeric character attributes.   In GDDM, the highlighting, color, and symbol set to be used for individual characters.

alphanumeric cursor.   A physical indicator on a display. It can be moved from one hardware cell to another.

alphanumeric field.   A field (area of a screen or printer page) that can contain alphabetic, numeric, or special characters. In GDDM, contrast with *graphics field*.

alphanumeric field attributes.   In GDDM, the intensity, highlighting, color, and symbol set to be used for field type, field end, output conversion, input conversion, translate table assignment, transparency, field outlining, and mixed-string fields.

alphanumerics.   Pertaining to alphanumeric fields. In GDDM there are three types of alphanumerics:

- Procedural alphanumerics
- Mapped alphanumerics
- High performance alphanumerics (HPA)

alternate device.   In GDDM, a device to which copies of the primary device's output are sent. Usually the alternate device is a printer or plotter. See also *primary device*.

annotation.   An added descriptive comment or explanatory note.

APA.   All points addressable.

aperture.   See *pick aperture*.

API.   Application programming interface.

APL.   One of the programming languages supported by GDDM.

application data structure (ADS).   A structure created by GDDM-IMD that contains an entry for each variable field within a *map*. The data to be displayed in a mapped field is placed into the application data structure by the user's program.

application image.   In GDDM, an image contained in GDDM main storage, and independent of any device or GDDM page. Contrast with *device image*.

application programming interface (API).   The formally defined interface used by an application programmer to pass commands to, and get responses from, an IBM system control program or licensed program.

area.   In GDDM, a shaded shape, such as a solid rectangle. It is created by opening the area, defining its outline, and closing the area.

aspect ratio.   The width-to-height ratio of an area, symbol, or shape.

attention identifier.   A number indicating which button the operator pressed to satisfy a read operation. For example, 0 (returned from GDDM to the application program) means that the operator pressed the Enter key.

attribute byte.   The screen position that precedes an alphanumeric field on a 3270-family device and holds the attribute information. See also *trailing attribute byte*.

attributes. Characteristics or properties that can be controlled, usually to obtain a required appearance; for example, the color of a line. See also *alphanumeric character attributes*, *alphanumeric field attributes*, and *graphics attributes*.

axis. In a chart, a line that is drawn to indicate units of measurement against which items in the chart can be viewed.

A3. A paper size, more common in Europe than in the U.S. It measures 297mm by 420mm, and is twice the size of A4. See also *A4*.

A4. A paper size, more common in Europe than in the U.S. It measures 210mm by 297mm, and is half the size of A3. Compare with *quarto*. See also *A3*.

B

background color. Black on a display, white on a printer. The initial color of the display medium. Contrast with *neutral color*.

bar code. A code representing characters by sets of vertical parallel bars of varying thickness and separation that are read optically by transverse scanning.

BASIC. One of the programming languages supported by GDDM.

BDAM. Basic Direct Access Method.

bi-level image. An image in which each pixel is either black or white (value 0 or 1). Contrast with *gray-scale image* and *halftone image*.

BMS. Basic Mapping Support (CICS).

BPAM. Basic Partitioned Access Method.

business graphics. The methods and techniques for presenting commercial and administrative information in chart form; for example, the creation and display of a sales bar chart. Contrast with *general graphics*.

C

CALS. Continuous Acquisition and Life-Cycle Support.

CDPDS. Composite Document Presentation Data Stream.

CDPF. Composed Document Print Facility.

CDPU. Composite Document Print Utility.

CECP. Country-extended code page.

cell. See *character cell*.

CGM. Computer Graphics Metafile. A file that contains information about the content of a picture, and conforms to the International Standard, ISO 8632, or is of a similar format.

channel-attached. Pertaining to devices that are attached directly to a computer by means of data (I/O) channels. Synonymous with *local*. Contrast with *link-attached*.

character. A letter, digit, or other symbol.

character attributes. See *alphanumeric character attributes*. See also *graphics text attributes*.

character box. In GDDM, the rectangle or (for sheared characters) the parallelogram boundaries that govern the size, orientation, spacing, and italicizing of individual symbols or characters to be shown on a display screen or printer page.

The box width, height, and, if required, shear are specified in world coordinates and can be program-controlled. See also *character mode*. Contrast with *character cell*.

character cell. The physical, rectangular space in which any single character or symbol is displayed on a screen or printer device. The size and position of a character cell are fixed. Size is usually specified in pixels on a given device; for example, 9 by 12 on an IBM 3279 Model 3 display. Position is addressed by row and column coordinates. Synonymous with *hardware cell* and *symbol cell*. Contrast with *character box*.

character code. The means of addressing a symbol in a symbol set, sometimes called *code point*.

The particular form and range of codes depends on the GDDM context. For example:

- For the Image Symbol Editor, a hexadecimal constant in the range X'41' through X'FE', or its EBCDIC character equivalent
- For the Vector Symbol Editor, a hexadecimal constant in the range X'00' through X'FF', or its EBCDIC character equivalent
- For the GDDM API, a decimal constant in the range 0 through 239, or subsets of this range (for example, a marker symbol code range of 1 through 8)

character grid. A notional grid that covers the *graphics field*. The size of the grid determines the basic size of the characters in all text constructed by presentation graphics routines. It is the fundamental measurement in chart layout, governing the spacing of mode-2 characters and the size of mode-3 characters. It also governs the size of the chart margins and thus the plotting area.

character matrix.   Synonym for *dot matrix*.

character mode.   In GDDM, the type of characters to be used. There are three modes:

- Mode-1 characters are loadable into PS and are of device-dependent fixed size, spacing, and orientation, as are hardware characters.
- Mode-2 characters are image (ISS) characters. Size and orientation are fixed. Spacing is variable by program.
- Mode-3 characters are vector (VSS) characters. Box size, position, spacing, orientation, and shear of individual characters are variable by program.

chart.   In GDDM, usually means business chart; for example, a *bar chart*.

choice device.   A logical input device that enables the application program to identify keys pressed by the terminal operator.

