5280

IBM

IBM 5280 Distributed Data System

System Control Programming Reference/Operation Manual

IBM

GC21-7824-1
S5280-36

IBM 5280 Distributed Data System

System Control Programming
Reference/Operation Manual

This reference manual describes the IBM 5280 System Control Programming (SCP) support and program operation procedures and is intended for operators, programmers, and customer engineers who design and execute programs on an IBM 5280. Use this manual to load the *starter* system, perform the IPL (initial program load), and use the system configuration program, the close failure recovery program, and the patch program.

This manual is divided into five chapters:

- Chapter 1. *Introduction to the IBM 5280 System Control Programming Support* contains an overview of the IBM 5280 SCP support and a general description of each SCP program.

- Chapter 2. *The Initial Program Load (IPL) Function* describes how to prepare the system for program processing.

- Chapter 3. *The System Configuration Program* explains how to tailor your system to your business needs.

- Chapter 4. *The Close Failure Recovery Program* describes how to recover data if a power or system failure occurs.

- Chapter 5. *The Patch Program* describes how to fix errors if they are encountered in IBM-licensed programs or user programs.

- Appendix A. *Prompt Descriptors* contains an alphabetized list of the headings of each section describing a specific prompt.

At the end of this manual is a glossary of terms and abbreviations.

You should read all of Chapter 1 to give yourself overall familiarity with the SCP support.

In Chapters 2 through 5, one SCP program is described in each chapter. Each chapter is divided into two sections: the first section describes concepts that are pertinent to successful program execution, and the second section describes a step-by-step procedure for program operation. You should read the chapter(s) that describes the specific function you wish to perform.

Prerequisite Publications

- *IBM 5280 General Information*, GA21-9350

- *IBM 5280 Planning and Site Preparation Guide*, GA21-9351

Related Publications

- *IBM 5280 System Concepts*, GA21-9352

- *IBM 5280 Utilities Reference/Operation Manual*, SC21-7788

- *IBM 5280 Sort/Merge Reference/Operation Manual*, SC21-7789

- *IBM 5280 Message Manual*, GA21-9354

- *IBM 5280 Operator's Guide*, GA21-9364

- *IBM 5280 Communications Reference Manual*, SC34-0247

- *IBM 5280-3270 Emulation Reference Manual*, SC34-0384

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CHAPTER 4. (Cont.)

Chapter 1. Introduction to the IBM 5280 System Control Programming Support

This chapter discusses concepts common to all the IBM 5280 SCP programs (such as how to load the programs and how to recover from errors) and your interaction with the system.

The IBM 5280 SCP programs and tables reside on an IBM-supplied diskette. These programs enable you to perform the IPL process for the IBM 5280 system, configure the system, recover data if a system or power failure occurs, and apply a fix to IBM-supplied programs or user programs if an error is encountered.

THE IBM 5280 SCP SUPPORT OVERVIEW

The following list provides an overview of how you use the IBM 5280 system. The SCP diskette is used in steps 1, 2, 4a and 4b.

1. IPL the IBM 5280 system with the initial program load function. The IPL process loads a *starter* system.

2. Load and execute the system configuration program. The system configuration program enables you to tailor the IBM 5280 system by creating your own IPL diskette. In doing this, you make certain choices regarding device configuration and system program characteristics.

3. IPL with the IPL diskette that was produced by step 2.

4. Load and execute user programs or IBM-supplied programs using your tailored system.
    a. If a power failure or system failure occurs during execution of a program, and a data set is not closed, use the close failure recovery program to update the data set label and close the data set.
    b. If IBM provides an update or correction to one of the IBM-supplied programs, use the patch program to apply the change to the program.

The Initial Program Load (IPL) Function (SYSIPL)

The initial program load function loads the IBM 5280 system with information needed to execute other programs. The IPL program loads a starter system immediately after you power on the IBM 5280. Once the IPL process is performed using the SCP diskette, you can load and execute the system configuration program.

The System Configuration Program (SYSCON)

The system configuration program allows you to configure, or tailor, the system's storage area and devices to meet your business needs.

During execution of the system configuration program, you specify the characteristics of your IBM 5280 system by responding to prompting messages. Using your responses, the IBM 5280 creates a user-defined IPL data set.

The user-defined IPL configuration is stored on diskette and is used to IPL the system for future data processing jobs.

The Close Failure Recovery Program (SYSCLOSE)

If execution of a program was interrupted, a data set may remain open and the data within cannot be accessed (that is, read or written) until the corresponding data set label has established the correct end-of-data position. The close failure recovery program allows you to set the end of data at a user-specified record number. The IBM 5280 uses this end-of-data record to update the data set label and enable you to access the data.

The Patch Program (SYSPTF)

The patch program enables you to correct problems that might be encountered while you are using the IBM 5280 system programs or user programs, and display the history of the changes made to the programs. This program uses IBM-supplied *program temporary fixes* (PTFs).

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COPYING THE IBM 5280 SCPs

The image copy function provided by the diskette copy utility can be used to copy the IBM 5280 SCPs from the IBM-supplied diskette to one of your own diskettes. When user-defined IPL data sets are copied to another diskette, they must be the first two data sets on the output diskette. Because the image copy function copies the data sets in the same order as they are on the original diskette, the copied diskette always has SYSIPL at the beginning. See the *Utilities Reference/Operation Manual* for more information about copy.

SCP PROGRAM STORAGE REQUIREMENTS

The following chart lists the minimum storage requirements of each program.

IBM 5280 Programs	Minimum Partition Storage Requirements
Initial program load	No minimum requirement
System configuration	16 K
Close failure recovery	9 K
Patch	9 K

Note: One K of storage equals 1024 bytes. Partitions must be equal to or greater than the amount specified.

See *Partitions* in Chapter 3 of this manual for more information. See the *Planning and Site Preparation Guide* for sample partition layouts.

THE SCP DATA SET NAMES

The IBM 5280 SCP programs have the following data set and program names:

Data Set Name	Program Name
SYSIPL	Initial program load
SYSCON	System configuration
SYSCLOSE	Close failure recovery
SYSPTF	Patch

Note: The initial program load program (SYSIPL) is not loaded as other programs are. SYSIPL is only initiated by using an IPL procedure.

PROMPTING MESSAGES

The SCP programs issue prompting messages (messages that require responses) to define the program characteristics. All fields where you should enter a response are preceded by colons and subdivided by column separators. The separators are vertical lines that mark character positions on the display screen. The following example shows the use of column separators:

Column
Separators

```
O 0001      A 16 40
Program name:  ∣∣∣∣∣∣∣∣∣∣∣∣∣∣∣∣∣∣
Device address:
Partition number:


               Press ENTER                                    05-00
```

Some prompting messages contain more than one field for you to fill in. In these cases, column separators first appear in the field where the cursor is positioned. After you fill in that field, press the Field Exit key on the data entry keyboard and/or the Skip key on the typewriter keyboard. (The Field + key must be used on the typewriter keyboard to exit from the digits-only field if the field is a right adjust field.) The cursor will move to the first position of the next field and the column separators will also move to that field.

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Prompt Numbers

In the lower-right corner of each prompt is a four-digit dashed number, such as 20-06. The first two digits identify the program. The second two digits identify the prompting message. The following example shows the use of a prompt number:

Prompt
Number

```
Enter the number of partitions that will be on the system.
Foreground:   2
Background:   _

                      Press ENTER                                     20-06
```
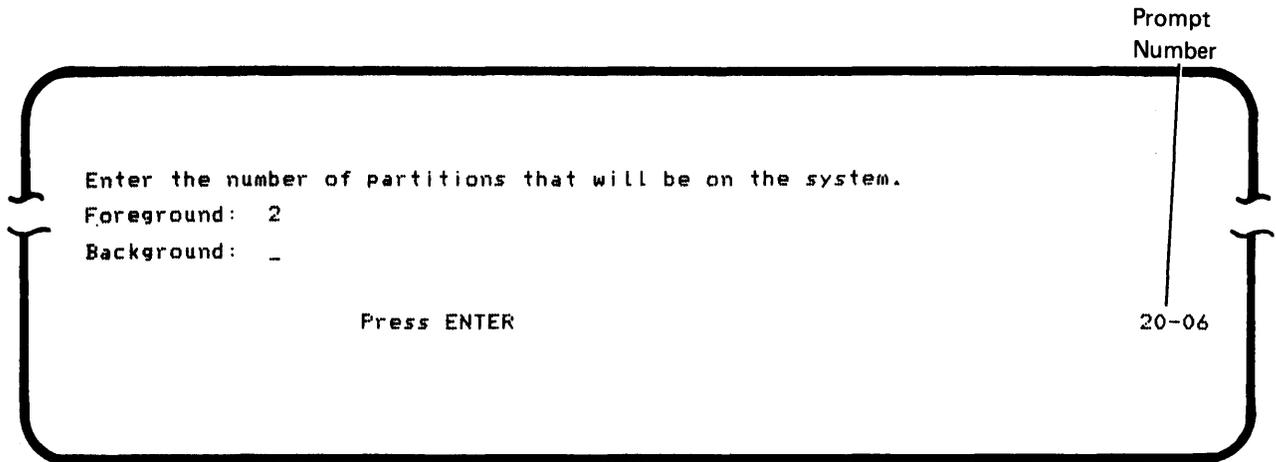
The prompt numbers are included in the headings that precede the sample prompts used in this manual.

Status Line

The top line of the display screen is called the status line. It contains such
information as the partition number, the program name, and error codes, about
the program currently being executed. Different information is displayed when
the load program prompt appears, when a program completes successfully, or
when an error occurs. To alert you when an error occurs, the status line also
blinks. Following is an explanation of the IBM 5280 error status line:

```
Physical
Device
Identifier

Partition        Error              Program    Status
Number           Code               Name       Line

     0  5400-9400           SYSCON01
```
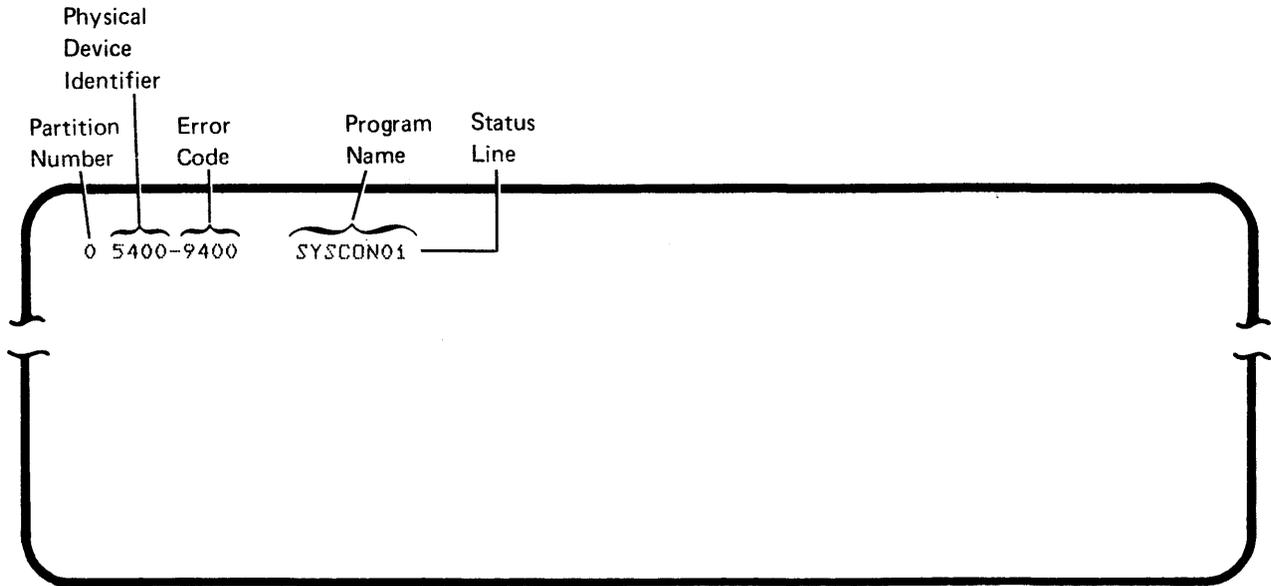
The load prompt and the close failure recovery SCP have the following status
line.

```
                              Number of
Partition      Error          Positions Left
Number         Code           in Field

      Physical    Field                Hexadecimal Value
      Device      Shift                at Cursor Position
      Identifier  Identifier

    0  0001-XXXX  A  16  40
```
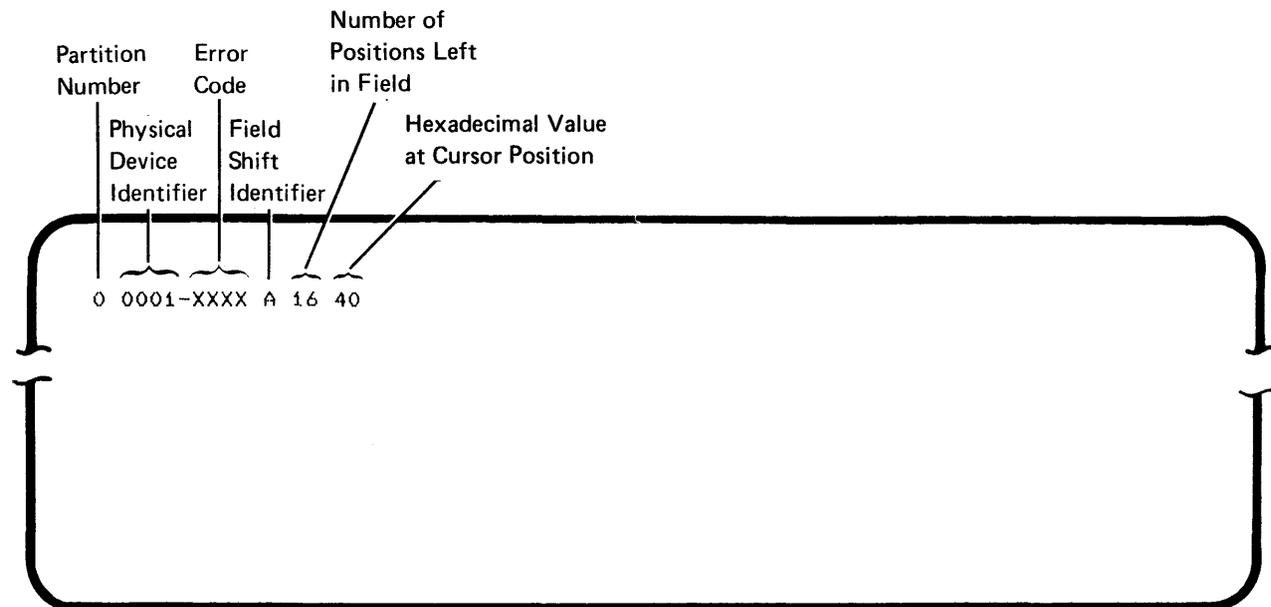
PROGRAM-COMPLETED PROMPT

When execution of an IBM 5280 SCP program is completed, a nonblinking status
line is displayed, showing the number of the partition in which the program
was executed and the name of the program that was executed. (You might
need this information because more than one program can have access to your
keyboard.)

The following prompt is displayed:

```
X                     XXXXXXXX
SYSnnn completed.
  Options are
    1. Restart
    2. Exit
Select option:    -  Press ENTER                              XX-78
```

Note: The nnn on the second line of the completed prompt represents the last
three to five characters of the program's data set name. The IBM 5280 SCP
programs and licensed programs have SYS as the first 3 characters of their
data set names.

Enter a 1 to restart the program from its beginning.

Enter a 2 to exit from the program.

PROGRAM-TERMINATED PROMPT

If a program terminates because of errors or when the End-of-Job key is pressed, the following prompt is displayed:

```
X XXXX-XXXX-XXXXX
SYSnnn terminated.
  Options are
    1. Restart
    2. Exit
Select option:    -  Press ENTER                                    XX-79
```

Note: The nnn on the second line of the program-terminated prompt represents the last three through five characters of the program's data set name.

