



Guided Learning Center

IBM System/38 Application Programming Student Materials Book





ZR30-0990-5

**IBM System/38 Application Programming
Student Materials Book**

Preface



The purpose of this Guided Learning Center course is to prepare you to write programs for the System/38.

This Student Materials Book, which is yours to keep, guides you through the course. It contains progress checks, exercises, and pages for your notes.


Sixth Edition (October 1986)

This is a major revision of, and obsoletes, ZR30-0990-4. Changes are periodically made to the information herein; any such changes will be reported in subsequent editions.

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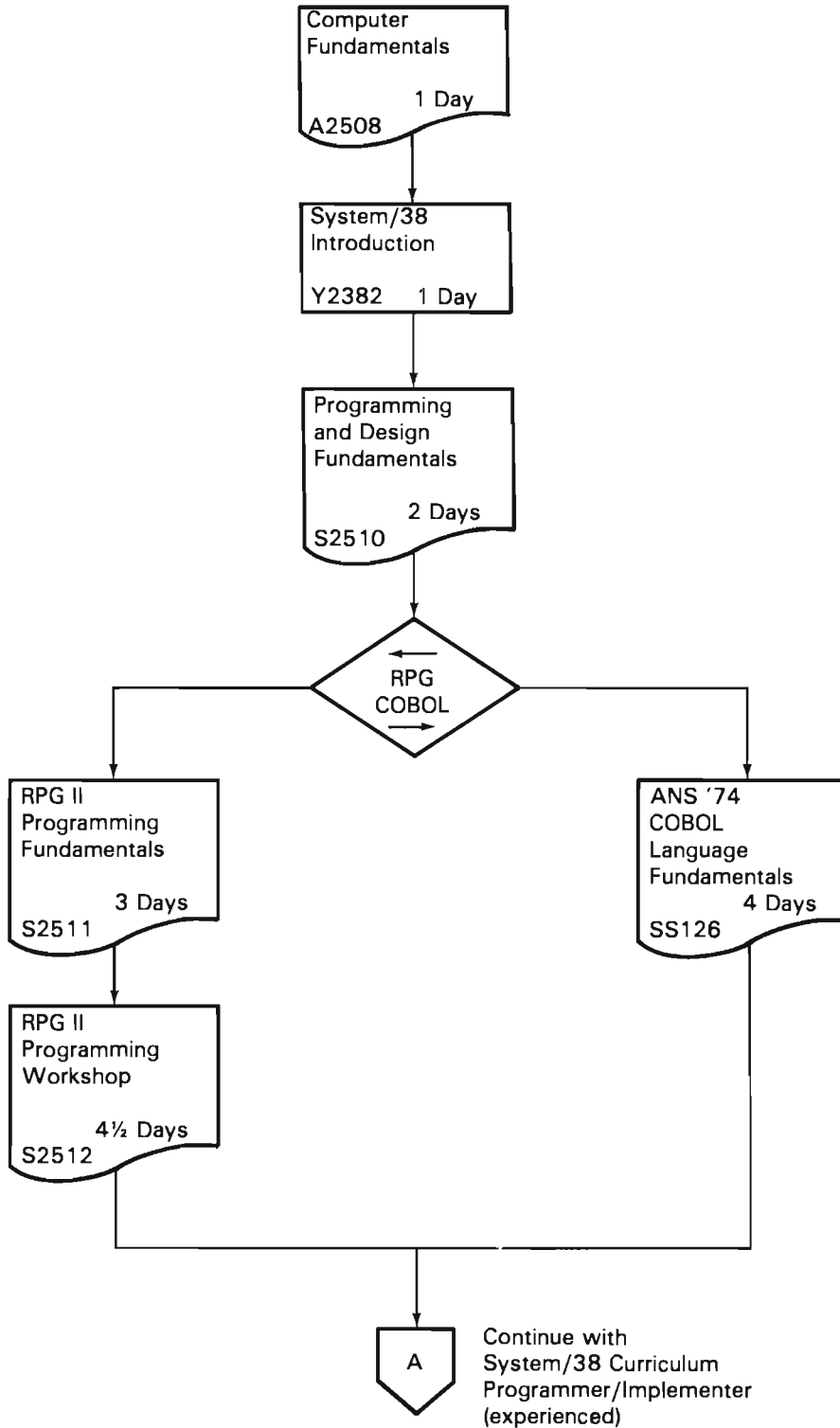
This flowchart is provided as a guide to the educational offerings for the System/38.