CICS.   Customer Information Control System. A subsystem of MVS or VSE under which GDDM can be used.

clipping.   In computer graphics, removing parts of a display image that lie outside a viewport. Synonymous with *scissoring*.

CMS.   Conversational Monitor System. A time-sharing subsystem that runs under VM/SP.

COBOL.   One of the programming languages supported by GDDM.

code page.   Defines the relationship between a set of code points and graphic characters. This relationship covers both the standard alphanumeric characters and the national language variations. GDDM supports a set of code pages used with typographic fonts for the IBM 4250 page printer.

code point.   Synonym for *character code*.

Composite Document Presentation Data Stream (CDPDS).   A data stream containing graphics, image, and text that is the input to the GDDM Composite Document Print Utility (CDPU).

Composed Document Print Facility (CDPF).   An IBM licensed program for processing documents destined for the IBM 4250 page printer.

composed-page image file.   An intermediate form, residing on disk, of a picture destined for a page printer.

composed-page printer.   See *page printer*.

composed-page printer format.   A general term describing the format of print data destined for output by using either *CDPF* or *PSF*.

composite document.   A document that contains both formatted text, such as that produced by the DCF program, and graphic or image data, such as that produced by GDDM. It is a combination of text and pictures on a page or set of pages. The pictures can be computer graphics or images created by scanning paper originals.

Composite Document Print Utility (CDPU).   A utility that can print or display composite documents

compressed data stream.   A data stream that has been made more compact by use of a data-compression algorithm.

constant data.   In GDDM, data that is defined in a map and need not be known to the application program.

correlation.   The translation (by GDDM) of a screen position into a part of the user's picture. This follows a *pick* operation.

country-extended code page (CECP).   An extension of a normal EBCDIC code page that includes definitions of all code points in the range X'41' through X'FE'. Each code page contains the same 190 characters, but the mapping between code points and graphics characters depends on the country for which the code page is defined. This is a method of marking a GDDM object so that the environment in which it was created can be identified. It enables automatic translation to a different environment.

CSD.   (1) Under MVS or VSE, CICS system definition. (2) In personal computer systems, Corrective Service Diskette; the means by which service is applied to the personal computer system.

current partition.   The partition selected for processing by the application program. Contrast with *active partition*.

current position.   In GDDM, the end of the previously drawn primitive. Unless a "move" is performed, this position is also the start of the next primitive.

cursor.   A physical indicator that can be moved around a display screen. See *alphanumeric cursor* and *graphics cursor*.

CUT.   Control unit terminal.

D

DASD.   Direct access storage device.

data stream compatibility (DSC).   In IBM 8100 systems, the facility that provides access to System/370 applications that communicate with IBM 3270 Information Display System terminals.

data stream compression.   The shortening of an I/O data stream for the purpose of more efficient transmission between link-attached units.

data set.   The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

DBCS.   Double-byte character set.

DCF.   Document Composition Facility.

DCSS.   Discontiguous saved segment (VM/SP).

DCT.   Destination control table (CICS).

default value.   The value of an attribute chosen by GDDM when no value is explicitly specified by the user. For example, the default line type is a solid line.   The default value is sometimes device-dependent.   See also *drawing default* and *standard default*.

denibblized data.   The decoded data stream used between the GDDM DOS Support feature in the host and GDDM-PCLK on the workstation.

designator character.   The first byte of a light-pen-detectable field that indicates whether or not the field has been selected.

device echo.   A visual identification of the position of the graphics cursor.   The form of the device echo is defined by the application program.

device family.   In GDDM, a device classification that governs the general way in which I/O will be processed. See also *processing option*.   For example:

- Family 1: 3270 display or printer
- Family 2: queued printer
- Family 3: system printer (alphanumerics only)
- Family 4: page printer

device image.   In GDDM, an image contained in a device or GDDM page.   Contrast with *application image*.

device suffix.   In GDDM-IMD, a suffix to a mapgroup name that indicates the device class.

device token.   In GDDM, an 8-byte code giving entry to a table of pre-established device hardware characteristics that are required when the device is opened (initialized).

DIF.   In GDDM terms, data interchange format.

digital image.   A two-dimensional array of picture elements (pixels) representing a picture.   A digital image can be stored and processed by a computer, using bits to represent pixels.   In GDDM, pixels have the value black or white.   Often called simply *image*.

direct transmission.   In GDDM image processing, the transfer of image data direct from a source outside GDDM to an image device, including manipulation by a projection in the device, and without GDDM maintaining a copy or buffer of the data.

display device.   Any output unit that gives a visual representation of data; for example, a screen or printer. More commonly, the term is used to mean a screen and not a printer.

display point.   Synonym for *pixel*.

display-point matrix.   Synonym for *dot matrix*.

display terminal.   An input/output unit by which a user communicates with a data processing system or subsystem.   It usually includes a keyboard and always provides a visual presentation of data.   For example, an IBM 3179 display.