Enter a 1 to restart the program from its beginning. However, before you restart the program, correct the error that caused it to terminate. The *IBM 5280 Message Manual* lists error codes and suggested recoveries.

Enter a 2 to exit from the program.

Chapter 2. The Initial Program Load (IPL) Function

The initial program load (IPL) function loads the IBM 5280 with a starter system (SCP) configuration immediately after you insert the SCP diskette and start the IPL process. The starter system (SCP) configuration has the following characteristics:

- A 32 K storage area (with 26 K of storage for a user program).

- A single display screen/data station with a 480-character display format.

- Common functions used by the IBM 5280 system to support all programs except the key entry utility and DE/RPG.

Note: The IPL process can also be used to load a user-defined configuration from a user-defined IPL diskette. A user-defined IPL diskette is generated by the system configuration program. For more information on using the IPL process to load a user-defined configuration, see the *IBM 5280 Operator's Guide.*

IPL PROCESS OVERVIEW

The IPL process requires either the power-on procedure or the command key sequence procedure. The command key sequence procedure is used only if the IPL process was previously performed and the power was not turned off.

Each time the IPL process is started, the IBM 5280 performs a system-initiated internal check. See *IBM 5280 Display Indicators* in this chapter for more information.

DEFINING THE LANGUAGE/KEYBOARD

To complete the starter system (SCP) configuration, you must specify the type of keyboard (typewriter, data entry, or data entry proof) that is attached to your system, the language/keyboard type, and the character set to be used on the system.

Language/Keyboard Type Chart

The language/keyboard type chart lists the languages available with each keyboard type on the IBM 5280 system, and the character sets available in each language. See the *System Configuration Program* in this manual for more information on the language/keyboard chart.

CHARACTER SETS

The Standard Character Set

The following chart shows the standard character set used by the United States and Canada. The row of numbers on the first line of the chart is the first hexadecimal number, and the column of numbers on the left side of the chart is the second hexadecimal number. For example, the hexadecimal numbers C and 1 indicate an A on the chart.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0						&	-						(	)	\	0
1						/			a	j	¯		A	J		1
2									b	k	s		B	K	S	2
3									c	l	t		C	L	T	3
4									d	m	u		D	M	U	4
5									e	n	v		E	N	V	5
6									f	o	w		F	O	W	6
7									g	p	x		G	P	X	7
8									h	q	y		H	Q	Y	8
9								`	i	r	z		I	R	Z	9
A					¢	!	¦	:								
B					.	$	,	#								
C					<	*	%	@								
D					(	)	_	'								
E					+	;	>	=								
F					|	¬	?	"								

Most countries listed in the language/keyboard chart have a standard character set. The character set depicts graphic codes as they are converted to EBCDIC (Extended Binary Coded Decimal Interchange Code). See the *Systems Concepts* manual for the standard character sets.

The Multinational Character Set

The multinational character set is used to generate and display all graphics shown in the following chart.

During the IPL process, the IBM 5280 system loads the correct character set translation table into the keyboard/display area of storage.

The following is an example of the multinational character set supported by the IBM 5280.

	0	1	2	3	4	5	6	7	8	9	A	B	C.	D	E	F
0						&	‑	ø	Ø	°	µ	¢	(	)	\	0
1						é	/	É	a	j	¨	£	A	J		1
2					â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3					ä	ë	Ä	Ë	c	l	t	R	C	L	T	3
4					à	è	À	È	d	m	u	f	D	M	U	4
5					á	í	Á	Í	e	n	v	§	E	N	V	5
6					ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7					å	ï	Å	Ï	q	p	x	¼	G	P	X	7
8					ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9					ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
A					[	]	¦	:	«	ª	¡	¬	—	■	2	3
B					.	$	,	‡	»	º	¿			ö	ü	ö	ü
C					<	*	%	@	d	æ	Ð	■	ö	ü	Ö	Ü
D					(	)	_	'	■	‚	■	¨	ò	ù	ò	ù
E					+	;	>	=	Þ	Æ	þ	´	ó	ú	ó	ú
F					!	^	?	"	±	¤	®	‗	ō	ý	ō	

OPERATION OF THE INITIAL PROGRAM LOAD (IPL) FUNCTION

The IPL process can be initiated by the power-on procedure or a command key sequence procedure.

The power-on procedure is used when you initially turn on the IBM 5280. Use the following steps to perform the power-on procedure:

1.   Insert the SCP diskette into a diskette drive.

2.   Secure the diskette locking lever.

3.   Set the power switches to the On position on all devices.

The IPL process starts immediately.

The command key sequence procedure is used only if the IPL process was previously performed on the IBM 5280 system and the power was not turned off. Use the following steps to perform the command key sequence procedure:

1.   Insert the SCP diskette into a diskette drive.

2.   Secure the diskette locking lever.

3.   Press the Cmd (Command) key, hold down the Shift key, then press the G key.

Note: If the Command key sequence procedure is used while other users are online, some or all of their data may be lost.

The IPL process starts immediately.

Each time you perform the IPL process on the IBM 5280 system, a system-initiated internal check is performed on the keyboard/display, one diskette drive, main storage, and the microprocessors. (This check can cause a delay in the display of the system indicators.)

IBM 5280 Display Indicators

Twelve display indicators (■) appear in a column on the display screen.

As each part of the IBM 5280 is checked, the indicator is changed to a dash (—). If the checkout sequence stops, the IBM 5280 has encountered a problem.

If the checkout sequence stops with six indicators remaining on the display screen, either the SCP diskette has not been inserted into a diskette drive or a problem has occurred with the diskette. Insert the SCP diskette into a diskette drive or use another SCP diskette.

If the checkout sequence stops with one indicator remaining on the display screen, the IPL diskette is configured for more storage than is available on the system. Reconfigure your IPL diskette to continue.

If the system stops at any other position, call the service representative.

When no display indicators are present, the checkout process is complete. The starter system (SCP) IPL function issues prompts that enable you to specify the keyboard type, the language type(s), and the character set.

Specify the Keyboard Type (01-01)

```
What type of keyboard do you have?
( )Typewriter
( )Data entry
( )Proof
                    Press ENTER                                    01-01
```

1. Enter the character K to the left of your keyboard type. An easy way to identify your keyboard type is to look at the U key:

    [1 / U] is data entry; [7 / U] is data entry with proof arrangement;

    [U] is typewriter.

2. Press the Enter key.

If necessary, use the → (Cursor Advance) and ← (Cursor Backspace) keys to position the cursor at the field where you will make an entry.

Note: The character K was selected as the valid entry used to specify the keyboard type because K can be identified logically by the program regardless of the keyboard and language type used.

Specify the Keyboard Language Type (01-02/01-03)

```
What keyboard language do you have?
( )United States    ( )Germany          ( )France Azerty
( )France Qwerty    (_)United Kingdom   ( )Italy
( )Japan/Katakana   ( )Spanish Speaking ( )Canadian/English
( )Canadian/French  ( )ASCII
                    Press ENTER                        01-02
```

1. Enter the character K to the left of the language.

2. Press the Enter key.

If you select a language from prompt 01-02, prompt 01-03 is not displayed.
The IBM 5280 advances to prompt 01-04 instead. If you do not made a selection
from prompt 01-02, prompt 01-03 is displayed.

```
What keyboard language do you have?
( )Austria          ( )Belgium          ( )Brazil
( )Denmark          ( )Finland          ( )International
( )Japan/English    ( )Norway           ( )Spain
( )Sweden           ( )Portugal
                    Press ENTER                              01-03
```
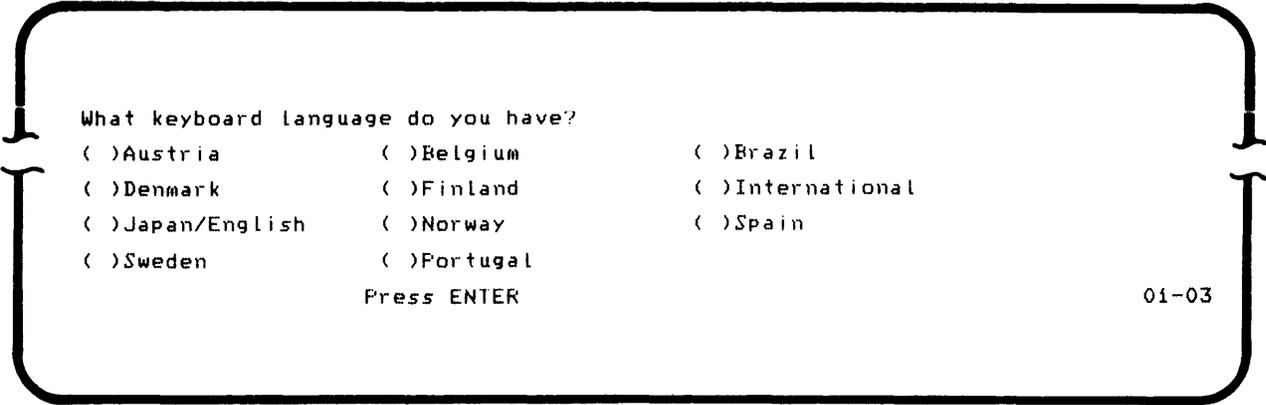
1.   Enter the character K to the left of the language.

2.   Press the Enter key.

If you have advanced to the second language prompt, but you decide to make
a selection from the first language prompt (01-02), press the Home key to
return to the first language prompt and select a language.

For example, assume you want to specify the Spanish-Speaking language
option in prompt 01-02. Instead of making your selection, you press the Enter
key and advance to the next prompt (01-03). After viewing the languages, you
realize that your choice of languages is not listed on prompt 01-03. Page back
to the previous display (prompt 01-02) by using the Home key. If you have
moved the cursor, press the Home key twice. When prompt 01-02 is
displayed again, position the cursor at the Spanish-Speaking language option.
Enter the character K to the left of the language and press the Enter key. The
IBM 5280 accepts the entry and displays the next prompt (01-04).

These uses of the Home key, the ← (Cursor Backspace) key, and the → (Cursor
Advance) key are unique to the starter system IPL function. All other
IBM-supplied programs are executed after you perform the IPL process and
use the standard keys for the typewriter, data entry, or proof keyboards.

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Specify the Character Set (01-04)

```
What character set do you have?
  ( )Standard
  ( )Multinational



                    Press ENTER                                    01-04
```

1. Enter the character K to the left of the character set.

2. Press the Enter key.

The IBM 5280 checks your responses to the four preceding prompts. If the combination of the entries is invalid, an error is displayed and the IBM 5280 system restarts the prompting sequence from the beginning. If the combination of the entries is valid, the starter system is establieshd and the load prompt is displayed.

See *Character Sets* in this chapter for a description of the standard and multinational character sets.

The Load Prompt (05-00)

```
0 0001      A 16 40
Program name:  LLLLLLLLLLLLLLLLLL

Device address:
Partition number:

                    Press ENTER                          05-00
```

Note: Because the starter system uses only one partition, you must enter a zero, or accept the default for the partition number associated with the keyboard from which you are executing the function.

1. Enter the name of the system configuration program, a user program, or IBM-supplied program, so it can be loaded into the IBM 5280 system.

2. Enter the device address.

3. Press the Enter key.

If you load a user program or IBM-supplied program, you will use the starter system to execute programs. If you enter the name of the system configuration program, you can tailor your IBM 5280 system to meet your needs, and create a user-defined IPL diskette to use instead of the starter system IPL diskette.

Chapter 3. The System Configuration Program

PLANNING YOUR SYSTEM CONFIGURATION

Before you execute programs and applications on the IBM 5280 system, you should plan how to use the system storage area and other devices. To aid you in planning, refer to the *System Configuration Checklist* in this chapter; for more information, refer to the *Planning and Site Preparation Guide.*

Answer each question on the configuration checklist provided in this manual. These questions correspond to the sequence of prompts that are displayed during execution of the system configuration program. Use the answers as responses to the configuration prompting messages.

Your responses to the prompting messages are used by the IBM 5280 system to configure the system for the IPL process. The options that you specify are combined with IBM-supplied programs to generate a system having the form and capacity to meet your business needs. You can use the same system on which the initial configuration was generated to produce other configurations for this and other IBM 5280 systems.

SYSTEM CONFIGURATION CHECKLIST

Information Required	Valid Responses	Your Response		Notes
How many diskette drives will you use during the configuration process? (Prompt 20-01)	1, 2, or 3 0 - 8	_____		
What is the total storage capacity of the system you are configuring? (20-05)	32 - 288 K	_____		
How many foreground partitions (how many keyboards) are in the system? (20-06)	1, 2, 3, or 4	_____		The total number of partitions that can be on the system is eight.
How many background partitions are in the system? (20-06)	0, 1, 2, 3, 4, 5, 6 or 7	_____		
How many application microprocessors are on the system? (20-23)	1 or 2	_____		There are two application microprocessors on the system only if the optional Second Application Microprocessor Feature is installed.
If two application microprocessors are used, which partitions are to be serviced by each? (20-24)	Application microprocessor:	1	2	
	First partition to be serviced:	_____	_____	
	Last partition to be serviced:	_____	_____	
Do you want to specify the date at IPL time? (20-07)	Yes or No	_____		
What is the name for your user-defined IPL data set? (20-08)	SYSIPLxx	_____		
How many diskette drives are in the system? (20-09)	1 - 8	_____		
How many printers are in the system? (20-10)	0 - 8	_____		
What type(s) of printer(s) are in the system? (20-11)	5256, 5225, 5224, or 5222	1. _____ 5. _____ 2. _____ 6. _____ 3. _____ 7. _____ 4. _____ 8. _____		
What is each printer's physical address? (20-11)	80xx	1. _____ 5. _____ 2. _____ 6. _____ 3. _____ 7. _____ 4. _____ 8. _____		
Will ASCII diskettes be used? (20-12)	Yes or No	_____		
Do you want to install the BSC multipoint monitor on the IPL diskette? (20-28)	Yes or No	_____		
What is the name of the common function option used? (20-14)	1. SYSDPRT2 2. SYSCFA 3. SYSHELP	_____		

Information Required	Valid Responses	Your Response		Notes
Beginning with partition 0, specify the programs to load in each partition at the completion of the IPL process. (20-30)		0. _____ 4. _____ 1. _____ 5. _____ 2. _____ 6. _____ 3. _____ 7. _____		All programs must reside on the IPL diskette.
Beginning with keyboard/display 0, specify the default device address that is to appear in prompt 05-00 (20-32)		0. _____ 1. _____ 2. _____ 3. _____		

		Logical Device Address	Physical Device Address	
What partition entries are to be placed in the resource allocation table? (20-17)		_____ _____	_____ _____	Additional entries might be required for your system.
What system-shared entries are to be placed in resource allocation table? (20-18)		_____ _____	_____ _____	

Information Required	Valid Responses	Your Response		Notes
Beginning with partition 0, what is the size of each partition? (20-19, 20-20)	Variable, 6 K – 64 K	0. _____ 4. _____ 1. _____ 5. _____ 2. _____ 6. _____ 3. _____ 7. _____		
Beginning with keyboard 0, specify the screen size and whether a single or dual unit. (20-21)	480 Single, 480 Dual, 960 Single, 960 Dual, or 1920 Single	0. _____ 1. _____ 2. _____ 3. _____		All display sizes for your IBM 5280 system must be the same.

		Keyboard/Language		
Beginning with keyboard 0, specify the type of keyboard and native language. (20-25)	Data Entry, Typewriter, Data Entry with Proof; Italy, Germany, United States, and so on.	0. _____ _____ 1. _____ _____ 2. _____ _____ 3. _____ _____		See the *Table of Language/Keyboard Types* in chapter 3.

When you execute the system configuration program you create a user-defined
initial program load (IPL) diskette. It consists of two data sets that define your
tailored system. See the *User-Defined IPL Data Set Name* in this chapter for
more information.