**System/38 Curriculum
Programmer/Implementer
(new to data processing)**

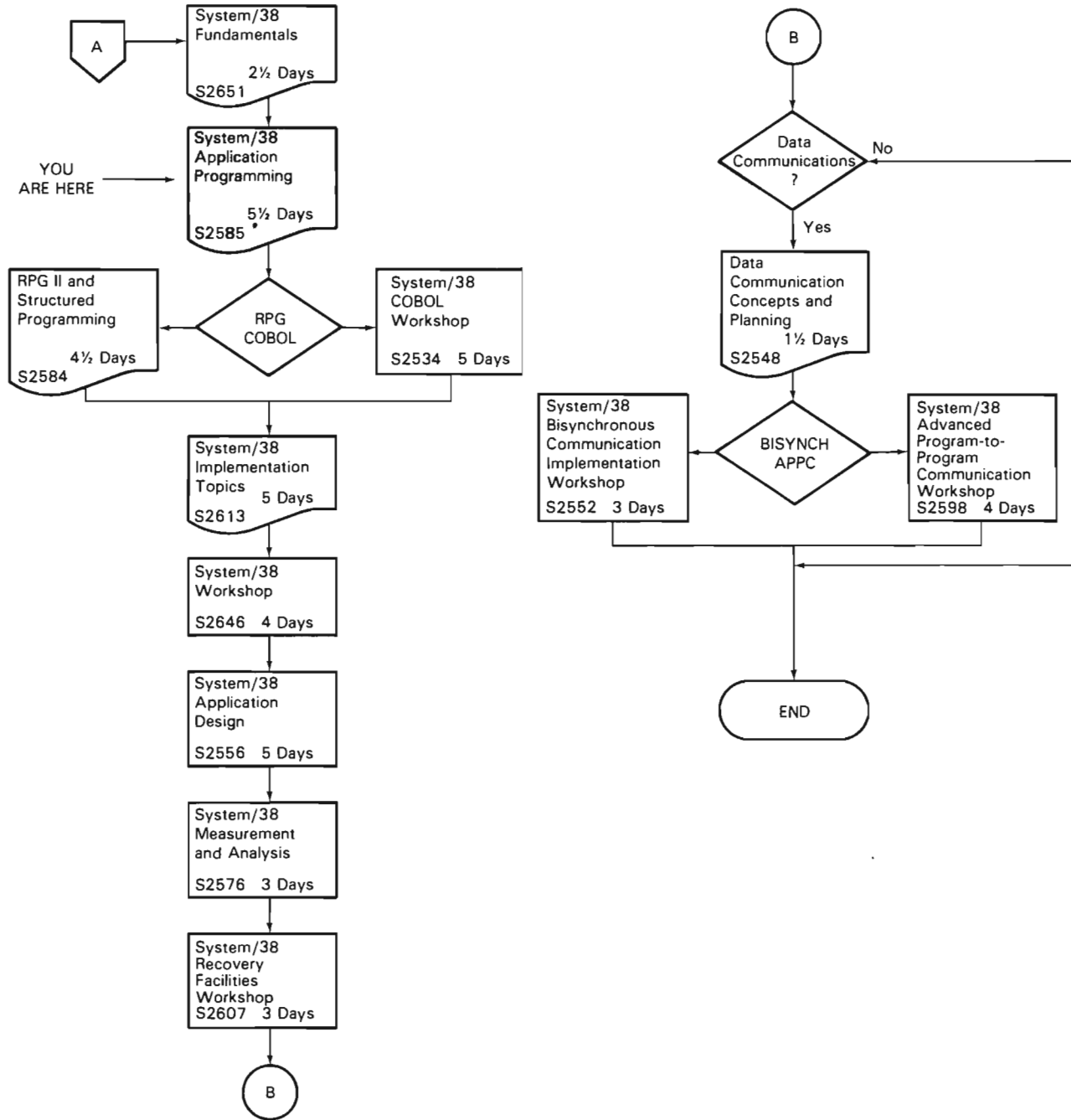
Legend

Self-Study or
Guided Learning
Center Course

Classroom
Course



**System/38 Curriculum
Programmer/Implementer
(experienced)**



Chapter 1. Course Introduction

This is where you start the course.

PURPOSE

In Module 1 you will learn about:

- The topics and objectives of this course
- The IBM System/38 reference library
- Using the IBM System/38.

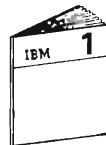
TIME ESTIMATE

1 hour, 15 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- State the purpose of this course—what it will prepare you to do.
- Describe the structure of this course—where it fits in the System/38 curriculum, what the components of the course are, and how they interact with each other.
- Perform fundamental programmer tasks on the System/38.



At this time, begin your study in the Module 1 text.

PROGRESS CHECK: UNIT 1



Now answer the following questions without reviewing the material in Module 1. Write your answers in the space provided under the question.

1. What is the purpose of the **System/38 Application Programming Course**?

code, Test and Execute Application programs
1. create data base files
2. enter data into data base files
3. create display files
4. create inquiry and update programs
5. create query application programs
6. create batch programs
A RPG II
B COBOL
7. use DEBUG facilities
8. use Control Language commands and create Control Language programs

2. Briefly describe the structure of this course—what are its components and how do they interact with one another?



When you are finished answering these questions, return to Module 1 and compare your answers with the ones given.

Chapter 2. System/38 Review

PURPOSE

The purpose of this module is to review some of the important facilities of CPF.

TIME ESTIMATE

1 hour, 15 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- List and briefly describe the components of the IBM System/38's data base.
- List the functions of the Control Program Facility.

TERMS

The terms listed below are reviewed in the module:

Physical File	Library List
Logical File	Interactive Job
Field Reference File	Batch Job
Library	User Profile
Display File	Subfile
Qualified Object Name	Select/Omit
SPOOL	Access Path
Control Language	



At this time, begin your study in the Module 2 text.

REVIEW TEST: MODULE 2

1. In the space below, list the components of a Physical File.

2. In the space below, list the components of a Logical File.

3. What is the purpose of a Field Reference File? How is it unique when compared to other physical files?

4. Name the coding form used to describe Data Base Files.

5. Name the four programs that are included in the Interactive Data Base Utilities (IDU). Briefly describe the purpose of each.

6. List at least three types of objects. Name the object used to locate other objects.

7. Name the coding form used to describe Display Files.

8. Briefly describe the purpose of a test library.

9. Briefly describe the value of a compiled Control Language program.

10. Briefly describe interactive processing and batch processing.

At this point, return to Module 2 to check your answers. Then read the Module Summary.

Chapter 3. System/38 Operation

PURPOSE

This module teaches you how to enter control language commands on the Command Entry Display and on the Programmer Menu. Also, you will learn to use prompting for entering command parameter values and how to use the System Request Menu to transfer between two interactive jobs.

TIME ESTIMATE

2 hours

MODULE OBJECTIVES

Upon successfully completing this module, you should be able to:

- List the considerations for choosing the Programmer Menu instead of the Command Entry Display—and vice-versa.
- Describe how you communicate your choice of displays to the IBM System/38.
- Execute Control Language commands using each of the displays.
- Describe at least two ways of selecting and entering a Control Language command using the prompting function.

TERMS

The following terms are defined or described in this module:

Command Entry Display

Programmer Menu

User Profile

Initial Program

Job Description

Password



At this time, begin your study in the Module 3 text.

MACHINE EXERCISE 1 – COMMAND ENTRY DISPLAY

This exercise gives you practice using commands entered on the Command Entry Display.

You are instructed to use command keys in the exercise. On some display stations a command key is activated by pressing the CMD key then the designated key on the top row. If you are using a display station with the command keys on a separate pad on the keyboard, press the indicated command key.

The notation used in this book for command keys is CMD n, where n is the number of the command key.

Also, the ENTER/REC ADV key is referred to in the exercises as the ENTER key.

1. Go to a display station attached to the System/38.
 - If the display station is not ready, power it on.
 - Sign on using the password M3E1A. As you may know the letters in a password can be entered in either uppercase or lowercase.