DL/1.   Data language 1.   A language for database processing operations.

dot matrix.   In computer graphics, a two-dimensional pattern of dots used for constructing a display image. This type of matrix can be used to represent characters by dots.   Synonymous with *character matrix* and *display-point matrix*.

double-byte characters.   See *double-byte character set (DBCS)*.

double-byte character set (DBCS).   A set of characters in which each character occupies two byte positions in internal storage and in display buffers. Used for oriental languages; for example, *Kanji* or *Hangeul*.   Contrast with *single-byte character set*.

DPCX.   Distributed Processing Control Executive.   An IBM 8100 system control program.

DPPX.   Distributed Processing Programming Executive. An IBM 8100 system control program.

drawing default.   The value of a graphics attribute chosen by GDDM when no value is explicitly specified

by the user. The drawing default may be altered by the user.

DSC. Data stream compatibility.

dual characters. See *double-byte characters*.

dummy device. An output destination for which GDDM does all the normal processing but for which no actual output is generated. Used, for example, to test programming for an unavailable output device.

E

EBCDIC. Extended binary coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

echo. In interactive graphics, the visible form of the locator or other logical input device.

ECSA. Extended character set adapter.

edit. To enter, modify, or delete data.

editing grid. In the GDDM Image and Vector Symbol Editors, a grid used as a guide for editing a symbol. In the Image Symbol Editor, it is a dot matrix. In the Vector Symbol Editor, it is a grid of lines.

enterprise. An organization or company that undertakes local, national, or international business ventures.

extended data stream. For IBM 3179, 3192, 3278, 3279, and 3287 devices, input/output data formatted and encoded in support of color, programmed symbols, and extended highlighting. These features extend the IBM 3270 data stream architecture.

extended highlighting. The emphasizing of a displayed character's appearance by blinking, underscore, or reverse video.

external defaults. GDDM-supplied values that users can change to suit their own needs.

extracted image. In GDDM, an image on which transform element calls operate. It may imply the whole source image or just a part of it, depending on whether a define sub-image transform element has been applied in its derivation.

F

FCT. File control table (CICS).

field. An area on the screen or the printed or plotted page. See *alphanumeric field*, *graphics field*, and *mapped field*.

field attributes. See *alphanumeric field attributes*.

field list. The high performance alphanumerics data structure used to define alphanumeric fields.

fillet. A curve that is tangential to the end points of two adjoining lines.

flat file. A file that contains only data; that is, a file that is not part of a hierarchical data structure. A flat file can contain fixed-length or variable-length records.

floating area. The part of a page reserved for *floating maps*.

floating map. A map whose absolute position on the GDDM page is not fixed. During execution, a floating map takes the next available space that satisfies its specification.

floating-point feature. A processing unit feature that provides four 64-bit floating-point registers to perform floating-point arithmetic calculations.

foil. A transparency for overhead projection.

font. A particular style of typeface (for example, Gothic English). In GDDM, a font can exist as a programmed symbol set.

formatted document. A type of file containing text, images, and graphics.

FORTRAN. One of the programming languages supported by GDDM.

four-button cursor. A hand-held device, with cross-hair sight, used on the surface of a *tablet* to indicate position on a screen. Synonymous with *puck*.

frame. In GDDM-IMD, a synonym for *panel*.

full-screen alphanumeric operation. Full-screen processing operations on alphanumeric fields.

full-screen mode. A form of screen presentation in which the contents of an entire terminal screen can be displayed at once. Full-screen mode is often used for fill-the-blanks prompting, and is an alternative to line-by-line I/O.

full-screen processor.   A host software component that, together with display terminal functions, supports display terminal input/output in full-screen mode.

G

GDDM.   Graphical Data Display Manager. A series of IBM licensed programs, running in a host computer, that manage communications between application programs and display devices, printers, plotters, and scanners for graphics applications.

GDDM-GKS.   GDDM Graphical Kernel System. A member of the GDDM family that runs under TSO and CMS and provides an alternative graphics programming interface to that of the GDDM base product. It is an implementation of the Graphical Kernel Standard, ISO 7942, of the International Organization for Standardization.

GDDM/graPHIGS.   A member of the GDDM family used for creating hierarchical three-dimensional structures on the IBM 5080 Graphics System. It is based on the proposed ANSI standard for the Programmer's Hierarchical Interactive Graphics System (PHIGS).

GDDM Interactive Map Definition.   GDDM-IMD. A member of the GDDM family of licensed programs. It enables users to create alphanumeric layouts at the terminal. The user defines the position of each field within the layout and may assign attributes, default data, and associated variable names to each field. The resultant map can be tested from within the utility.

GDDM-IVU.   GDDM Interactive View Utility. A member of the GDDM family of licensed programs. It enables users to view, create, modify, store, and print images.

GDDM-OS/2.   A licensed program that enables IBM PS/2 and other personal-computer systems with OS/2 installed to run GDDM application programs in the host computer.

GDDM-PCLK.   A licensed program that enables IBM PS/2 and other personal computers with graphics-display adapters, and IBM 3270 terminal emulators to run GDDM application programs in the host computer.