The user-defined IPL data set performs the same function as the IBM-supplied
initial program load function. That is, it loads the IBM 5280 system with
information needed to process the programs. The difference between the
two types of IPL data sets is that the IBM-supplied data set contains a starter
system with a single partition, whereas a user-defined data set might contain
more than one partition and a number of other options.

Only one user-defined configuration can be recorded per diskette. If more
than one configuration is to be generated, use a different diskette for each.

Though the first two data sets on an IPL diskette perform the IPL process,
other data sets can be copied to the diskette. For example, you can create a
system's diskette by copying onto the IPL diskette the IBM 5280 system
programs and utilities to be used during the day.

You can make copies of the IPL diskettes with the diskette copy utility. This
will create a backup copy to be used if data on the primary configuration copy
becomes inaccessible because of damage, loss, or extended use. Copies are
made with the image copy or volume copy functions only. See *Copying the
IBM 5280 SCPs* in chapter 1 of this manual or the *Utilities Reference/Operation
Manual* for more information.

The system configuration program allows you to configure a smaller system
for special data entry jobs, a system that uses less storage than was purchased
for the system. For example, if you have an IBM 5280 system with 128 K
storage capacity, you can configure another system that uses only 64 K of
that storage. The system configuration program can execute in a minimum
partition size of 16 K.

The following sections (preceding the operation section) of this chapter provide
general information about the system configuration prompting messages
options. This explanatory information is provided in the sequence in which the
prompting messages appear in the operation section. You should read these
sections before configuring your first system.

Device Addresses

Each time you load a program into the IBM 5280 system, you can specify a device address (device ID) that identifies the diskette drive location from which that program is loaded.

The physical device address is a four-position address that identifies each input/output device (the diskette drives or the printers) attached to the IBM 5280 system. Each IBM 5280 I/O device is labeled with the appropriate physical device address when the system is set up. (See the *Planning and Site Preparation Guide* for more information about labels.) For example, each diskette drive is labeled with a four-position address, such as 4000 or 4400, as illustrated below.
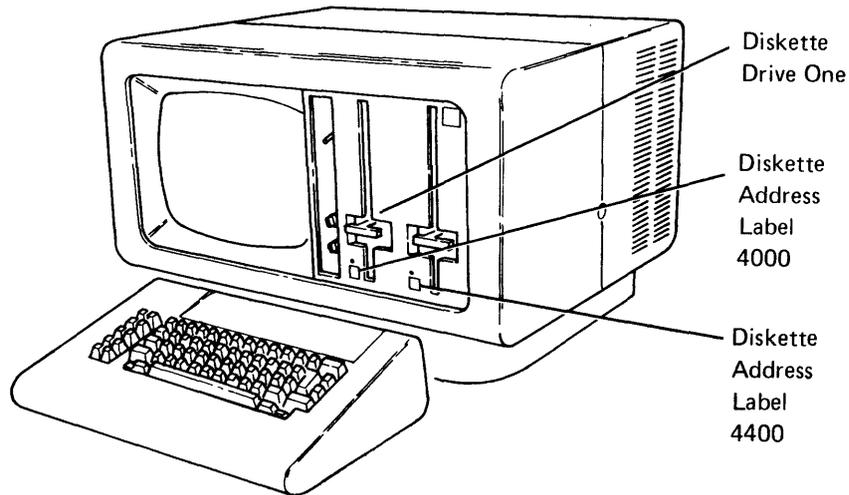
The physical device addresses for the IBM 5280 system diskette drives and printers are as follows:

Device	Device Address			
Diskette Drives	4000	4400	4800	4C00
	5000	5400	5800	5C00
Printers	8000-8006	8008-800E	8010-8016	8018-801E
	8020			

You can also specify a logical device address (a two-character, user-defined identifier for a device) to be associated with a physical device address during system configuration. You can then use this name to refer to a diskette either in a program to be compiled, or in a sort/merge command data set. See the *Sort/Merge Reference/Operation Manual* for more information. The advantage of using a logical device address is that a different physical device can be assigned to a program if the program is being executed at another data station, without recompiling or requiring special operator intervention.
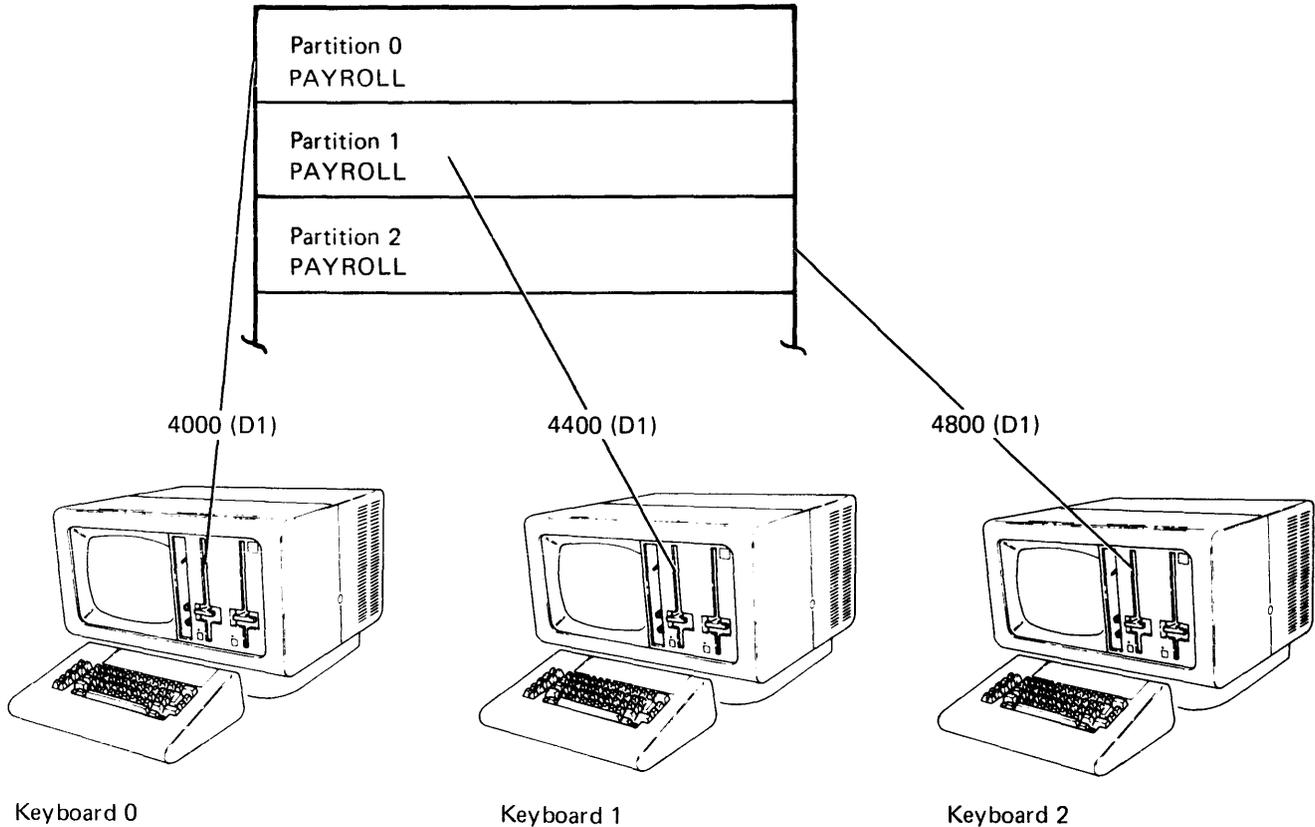
Partition 0 PAYROLL		
Partition 1 PAYROLL		
Partition 2 PAYROLL		

4000 (D1)   4400 (D1)   4800 (D1)

Keyboard 0   Keyboard 1   Keyboard 2

In the preceding illustration, the same program (PAYROLL) is executing in three different foreground partitions. Separate keyboards and diskette drives are used to enter the program into the IBM 5280 system. Each of the diskette drives has a different physical device address. However, if the program uses a logical device ID instead of a physical device address, the same logical device address can be associated with a different physical device to be used by each partition. The program in partition zero associates physical device 4000 with logical device D1; partition one associates physical device 4400 with logical device D1; partition two associates physical device 4800 with logical device D1. As the program is executing in three different partitions, data is being written on three diskettes in different diskette drives. See the *Resource Allocation Table* in this chapter for more information.

The Output IPL Diskette

The output IPL diskette is another name for the system configuration output diskette.

If you attempt to configure a system using a diskette that already contains data, a message is displayed both warning that the output IPL diskette contains data and providing the option to continue. If you continue with the configuration process, all previous data defined by the first two data set labels is lost. The first two labels contain the new user-defined IPL data set labels (SYSIPLxx and PARTSOxx). The space that was used by the original two data sets becomes dead space. The compress utility can be used to remove this dead space between the data sets. The output IPL diskette can contain other data sets, but the diskette cannot contain another user-defined IPL data set.

The output diskette should not contain any defective sectors. If it does and a defective sector is within the IPL data sets (SYSIPLxx and PARTSOxx), the IPL process will fail. The diskette initialization utility (described in the *Utilities Reference/Operation Manual*) can be used to determine whether any defective sectors exist on the diskette.

Once SYSCON is executed, the output diskette becomes an IPL diskette that is used to perform future IPLs on the system. It can also be considered as a *system's diskette*, if you copy other programs on it with the data set or volume copy function.

The Common Area

The common area is an area of storage separate from that used for executing user programs. This separate area of storage contains data and routines that can be accessed by programs executing in any of the partitions. The common functions reside in the common area.
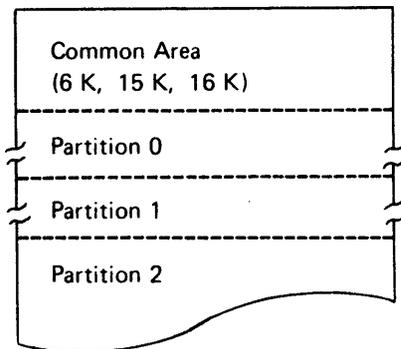
While only one common functions option can be loaded into the IBM 5280 system storage at one time, three versions are available on the IBM 5280 system. Option one (SYSDPRT2) resides on the IBM-supplied SCP diskette and is read into storage when you perform the IPL on the system. Options two (SYSCFA) and three (SYSHELP) reside on the utilities diskette.

Option one contains error-handling routines, the load prompt, the resource allocation table map, command key functions, other routines, and some help text. Option one requires a total of 6 K storage (7 K if you use the ASCII translation table).

Option two includes all the functions provided by option one except the help text, as well as other routines for copying records and data, performing edit functions, and record advancing and backspacing. This option requires a total of 15 K storage (16 K if you use the ASCII translation table). DE/RPG and the key entry utility require the use of option two or three.

Option three includes all the functions provided by options one and two as well as help messages that can be used with the key entry utility and DE/RPG. This option requires a total of 16 K storage (17 K if you use the ASCII translation table).

The common area sizes can vary slightly from 6 K, 15 K, or 16 K, depending upon the following factors:

- Allocation of spaces for error-logging tables: The sizes of the error-logging tables depend upon the number of printers and diskette drives on the system.

- Entries in the resource allocation table: The number of entries made to the resource allocation table determines the size of the table.

- Inclusion of the ASCII translation table: The size of the ASCII translation table is fixed at 512 bytes.

- Provision for the BSC multipoint monitor: This option increases the size of the common area by 256 bytes.

  The amount of storage to be allocated for partitions after selection of a common functions option is displayed by the program.

The IBM 5280 System Storage Capacity

The size of your system is the total amount of storage capacity on the system. The *General Information* manual provides a complete list of available storage sizes for the IBM 5280 system.

The amount of storage needed to execute the system configuration program is independent of the size of the system being configured. For example, you can use a starter system (with a single partition), or any partition of at least 16 K to configure a system with a larger amount of storage capacity, such as 64 K or 80 K.

Second Application Microprocessor Feature

If your system has the second application microprocessor feature installed, you are prompted during system configuration to specify which partitions each application microprocessor is to service. You can assign both application microprocessors to service all partitions, or you can assign each application microprocessor to service only a specific range of partitions.

The partitions assigned to each application microprocessor must be sequential. For example, if your system has eight partitions, you can assign application microprocessor 1 to service partitions 0 through 3, and assign application microprocessor 2 to service partitions 4 through 7.

The way you assign your partitions depends on your particular system. If your system has the communications feature installed, you might assign one application microprocessor to the partitions where your communications programs are loaded, and assign the other application microprocessor to service the other partitions, which might be loaded with data entry jobs.

If you run several data entry jobs at the same time where the operators enter short fields that require immediate processing—such as verfication jobs—you might assign both application microprocessors to service all partitions. This should provide the best performance from all the keyboards.

You can overlap partitions, assigning some partitions to be serviced by one application microprocessor and the other partitions to be serviced by both application microprocessors. For example, you can assign partitions 0 through 4 to one application microprocessor, and assign partitions 4 through 7 to the other application microprocessor. Only partition 4 is serviced by both application microprocessors.
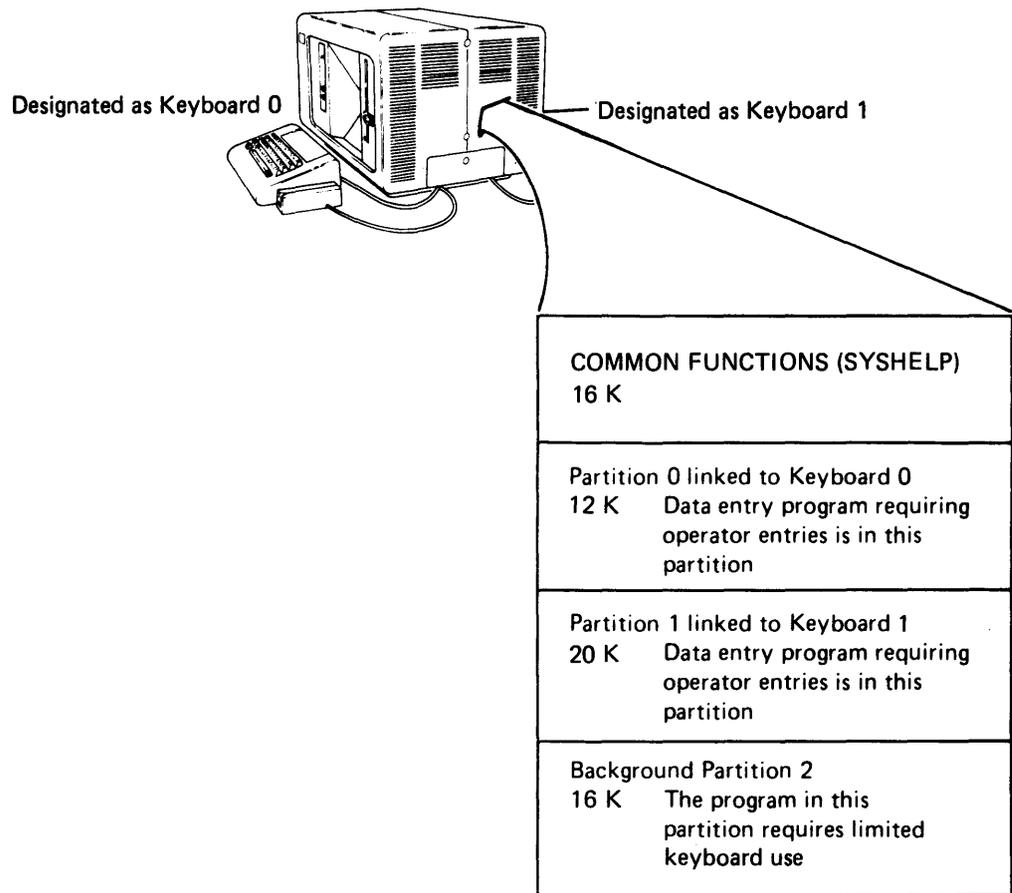
If foreground partitions are serviced by application microprocessor 2 only, (with no overlap with application microprocessor 1), some performance degradation can occur in those foreground partitions. Application microprocessor 2 does not process keyboard interrupts—it services the partitions assigned to it in a serial fashion.