3. Take a few minutes to study the display. Then press ENTER to return to the Command Entry Display.
4. Next, use the prompting displays to copy a file from one library to another.
 - Press CMD 4, to get prompting.
 - On the Command Grouping Menu, select the option for Data Base File Menu (DBF) and press ENTER.
 - On the Data Base File Menu, select the option for Physical File Menu (PF) and press ENTER.
 - On the Physical File Menu, enter the option for Copy File (CPYF) and press ENTER.
 - On the Copy File (CPYF) prompt, enter only the names shown below, replacing xxx with your initials. To remove unwanted material and to advance to the next entry line after you enter a name, press FIELD EXIT.

Check your entries before you press ENTER.

```

Copy File (CPYF) Prompt      +++
Enter the following:
From file name:             FROMFILE  R  appvend
Library name:               glc
To file name or *LIST:     TOFILE   R  appvms1
Library name:               libxxx
From member or generic* name: FROMMBR   P  *FIRST
To member name or label name: TOMBR     P  *FIRST
Replace or add records:    MBROPT     P  *NONE
Create file (*NO *YES):    CRTFILE   P  *NO
Which records to print:   PRINT      *NONE

```

- You will see another CPYF prompt. Because of its many parameters, the CPYF command has several prompting displays. Make no changes to the remaining prompting displays—press ENTER as each appears.

Sometimes in using a multiple page prompt, such as the CPYF prompt, you may need to page back. You can page back using CMD 2.

10. You have completed doing functions discussed in Unit 2.

Sign off by entering the SIGNOFF command as shown below and pressing ENTER.

```
COMMAND ENTRY DISPLAY                               System: ATLEDDDEV
:: dspusrprf usrprf(m3ela)
:: COPYF FROMFILE(APPVEND.GLC) TOFILE(APPVMST.LIBXXX)
  Library LIBXXX not found.
  To-file APPVMST.LIBXXX not found.
  Copy command terminated due to error.
:: crtlib lib(libxxx)
:: dsplib lib(libxxx)
:: COPYF FROMFILE(APPVEND.GLC) TOFILE(APPVMST.LIBXXX) crtfile(*yes)
  Physical file APPVMST created in lib LIBXXX.
  Mbr APPVEND added to file APPVMST.LIBXXX.
  47 rcds copied from file APPVEND.GLC mbr/label APPVENDI. 0 rcds excluded.
:: dsplib lib(libxxx)
:: signoff
```

CF3 - Duplicate

CF4 - Prompt

CF7 - Low level messages

11. When the sign-on display returns, sign on using the password M3E1B.

This password presents the Programmer Menu.

```

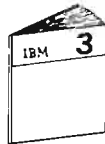
                                PROGRAMMER MENU                                SYSTEM: ATLEDDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program                program name
 5. Execute command            command
 6. Submit job                  (job name), (command)
 7. Display submitted jobs
 8. Edit source                 (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
10. Display Menu                (menu)
10. Sign off                    (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CEL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTE, QRY, RPG, RPT, TXT
Option:  ___  Parm:  _____  Type:  ___  Parm 2:  _____
Command:  _____

Text:  _____  Log requests: *YES
Src file:  _____  Src Lib: *LIBL  Obj Lib:  _____  Jobd: QBATCH
CF3--Command entry  CF4--Prompt (3,5 & 6 only)  CF6--DSPMSG
```


15. You will use the Programmer Menu again in the following exercises. For now, sign off by entering option 90 and pressing ENTER.

```
                                PROGRAMMER MENU                                SYSTEM: ATLEDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
90. Display Menu               (menu)
90. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSFF, LF, MXDF, PF, PLI,
      PRTF, QRY, RFG, RPT, TXT
Option: 90 Parm: _____ Type: _____ Parm 2: _____
Command: _____

Text: _____ Log requests: *YES
Src file: _____ Src lib: *LIBL Obj lib: _____ Jobd: QBATCH
CF3-Command entry CF4-Prompt (3,5 & 6 only) CF6-DSPMSG
```



Return to your study carrel and continue with the Unit Summary of Unit 2 in Module 3.

MACHINE EXERCISE 2 – PROGRAMMER MENU

This exercise gives you practice using commands entered from the Programmer Menu.

1. Go to a display station attached to the System/38.
Sign on with the password M3E1B.
2. When the Programmer Menu appears, enter option 5 and the Display User Profile (DSPUSRPRF) command in order to display the user profile named M3E1B. These entries are shown below.

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
80. Display Menu               (menu)
90. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RFG, RPT, TXT
Option: 5  Parm: _____ Type: _____ Parm 2: _____
Command: dspusrprf usrprf(m3e1b)
-----
Text: _____ Log requests: *YES
Src file: _____ Src lib: *LIBL Obj lib: _____ Job: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-ISPMSG
```

3. Take a few minutes to study the user profile information. When ready, press ENTER to return to the Programmer Menu.

4. Display the library list using the DSPLIBL command as shown below. After you have entered DSPLIBL, press FIELD EXIT to remove the unwanted material to the right. Then press ENTER to process the command.

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program                program name
 5. Execute command            command
 6. Submit job                  (job name), (command)
 7. Display submitted jobs
 8. Edit source                 (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
80. Display Menu                (menu)
90. Sign off                    (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 5  Farm: _____ Type: _____ Parm 2: _____
Command: dsplibl

Text: _____ Log requests: *YES
Src file: _____ Src lib: *LIBL Obj lib: _____ Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-ISPMSG

```

What you see displayed is a list of the libraries used for this interactive job. The libraries are searched in the top-to-bottom order listed. This library list is used whenever *LIBL is specified for the library name. As for the interactive job, it started when you signed on and will end when you sign off.

Note that your library name, the one you created in the last exercise, is not on the list.

Press ENTER to return to the Programmer Menu.

5. Back at the Programmer Menu, add your library name, LIBxxx, to the library list using the Add Library List Entry (ADDLIBLE) command shown below.

Alternatively, you could use the Replace Library List (RPLLIBL) command, but using this command you would have to enter all the library names on the list plus your library name.

Press ENTER to process the command.

Note the message at the bottom of the menu telling you the library list was changed.