GDDM-PGF.   GDDM-Presentation Graphics Facility. A member of the GDDM family of licensed programs. It is concerned with business graphics, rather than general graphics.

GDDM storage.   The portion of host computer main storage used by GDDM.

GDF.   Graphics data format.

general graphics.   The methods and techniques for converting data to or from graphics display in mathematical, scientific, or engineering applications; that is, in any application other than business graphics. See also *business graphics*.

generated mapgroup.   The output produced when a source GDDM-IMD mapgroup is generated. It contains the information needed by GDDM at execution to position the mapped fields on the GDDM page.

GIF.   Graphics Interchange Format.

GKS.   Graphical Kernel System. See *GDDM-GKS*.

GL.   Graphical Language.

Graphical Data Display Manager.   See *GDDM*.

graphics.   A picture defined in terms of *graphics primitives* and *graphics attributes*.

graphics area.   Part of a mapped field that is reserved for later insertion of graphics.

graphics attributes.   In GDDM, color selection, color mix, line type, line width, graphics text attributes, marker symbol, and shading pattern definition.

graphics cursor.   A physical indicator that can be moved (often with a joystick, mouse, or stylus) to any position on the screen.

graphics data format (GDF).   A picture definition in an encoded order format used internally by GDDM and, optionally, providing the user with a lower-level programming interface than the GDDM API.

graphics data stream.   The data stream that produces graphics on the screen, printer, or plotter.

graphics field.   A rectangular area of a screen or printer page, used for graphics. Contrast with *alphanumeric field*.

graphics input queue.   A queue associated with the graphics field onto which elements arrive from logical input devices. The program can remove elements from the queue by issuing a graphics read.

graphics primitive.   A single item of drawn graphics, such as a line, arc, or graphics text string. See also *graphics segment*.

graphics read.   A form of read that solicits graphics input or removes existing elements from the graphics input queue.

graphics segment.   A group of graphics primitives (lines, arcs, and text) that have a common window and a common viewport and associated attributes. Graphics

segments allow a group of primitives to be subject to various operations. See also *graphics primitive*.

graphics text attributes. In GDDM, the symbol (character) set to be used, character box size, character angle, character mode, character shear angle, and character direction.

graPHIGS. See *GDDM/graPHIGS*.

gray-level. A digitally encoded shade of gray, normally (and always in GDDM) in the range 0 through 255. See also *gray-scale image*.

gray-scale image. An image in which the gradations between black and white are represented by discrete gray-levels. Contrast with *bi-level image* and *halftone image*.

green lightning. The name given to the flashing streaks on an IBM 3270 screen while a programmable symbol set is being loaded.

H

halftone image. A bi-level image in which intermediate shades of gray are simulated by patterns of adjacent black and white pixels. Contrast with *gray-scale image*.

Hangeul. A character set of symbols used in Korean ideographic alphabets.

hardware cell. Synonym for *character cell*.

hardware characters. Synonym for *hardware symbols*.

hardware symbols. The characters that are supplied with the device. The term is loosely used also for GDDM mode-1 symbols that are loaded into a PS store for subsequent display. Synonymous with *hardware characters*.

hexadecimal. Pertaining to a numbering system with base sixteen.

host. See *host computer*.

high performance alphanumerics. The creation of alphanumeric displays using field list data structures. Contrast with *procedural* and *mapped* alphanumerics.

host computer. The primary or controlling computer in a multiple-computer installation.

I

ICU. Interactive Chart Utility.

identity projection. In GDDM image processing, a projection that is transferred from source image to target image without any processing being performed on it.

image. Synonym for *digital image*.

image data stream. The internal form of the GDDM data in an image environment.

image field. A rectangular area of a screen or printer page, used for image. Contrast with *alphanumeric field* and *graphics field*.

Image Object Content Architecture (IOCA). An architected collection of constructs used to interchange and present images.

image symbol. A character or symbol defined as a dot pattern.

Image Symbol Editor (ISE). A GDDM-supplied interactive editor that enables users to create or modify their own image symbol sets (ISS).

image symbol set (ISS). A set of symbols each of which was created as a pattern of dots. Contrast with *vector symbol set (VSS)*.

IMD. See *GDDM Interactive Map definition*.

IMS/VS. Information Management System/Virtual Storage. A subsystem of MVS under which GDDM can be used.

include member. A collection of source statements stored as a library member for later inclusion in a compilation.

input queue. See *graphics input queue*.

integer. A whole number (for example, –2, 3, 457).

Intelligent Printer Data Stream (IPDS). A structured-field data stream for managing and controlling printer processes, allowing both data and controls to be sent to the printer. GDDM uses IPDS to communicate with the IBM 4224 printer.

Interactive Chart Utility (ICU). A GDDM-PGF menu-driven program that allows business charts to be created interactively by nonprogrammers.

interactive graphics. In GDDM, those graphics that can be moved or manipulated by a user at a terminal.

Interactive Map definition. A member of the GDDM family of licensed programs. It enables users to create alphanumeric layouts at the terminal. The operator defines the position of each field within the layout and may assign attributes, default data, and associated variable names to each field. The resultant map can be tested from within the utility.

interactive mode. A mode of application operation in which each entry receives a response from a system or program, as in an inquiry system or an airline reservation system. An interactive system can also be conversational, implying a continuous dialog between the user and the system.

interactive subsystem. (1) One or more terminals, printers, and any associated local controllers capable of operation in interactive mode. (2) One or more system programs or program products that enable user applications to operate in interactive mode; for example, CICS.

intercept. In a chart, a method of describing the position of one axis relative to another. For example, the x axis can be specified so that it intercepts (crosses) the y axis at the bottom, middle, or top of the plotting area of a chart.

inter-device copy. The ability to copy a page or the graphics field from the current primary device to another device. The target device is known as the alternate device.