Partitions

Before you execute the system configuration program, you should determine the number and size of the partitions required for your data processing needs. Partitions are areas of storage where programs can execute. Sample partition layouts for various system sizes are provided in the *Planning and Site Preparation Guide*. Once you determine the number and size of the partitions needed, use the *System Configuration Checklist* to record your answers.

When you plan for the types of partitions you need, consider the programs that might require the use of a keyboard, the types of programs to execute in specific partitions, and the size of programs to execute in specific partitions. See the *System Concepts* manual for more information.

The following is an example of partitions in the IBM 5280 system.

Designated as Keyboard 0 ———— Designated as Keyboard 1

COMMON FUNCTIONS (SYSHELP) 16 K
Partition 0 linked to Keyboard 0 12 K   Data entry program requiring operator entries is in this partition
Partition 1 linked to Keyboard 1 20 K   Data entry program requiring operator entries is in this partition
Background Partition 2 16 K   The program in this partition requires limited keyboard use

The preceding illustration shows that partition zero is the first partition in the IBM 5280 system. (Partition numbering starts at zero.) Partition zero must be allocated first, and must reside in the first 64 K of storage on a system with more than 64 K of storage. Notice that in the example there are three partitions (0, 1, and 2) and two keyboards. (Keyboard numbering starts at zero.) Partition zero is associated with keyboard zero; partition one is associated with keyboard one; and partition two is a background partition with limited keyboard use. The preceding example also shows that a specific amount of storage is allocated to each partition according to the kinds of programs that will be executed in the partitions. Partitions zero and one have immediate access to a keyboard because operator entries are required. Partition two does not have immediate access to a keyboard because operator entries are not required for program execution.
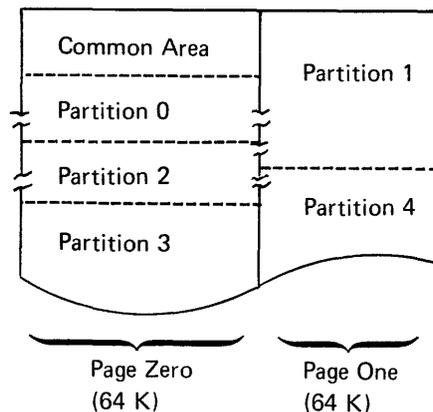
Types of Partitions

The IBM 5280 has two types of partitions: foreground partitions and background partitions. Foreground partitions have immediate access to a keyboard/display immediately after you perform the IPL process. The number of keyboards attached to your IBM 5280 determines the number of foreground partitions your system can have. One foreground partition is required for each keyboard. Because a foreground partition has immediate access to a keyboard, you can interact with data in the partition as it is entered into the system.

Background partitions are not associated with a particular keyboard until a program is loaded. Programs that operate in the background, such as compilers, are normally independent and do not require operator intervention. However, a background partition can access a keyboard when necessary. See the *System Concepts* manual for more information about keyboard sharing.

Partitions and Pages

Partitions have a minimum storage size of 6 K and a maximum storage size of 64 K. If your IBM 5280 system has more than 64 K of storage, it uses pages of storage. A page of storage is a single 64 K block of storage in the IBM 5280 system. A partition cannot cross a page boundary, and an attempt to allocate a partition that crosses a page boundary causes an error.

The following illustration shows how pages of storage on a system with 128 K of storage can be divided into partitions:


```
+-----------------------+-----------------------+
| Common Area           |                       |
|-----------------------| Partition 1           |
| Partition 0           |                       |
|-----------------------|-----------------------|
| Partition 2           |                       |
|-----------------------| Partition 4           |
| Partition 3           |                       |
+-----------------------+-----------------------+
     Page Zero               Page One
      (64 K)                  (64 K)
```

In the preceding illustration, partitions 0, 1, and 2 are foreground partitions. Partitions 3 and 4 are background partitions. Because partitions cannot cross a 64 K page boundary, the partition layout might place one of the foreground partitions in the second page of storage.

When allocating storage for partitions, be sure that an adequate amount of storage is set aside for utility and communication utility execution.

The Date Prompt

The date prompt enables you to specify the day of the month, the month, the year, and the day of the year. The system configuration program provides the option of specifying that a date prompt be displayed each time the IPL process is performed with a user-defined IPL configuration data set. Following is an example of the date prompt:

```
Enter date.
Day:      -- --
Month:                                                                    2
Year:
Day of year:
                        Press ENTER                                    01-05
```

Only numbers are valid entries for the date prompt. A valid entry for the day of the month is any number from 1 through 31. Valid entries for the month are any numbers from 1 through 12. Also, a valid entry for the day of the year is any number from 1 through 366. The day of the year is an optional field in the date prompt.

If you specify that the date prompt be displayed, then each time you use this user-defined IPL diskette, the date prompt is the first prompt displayed at all the data stations. After a date is entered at any data station, the load prompt is displayed at all data stations. If you specify that the date prompt *not* be displayed when you perform an IPL with this diskette, the load prompt will be the first prompt displayed at all configured data stations.

The date prompt is used by DE/RPG programs and by all data sets that are allocated on a system where the date prompt was specified on the output IPL diskette. When the data sets are created, the date specified (in the date prompt) is written in the creation date field of the header label. If a date is not specified, the date field is filled with zeros.

The User-Defined IPL Data Set Name

When a system is configured to perform subsequent IPLs, two data sets are generated. They are SYSIPLxx and PARTSOxx. The last two characters are user-defined numeric characters which can range from 00 through 99.

During system configuration, you can add the last two characters to the user-defined IPL data set name (SYSIPLxx). Because numeric combinations are allowed, separate and distinct identifiers can be provided if more than one configuration is necessary.

The Number of Diskette Drives on the System Being Configured

During system configuration, you can specify the number of diskette drives that will be on the system you are configuring. See the *System Summary Worksheet* in the *Planning and Site Preparation Guide* for more information.

The IBM 5280 Printer(s)

During system configuration, you can specify the attached printer models and their addresses. See the *Planning and Site Preparation Guide* for more information.

The ASCII Translation Table

Although the IBM 5280 normally uses EBCDIC (Extended Binary Coded Decimal Interchange Code) to record data on diskettes, the system configuration program provides the IBM 5280 system with the optional capability to read and write ASCII (American Standard Code Information Interchange) code on ASCII diskettes. During system configuration, if you specify that your system will use ASCII diskettes, an ASCII translation table is written to the user-defined IPL configuration data set. If you use the ASCII translation table, the size of the common area is increased, and the IPL diskette you created supports EBCDIC and ASCII recordings.

You can use ASCII translation with the communications program product. If you are using IBM 3270 Emulation, you cannot use the ASCII translation table option. If you are using BSC (binary synchronous communications) to transmit or receive data in ASCII, the communications access method will use the ASCII translate table provided by the system configuration program. However, if you are using SNA (systems network architecture), an ASCII translation table is provided by the communications access method.

The BSC Multipoint Monitor

You can make provision for a BSC multipoint monitor during system configuration. When the SYSCON utility has completed, you must run the SYSCMPU communications utility to install the BSC multipoint monitor. This option increases the size of the common area by 256 bytes.

Programs Loaded at Completion of System IPL

Instead of having the load prompt (05-00) displayed, you can specify a program to be loaded into a partition at the completion of IPL. During system configuration, you can specify a program for some or all of the foreground and background partitions. Or you can bypass this option.

The programs you specify (and any associated programs) must reside on the IPL diskette used when the system is initialized.

Default Device Addresses on Load Prompt

During system configuration, you can provide a default device address for the load prompt (05-00). An address may be specified for all, some, or none of the foreground partitions.

If you specify any default device addresses, a 32-byte table is added to the common area.

The Resource Allocation Table

The resource allocation table is an optional table in the common area and allows you to specify logical device addresses for printers and diskette drives.

A logical device address is a two-character, user-defined identifier for a device on a system. For example, a logical device address might be P1 for a printer, or D1 for a diskette drive. The logical device address can be used in your program to specify devices instead of the four-character physical device address.

In the following illustration, the same program (PAYROLL) is executing in three different foreground partitions. Three operators use separate keyboards (0, 1, and 2) and separate diskette drives with different physical addresses (4800, 4C00, and 5000 respectively) to enter a program into the IBM 5280 system.
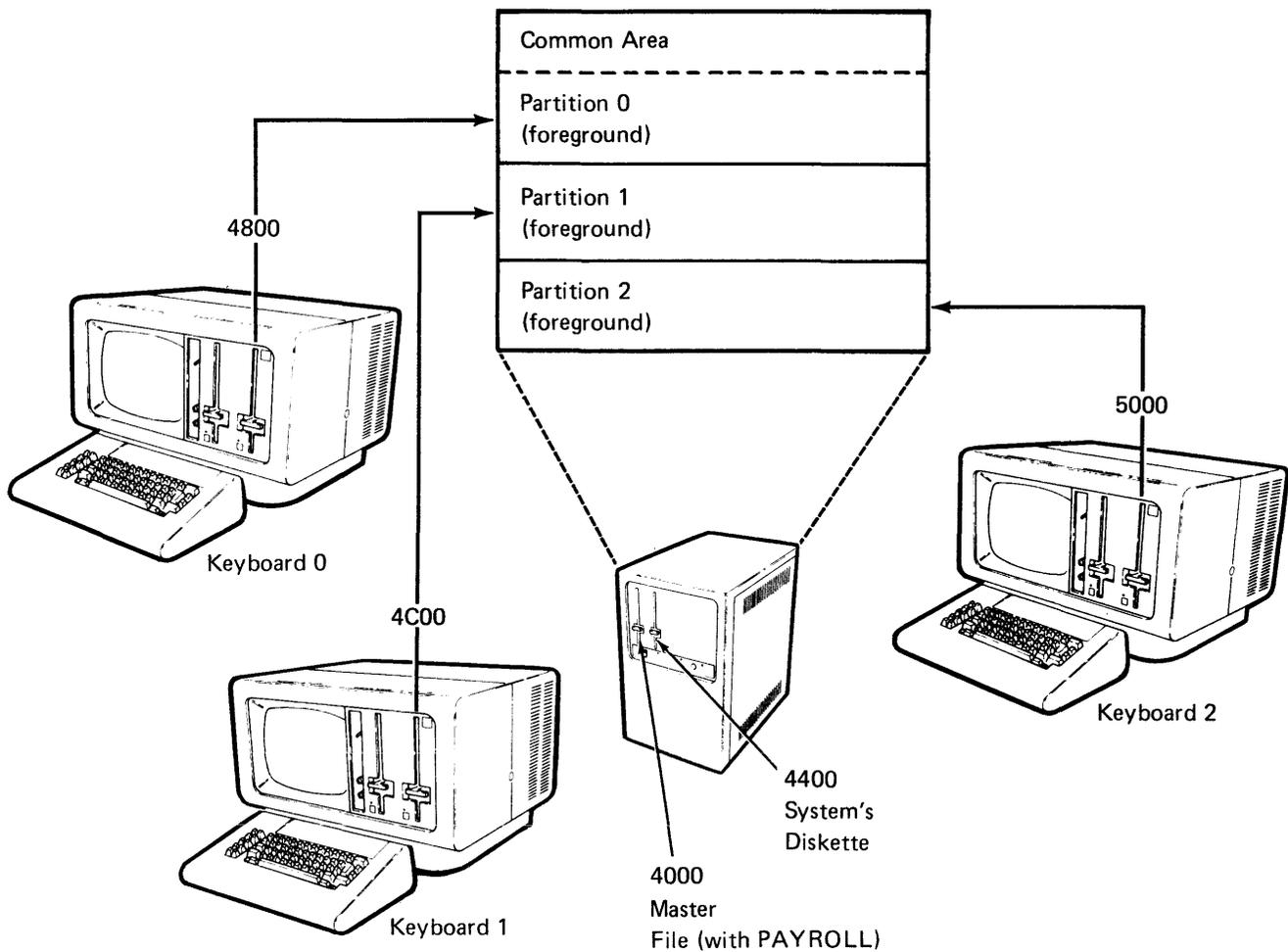
Logical device IDs were assigned in the resource allocation table to each physical device as follows:

Resource Allocation Table

Physical Device Address	Logical Device Address	
4800	D3	◄── Partition 0 entry
4C00	D3	◄── Partition 1 entry
5000	D3	◄── Partition 2 entry
4000	D1	System-shared entries
4400	D2	

Two kinds of entries can be made to the table: system-shared entries and partition entries.

System-shared entries are logical device addresses for devices that are shared by all partitions in a system. The system-shared entries can be used by each program that is executing in each of the three partitions if the logical device IDs (D1 and/or D2) are specified in the programs, and if the utility supports logical devices.

If logical device D1 is used in a program executing in *any partition*, the data is read from or written to the diskette at physical device address 4000. The same is true for logical device D2: a program that is executing in any partition (0, 1, or 2) will read and/or write data to the diskette at physical device address 4400.

Partition entries are logical device addresses that only the partition with which the device is associated can use. In the preceding example, if logical device D3 is used in a program, the data is read from and/or written to the diskette at the specific physical device address specified in the resource allocation table. For example, if a program is executing in partition 1, the data is read or written to the diskette at physical device address 4C00. This entry into the resource allocation table is a partition entry.

The resource allocation table enables the use of logical device addresses that allow for device independence during the execution of a DE/RPG program, or for building a command data set with the sort/merge program. At execution time, the logical address is translated to a physical address. See the *System Concepts* manual for more information about the resource allocation table.

Keyboard/Display Sizes

The IBM 5280 system accomodates three display capacities so that no more keyboard storage is ordered than is needed. Physically a keyboard/display is either a single or a dual unit. A single keyboard/display unit consists of one keyboard and one display screen. A dual keyboard/display unit consists of two keyboards and a split mirror-image screen attached to a common unit. This unit is divided logically into two independent data stations that allow two operators to view separate display screens.

During system configuration, you must specify the keyboard/display sizes for the IBM 5280 system. For a dual data station, when you specify the size and type of the first display screen, the second display screen is automatically specified as the same type.

Single work stations are available with three display screen sizes: 480 characters, 960 characters, and 1920 characters. Dual data stations are available with 480- and 960-character screen sizes. The 480-character screen displays 6 rows with 80 characters of data; the 960-character screen displays 12 rows with 80 characters of data; and the 1920-character display screen displays 24 rows with 80 characters of data.

Language and Keyboard Types

Twenty-two languages are available with the system. Three types of keyboards are available: the typewriter keyboard, the data entry keyboard, and the data entry with proof arrangement keyboard.

During system configuration you must specify the language and keyboard type, and the character set you have on your IBM 5280 system. The language and keyboard type for a dual data station will be identical for each keyboard.

The languages and keyboard types supported by the IBM 5280 system are provided in the following chart. Refer to the *Systems Concepts* manual for more information.

	Keyboard Types		
	Typewriter	**Data Entry**	**Proof**
Languages			
United States	X	X	X
ASCII	X		
Austria	X	X	X
Germany	X	X	X
Brazil	X	X	X
Canadian/English	X		
Canadian/French	X	X	X
Denmark	X	X	X
Belgium	X	X	X
Spain	X	X	X
Sweden	X	X	
United Kingdom	X	X	X
Finland	X	X	X
France Azerty	X	X	X
France Qwerty	X	X	X
International	X	X	X
Spanish Speaking	X	X	X
Italy	X	X	X
Japan/English	X	X	X
Japan/Katakana	X	X	X
Norway	X	X	X
Portugal	X	X	X
The Xs specify the kind of language available for each keyboard type.			