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
80. Display Menu               (menu)
90. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, ISPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 5  Parm: _____ Type: _____ Parm 2: _____
Command: addlible lib(libxxx)
-----
Text: _____ Log requests: *YES
Src file: _____ Src lib: *LIBL Obj lib: _____ Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-ISPMMSG

```

Display the library list again to see the change to the library list. Note whether the library name was added as the first or last entry in the list. The default is first.

6. Next, you are to delete the file APPVMST. You will recall, this file was created in your library, LIBxxx, when you processed the CPYF command in the previous exercise.

Enter the Delete File (DLTF) command as shown below. Again, after you enter the command press FIELD EXIT to remove unwanted material to the right.

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
10. Display Menu               (menu)
19. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, ISPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 5  Parm: _____ Type: _____ Parm 2: _____
Command: dltf file(appvmst.libxxx)
-----
Text: _____ Log requests: *YES
Src file: _____ Src lib: *LIBL Obj lib: _____ Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-ISFMSG

```

The command will fail. The message at the bottom of the Programmer Menu tells you why.

Remember, for this exercise you signed on using M3E1B. The password and profile name are the same, so you are operating under user profile M3E1B. When you created the file, you signed on as M3E1A and were operating under the user profile M3E1A. The profile M3E1A created the file and has existence or deletion rights for the file; profile M3E1B does not have these rights.

CPF security prevents profile M3E1B from destroying an object created by M3E1A.

To delete the file you must operate under profile M3E1A.

To do this you will use a very useful feature of CPF. You will start a second interactive job at your display station.

8. On the System Request Menu, select option 1 to transfer to a secondary interactive job.

```
                SYSTEM REQUEST MENU                SYSTEM: ATLEDDV
Select one of the following:
 1. Transfer to secondary interactive job
 2. Cancel previous request
 3. Display current job
 4. Display messages (msgq)
 5. Send message      'msg' tomsgq
10. Invoke system request program at source system, if BGNPASTHR active
11. Transfer to source/target system, if BGNPASTHR active
90. Signoff          (*NOLIST *LIST)
Option: 1          CF4-Prompt (4,5 and 90)
Parameters: _____
_____
```


12. When the Programmer Menu appears you are returned to your first job (M3E1B). Sign off by entering option 90, as shown below.

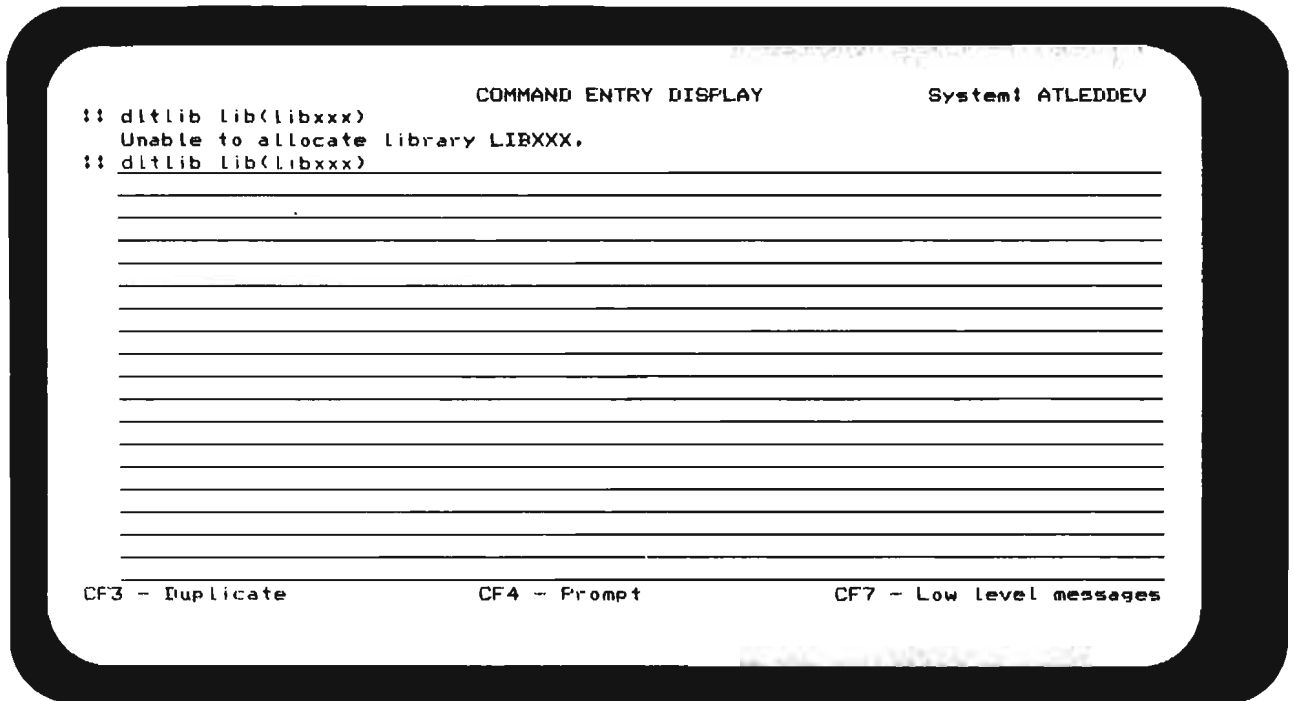
```

                                PROGRAMMER MENU                                SYSTEM: ATLEBDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program               program name
5. Execute command            command
6. Submit job                 (job name), (command)
7. Display submitted jobs
8. Edit source                (srcmbr), (type), (text)
9. Design display format      (srcmbr)
90. Display Menu              (menu)
    Sign off                  (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXIF, PF, PLI,
      PRIF, QRY, RPG, RPT, TXT
Option: 90 Parm: _____ Type: _____ Parm 2: _____
Command: _____

Text: _____ Log requests: *YES
Src file: _____ Src lib: *LIBL Obj lib: _____ Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-ISPMSG
```

When job M3E1B ends, you are automatically switched to the other interactive job (M3E1A).

13. Duplicate the last command by pressing CMD 3, then press ENTER.



14. When the library is deleted, enter the SIGNOFF command and press ENTER.



Return to your study carrel and continue with the unit summary in Module 3.



Chapter 4. Building the Data Base

PURPOSE

This module teaches you the uses of and how to code and create System/38 data base files.

TIME ESTIMATE

6 hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- List the three uses of a physical file.
- Using appropriate reference material and a field reference file, code the Data Description Specifications (DDS) for physical and logical files.
- Use the Source Entry Utility (SEU) to enter Data Description Specifications into a source file.
- Use Control Language commands to create physical and logical data base files.

TERMS

The following terms are defined or described in this module:

Source file	File level keyword
Format level keyword	Field level
Key field level	Select/Omit
Access Path	Access path sharing
Format sharing	Composite keys
Field reference file	

MATERIALS NEEDED

You will use the following reference manuals and coding form in this module. They are available in the Guided Learning Center Resource Library.