IOCA. See *Image Object content Architecture*.

IPDS. See *Intelligent Printer Data Stream*.

ISE. Image Symbol Editor.

ISO. International Organization for Standardization.

ISPF. Interactive System Productivity Facility.

ISS. Image symbol set.

IVU. Image View Utility. See *GDDM-IVU*.

J

joystick. A lever that can pivot in all directions in a horizontal plane, used as a *locator* device.

K

Kanji. A character set of symbols used in Japanese ideographic alphabets.

Katakana. A character set of symbols used in one of the two common Japanese phonetic alphabets; Katakana is used primarily to write foreign words phonetically. See also *Kanji*.

key. In a legend, a symbol and an associated data group name. A key might, for example, indicate that the blue line on a graph represents "Predicted Profit." See also *legend*.

key symbol. A small part of a line (from a line graph) or an area (from a shaded chart) used in a legend to identify one of the various data groups.

L

Latin. Of or pertaining to the Western alphabet. In GDDM, a synonym for *single-byte character set*.

legend. A set of symbolic keys used to identify the data groups in a business chart.

line attributes. In GDDM, color, line type, and line width.

link pack area. An MVS term that describes an area of shared storage.

link-attached. Pertaining to devices that are connected to a controlling unit by a data link. Synonymous with *remote*. Contrast with *channel-attached*.

local. Synonym for *channel-attached*.

local character set identifier. A hexadecimal value stored with a GDDM symbol set, which can be used by symbol-set-loading means other than GDDM in the context of local copy on a printer.

locator. A logical input device used to indicate a position on the screen. Its physical form may be the alphanumeric cursor or a graphics cursor moved by a joystick.

logical input device. A concept that allows application programs to be written in a device-independent manner. The logical input devices to which the program refers may be subsequently associated with different physical parts of a terminal, depending on which device is used at run time.

LPA. Link pack area.

LTERM.   In IMS/VS, logical terminal.

M

map.   A predefined format of alphanumeric fields on a screen.   Usually constructed outside of the application program.

map specification library (MSL).   The data set in which maps are held in their source form.

mapgroup.   A data item that contains a number of maps and information about the device on which those maps are to be used.   All maps on a GDDM page must come from the same mapgroup.

mapped alphanumerics.   The creation of alphanumeric displays using predefined maps.   Contrast with *procedural alphanumerics* and *high performance alphanumerics*.

mapped field.   An area of a page whose layout is defined by a map.

mapped graphics.   Graphics placed in a graphics area within a mapped field.

mapped page.   A GDDM page whose content is defined by maps in a mapgroup.

mapping.   The use of a map to produce a panel from an output record, or an input record from a panel.

marker.   In GDDM, a symbol centered on a point.   Line graphs and polar charts can use markers to indicate the plotted points.

MDT.   Modified data tag.

menu.   A displayed list of logically grouped functions from which the user can make a selection.   Sometimes called a menu panel.

menu-driven.   Describes a program that is driven by user response to one or more displayed menus.

MFS.   Message format service.

MICR.   Magnetic ink character recognition.

mixed character string.   A string containing a mixture of *Latin* (one-byte) and *Kanji* or *Hangeul* (two-byte) characters.

Mixed Object Document Content Architecture (MO:DCA).   An architected, device-independent data stream for interchanging documents.

mode-1/-2/-3 characters.   See *character mode*.

mountain shading.   A method of shading surface charts where each component is shaded separately from the base line, instead of being shaded from the data line of the previous component.

mouse.   A device that a user moves on a flat surface to position a pointer on a screen.

MSHP.   Maintain System History Program.   A software process for installing licensed programs on VSE systems.

MSL.   Map specification library.

MVS.   IBM Multiple Virtual Storage.   A system under which GDDM can be used.

MVS/XA.   Multiple Virtual Storage/Extended Architecture.   A subsystem under which GDDM can be used.

N

name-list.   A means of identifying which physical device is to be opened by a GDDM program.   It can be used as a parameter of the DSOPEN call, or in a *nickname*.

National Language Support (NLS).   A special feature that provides translations of the ICU panels and some of the GDDM messages into a variety of languages, including US English.

negate.   In bi-level image data, setting zero bits to one and one bits to zero.

neutral color.   White on a display, black on a printer.   Contrast with *background color*.

nibblized data.   The encoded data stream used between the GDDM DOS Support feature in the host and GDDM-PCLK on the workstation.

nickname.   In GDDM, a means of referring to a device, the characteristics and identity of which have been already defined.

NLS.   National Language Support.

nonqueriable printer.   A printer about which GDDM cannot obtain any information.

NSS.   Named saved system (VM/XA and VM/ESA).

null character.   An empty character represented by X'00' in the EBCDIC code.   Such a character does not occupy a screen position.