OPERATION OF THE SYSTEM CONFIGURATION PROGRAM

Load the SYSCON Program (05-00)

```
0 0001      A 16 40
Program name:  LLLLLLLLLLLLLLLLLL
Device address:
Partition number:

                    Press ENTER                              05-00
```

Note: See the initial program load function if you are unfamiliar with the load prompt.

1. Enter SYSCON as the program name.

2. Enter the physical device address of the diskette drive where the diskette is inserted. (An address label is attached to each diskette drive.)

3. Enter the number of the partition where the program will execute. (If a partition number is not entered, the number defaults to the partition associated with the keyboard.)

4. Press the Enter key.

Once the system configuration program is loaded, keyboard control cannot be transferred to another partition (that is, the Attn key is ignored).

The Number of Diskette Drives Available to the Program (20-01)

```
SYSCON - SYSTEM CONFIGURATION
How many diskette drives are available to the function?
  Options are
    1. One drive      3. Three drives
    2. Two drives
Select option:      Press ENTER                              20-01
```

1. Enter the number of diskette drives you are using to configure your
   system.

2. Press the Enter key.

Note: The more diskette drives you have available for executing the program,
the less you have to remove and insert the diskettes during the configuration
process. If common functions option one is used, use two drives if possible. If
options two or three are used, use three diskette drives to perform the
configuration and provide for a minimum number of diskette insertions and
removals. Common functions option one resides on the SCP diskette. Options
two and three reside on the utility diskette.

Insert the Output IPL Diskette (20-02)

If you use one diskette drive, prompts are displayed that specify when the SCP and the output IPL diskettes should be inserted.

If you use *two* or *three* diskette drives, respond to the following prompt:

```
Insert output IPL diskette and enter
Device address:    ____


                      Press ENTER                              20-02
```

1. Insert the diskette that will contain the output IPL configuration data sets into a diskette drive.

2. Enter the four-digit physical device address of the diskette drive.

3. Press the Enter key.

IPL Diskette Contains Data (20-03)

If the output IPL diskette contains nondeleted data set labels, respond to the following prompt:

```
IPL diskette may contain data. Do you want to continue?
  Options are
    1. Yes
    2. No
Select option:  _  Press ENTER                                    20-03
```

Note: If you use the diskette containing data to continue with the configuration process, the existing data associated with the first two data set labels on the diskette will be lost.

Enter a 1 to continue the configuration process using the diskette containing nondeleted data sets.

Enter a 2 if you do not want to continue the configuration process using the present diskette.

If you continue with the diskette containing data, the first two data set labels on the diskette containing data will be used by the configuration program. The labels will be respecified as SYSIPLxx and PARTSOxx, the configuration data sets.

At this point if you continue but want to use a different output diskette, remove the diskette containing data, and prompt 20-02 will be displayed again. Insert the different diskette and continue the configuration process.

Output IPL Diskette Contains Defective Cylinders (20-22)

If the output diskette contains defective cylinders, the following prompt is
displayed:

```
IPL diskette contains defective cylinders. Do you want to continue?
  Options are
    1. Yes
    2. No
Select option:        Press ENTER                                      20-22
```

Enter a 1 if you want to continue with the diskette and press the Enter key. If
you use a diskette that contains defective cylinders and the IPL data set spans
the defective cylinders, the IPL process will fail. You will have to rerun the
system configuration program and use a different output diskette.

Enter a 2 if you want to insert a different diskette for the output IPL diskette,
and press the Enter key. Prompt 20-02 is redisplayed.

Insert the Diskette with Common Functions (20-04)

If you are using *three* diskette drives, after you press the Enter key, the following prompt is displayed (the common functions are contained either on the SCP diskette or on the utilities diskette):

```
Insert diskette containing common functions and enter
Device address:    ____



                    Press ENTER                              20-04
```

1. Insert the diskette containing the common functions and enter the device address.

2. Press the Enter key. Prompt 20-14 will be displayed next, followed by 20-05.

Note: If you are using one or two drives, prompts 20-13 and 20-14 will be displayed later, instead of 20-04.

Specify the System Size (20-05)

```
Enter the size of the system you are configuring:      ___ K bytes.




              Press ENTER                                      20-05
```

1. Enter the system size in K bytes. Numbers that are a multiple of 16 and between 32 and 288 are valid. (The number entered must be the amount of storage available on the system being configured.)

2. Press the Enter key.

Enter the Number of Partitions in the System (20-06)

To enter the number of foreground and background partitions on the system, respond to the following prompt:

```
Enter the number of partitions that will be in the system.
Foreground:    __
Background:

              Press ENTER                                      20-06
```

1. Enter the total number of foreground partitions that are in the system.

2. Enter the total number of background partitions that are in the system.

3. Press the Enter key.

Valid entries for the number of foreground partitions are one through four, depending on the number of keyboards being configured. The total number of partitions is limited to eight. You must enter the number of background partitions the IBM 5280 will have. Enter a zero if no background partitions will be in the system.

Is the Second Application Microprocessor Feature Installed? (20-23)

```
How many application microprocessors

are on the system being configured?

   Options are

     1. One       2. Two

Select option:      Press ENTER                                    20-23
```

1. Enter a 1 if your system does not have the second application microprocessor feature installed, and press the Enter key. The date prompt (20-07) is displayed.

2. Enter a 2 if the second application microprocessor feature is installed on your system, and press the Enter key. The partition assignment prompt (20-24) for application microprocessor 1 is displayed.

```
Application microprocessor   x

First partition to be serviced:      0

Last partition to be serviced:       x

                    Press ENTER                                         20-24
```

This prompt is displayed first for application microprocessor 1, and then again for application microprocessor 2; the X on the first line is 1 or 2 to indicate which application microprocessor the assignment is for.

The defaults to the prompt are displayed. The application microprocessor will service all partitions in your system if the defaults are taken. Press the Enter key to use the default values.

If you do not want the application microprocessor to service all partitions, enter the partition numbers for the first and last partitions to be serviced by the specified microprocessor, and press the Enter key. See *Second Application Microprocessor Feature* in this chapter for more information about assigning the partitions.

After you have assigned the partitions to be serviced by both application microprocessors, the system checks to make sure all partitions in your system have been assigned to at least one application microprocessor, and that all the partition numbers you have assigned are valid partition numbers for your system.

After the partitions have been assigned, the date prompt (20-07) is displayed.

Optional Date Specification (20-07)

```
Do you want date prompt at IPL time?
  Options are
    1. Yes
    2. No
Select option:   _  Press ENTER                              20-07
```

1.   Enter a 1, and the date prompt is displayed any time the user-defined
     IPL diskette is used to perform the IPL process.

2.   Enter a 2, and the date prompt is not displayed at IPL time.

3.   Press the Enter key.

Enter the New IPL Data Set Name Qualifier (20-08)

```
Enter two digit identifier for IPL data set name:       SYSIPL__




            Press ENTER                                      20-08
```

1.   Enter the two-digit identifier for the output IPL data set name.

2.   Press the Enter key.

Enter the Number of Diskette Drives on the System (20-09)

```
Enter the number of diskette drives that will be on the system:          _


                    Press ENTER                                    20-09
```

1. Enter the number of diskette drives that will be on the system being configured. A valid entry is any number from one through eight.

2. Press the Enter key.

Specify the Number of Printers on the System (20-10)

```
Enter the number of printers that will be on the system.
(Enter 0 if no printer)  _


                    Press ENTER                                    20-10
```

1. Enter the number of printers that will be on the system. A valid entry is any number from zero through eight.

2. Press the Enter key.

Specify the Printer Model (20-11)

If zero is entered in prompt 20-10, the following prompt is not displayed. If a number from one through eight is entered, the following prompt is displayed once for each printer that is attached to the system.

```
Printer   x

Specify the following.

Printer type number:

Physical address:

Press ENTER to continue                                    20-11
```

1.   Enter the printer type number of the printer specified by the prompt.

2.   Enter the physical device address of that printer.

3.   Press the Enter key.

Valid printer type numbers are 5222, 5224, 5225, and 5256. If an invalid printer type number is entered an error message is displayed. Press the Reset key and reenter the printer type number.

Valid physical device addresses for the printers are addresses such as 8000 or 8008.

Do not enter the same address for two printers. If the same address is entered for two printers, an error message is displayed.

Enter the ASCII Translation Table Option (20-12)

The ASCII translation table enables the IBM 5280 to read and write ASCII diskettes. If the ASCII table is selected, a 512-byte table is written to the configuration diskette. You also need an ASCII translation table to transmit or receive ASCII data using BSC with the communications program product.

```
Do you want ASCII translation table in the system?
  Options are
    1. Yes
    2. No
Select option:  _  Press ENTER                                    20-12
```

1. Enter a 1 to use the ASCII translation table in the system.

2. Enter a 2 and the ASCII table is not used in the system.

3. Press the Enter key.

Request Space for the BSC Multipoint Monitor (20-28)

The BSC multipoint monitor enables the communications hardware to respond to any polls or selections that the host sends across the line without having a Communications Access Method loaded.

```
Do you want the BSC Multipoint Monitor in the system?
  Options are
    1. Yes
    2. No
Select option:       Press ENTER                              20-28
```

1. Enter a 1 to reserve space for the BSC multipoint monitor on your IPL diskette. When the SYSCON utility is completed, you must use the SYSCMPU communications utility to install the BSC multipoint monitor.

2. Enter a 2 and space is not reserved for the BSC multipoint monitor.

3. Press the Enter key.

Insert Common Functions Diskette (20-13)

If you are using three drives, prompt 20-04 appeared earlier, making this prompt unnecessary. If you are using one or two diskette drives for the configuration process, respond to the following prompt:

```
Insert diskette containing common functions in device   XXXX




                    Press ENTER                                        20-13
```

1. Insert the diskette containing the common functions into the diskette drive specified by the IBM 5280. This diskette is either the SCP diskette or the utilities diskette. The Xs identify the diskette drive address.

2. Press the Enter key.

Enter the Name of the Common Functions Routine (20-14)

```
Name of common functions routine
   Options are
      1. SYSDPRT2 (CFA1)    3. SYSHELP  (CFA3)
      2. SYSCFA   (CFA2)
Select option:      Press ENTER                                  20-14
```

1. Enter a 1, 2, or 3 to select the common functions routine.

2. Press the Enter key.

The common function is copied to the user-defined system configuration diskette.

Using One Diskette Drive to Configure the System (20-15 and 20-13)

If you are using one diskette drive to tailor your system, the diskette containing the common functions and your IPL diskette will share the diskette drive. Therefore, the two diskettes must be exchanged in the drive at various intervals. The following prompts are displayed as needed:

```
Insert output IPL diskette in device        XXXX




                    Press ENTER                              20-15
```

Then:

```
Insert diskette.containing common functions in device    XXXX



                    Press ENTER                              20-13
```

Programs To Be Loaded at IPL (20-29)

```
Do you want to specify programs to be loaded at IPL?
 Options are
   1. Yes
   2. No
Select option:       Press ENTER                              20-29
```

1. Enter a 1 to have the system load programs when IPL is completed.
    Prompt 20-30 will be displayed.

2. Enter a 2 and the system will not load programs when IPL is completed.
    Prompt 20-31 will then be displayed.

3. Press the Enter key.

Specify the Programs to Load at IPL (20-30)

```
Program to load in partition    X         |||||||||

Specify a foreground partition to perform the load


         Press ENTER                                          20-30
```

1. Enter the name of a program you wish to have loaded in the designated partition during IPL. (If you press only the Enter key, no program will be loaded in the designated partition.)

2. The second line of the prompt is displayed if the designated partition is a background partition. In response, you must enter a foreground partition number. (Background partitions are loaded by foreground partitions.)

3. Press the Enter key.

Prompt 20-30 is displayed once for each partition in the system you are configuring. All of the programs you name in response to prompt 20-30 must reside on the diskette used to IPL the system you are configuring.

When prompt 20-30 is displayed, you may press the Home key to display or change the responses to previous 20-30 prompts.

Default Devices for Load Prompt (20-31)

```
Do you want to specify default device addresses for load prompts
 Options are
    1. Yes
    2. No
Select option:       Press ENTER                                    20-31
```

1.   Enter a 1 to specify default device addresses for prompt 05-00. Prompt 20-32 will then be displayed.

2.   Enter a 2 and no default devices will be specified.

3.   Press the Enter key.

Specify Default Device Addresses for Load Prompt (20-32)

```
Default device address for partition        X            ⊔⊔⊔⊔




                      Press ENTER                                          20-32
```

1. Enter the default load device address for the indicated partition. (If you press only the Enter key or enter blanks, no default device address will be specified for this partition.)

2. Press the Enter key.

Prompt 20-32 will be displayed once for each foreground partition in the system being configured. The device address you enter will be displayed in the 05-00 prompts for that partition when IPL is completed for the system being configured.

When prompt 20-32 is displayed, you may press the Home key to display or change the responses to previous 20-32 prompts.

Specify the Resource Allocation Table Partition Entries (20-17)

A partition number and an entry number are displayed on the first line of the resource allocation table prompt. Each time a partition number is assigned a logical device identifier and a physical address, the entry number is incremented by one.

You are not required to assign a logical device identifier and a physical address for each partition previously allocated for your configuration. However, the system displays a prompt for each partition that was allocated. Continue to press the Enter key without entering any information until prompt 20-18 is displayed.

To assign the logical device identifier and the physical address for the displayed partition number, respond to the following prompt:

```
Partition     X     Entry     XXX
Specify the following.
Logical device identifier:     __
Physical address:
Press ENTER to continue                                    20-17
```

1. Enter two alphameric characters as the logical device identifier (for example, D1 or D2 for diskette drive one or two).

    -OR-

    Enter two asterisks (**) to set aside blank space in the table for future entries.

2. Enter a four-digit physical device address.

    -OR-

    Leave the physical address blank to set aside blank space in the table for future entries.

3.	Press the Enter key. (The entry portion of the first line is incremented by one.)

4.	Repeat steps 1 through 3 to continue assigning logical device identifiers and physical addresses in the same partition.

5.	If you do not wish to continue assigning logical device identifiers and physical addresses for the same partition, press the Enter key without entering any information. (The partition portion of the next displayed screen is incremented by one.)

6.	Enter the logical device identifier and the physical address in the indicated partition.

	This prompting sequence continues for the number of partitions previously specified in prompt 20-06.

7.	When you have specified the logical device identifier and physical address for the last partition number that you are using, press the Enter key without entering any information, and the prompting sequence for prompt 20-17 ends.

Specify the Resource Allocation Table System-Shared Entries (20-18)

The first line of the following prompt displays the total number of system-shared entries in the IBM 5280 system. Each time you assign a logical device identifier and a physical address, and press the Enter key, the system-shared entry is incremented by one. If you do not want to specify system-shared entries, press the Enter key without entering any information.

To assign a number for the logical device identifier and the physical address, respond to the following prompt:

```
System shared entry    XXX
Specify the following.
Logical device identifier:    __
Physical address:
Press ENTER to continue                                          20-18
```

1. Enter any two alphameric characters as the logical device identifier (for example, D1 or D2 for diskette drives one and two).

   -OR-

   To set aside blank space for each entry in the resource allocation table for future additions, enter two asterisks (**) for the logical device identifier.

2. Enter a four-digit physical device address.

   -OR-

   Leave the physical device address blank to set aside blank space in the table for future entries.

3. Press the Enter key.

4. To end the system-shared entry process, press the Enter key without entering any information.

When the resource allocation table is completely built, it is written to the user-defined IPL diskette.

Partition Sizes (20-19)

The next two prompts, 20-19 and 20-20, refer to the storage amount remaining in main storage and in each page after storage is allocated to the partitions. Prompt 20-19 displays the total storage amount remaining in systems having 64 K or less of total main storage. Prompt 20-20 informs you of the storage amount remaining in a certain page for systems with more than 64 K of total main storage.

The following prompt enables you to define the partitions' storage size(s). It is displayed *only* if your IBM 5280 system has 64 K or less total storage area. The first time the prompt is displayed, the remaining storage is the total storage amount minus the storage used by the common area.