- *Control Language Reference Manual, SC21-7731*
- *Control Program Facility Reference Manual—Data Description Specifications, SC21-7806*
- *Source Entry Utility Reference Manual and User's Guide, SC21-7722*
- *Data Description Specifications Coding Forms, GX21-7754*



At this time, begin your study in the Module 4 text.

DESK EXERCISE 1 – CODING A PHYSICAL FILE

In this review exercise you are to code a physical file using the information on the Data File Work Sheet shown below.

You will find *Data Description Specification Coding Forms, GX21-7754*, in the Guided Learning Center Resource Library. You are encouraged to use the DDS Reference Manual (SC21-7806) in this exercise.

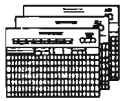
DATA FILE WORK SHEET						
APPLICATION:		PAYROLL		FILE NAME		PRPEMAST
PHYSICAL		<input checked="" type="checkbox"/>				
LOGICAL		<input type="checkbox"/>				
		IF LOGICAL, PHYSICAL files used:				

Page		1 of 1				
FORMAT NAME	FIELD NAME	LENGTH	TYPE	DEC.	KEY FLD. (SEQ.)	COMMENTS
EMPMAS						
	EMPNO	4	ZONED DECIMAL	0	1	CLOCK NUMBER
	EMPNAM	20	ALPHA			NAME
	EMPSTR	25	ALPHA			STREET ADDRESS
	EMPCTY	25	ALPHA			CITY & STATE
	EMPZIP	5	PACKED	0		ZIP CODE
	SALARY	7	ZONED DECIMAL	2		MONTHLY SALARY
	YDTAX	6	ZONED DECIMAL	2		TAXES WITHHELD Y.T.D.
	YDNET	7	PACKED	2		NET PAY YEAR-TO-DATE



When you are finished, return to Module 4 and compare your coding with our solution. Please do not look at the solution until you have completed the exercise.

DESK EXERCISE 2 – CODING A PHYSICAL FILE



For this exercise, you are to code the DDS for a physical file to be used as an Accounts Payable transaction file. The file name will be APTRNxx—which is translated as:

AP for Accounts Payable

P for Physical file

TRN for TRaNsactions

xx for the initials of your first and last names—to identify the programmer creating the file.

The record format is to be named PAYBLE (watch the spelling P-A-Y-B-L-E). The format includes all the fields shown on the Data File Work Sheet shown on the facing page.

All the fields used in this format are defined in a field reference file named APPFREF which is located in a library named GLC.

You may do either of the following:

- Code the DDS including all field definitions.
- Reference the field reference file for this data. ←

If you code the field definitions, have the CPF check that a valid status code is entered.

Whichever method you use, be sure the file has an arrival sequence access path.

DESK EXERCISE 4 — CODING A JOIN LOGICAL FILE

In this desk exercise you are to code a join logical file to get the following fields in the order shown from the Accounts Payable Transaction file APPTRN and the Accounts Payable Vendor file APPVEND.

Field Name	Description	Physical File
VNDNBR	Vendor Number	APPTRN
VNDNAM	Vendor Name	APPVEND
MERCH	Merchandise Amount	APPTRN
BALOWE	Balance Owed	APPVEND

Select only those records from the APPTRN file with a T in the STATUS field. T is the code for records to be paid.

The records are to be selected in vendor number sequence from the APPTRN file, which is the primary file.

The record formats for the two physical files are shown for your information.

APPTRN File Format																			
SEQNBR	*...	...	1	...	2	...	3	...	4	...	5	...	6	...	7	...	8	...	
100		A																	REF (APPFREF.GLC)
200		A				R	PAYBLE												
300		A					VNDNBR	R											
400		A					INUNBR	R											
500		A					DATREC	R											
600		A					MERCH	R											
700		A					NET	R											
800		A					STATUS	R											
900		A					DTPAID	R											
1000		A					CHECK#	R											
1100		A					DEPTNO	R											

APPVEND File Format

SEGNBR	*... .. 1 2 3 4 5 6 7 8 ...			
100	A			REF(AFFREF)
200	A	R	VENDMAST	TEXT('VENDMAST DB FORMAT')
300	A		UNINBR	R
400	A		UNINAM	R
500	A		UNIAID1	R
600	A		UNIAID2	R
700	A		UNIAID3	R
800	A		UNZIP	R
900	A		UNIAID	R
1000	A		UNIPHN	R
1100	A		UTRMFC	R
1200	A		UTRMIA	R
1300	A		UNICLS	R
1400	A		ACTCD	R
1500	A		UNISLS	R
1600	A		ICTMTD	R
1700	A		ICTYTD	R
1800	A		FCHMTD	R
1900	A		FCHYTD	R
2000	A		BALDWE	R
2100	A		SRVRTG	R
2200	A		DELRTG	R
2300	A		COMNTS	R
2400	A		SCHCOD	R

Use the DDS coding form GX21-7754.

You are encouraged to use reference material when questions arise in coding the specifications.

When you finish coding your join logical file, you will find a solution on the next page.

DESK EXERCISE 4 SOLUTION

Illustration of listing of source statements:

SEQNBR	*... .. 1 2 3 4 5 6 7 8 ...
100	A R TOBEPaid
200	A
300	A J
400	A
500	A UNDNBR
600	A UNDNAM
700	A MERCH
800	A BALOWE
900	A STATUS
1000	A K UNDNBR
1100	A S STATUS

The use of JOIN in this case is optional because there are only two files.

You could use COMP(EQ 'T') instead of VALUES.

Save your DDS coding. You will be using it in a machine exercise in the next study unit when you create your join logical file.

MACHINE EXERCISE 1 – CREATING FILES

In this exercise you are to create the two files you coded for Desk Exercises 2 and 3. In Desk Exercise 2 you coded the specifications for a physical file named APPTRNxx. In Desk Exercise 3 you coded the specifications for a logical file named APLTRNxx.

You should have a copy of the *IBM System/38 Source Entry Utility Reference Manual and User's Guide*, SC21-7722.

For your convenience in using SEU, the more common line commands are included in Appendix B of this manual.

Be aware that the two files you create here will be used in later exercises. Because of this, it is very important that your DDS code is essentially the same as one of the desk exercise solutions for the physical file and that both files are successfully created. Also, be sure to get your listings from the printer and keep them.