O

operator reply mode. In GDDM, the mode of interaction available to the operator (display terminal user) with respect to the modification (or not) of alphanumeric character attributes for an input field.

operator window. Part of the display screen's surface on which the GDDM output of an application program can be shown. An operator window is controlled by the end user; contrast with *partition*. A *task manager* may create a window for each application program it is running.

outbound structured field. An element in IBM 3270 data streams from host to terminal with formatting that allows variable-length and multiple-field data to be sequentially translated by the receiver into its component fields without the receiver having to examine every byte.

P

page. In GDDM, the main unit of output and input. All specified alphanumerics and graphics are added to the current page. An output statement always sends the current page to the device, and an input statement always receives the current page from the device.

page printer. A printer, such as the IBM 3820 or IBM 4250, to which the host computer sends data in the form of a succession of formatted pages. Such devices can print pictorial data and text, and can position all output to pixel accuracy. The pixel density and the general print quality both often suffice as camera-ready copy for publications. Also known as *composed-page printer*.

page segment. A picture file in a form that can be printed. It can only be printed if it is embedded in a primary document. Also known as a *PSEG*o file.

panel. A predefined display that defines the locations and characteristics of alphanumeric fields on a display terminal. When the panel offers the operator a selection of alternatives it may be called a menu panel. Synonymous with *frame*.

partition. Part of the display screen's surface on which a page, or part of a page, of GDDM output can be shown. Two or more partitions can be created, each displaying a page, or part of a page, of output. A partition is controlled by the GDDM application; contrast with *operator window*.

partition set. A grouping of partitions that are intended for simultaneous display on a screen.

partitioned data set (PDS). A data set in direct access storage that is divided into partitions, called members, each of which can contain a program, part of a program, or data.

PCB. In GDDM, program communication block (IMS/VS).

PCLK. See *GDDM-PCLK*.

PDS. Partitioned data set (MVS).

pel. Picture element. See *pixel*.

PGF. Presentation Graphics Facility. A member of the GDDM family of licensed programs. It is concerned with business graphics, rather than general graphics.

PHIGS. Programmer's Hierarchical Interactive Graphics System.

pick. The action of the operator in selecting part of a graphics display by placing the graphics cursor over it.

pick aperture. A rectangular or square box that is moved across the screen by the graphics cursor. An item must lie at least partially within the pick aperture before it can be picked.

pick device. A logical input device that allows the application to determine which part of the picture was selected (or picked) by the operator.

picture interchange format (PIF) file. In graphics systems, the type of file, containing picture data, that can be transferred between GDDM and an IBM 3270-PC/G, /GX, or /AT workstation.

picture space. In GDDM, an area of specified aspect ratio that lies within the graphics field. It is centered on the graphics field and defines the part of the graphics field in which graphics will be drawn.

PIF. Picture interchange format.

pixel. The smallest area of a display screen capable of being addressed and switched between visible and invisible states. Synonymous with *display point*, *pel*, and *picture element*.

PL/I. One of the programming languages supported by GDDM.

plotter. An output device that uses pens to draw its output on paper or transparency foils.

pointings. Pairs of x-y coordinates produced by an operator defining positions on a screen with a locator device, such as a *mouse*.

polar chart.   A form of business chart where the x axis is circular and the y axis is radial.

polyfillet.   In GDDM, a curve based on a sequence of lines. It is tangential to the end points of the first and last lines, and tangential also to the midpoints of all other lines.

polyline.   A sequence of adjoining lines.

popping.   A method of ordering data whereby each item in a list or sequence takes the value of the previous item in the list or sequence, and is then removed from the list; when this happens, the list or sequence of data is said to be "popped."

ppi.   Pixels per inch.

PQE.   Printer queue element.

presentation graphics.   Computer graphics products or systems, the functions of which are primarily concerned with graphics output presentation. For example, the display of business planning bar charts.

preview chart.   A small version of the current chart that can be displayed on ICU menu panels.

primary device.   In GDDM, the main destination device for the application program's output, usually a display terminal. The default primary device is the user console. See also *alternate device*.

primitive.   See *graphics primitive*.

primitive attribute.   A specifiable characteristic of a graphics primitive. See *graphics attributes* and *graphics text attributes*.

Print Services Facility (PSF).   An IBM licensed program for processing documents destined for the IBM 3800 Model 3 page printer.

print utility.   A subsystem-dependent utility that sends print files from various origins to a queued printer.

procedural alphanumerics.   The creation of alphanumeric displays using the GDDM alphanumeric API. Contrast with *mapped alphanumerics* and *high performance alphanumerics*.

processing option.   Describes how a device's I/O is to be processed. It is a device-family-dependent and subsystem-dependent option that is specified when the device is opened (initialized). An example is the choice between CMS attention-handling protocols.

procopt.   Processing option.

profile.   In GDDM, a file that contains information about how GDDM is to process requests for services to devices or other functions.

program library.   (1) A collection of available computer programs and routines. (2) An organized collection of computer programs.

programmed symbols (PS).   Dot patterns loaded by GDDM into the PS stores of an output device.

projection.   In GDDM image processing, an application-defined function that specifies operations to be performed on data extracted from a source image. Consists of one or more *transforms*. See also *transform element*.

PS.   Programmed symbols.

PS overflow.   A condition where the graphics cannot be displayed in its entirety because the picture is too complex to be contained in the device's PS stores.

PSB.   Program specification block (IMS).

PSEG.   See *page segment*.

PSF.   Print Services Facility.

PSP bucket.   A database containing descriptions of faults found in programs. Used by Service personnel.