To specify the partition number and size, respond to the following prompt:

```
Remaining storage is NN K bytes.
Specify the following.
Partition number:          _
Partition size in K bytes:
                    Press ENTER                                    20-19
```

1. Enter the partition number. (Partition zero, the first partition, must be allocated first.)

2. Enter a two-digit number for the partition size in K bytes. Valid entries for partition sizes are 6 K through 64 K.

3. Press the Enter key.

After each partition size is specified, its size is subtracted from the total storage amount in the system. The first line of the display is updated and the prompt is redisplayed so the next partition can be specified. The prompt is displayed until each partition previously specified in prompt 20-06 is defined.

After you have allocated storage to all the partitions in a configuration, any remaining storage that is less than 6 K is automatically added to the last partition allocated. If 6 K or more of storage remains after all the partitions are allocated, that storage is unused.

Display Remaining Storage Area in Page (20-20)

The following prompt is displayed if your IBM 5280 system has more than 64 K of total storage. The first line displays the storage amount remaining in each page after a partition has been specified. The remaining storage is the unallocated storage on the specified page. If less than 6 K of storage remains on a page, that storage is assigned to the last partition allocated on that page. There is a page distinction because no partition can cross a page (64 K) boundary.

To specify the partition number and size, respond to the following prompt:

```
Remaining storage in page N is NN K bytes.
Partition number:            _
Partition size in K bytes:

                Press ENTER                                    20-20

          ,
```

1. Enter the partition number. (Partition zero, the first partition, must be allocated first.)

2. Enter the size of the partition in K bytes.

3. Press the Enter key.

This prompt is displayed until each partition previously specified in prompt 20-06 is defined.

Specify the Keyboard/Display Size (20-21)

```
Enter the display type of keyboard         X
   Options are
   1. 480 single      3. 960 single     5. 1920 single
   2. 480 dual        4. 960 dual
Select option:    _  Press ENTER                              20-21
```

1. Enter the option number that corresponds to the type and size of the display screen to be used with this configuration.

2. Press the Enter key.

If four single keyboards are specified, the prompt is displayed four times; if two singles and a dual unit are specified, the prompt is displayed three times. When the first unit of a dual unit is defined, the second unit is also defined.

This prompt is displayed for each keyboard on the system with the keyboard number displayed in the upper right corner of the prompt.

Enter the Language/Keyboard Type (20-25)

The first line of the language/keyboard type prompt displays the keyboard number. The number is incremented by one each time a keyboard is specified. (For a dual unit, only the keyboard number of the first keyboard is displayed. The number for the second keyboard is not displayed.) The prompt is displayed until a keyboard is specified for each foreground partition.

To specify the language/keyboard type, respond to the following prompt:

```
Keyboard   X

Enter language/keyboard type from table:




              Press ENTER                                    20-25
```

1. In the *Table of Language/Keyboard Types* in this chapter, locate the language/keyboard combination that corresponds to your system.

2. Enter the language/keyboard type. Valid entries are provided for the standard character set for specific countries, the multinational character set, and the three types of keyboards (data entry, typewriter, and proof). Enter 999 for an RPQ language/keyboard type.

3. Press the Enter key.

If you entered 999 for an RPQ language/keyboard type instead of a number from the *Table of Language/Keyboard Types*, prompt 20-26 is displayed.

If you specify a language/keyboard combination that is not available, an error message is displayed on the status line. For example, if you specify the keyboard type as data entry, and the language as Canadian/English, an error occurs because that particular combination is not available.

The following table lists a combination of 132 available language/keyboard types.

Table of Language/Keyboard Types

	Standard Character Set			Multinational Character Set		
	Typewriter	Data Entry	Proof	Typewriter	Data Entry	Proof
United States	1	2	3	4	5	6
Germany	7	8	9	10	11	12
France Azerty	13	14	15	16	17	18
France Qwerty	19	20	21	22	23	24
United Kingdom	25	26	27	28	29	30
Italy	31	32	33	34	35	36
Japan/Katakana	37	38	39	40*	41*	42*
Spanish Speaking	43	44	45	46	47	48
Canadian/English	49*	50*	51*	52	53*	54*
Canadian/French	55	56	57	58	59	60
ASCII	61	62*	63*	64	65*	66*
Austria	67	68	69	70	71	72
Belgium	73	74	75	76	77	78
Brazil	79	80	81	82	83	84
Denmark	85	86	87	88	89	90
Finland	91	92	93	94	95	96
International	97	98	99	100	101	102
Japan/English	103	104	105	106	107	108
Norway	109	110	111	112	113	114
Spain	115	116	117	118	119	120
Sweden	121	122	123*	124	125	126*
Portugal	127	128	129	130	131	132

*Not available

When the keyboard parameters are established and written to the configuration table, the system copies the specified language groups from the program diskette to the new user-defined system configuration diskette.

Insert RPQ Diskette (20-26)

If you are using an RPQ for the language/keyboard type, the following prompt is displayed:

```
Insert RPQ diskette in device      XXXX  and enter

Data set name:




                   Press ENTER                                    20-26
```

1. Insert the RPQ diskette in the device specified by the Xs.

2. Enter the name of the data set with the language you want to use.

3. Press the Enter key.

The system reads a portion of the RPQ language data set from the RPQ diskette, then displays a prompt that instructs you to remove the RPQ diskette from the diskette drive. When the system needs to read another portion from the RPQ language data set, it prompts you to reinsert the RPQ diskette.

Note: After you have specified the RPQ language data set name in prompt 20-26, this same data set will be used the next time you specify an RPQ language/keyboard type. Prompt 20-26 will not be displayed again; however, you *will* be prompted to insert and remove the RPQ diskette.

SYSCON Completed (20-78)

To complete the system configuration program, respond to the following program-completed prompt:

```
i                    SYSCON
SYSCON completed.
  Options are
    1. Restart
    2. Exit
Select option:    _  Press ENTER                              20-78
```

1. Enter a 1 to restart the program from its beginning.

2. Enter a 2 to exit from the program.

The load prompt is displayed and you can load and execute other programs.

Although the load prompt is now displayed, the system is still executing with the configuration you used to IPL the system. You can execute programs using this configuration or you can perform a user-defined IPL process to execute programs using the configuration you have just finished generating.

To perform a user-defined IPL process, perform the following steps:

1. Ensure that the IPL diskette you have just generated is the only IPL diskette inserted in any of the diskette drives.

2. Secure the diskette locking lever.

3. Press the Cmd (Command) key, hold down the Shift key, then press the G key.

Note: If the Command key sequence procedure is used while other users are online, some or all of their data may be lost.

The IPL process starts immediately. When it is completed, the load prompt is displayed at all the stations and the system is ready for use. If, during system configuration, you specified programs to be loaded at the completion of IPL, those programs will now be loaded from the IPL diskette. All of the programs you name to be loaded at the completion of IPL must reside on the diskette used to IPL the system.

The close failure recovery program enables you to recover access to data that has become inaccessible because of program interruption. If execution of a program is interrupted and an output data set is left open, the end-of-data address field in the data set header will not be updated. You could not access any data beyond the old end-of-data address (any data added to the data set by the program that was interrupted).

The close failure recovery program enables you to scan a data set and specify the end-of-data record. The program uses the end-of-data record to update the data set header and close the data set. When the data set is closed, the data becomes accessible.

RELATIVE RECORD NUMBER

Each record in a data set on a diskette is assigned a specific physical location in the data set. Each record location is identified by a relative record number without the help of an index. See the following illustration.

RECORDS

1	2	3	BLANK	5	

Relative Record Number 1 2 3 4 5
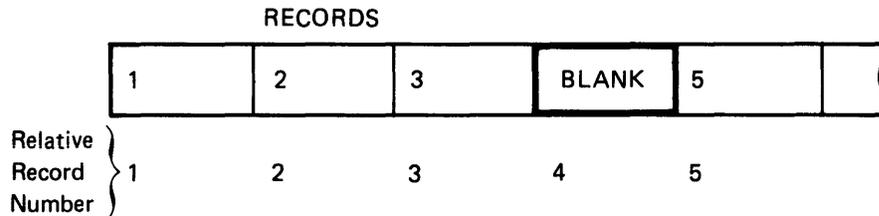
RECORD SCANNING OVERVIEW

To scan a record, enter its relative record number. Records specified for scanning are displayed, and can be scanned sequentially or nonsequentially. To scan records sequentially, enter the number of the record to be scanned first. (If you do not enter the number of the first record to be scanned, the first record in the data set is displayed for scanning.) Scan the following records without entering their record numbers by pressing the Enter key to display the record. To scan records nonsequentially, specify the relative record number of each record. See prompt 24-03 in the operation section of this chapter.

If the record size is larger than the display screen size, only the data that fits on the display screen is displayed. Deleted records and defective sectors are not displayed for scanning. If you enter the relative record number of a deleted record, the first nondeleted record following the deleted record is displayed.

OPERATION OF THE CLOSE FAILURE RECOVERY PROGRAM

Load the Close Failure Recovery Program (05-00)

```
0 0001      A 16 40
Program name:  LLLLLLLLLLLLLLLLLL
Device address:
Partition number:


                    Press ENTER                              05-00
```

1. Enter SYSCLOSE as the program name.

2. Enter the address of the diskette drive where the program diskette is located. Each diskette drive should have a diskette drive label attached to it.

3. Enter the number of the partition where the program will execute. (You cannot load from one foreground partition into another foreground partition.)

4. Press the Enter key.

```
SYSCLOSE - CLOSE FAILURE RECOVERY
Insert diskette to be scanned and enter
Data set name:-----------------
Device address:
                    Press ENTER                                    24-01
```

1. Insert the diskette that contains the unclosed data set into a diskette drive.

2. Enter the name of the data set to be scanned.

3. Enter the device address for the diskette drive.

4. Press the Enter key.

During processing, the close failure recovery program modifies the following fields in the data set header label:

*   The end-of-data address field is set one sector beyond the end of the space that was allocated for the specified data set.

*   The offset to the next record space field and the data set organization field are set to blanks (hex 4040).

If the diskette is removed and is not reinserted before the Reset key is pressed, the data set header contains the modified values. If this occurs, rerun the close failure recovery program.

Scan a Record (24-02)

To begin the scanning process, respond to the following prompt:

```
The data set specified will be displayed by record.

To scan a specific record enter its relative record number.

Making no entry causes the next record to be displayed.

To end the scan and update end of data, enter 0.        ENTRY:

                    Press ENTER                                    24-02
```

Note: If a zero is the entry for this prompt, an error message is displayed. Enter 0 in response to prompt 24-03 when you want to end the scan and update end-of-data. Zero can be entered only after the scan has begun and the record is displayed.

1. To scan a specific record, enter the relative record number of the record to be displayed. (For example, the fifth record in a data set is relative record number five.) The record number entered must be right adjusted.

2. To right adjust the entered record number, press the Field Exit key on the data entry keyboard or the Field + key on the typewriter keyboard. (For example, if 5 is the entered record number, 5 becomes 00000005 when the Field Exit key or the Field + key is pressed.)

3. Press the Enter key.

-OR-

1. To display the first record in the specified data set, do not enter a record number.

2. Press the Enter key.

Display a Record (24-03)

Prompt 24-03 is displayed each time a record is displayed. The first line displays the status line maintained by the keyboard/display station. The second line displays the relative record number (where the Ns are shown) of the displayed record. If a record size is larger than the display screen size, only the data that fits on the display screen is displayed.

If the data in a record contains nondisplayable data, the displayable EBCDIC characters are displayed and ■s are displayed for the nondisplayable data. To display the hexadacimal value of any data, position the cursor under the character or ■ you want displayed. The hexadecimal value will be displayed in columns 18 and 19 of the status line. Do not use the space bar to position the cursor. Use the → (Cursor Advance) key and the ← (Cursor Backspace) key to position the cursor. If changes are made to displayed data, the changes are not written to the diskette.

To display the next record or to specify another record, respond to the following prompt:

```
0 0001-XXXX A 17 40
NNNNNNNN Entry for next display: --------                    24-03
```
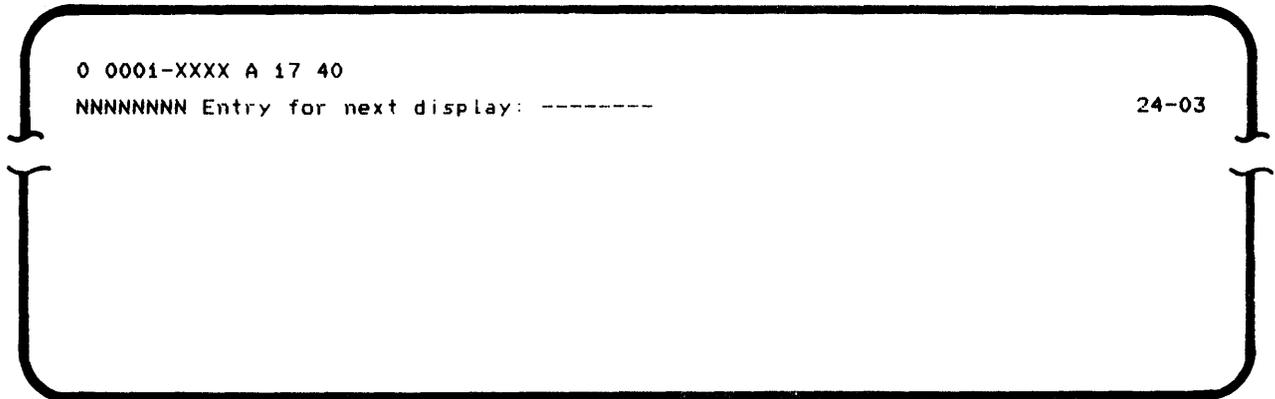
1. To scan records sequentially, make no entry.

2. Press the Enter key.

-OR-

1. To scan records nonsequentially, enter the record number of the next record to be scanned. (The record number can be greater than or less than the currently displayed record number.)

2. To right adjust the entered record number, press the Field Exit key on the data entry keyboard or the Field + key on the typewriter keyboard.

3. Press the Enter key.

If you entered the record number of a deleted record, the first nondeleted record following the deleted record is displayed. If you entered a record number greater than the number of records allocated for the data set, the last record in the allocated space is displayed.

-OR-

1. Enter a zero (must be right adjusted) to update the header and end the scan process. (The end-of-data value of the header label is changed so that the display record, at the time the zero is entered, is the end-of-data record. This restores the end-of-data address to the desired position.)

2. Press the Enter key.

-OR-

1. To terminate the scan, press the Cmd key, then press the End-of-Job key. (The end-of-data address will be restored to what it was at the time execution of SYSCLOSE was started.)

2. Respond to the SYSCLOSE-terminated prompt that is displayed.

SYSCLOSE Completed (24-78)

When the scan process is completed, the following prompt is displayed:

```
0               SYSCLOSE
Utility completed.
  Options are
    1. Restart
    2. Exit
Select option:   _  Press ENTER                                    24-78
```

1. Enter a 1 to restart the program from its beginning.

2. Enter a 2 to exit from the program.

The patch program enables you to patch user-written application programs, to change IBM-supplied programs if any errors are encountered, or to replace program modules to update IBM-supplied programs. Changes and replacement modules for IBM-supplied programs are distributed by IBM as PTFs (program temporary fixes). By using the patch program you can also display or print the PTF log number of all changes made to an individual module or to the IBM 5280 system.

CAUTION
Never try to patch a user *data file* with the patch program.

The patch program can do the following:

- Patch an application program

- Change an IBM-supplied program

- Replace an IBM-supplied program module

- List module history

- List system history

Patches and changes can be made from a diskette or through the keyboard/display screen. Replacements can be made only from a diskette.

Before you attempt to use these functions, be sure you have a copy of the data to be patched. This ensures that important data is not lost if an error occurs during the patch program.