PS/2.   Personal System/2.

puck.   Synonym for *four-button cursor*.

PUT.   Program update tape.

Q

quarto.   A paper size, more common in the U.S. than in Europe. It measures 8.5 inches by 11.0 inches. Also known as A size. Compare with *A4*.

queued printer.   A printer belonging to the subsystem under which GDDM runs, to which output is sent indirectly by means of the GDDM Print Utility program. In some subsystems, this may allow the printer to be shared between multiple users. Contrast with *system printer*.

R

raster device.   A device with a display area consisting of dots. Contrast with *vector device*.

rastering.   The transforming of graphics primitives into a dot pattern for line-by-line sequential use. In GDDM PS devices, this is done by transforming the primitives into a series of programmed symbols (PS).

real device. A GDDM device that is not being windowed by means of operator window functions. Contrast with *virtual device*.

reentrant. The attribute of a program or routine that allows the same copy of the program or routine to be used concurrently by two or more tasks.

remote. Synonym for *link-attached*.

reply mode. See *operator reply mode*.

resolution. In graphics and image processing, the number of pixels per unit of measure (inch or meter).

reverse clipping. Where one graphics primitive overlaps another, removing any parts of the underlying primitive that are overpainted by the overlying primitive.

reverse video. A form of alphanumeric highlighting for a character, field, or cursor, in which its color is exchanged with that of its background. For example, changing a red character on a black background to a black character on a red background.

REXX. Restructured Extended Executor Language. One of the programming languages supported by GDDM.

Roman. Relating to the *Latin* type style, with upright characters.

S

SBCS. Single-byte character set.

scanner. A device that produces a digital image from a document.

scissoring. Synonym for *clipping*.

scrolling. In computer graphics, moving a display image vertically or horizontally in a manner such that new data appears at one edge as existing data disappears at the opposite edge.

SCS. SNA character string.

segment. See *graphics segment*.

segment attributes. Attributes that apply to the segment as an entity, rather than to the individual primitives within the segment. For example, the visibility, transformability, or detectability of a segment.

segment library. The portion of auxiliary storage where segment definitions are held. These definitions are GDDM objects in graphics data format (GDF) and are managed by GDDM API calls. GDDM handles the file accesses to and from auxiliary storage.

segment priority. The order in which segments are drawn; also the order in which they are detected.

segment transform. The means to rotate, scale, and reposition segments without re-creating them.

selector adjunct. A subfield of an application data structure that qualifies a data field.

shear. The action of tilting graphics text so that each character leans to the left or right while retaining a horizontal baseline.

single-byte character set (SBCS). A set of characters in which each character occupies one byte position in internal storage and in display buffers. Used for example, in most non-Oriental symbols. Contrast with *double-byte character set.*

SMP/E. System Modification Program/Extended. A software process for installing licensed programs on MVS systems.

SNA. System Network Architecture.

source image. An image that is the data input to image processing or transfer.

spill file. A means of reducing storage requirements at the cost of processing time, when creating high-resolution output files for page printers, for example.

stand-alone (mode). Operation that is independent of another device, program, or system.

standard default. The value of a graphics attribute chosen by GDDM when no value is explicitly specified by the user. The standard default cannot be altered by the user, although it may be overridden by the user.

string device. A logical input device that enables an application program to process character data entered by the terminal operator.

stroke device. A logical input device that enables an application program to process a sequence of x,y coordinate data entered by the terminal operator.

stylus. A pen-like pointer used on the surface of a tablet to indicate position on a screen.

surface chart. A chart similar to a line graph, except that no markers appear and the areas between successive lines are shaded.

swathe. A horizontal slice of printer output, forming part of a complete picture. Page printer images are often constructed in swathes to reduce the amount of storage required.

symbol. Synonymous with *character*. For example, the following terms all have the same meaning: vector symbols, vector characters, vector text.

symbol cell. Synonym for *character cell*.

symbol matrix. Synonym for *dot matrix*.

symbol set. A collection of symbols, usually but not necessarily forming a font. GDDM applications may use the hardware device's own symbol set. Alternatively, they can use image or vector symbol sets that the user has created.

symbol set identifier. In GDDM, an integer (or the equivalent EBCDIC character) by which the programmer refers to a loaded symbol set.

system printer. A printer belonging to the subsystem under which GDDM runs, to which output is sent indirectly by use of system spooling facilities. Contrast with *queued printer*.

T

tablet. (1) A locator device with a flat surface and a mechanism that converts indicated positions on the surface into coordinate data. (2) The IBM 5083 Tablet Model 2, which, with a four-button cursor or stylus, allows positions on the screen to be addressed and the graphics cursor to be moved without use of the keyboard.

tag. In interactive graphics, an identifier associated with one or more primitives that is returned to the program if such primitives are subsequently picked.

target image. An image that is the destination of processed or transferred data.

target position. In the GDDM Vector Symbol Editor, the grid coordinates of a point on the editing grid to which a vector is to be drawn.

task manager. A program that supervises the concurrent running of other programs.

temporary graphics. Graphics created outside a segment.

terminal. A device, usually equipped with a keyboard and a display unit, capable of sending and receiving information over a link. See also *display terminal*.

terminal emulator. A program that enables a device such as a personal computer system to enter and receive data from a host computer system as if it were a particular type of attached terminal.

test symbol. In the GDDM Image and Vector Symbol Editors, an area on the Symbol Edit panel in which the currently chosen symbol is displayed.

text. Characters or symbols sent to the device. GDDM provides alphanumeric text and graphics text.

text attributes. See *graphics text attributes*.

tilted pie chart. A pie chart drawn in three dimensions, which has been tilted away from full face to reveal its three-dimensional properties.

trailing attribute byte. The screen position following an alphanumeric field. This attribute byte can specify, for example, that the cursor should auto-skip to the next field when the current field is filled.

transfer operation. In GDDM image processing, an operation in which a projection is applied to a source image, and the result placed in a target image. The source and target images can be device or application images in any combination, or one or other of them (but not both) can be image data within the application program.

transform. (1) The action of modifying a picture for display; for example, by scaling, rotating, or displacing. (2) The object that performs or defines such a modification; also referred to as a *transformation*. (3) In GDDM image processing, a definition of three aspects of the data manipulation to be done by a projection:

1. A transform element or sequence of transform elements
2. A resolution conversion or scaling algorithm
3. A location within the target image for the result

Only the third item is mandatory.

See also *projection* and *transform element*.

transform element. In GDDM image processing, a specific function in a transform, which can be one of the following: define sub-image, scale, orient, reflect, negate, define place in target image.

A given transform element can be used only once in a *transform*.

transformable. A segment must be defined as transformable if it will subsequently be moved, scaled, or rotated.

transparency. (1) A document on transparent material suitable for overhead projection. (2) An alphanumeric attribute that allows underlying graphics or image to show.

TSO. Time Sharing Option. A subsystem of MVS under which GDDM can be used.

TWA. Transaction work area.

U

UDS. User default specification.

UDSL. A list of user default specifications (UDSs).

unformatted data. In GDDM image processing, compressed or uncompressed binary image data that has no headers, trailers, or embedded control fields other than any defined by the compression algorithm, if applicable. The data is in row major order, beginning with the top left of the picture.

User Control. A GDDM function that enables the terminal or workstation to perform some functions without the need for application programming. The actions include: moving and zooming graphics; manipulating windows; printing, plotting, and saving pictures.

user default specification (UDS). The means of changing a GDDM external default value. The external default values that a UDS can change are those of the GDDM or subsystem environment, GDDM user exits, and device definitions.

user exit. A point in GDDM execution where a user routine will gain control if such has been requested.

V

variable cell size. In most devices, the hardware cell size is fixed, but the IBM 3290 Information Panel has a cell size that can be varied. This, in turn, causes the number of rows or columns on the device to alter.

vector. (1) In computer graphics, a directed line segment. (2) In the GDDM-PGF Vector Symbol Editor, a straight line between two points.

vector device. A device capable of displaying lines and curves directly. Contrast with *raster device*.

vector symbol. A character or shape composed of a series of lines or curves.

Vector Symbol Editor. A program supplied with GDDM-PGF, the function of which is to create and edit vector symbol sets (VSS).

vector symbol set (VSS). A set of symbols, each of which was originally created as a series of lines and curves.

Venetian blind effect. The name given to the appearance of bars across shaded patterns on an IBM 3270-PC when GDDM tries to match the image symbol sets.

Venn diagram. A form of business chart in which, in GDDM, two or more populations and their intersection are represented by overlapping circles.

viewport. A subdivision of the picture space, most often used when two separate pictures are to be displayed together.

virtual device. A GDDM device that is being windowed by use of operator window functions. Contrast with *real device.*

virtual screen. The presentation space viewed through an *operator window*.

VM/ESA. IBM Virtual Machine Enterprise Systems Architecture.

VM/SP CMS. IBM Virtual Machine/System Product Conversational Monitor System; a system under which GDDM can be used.

VMXA. IBM Virtual Machine Extended Architecture; a system under which GDDM can be used.

VSE. Virtual storage extended; an operating system consisting of VSE/Advanced Functions and other IBM programs.

Note: In GDDM, the abbreviation VSE has sometimes been used to refer to the Vector Symbol Editor, but to avoid confusion, this usage is deprecated.

VSS. Vector symbol set.

W

Ward. One of the 190 matrices used to contain the symbols of a double-byte character set. The value in the first byte of each double-byte character code refers to the ward in which the character is contained. The value in the second byte denotes the character's position in the matrix.

window. In GDDM, the term window has three distinct meanings:

1. The "graphics window" is the coordinate space used for defining the primitives that make up a graphics picture. By default, both x and y coordinates run from 0 through 100. The graphics window can be regarded as a set of coordinates that are overlaid on the viewport.

2. An "operator window" is an independent rectangular subdivision of the screen. Several can exist at the same time, and each can receive output from, and send input to, either a separate GDDM program or a separate function of a single GDDM program.

3. The "page window" defines which part should be displayed of a page that is deeper or wider than its partition.

workstation.   A display screen together with attachments such as a local copy device or a tablet.

world coordinates.   The user application-oriented coordinates used for drawing graphics.   See also *window*.

wrap-around field.   An alphanumeric field that extends to the right-hand edge of the page and continues at the start of the next row.

WTP.   Write-to-programmer.

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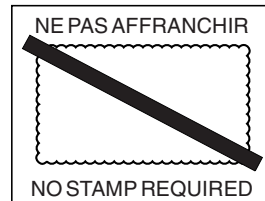
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