You should use the same SCP diskette to apply all PTFs for a single system so that the complete system history is recorded on a single SCP diskette. However, do not use the same SCP diskette to apply PTFs to multiple systems.

PATCH OVERVIEW

Patches are temporary repairs that are made to a user-written application program. You can patch a program by entering your own data through a keyboard/display or a diskette.

CHANGE OVERVIEW

Changes are formal program fixes made from a diskette or through the keyboard/display screen. They are distributed by IBM as PTFs if errors are encountered in IBM-supplied programs.

REPLACE OVERVIEW

The replace function of the patch program replaces an entire module of an IBM-supplied program. A module can be a program or an overlay and can be replaced only from a diskette. Diskettes containing replacement modules are distributed by IBM as PTFs.

The new module is placed in the same location as the old module if there is sufficient space within the data set extents. If the replace module is too large, an error message is displayed.

If the replace data set will fit within the original data set to be replaced, the replacement occurs, but the original data will no longer be available.

Several modules within one data set can be replaced if all the replacement modules are in the same data set. For example, if two modules need to be replaced, the replacements can be contained in one PTF input data set.

MODULE HISTORY OVERVIEW

Each module maintains a history of all fixes (patches and PTFs) made to it.
The module history can be used to determine whether a PTF has been applied.
The history can be displayed or printed.

This history is maintained in the module as two bytes of information. The
history log can record only eight PTFs, and show that more than eight PTFs
have been applied. The first byte has the following format:

Byte **1**

Bits 6 and 7 - Modification number.
Bit 5 - More than 8 PTFs have been applied.
Bit 4 - A patch has been applied.
Bits 0 through 3 - Release number.
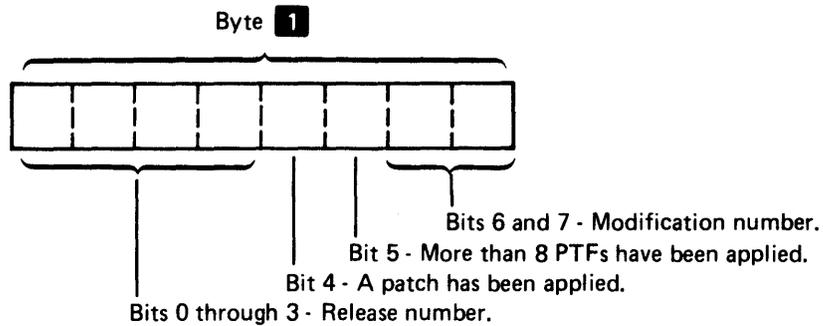
The second data byte that maintains the module history has the following
format:

Byte **2**

The 1st PTF has been applied.
The 2nd PTF has been applied.
The 3rd PTF has been applied.
The 4th PTF has been applied.
The 5th PTF has been applied.
The 6th PTF has been applied.
The 7th PTF has been applied.
The 8th PTF has been applied.
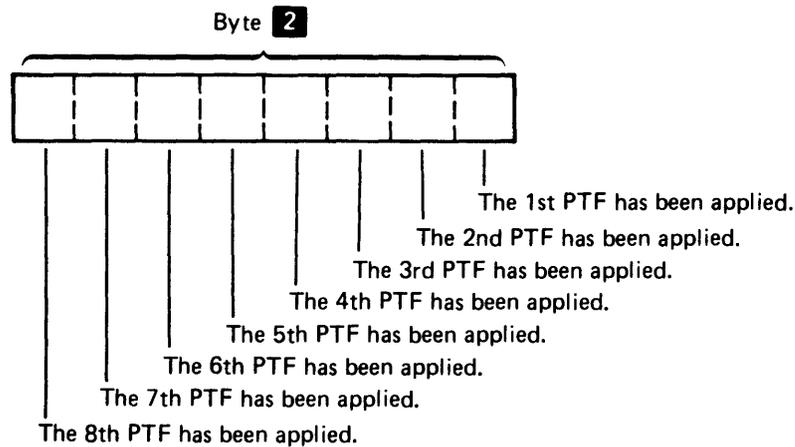
Each bit of the second byte of information indicates whether a program
temporary fix has been applied to a module.

The module history can have the following format when displayed on the system display screen or when printed on the system printer.

```
XXXXXXXX is at release XX modification      X
PTF(s) X X X X X X X X have been applied
More than 8 PTFs have been applied.
A patch has been applied.
                    Press ENTER                                    26-14
```

The IBM 5280 system's release level, and the number of modifications made to that specific release level, are displayed on line one of the preceding example. The second line of the display indicates the temporary fixes that have been applied to a module. If a module has not changed, the word *none* is displayed instead of the PTF numbers. The next line is displayed only if more than eight changes are made to the module. The fourth line is displayed only if the patch program was used to change the module.

SYSTEM HISTORY OVERVIEW

In addition to each module history, a system history is maintained by the patch program. The system history is recorded on the SCP diskette you used to apply the PTFs, and contains records of all PTFs applied to an IBM 5280 system. The system history can be printed or displayed on the display screen.

When the system history is displayed, it has the following format:

```
LOG MASK DATA SET OVERLAY LOG MASK DATA SET OVERLAY LOG MASK DATA SET OVERLAY




Press ENTER to continue                                                  26-15


```

The system history entries are listed in the order in which they are recorded on the SCP diskette. If the history is displayed on the display screen, only twelve entries are displayed at one time. You can press either the Enter key until all entries have been displayed, or the End-of-Job key to terminate the process. Duplicate PTF log numbers are not displayed or printed. If multiple modules were changed by the same PTF, duplicate log numbers may be present in the history.

OPERATION OF THE PATCH PROGRAM

Load the Patch Program (05-00)

```
0 0001        A 16 40
Program name:  LLLLLLLLLLLLLLLLLLLU
Device address:
Partition number:

                Press ENTER                              05-00
```

1. Insert a patch diskette into a diskette drive.

2. Secure the diskette locking lever.

3. Enter SYSPTF as the program name.

4. Enter the diskette device address.

5. Enter the number of the partition where the program will execute. (If a partition number is not entered, the number defaults to the partition associated with the keyboard.)

6. Press the Enter key.

Note: Do not remove the program diskette until after you have selected your option on the next prompt.

Select a Patch Function (26-01)

```
SYSPTF - PATCH PROGRAM
Which function do you want?
  Options are
    1.  Patch     3.  Replace     5. System history
    2.  Change    4.  Module history
Select option:    _  Press ENTER                              26-01
```

1.   Enter the number of the function you want to use.

2.   Press the Enter key.

Display Warning Message (26-02)

If you select patch, change, or replace, the following warning message is displayed:

```
A copy of the diskette being modified should be available.
This will ease recovery in case of error.
                      Press ENTER                                    26-02
```

You should have a copy of the data on the diskette to be patched to ensure that important data is not lost if an error occurs during the patch program.

1. To begin the process of copying the data on the diskette to be patched, press the System Request key. (The system request function enables you to temporarily interrupt the current program in this partition and to load a program in another partition.)

2. Display screen 05-00 is displayed. Use the diskette copy utility to make a copy of the data to be modified. (See the *Utilities Reference/Operation Manual* for more information about copy.)

3. When the copy is completed, display screen 31-78 is displayed.

4. Use the Exit option, and prompt 26-02 will be displayed.

5. Press the Enter key.

-OR-

1. Press the Cmd key, then press the End-of-Job key to terminate the patch program.

2. Use the diskette copy utility to make a copy of the data to be modified.

3. Reload the patch program.

Note: The patch program can be interrupted at any time to make a copy of the data to be modified.

PATCH OR CHANGE OPTION

Select the Input Device (26-03)

If you selected option one (patch) or option two (change), the following prompt is displayed:

```
Which input device will be used?
  Options are
    1. Diskette
    2. Display
Select option:   _  Press ENTER                              26-03
```

1. Enter a 1 to use the diskette to make the patch or the change.

2. Enter a 2 to use the display screen/keyboard to make the patch or the change.

3. Press the Enter key.

```
Insert output diskette and enter
Data set name:       _____
Device address:      ____
Overlay name (optional):    _____
                    Press ENTER                                    26-06
```

1. Insert the diskette to be patched into a diskette drive.

2. Secure the diskette locking lever.

3. Enter the name of the data set to be patched.

4. Enter the diskette device address.

5. Enter the overlay names, optionally. (An overlay is a segment of a
    program that is not permanently maintained in storage. An overlay name
    is an IBM-supplied name to use with PTFs.)

6. Press the Enter key.

Describe the Patch (26-07)

The IBM 5280 system locates the output data set and displays the following prompt:

```
Describe the patch.
Location:    ____
Checkbyte:        ____
Data:       ____ ____ ____ ____ ____ ____ ____ ____
Press ENTER to continue                              26-07
```

1. Enter the four-digit address for the location of the checkbyte. (The four-digit address equals the assembled address minus the address of the start of the module, and it is the displacement into the module from the beginning of the extent.)

2. Enter the value of the checkbyte. (The checkbyte represents the first byte being overlaid by the first byte of patch information on the data statement.)

3. Enter the data. (Data is the actual patch. The hexadecimal representative of two characters of data is equivalent to one byte.) Entries for the data fields must be in full bytes (pairs of characters). The first blank data field indicates the end of the patch or change.

If you enter an incorrect value in the prompt, an error message is displayed on the status line.

1. Press the Reset key. Prompt 26-07 is redisplayed with the values first entered.

2. Correct the invalid entry.

3. Press the Enter key, and the IBM 5280 attempts to make the patch. If the entry is valid, prompt 26-07 is redisplayed.

To make only one patch:

1.   Press the Enter key and the prompt is redisplayed.

2.   Press the Cmd key, then press the End-of-Job key to complete the program.

To make more than one patch:

1.   Enter the location, checkbyte, and data on prompt 26-07.

2.   Press the Enter key, and prompt 26-07 is redisplayed.

3.   Continue with steps 1 and 2 until all the patches have been made.

4.   Press the Cmd key, then press the End-of-Job·key to end the patch process.

Prompt 26-78 is displayed.

```
1       SYSPTF
SYSPTF completed.
  Options are
   ᐧ1. Restart
    2. Exit
Select option:   _  Press ENTER                                    26-78
```

1.   Enter a 1 to restart the program. (The program can be restarted only if the program is in the diskette drive where it was first loaded.)

2.   Press the Enter key.

3.   Prompt 26-01, to select a patch function, is displayed.

-OR-

1.   Enter a 2 to exit from the program.

2.   Press the Enter key.

3.   Prompt 05-00, the load prompt, is displayed if the patch process is in the foreground partition. If the patch process is in the background partition, the foreground partition receives control.

Using a Diskette as the Patch or Change Input Device (26-04)

```
Insert input diskette and enter
Data set name:      _____
Device address: ____


                      Press ENTER                              26-04
```

1. Insert the input diskette (the diskette that contains the patch or change) into a diskette drive.

2. Secure the diskette locking lever.

3. Enter the name of the data set where the patch information is located.

4. Enter the diskette device address.

5. Press the Enter key.

The patch or change diskette can be a separate diskette (a diskette that contains only the patch or change), or the information can be copied either to the SCP diskette, or to the diskette containing the program to be patched.

Insert the Output Diskette (26-05)

```
Insert output diskette and enter
Device address:    ____



                    Press ENTER                                    26-05
```

1. Insert into a diskette drive the diskette to be patched or changed.

2. Enter the diskette device address.

3. Press the Enter key.

The IBM 5280 searches the output diskette for the data set to be patched or changed, and makes the patch or change. Prompt 26-78 is displayed.

Using the Display Screen/Keyboard as the Input Device for Making a Change (26-08)

After you enter the information in prompt 26-06 for the output diskette and data set name, the next prompt is displayed:
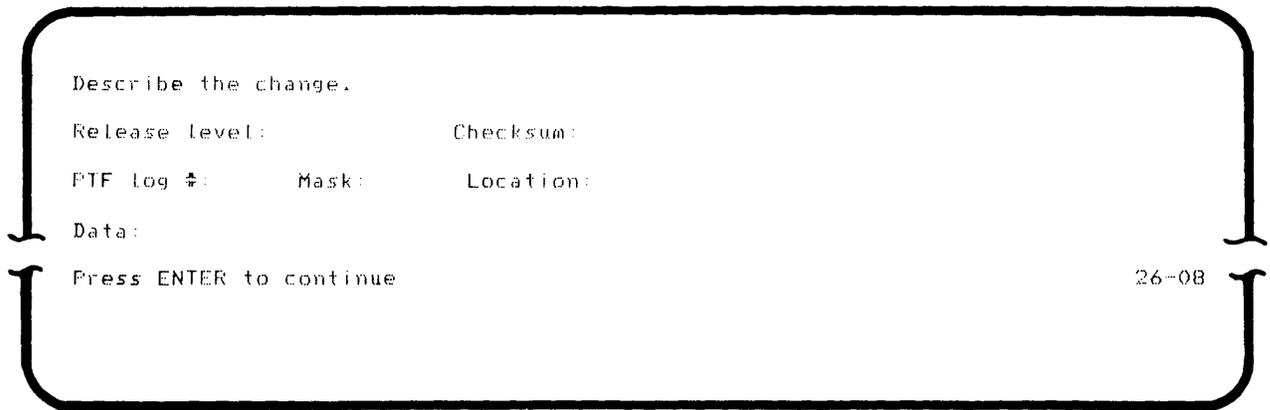
```
Describe the change.

Release level:              Checksum:

PTF Log #:      Mask:       Location:

Data:

Press ENTER to continue                                    26-08
```

The values for the fields in this prompt are supplied by IBM.

1. Enter the IBM 5280 system release level (one hexadecimal digit) and the modification number (one hexadecimal digit) for your particular system.

2. Enter the checksum (a cumulative number derived from the input used to ensure correct data entry).

3. Enter the PTF log number (the number associated with this change).

4. Enter the mask (the number indicating the change to this module).

5. Enter the location where the change is to be made.

6. Enter the data (the actual change).

7. Press the Enter key.

If all the entries are valid, the change is processed and the prompt is redisplayed so you can make the next change. The second time the prompt is displayed, all fields are blank so the next change can be made. Prompt 26-08 is displayed as many times as necessary to make all the changes. When you make all the changes, press the End-of-Job key to exit from the program.

Insert the Patch Diskette (26-16)

If you remove the program diskette from the diskette drive while you are changing a data set, the following prompt is displayed:

```
Insert the SCP diskette in device    XXXX




                                                              26-16
```

1. Insert the SCP diskette into the specified diskette device address (where the Xs are shown).

2. Press the Enter key.

REPLACE OPTION

Insert the Replace Input Diskette (26-04)

If you select the replace option, prompt 26-02 is displayed. Respond to prompt 26-02, and prompt 26-04 is displayed.

```
Insert input diskette and enter
Data set name:    _____
Device address: ____

                 Press ENTER                                    26-04
```

1. Insert the diskette with the replacement(s) into a diskette drive.

2. Secure the diskette drive locking lever.

3. Enter the name of the data set containing the replacement(s).

4. Enter the diskette device address.

5. Press the Enter key.

Insert the Replace Output Diskette (26-05)

```
Insert output diskette and enter
Device address:    _____



                    Press ENTER                                    26-05

```

1.   Insert the diskette with the module(s) to be replaced into a diskette drive.

2.   Enter the device address.

3.   Press the Enter key.

If the two diskettes are in different drives, the replacement process takes place without further prompting.

Insert the Input/Output Diskette (26-09 and 26-10)

If you replace a module on a system with a single drive, you are prompted to insert the input and output diskettes at different intervals by following prompts 26-09 and 26-10.

```
Insert the input diskette in device XXXX



                    Press ENTER                                    26-09
```

```
Insert the output diskette in device XXXX



                    Press ENTER                                    26-10
```

Prompts 26-09 and 26-10 will be displayed each time a diskette should be inserted into a diskette drive. This exchanging of diskettes continues until the entire module is replaced.

The replacement module is written over the old data set. Then the program-completed prompt is displayed.

MODULE HISTORY OPTION

Specify the Output Device for the Module History (26-12)

If you selected the module history option on prompt 26-01, the following prompt is displayed:

```
Which output device will be used?
   Options are
      1. Printer
      2. Display
Select option:   _   Press ENTER                                    26-12
```

1.   Enter a 1 if you are going to print a module history.

2.   Enter a 2 if you are going to display a module history.

3.   Press the Enter key.

Specify the Printer Device Address (26-13)

If you specify the printer as the output device, the following prompt is
displayed:

```
Enter printer device address:   ----




                      Press ENTER                                      26-13


```
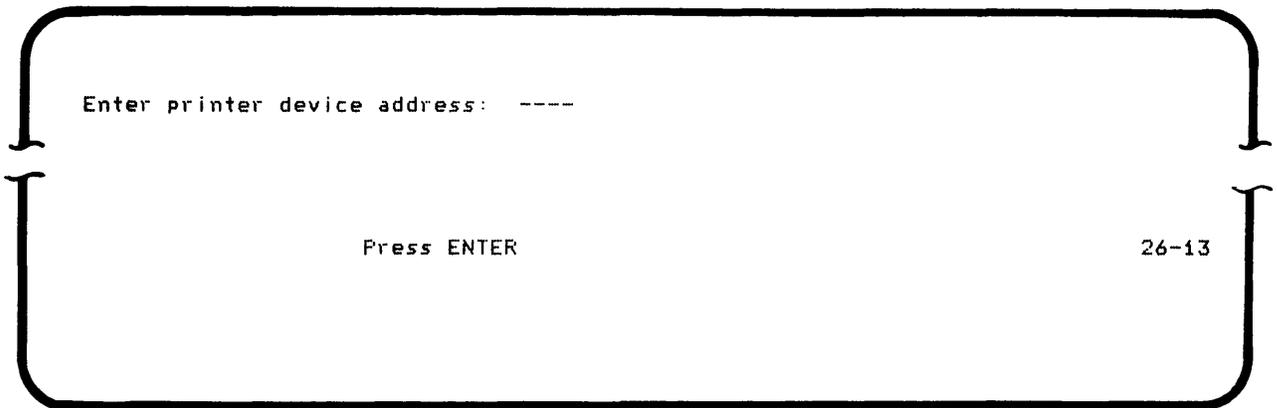
1. Enter the printer device address.

2. Press the Enter key.

Insert the Diskette Containing the Module History (26-11)

If you are going to print the output or display the output, the following prompt
is displayed:

```
Insert input diskette and enter
Data set name:        _____
Device address:       ____
Overlay name (optional):    _____
                Press ENTER                                    26-11
```

1. Insert the diskette containing the module history to be printed or
   displayed.

2. Enter the name of the data set of the first module.

3. Enter the device address.

4. Enter the overlay name (optional).

5. Press the Enter key.

If you selected the printer option in prompt 26-12, the specified module history is printed (with 80 characters per line), and prompt 26-11 is redisplayed. To print more than one module history, supply the required information and press the Enter key. This procedure continues until you press the End-of-Job key.

If you selected the display option in prompt 26-12, the IBM 5280 displays the module history in the following format:

```
XXXXXXXX is at release XX modification     X
PTF(s) X X X X X X X X have been applied
More than 8 PTFs have been applied.
A patch has been applied.
                      Press ENTER                                    26-14
```

Note: Lines three and four are displayed only if needed.

To display more than one module history, press the Enter key. Prompt 26-11 is redisplayed. Supply the required information and press the Enter key. This procedure continues until you press the End-of-Job key.

SYSTEM HISTORY OPTION

Select the Output Device for the System History (26-12)

If you selected the system history option on prompt 26-01, the following prompt is displayed:

```
Which output device will be used?
   Options are
      1. Printer
      2. Display
Select option:   _  Press ENTER                                    26-12
```

1. Enter a 1 if you are going to print the system history.

2. Enter a 2 if you are going to display the system history.

3. Press the Enter key.

Specify the Printer Device Address (26-13)

If you specify the printer as the output device, the following prompt is displayed:

```
Enter printer device address:   ----




                        Press ENTER                              26-13
```

1.   Enter the device address.

2.   Press the Enter key.

The system prints the actual system history as it is recorded on the SCP diskette used to apply the PTFs. When the printing process is complete, the SYSPTF-completed prompt (26-78) is displayed.

Display a System History (26-15)

if you specified the display screen as the output device, the system history is displayed in the following format:

```
LOG MASK DATA SET OVERLAY LOG MASK DATA SET OVERLAY LOG MASK DATA SET OVERLAY




Press ENTER to continue                                              26-15



```

The system history is displayed on lines two through five. If more history remains to be displayed, prompt 26-15 is redisplayed when the Enter key is pressed, as many times as necessary to complete the display. When the display process is complete, press the Enter key, and the SYSPTF-completed prompt (26-78) is displayed. The SYSPTF-completed prompt allows you to restart or exit from the patch program.

address: A name, label, or number that identifies a register, location in storage, or any other data source.

alphameric characters: Alphabetic characters A through Z plus digits 0 through 9.

American National Standards Institute, Inc. (ANSI): An organization sponsored by the Business Equipment Manufacturers' Association for the purpose of establishing voluntary industry standards.

application: A unit of work for which the IBM 5280 system will be used. This unit of work can consist of entering data from source documents to doing payroll for a small company.

ASCII: (ANSI definition) American National Code for Information Interchange. The standard code, using a coded character set consisting of 7-bit coded characters (8 bits including parity check), used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphic characters.

background job: A job that is run in a partition that does not have immediate access to a keyboard/display unit.

backup copy: A copy of a data set or diskette that is kept in case the original data set or diskette is destroyed. It contains information that was copied from another diskette and is used in case the original information is damaged or unintentionally altered.

background partition: An area of storage that does not have immediate access to a keyboard/display unit.

BSC: Binary synchronous communications. A flexible form of line control that provides a protocol for communications between two stations.

check: A process for determining accuracy.

checkbyte: The first byte being overlaid by the first byte of patch information on the data statement.

checksum: A check based on the formation of the sum of the digits of a number. The sum of the individual digits is compared with a previously computed value.

close failure recovery program: An IBM-supplied function on the SCP diskette that allows the end-of-data address to be updated when a program interruption occurs.

column separators: Vertical lines that precede each position in a field on a display. These lines do not occupy positions on the display. For example | A | B | C |.

comments: Words or statements in a program that serve as documentation rather than instructions to an assembler or compiler.

common area: The first part of main storage that contains the system control area, common functions, global tables (such as ASCII and error recording), and so on. Depending upon the common function option selected, this area can be 6 K, 14 K, or 16 K. This area is not available for user programs.

common function area: An area of storage within the common area that contains routines and data that can be accessed by programs in any of the partitions.

common functions: A set of IBM-supplied programs in the common area that are used by programs executing in any partition.

completed prompt: A message displayed by the IBM 5280 system that indicates successful execution of a program. The prompt provides the option of restarting or exiting from the program currently executing.

configuration: The group of machines, devices, features, and programs that make up a data processing system.

configuration checklist: A list of questions associated with the system configuration program prompting messages that provide specifications for tailoring your IBM 5280 system.

configure: To give information (to the control program) about the devices and optional features installed on a system.

cursor: A moveable horizontal line (underscore) on a display screen, used to indicate where the next character entered by the operator will appear.

data entry errors: Errors that occur when invalid prompt responses are entered into the IBM 5280 system.

data processing: Performing a series of planned instructions on information to achieve a desired result.

data set: An organized collection of related data records treated as a unit and existing on a diskette.

data set label: A 128-byte area on the diskette index cylinder that describes a data set.

data set name: The name associated with a data set. The first character must be alphabetic, and the remaining characters can be any combination of alphabetic or numeric characters. Blanks cannot appear between characters in a name.

device address: Two EBCDIC characters or four hexa-decimal characters used to identify an IBM 5280 device such as a diskette drive or a printer.

diskette: 1. A thin, flexible magnetic disk permanently sealed in a protective cover. 2. A single removeable disk contained in its own envelope.

display screen: The part of a display station on which data, messages, or other information is displayed.

dual keyboard/display: A work station that consists of two keyboards and a split mirror-image screen attached to a common unit.

EBCDIC (Extended Binary-Coded Decimal Interchange Code): A character set containing 256 eight-bit characters.

EOD (end of data): The end-of-data address identifies the next unused area within the data set or indicates that data has been written to the entire data set.

error-logging tables: An area of storage where errors that occur on an IBM 5280 system are recorded.

execute: To cause an instruction, program, utility, or other machine function to be performed. See *execution*.

execution: 1. The process of carrying out the instructions of a computer program by a processor. 2. The machine logic process that causes an instruction to be executed.

extent: A continuous space on a diskette that is occupied by or reserved for a particular data set.

field: One or more bytes of related information in a record.

field length: The number of positions allowed for a given field, determined by the maximum length of information that will be entered in the field.

fixes: See *program temporary fixes.*

foreground job: A job in which the keyboard/display unit is immediately available to the partition where the job is being executed.

foreground partition: An area of storage that has immediate access to a keyboard/display unit.

header label: An identification record for a diskette.

image copy: One of the copy functions provided in the diskette copy utility. Image copy copies data from one diskette to another of the same type. This function can also copy IPL diskettes.

IMFs (internal machine fixes): Fixes supplied by IBM to correct machine problems.

initial program load (IPL): 1. (noun) A sequence of events that loads the system programs and prepares the system for execution of jobs. 2. (verb) To perform the initial program load function.

input data set: A set of records a program uses as source information.

IPL: Initial program load.

IPL sector: Sector one of a diskette that identifies it as an IPL diskette.

job: For the IBM 5280 system, a program and associated data that can be executed in a partition.

load program prompt: A message issued by the system that requests information needed to load a program. This information consists of the program name, device address, and partition number where a program will execute.

main storage: 1. General purpose storage of a computer. 2. All storage that can be addressed by programs, from which instructions can be executed, and from which data can be loaded directly into registers.

mask: A pattern of characters that is used to control the retention or elimination of portions of another pattern of characters.

menu: A displayed list of items from which the operator makes a selection.

module: One part of a program. Usually a module performs a specific function.

module history: A listing of the PTFs applied to one part of a program.

multinational characters: A defined set of characters used by more than two nations.

multipoint line: A line or circuit interconnecting several stations.

multioverlay: The procedure of repeatedly using the same areas of main storage during different stages of a program.

overlay: A segment of a program that is not permanently maintained in storage.

overlay name: The name of a program or the name of a module of a program that will be used by the patch function to fix an error that might be encountered on IBM-supplied programs.

page: A 64 K block of storage on the IBM 5280 system.

partition entry: A logical device address in the resource allocation table for devices that are commonly used by a single partition.

program module: One part of a program that performs a specific function.

program temporary fix (PTF): An IBM-supplied program that provides a temporary solution or bypass of a problem that IBM diagnosed as the result of a defect in a current version of a program.

prompt (noun): A message, issued by a program, that requests either information or an operator action to continue processing.

PTF: Program temporary fix.

PTF log number: The number of the program temporary fix made to an IBM 5280 system.

record: (noun) A collection of related data, treated as a unit.

record scan: A procedure used to check the end-of-data address in a data set.

relative record number: A number that specifies the location of a record in relation to the beginning of the file.

replace a module: A program temporary fix that takes the place of a segment in a program containing an error.

resource allocation table: A table in storage that is used to assign a logical device ID (a name) to a physical device.

root module: The segment of a program that remains in main storage at all times during program execution.

routine: A set of executable instructions that provides one unique function for a program.

RPQ: Request for price quotation. A user-requested program function supplied by IBM for a particular application.

SCP: System control programming.

sector: The partition of a diskette track required to write one physical record.

single keyboard/display: A work station with one keyboard and one display screen.

starter system: A minimum 32 K system configuration automatically loaded by the IBM 5280 system at IPL time.

job: For the IBM 5280 system, a program and associated data that can be executed in a partition.

load program prompt: A message issued by the system that requests information needed to load a program. This information consists of the program name, device address, and partition number where a program will execute.

main storage: 1. General purpose storage of a computer. 2. All storage that can be addressed by programs, from which instructions can be executed, and from which data can be loaded directly into registers.

mask: A pattern of characters that is used to control the retention or elimination of portions of another pattern of characters.

menu: A displayed list of items from which the operator makes a selection.

module: One part of a program. Usually a module performs a specific function.

module history: A listing of the PTFs applied to one part of a program.

multinational characters: A defined set of characters used by more than two nations.

multipoint line: A line or circuit interconnecting several stations.

multioverlay: The procedure of repeatedly using the same areas of main storage during different stages of a program.

overlay: A segment of a program that is not permanently maintained in storage.

overlay name: The name of a program or the name of a module of a program that will be used by the patch function to fix an error that might be encountered on IBM-supplied programs.

page: A 64 K block of storage on the IBM 5280 system.

partition entry: A logical device address in the resource allocation table for devices that are commonly used by a single partition.

program module: One part of a program that performs a specific function.

program temporary fix (PTF): An IBM-supplied program that provides a temporary solution or bypass of a problem that IBM diagnosed as the result of a defect in a current version of a program.

prompt (noun): A message, issued by a program, that requests either information or an operator action to continue processing.

PTF: Program temporary fix.

PTF log number: The number of the program temporary fix made to an IBM 5280 system.

record: (noun) A collection of related data, treated as a unit.

record scan: A procedure used to check the end-of-data address in a data set.

relative record number: A number that specifies the location of a record in relation to the beginning of the file.

replace a module: A program temporary fix that takes the place of a segment in a program containing an error.

resource allocation table: A table in storage that is used to assign a logical device ID (a name) to a physical device.

root module: The segment of a program that remains in main storage at all times during program execution.

routine: A set of executable instructions that provides one unique function for a program.

RPQ: Request for price quotation. A user-requested program function supplied by IBM for a particular application.

SCP: System control programming.

sector: The partition of a diskette track required to write one physical record.

single keyboard/display: A work station with one keyboard and one display screen.

starter system: A minimum 32 K system configuration automatically loaded by the IBM 5280 system at IPL time.

status line: For IBM 5280, the first line on a display screen. This line provides operational information.

system configuration: A process that specifies the various components and devices that form a particular operating system. System configuration combines user-specified parameters with IBM programs to produce a system having the form and capacity your business requires.

system control area: 256 bytes starting at address hexadecimal 00. This area contains information such as the address of each partition, system device pointers, system flags, machine storage size, and so on.

system control programming: IBM-supplied functions and programs that are on a diskette. These programs are included with each IBM 5280 system and enable the operator to IPL the system, configure the system, recover from power failures, and apply program temporary fixes.

system diskette: A user-created diskette that contains programs and utilities used most frequently during the course of a work day.

system history: A record of all program temporary fixes applied to an IBM 5280 system.

system-shared entries: Logical device addresses in the resource allocation table for devices that are shared by partitions on an IBM 5280 system.

terminated prompt: A message displayed by the IBM 5280 system that indicates unsuccessful execution of a program. The prompt provides the option of restarting or exiting from the program that is currently executing.

user-defined IPL diskette: A diskette containing a user-tailored system configuration created as a result of execution of the system configuration program.

Appendix A. Prompt Descriptors

READER'S COMMENT FORM

Please use this form only to identify publication errors or request changes to publications. Technical questions about IBM systems, changes in IBM programming support, requests for additional publications, etc, should be directed to your IBM representative or to the IBM branch office nearest your location.

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IBM 5280 System
Control Programming
Reference/Operation
Manual

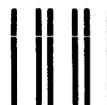GC21-7824-1

GC21-7824-1

Cut Along Line
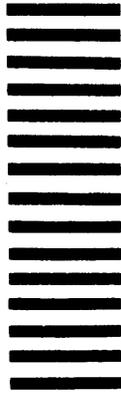
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