1. Go to a display station attached to a System/38.
 - Sign on using the password GLC.
 - Enter your first and last initials on the Student Exercise Menu and enter option 2 to get the Programmer Menu.

```
IBM SYSTEM/38 APPLICATION PROGRAMMING
      STUDENT EXERCISE MENU

      1 - COMMAND ENTRY DISPLAY
      2 - PROGRAMMER MENU

ENTER YOUR FIRST AND LAST INITIALS  --
ENTER YOUR CHOICE OF INTERFACE      --
```

Next, you will see a WELCOME display. Please read this display carefully and enter your name. When you press ENTER, your ID for the machine exercises, which are the initials you entered on the previous display, and your name are recorded for this course. From now on when you sign on with GLC and enter your ID on the Student Exercise Menu, you will see a WELCOME BACK display with your name on it.

2. On the Programmer Menu, enter option 8 and the other values shown below. Please take a little extra time and check your entries before pressing ENTER. Entries are used in the Edit Source (EDTSRC) command that is processed when you select option 8.

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                 (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
10. Display Menu               (menu)
90. Sign off                    (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSFF, LF, MXDF, PF, PLI,
      PRTF, GRV, RPG, RPT, TXT
Option: B  Parm: APFTRNXX  Type: PF  Parm 2: _____
Command: _____
-----
Text: _____  Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Job: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG

```

Note that as discussed in Unit 5 of the module text, if you leave the source file (Src file:) entry blank, the name defaults to QDDSSRC. This is the default when the type is a file.

3. Request prompting by entering the line command IP as shown below, and pressing ENTER.

```
EDIT      US Wt1   Mbr: APPTRNXX          Scan: _____
FMT PF    ....A.....T.Name+++++RLent+TDpB.....Functions+++++
IP        *****BEGINNING OF DATA*****
          *****END OF DATA*****
```

Enter I (insert), IFff (insert under format ff), IPff (insert with prompt ff) or A (copy after) at cursor. PF ff values are:
A*,PF,NC
For more help, press HELP.

4. Enter the DDS for the physical transaction file you coded in Desk Exercise 2 of this chapter.

You may find the following suggestions helpful:

- If you have comment lines with your DDS, enter them after you enter all your specifications using the line command I, or IPA* if you want the comment prompt.
 - After entering data in numeric fields on the prompt, press FIELD EXIT to ensure correct right adjustment of the data in the field.
5. When you have finished, exit SEU by pressing command key 1 (CMD 1).

6. Verify the EXIT display entries.

```
SEU                EXIT

Select one of the following:
 1. Exit without update
 2. Exit and update member
 3. Exit and create a new member
 4. Update member, no exit
 5. Create member, no exit
 6. Return to editing

Option:  2

For options 2 to 5:
Text (description):
  Resequene member (Y N):  Y  Start:  1.00  Increment:  1.00
MEMBER      FILE      LIBRARY
APPTRNxx   QDDSSRC   GLC

For options 1 to 3:
Return to member list (Y N):  N

For options 1 to 6:
Print source listing (Y N):  N

TOTAL RECORDS      ADDED      CHANGED      DELETED      SYNTAX ERRORS LEFT
      14              14
```

- Take option 2 – Exit and update the member. This is the only acceptable option for this exercise. If the option displayed is 6 you have syntax errors. Press ENTER to return to your source member and correct the errors.
- The member name – APPTRNxx
- The source file name – QDDSSRC
- The library name – GLC

Note: Your TOTAL RECORDS and ADDED values may not agree with those shown. The discrepancy could be a difference in the number of comment records.

7. If the entries are correct, exit SEU by pressing ENTER.

8. Back at the Programmer Menu, you are ready to create your physical file. To do this, enter option 3 and press ENTER. Leave the other entries as they were.

When you select option 3, object creation is done by submitting the create command as a batch job. You will see this message at the bottom of the display.

Alternatively, you could execute a create command interactively using option 5 and entering the command on the Command line; or, you could also press CMD 3 and enter the create command on the Command Entry Display.

9. Creating the physical file takes a minute or two. When you hear the buzzer or after two or three minutes, press CMD 6 to display messages. The last message listed tells you whether or not your file was created successfully.

In either case, get your listing from the printer.

Examine the listing for this message:

```
CPC7301 File APPTRNxx created in library GLC
```

If the message is at the end of the listing, be sure the library name is GLC. If it isn't, delete the file (DLTF) from the library it is in, enter GLC for the object library name on the Programmer Menu, and create your physical file again.

If your file was not created, get your listing from the printer and find what is wrong. Enter option 8 to get your source member back in order to correct the errors.

Remember, you cannot create your logical file until you have successfully created your physical file.

When your file is successfully created, proceed to item 10 to create your logical file.

In the following steps, you enter the DDS for and create your logical transaction file.

10. At the Programmer Menu, enter option 8, your logical file name, and LF for the type. Leave the entries on the bottom line as they are. Again, take the time to check your entries before you press ENTER.
11. Enter the DDS source for your logical transaction file as you did with the physical file. Not that this time, when you request prompting with IP, the prompt format is LF.
12. When you finish entering your specifications, exit with CMD 1. The option must be 2 on the EXIT display. If not, return to the source member and correct your errors.
13. Create the logical file using option 3.

When you hear the buzzer or after a few minutes, press CMD 6 to display the messages. If your file was not created, get your listing from the printer and correct your source statements.

14. After successful creation of your logical file, get your listing or listings from the printer.
15. Press CMD 6 to display messages. When the messages are displayed press CMD 8 to remove them as a courtesy to the next user of the display station.
16. Sign off by entering 90 and blanking out the Parm field. A blank Parm field results in no job log being printed, the same as if you had entered *NOLIST in the Parm field.



When you have completed the exercise, return to "Review of Machine Exercise 1" in the Module 4 text.

MACHINE EXERCISE 2 – CREATING A JOIN LOGICAL FILE

You are to enter the specifications you coded for a join logical file and then create the file. To do so, follow these steps.

1. Go to a System/38 display station and sign on with the password GLC. Select the Programmer Menu.
2. Enter option 8 and the following on the Programmer Menu:

Parm: APJL4xx This is the name of your source member. Replace xx with your initials.

Type: LF
Src file: QDDSSRC (Optional entry)
Src lib: GLC
Obj lib: GLC
Jobd: QBATCH

3. Enter the source you coded in Desk Exercise 4. Be sure option 2 appears on the SEU EXIT prompt.
4. On returning to the Programmer Menu enter option 3 to create the file.

Get your compilation listing from the printer.

If the file was not created, find and correct the errors using SEU (Edit Source). Then, create the file again.

When the file is created successfully, you have completed the exercise.

5. As a courtesy to other students using this display station, please display messages with CMD 6, then press CMD 8 to remove your messages.
6. Enter 90 and blank out the Parm field to sign off. Please get your listing from the printer.



Return to your study carrel and continue your studies with the summary of Unit 5.

MODULE SUMMARY

Data base data management routines allow you to create and process physical and logical files.

Physical data base files can be used as:

- Field reference files
- Source files
- Data files

Logical files provide the flexibility to meet the various needs of your applications. The logical file's format can be the same as a based-on physical file format or it can be selected fields of a physical file format. If more than one physical file is specified for a logical file format, any field specified must exist in all the physical files.

Normally, select/omit is used in building and maintaining an access path, whether it is a keyed sequence or arrival sequence access path. However, when DYNST is specified, select/omit is done when the file is read and over the whole file.

Whenever possible, a logical file shares the keyed sequence access path of an existing physical or logical file.

Both physical and logical files are described to the System/38 using Data Description Specifications (DDS).

Once the DDS are coded, you can use the Source Entry Utility (SEU) to enter the DDS directly into a source file.

You use the create file commands to create the files based on the DDS in the source file.

Once the file is built, other commands must be used to place data records in the files.

You can give data files, source files, and other objects qualified names that do the following:

- Help the system find them more quickly
- Specify the exact library to which a newly created object should be assigned

The job's library list is used to locate objects when a qualified name is not specified.

A library can be added to the library list with the ADDLIB (add library list entry) command.

An entire library list can be changed using the RPLLIBL (replace library list) command.

A library list can be displayed using the DSPLIBL (display library list) command.

Chapter 5. Introduction to Interactive Processing

PURPOSE

The purposes of this module are twofold:

- To introduce and define the terminology associated with interactive processing
- To describe System/38 program products that support interactive processing

TIME ESTIMATE

30 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- State the factor common to all interactive programs.
- Define an interactive "job."
- List two or more IBM System/38 tools that can create interactive programs.

TERMS

The following terms are defined or described in this module:

Job
Data Entry
File Maintenance
Execution Priority
Device Files
Interactive Subsystem
Inquiry
Time Slice



At this time, begin your study in the Module 5 text.

Chapter 6. Data File Utility

PURPOSE

The purpose of Module 6 is to teach you how to use the Data File Utility (DFU).

As you recall from Module 4, Building the Data Base, creating data base files allowed only the structure of the files to be built. The files were created without data. At that time, your files were nothing more than shells waiting to be filled. Also it was stated that one way to add records to your files was to use DFU.

Without writing programs, you can use DFU to create applications to:

- Add records to a file.
- Update file records.
- Delete file records.
- Display contents of a record.

TIME ESTIMATE

2½ hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

1. Select the appropriate Control Language command(s) to use the Data File Utility (DFU) program product.
2. Recognize the various prompt displays of DFU and enter the correct information according to given application requirements.
3. Use DFU to enter several supplied data records, display data records through inquiry, and change data records as part of file maintenance.

MATERIALS NEEDED

For this module, you will need a copy of the *Data File Utility Reference Manual and User's Guide*, SC21-7714.



At this time, begin your study in the Module 6 text.

MACHINE EXERCISE 1 – CREATING A DFU APPLICATION

In this exercise, you are to create and run a DFU application to add records to your transaction logical file APLTRNxx. You created this file and its associated physical file APPTRNxx in the Module 4 exercises. You are to use the logical file because DFU requires a file with a keyed-sequence access path.

APLTRNxx used the record format PAYBLE of the physical file APPTRNxx. The record formats of both files are shown below for your convenience.

APPTRNxx																		
SEQNBR*	...	1	...	2	...	3	...	4	...	5	...	6	...	7	...	8	...	
100	A																	REF (APPFREF.GLC)
200	A			R	PAYBLE													
300	A				UNDNBR			R										
400	A				INVNBR			R										
500	A				DATREC			R										
600	A				MERCH			R										
700	A				NET			R										
800	A				STATUS			R										
900	A				DTPAID			R										
1000	A				CHECK			R										
1100	A				DEPTNO			R										

APLTRNxx																		
SEQNBR*	...	1	...	2	...	3	...	4	...	5	...	6	...	7	...	8	...	
100	A	LOGICAL	FILE	APLTRNXX														
200	A			R	PAYBLE													PF FILE (APPTRNXX)
300	A			K	UNDNBR													
400	A			K	INVNBR													

You are to select the following listed fields for this DFU application.

VNDRNBR	Vendor number
INVNBR	Invoice number
DATREC	Date received
MERCH	Merchandise amount
STATUS	Status code; E for each new record
DEPTNO	Department charged

For each new record added to the file the status code is to be E. By selecting extended field definition, column XDEF, on the BASIC FIELD DEFINITION PROMPT display, you can have DFU automatically add the E with each record added to the file.

As you may know, the fields you do not select will contain blanks for a character field and zeros for a numeric field when they are written to the physical file.

A display-by-display solution follows the instructions for this exercise. It is put there for two purposes. One, if you get hopelessly bogged down in doing the exercise, you can use it to help you do the exercise. Two, after you successfully do the exercise, you may want to compare the way you did it with the course solution.

Instructions

Please read all steps before you do this exercise.

1. Go to a display station attached to a System/38 and sign on using the password GLC.
2. Select Option 2 for the Programmer Menu on the Student Exercise Menu.
3. When the Programmer Menu appears, enter Option 1 and press ENTER to get the first DFU Menu.

Try to do this exercise on your own. If you are unsure of what to enter on a prompt display, first use the HELP text. If that fails, use the DFU reference manual (SC21-7714) or the Module 6 student text. In any event, take the time to make this exercise a learning experience. As a last resort, you will find a solution to this exercise on following pages.

Please observe the following:

- Name the DFU application APD1xx, where xx are your initials.
- Be sure the object library name is GLC.
- Create the DFU application in batch using the job description QBATCH.GLC.
- Remember to specify your logical file APLTRNxx.

One last precautionary note before you proceed, DFU fills the values on some of the early prompt displays with the values of the previous user. Be sure you check every entry to see that it reflects your specifications.

Remember, you can always go back and change a value on a previous prompt display using CMD 2.

4. After you successfully create your application, run it.

If the menu displayed does not include an option to run a DFU application, press CMD 2 until you get a previous prompt from which you can run your application.

When the application display appears, look at the upper right hand corner and make sure it is in ADD mode (CMD 9).

Enter the following transactions.

Vendor No.	Invoice No.	Date Rec'd	Merchandise Amount	Dept. No.
00714	A1005	08 21 83	575000	010
00221	156	04 10 83	750075	012
05075	JN-825	06 08 83	56000	010
00714	A0875	05 16 83	80000	220
00221	782	08 10 83	60000	102
10504	2020	08 22 83	3500	010

5. After entering all the data, press CMD 1 to exit.

Press ENTER to exit from the EXIT APPLICATION prompt.

You may need to press CMD 1 several times to get back to the Programmer Menu.

6. List your files using the following Copy File commands:

```
CPYF APTRNxx TOFILE(*LIST) PRTFMT(*HEX)
```

```
CPYF APLTRNxx TOFILE(*LIST) PRTFMT(*HEX)
```

7. Get the two listings and compare them. Note the arrival sequence of the physical file in contrast to the keyed sequence of the logical file.
8. Remove your messages by pressing CMD 6, then CMD 8.

Sign off, be sure to get your listing from the printer, and return to your study carrel.



Continue your study of DFU with the "Unit Summary" of Unit 4 in Module 6.

SOLUTION FOR MACHINE EXERCISE 1

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
10. Display Menu              (menu)
10. Sign off                  (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSFF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 1  Parm: _____  Type: _____  Parm 2: _____
Command: _____

Text: _____  Log requests: *YES
Src file: _____  Src lib: *LIBL  Obj lib: _____  Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG

```

```

                                DFU MENU
Select one of the following:
 1. Create, change, or delete an application
 2. Execute an application
 3. Manage existing applications

Option: 1

Press HELP for instructions.  Press CF1 to exit.

```

SOLUTION FOR MACHINE EXERCISE 1

DFU CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about an application
2. Create a new application
3. Change an existing application
4. Delete an existing application
5. Display status of applications submitted

Option: 2

Application name: APD1XX (*-Application selection list)

Library name: GLC

HELP-Help CF2-Previous display

DFU CREATE PROMPT

Application name: APD1XX Library: GLC

Enter information for new application:

Description: to add records to your transaction file

File name: APLTRNXX (*-File selection list)

Library name: GLC

HELP-Help CF2-Previous display CF3-File information

SOLUTION FOR MACHINE EXERCISE 1

```
APPLICATION CONTROL PROMPT
Application name:  APD1XX      Library:  GLC
File name:        APLTRNXX    Library:  GLC

Place an X next to display size:
Primary display size:  X 24x80   _ 12x80   _ 16x64

Take defaults after field selection:  N (Y-Yes  N-No)
```

HELP=Help CF2=Previous display

RECORD FORMAT REVIEW PROMPT FOR FILE APLTRNXX

For each record format to be used, enter R to review the fields, A to select all fields, or E to enter the fields later:

```
RECORD FMT  DESCRIPTION
R  PAYBLE
```

SOLUTION FOR MACHINE EXERCISE 1

FIELD REVIEW PROMPT FOR RECORD FORMAT PAYBLE

Enter an X next to each field to be used or enter *ALL: _____

X	ATTR	FIELD NAME	LENGTH	TYPE	DESCRIPTION
X	K	VNDNBR	5,0	P	VENDOR ID NUMBER
X	K	INUNBR	8	A	VENDORS INVOICE AMOUNT
X		DATREC	6,0	P	DATE RECEIVED
X		MERCH	7,2	P	MERCHANDISE AMOUNT
—		NET	7,2	P	NET AMOUNT PAID
X		STATUS	1	A	E=ENTERED T=TO PAY D=DELETE P=PAID
—		DTPAID	6,0	P	DATE PAID
—		CHECK#	6,0	P	CHECK NUMBER
X		DEPTNO	3,0	P	DEPARTMENT CHARGED

HELP--Help CF2--Previous display CF13--Status

ENTRY FORMAT DEFINITION PROMPT

For record format name PAYBLE enter:
Entry format identifier: AA
Entry format description: _____
Display one field per line: *NO
Display multiple records: *NO
Redisplay changes: *NO
Chain to entry format ID: _____

SOLUTION FOR MACHINE EXERCISE 1

BASIC FIELD DEFINITION PROMPT FOR RECORD PAYBLE

```
Define format ID AA - PAYBLE
FIELD NAME ORDER INPUT DISPLAY VERIFY XDEF XVAL
VNINBR _____ 1.0 X X - - -
INVNBR _____ 2.0 X X - - -
DAIREC _____ 3.0 X X - - -
MERCH _____ 4.0 X X - - -
STATUS _____ 5.0 X X - X -
DEPINQ _____ 6.0 X X - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
_____ - - - - -
```

EXTENDED FIELD DEFINITION PROMPT FOR FIELD STATUS

Enter the following character field attributes:

```
Label: STATUS
OF
RECORD

Default spacing: *YES If *NO, enter number of spaces: 1
Newline: *NO Label location: *ABOVE
Lowercase entry: *NO Alpha characters only: *NO
Initial value: E
Autodup: *NO
Field exit required: *YES
```

SOLUTION FOR MACHINE EXERCISE 1

ENTRY FORMAT DEFINITION PROMPT

For record format name PAYBLE enter:
Entry format identifier: _____
Entry format description: _____
Display one field per line: *NO
Display multiple records: *NO
Redisplay changes: *NO
Chain to entry format ID: _____

AUDIT CONTROL PROMPT

Enter the following:
Add/delete records allowed: *YES
Change records allowed: *YES
Key changes allowed: *YES
Print additions: *NO
Print changes: *NO
Print deletions: *NO
Data error option
(*NOTIFY *DISPLAY *CHANGE): *NOTIFY

SOLUTION FOR MACHINE EXERCISE 1

EXIT APPLICATION DEFINITION MENU

Select one of the following:

1. Restart definition
2. Modify definition
3. Delete definition
4. Save definition
5. Create application interactively
6. Create application in batch

Option: 6

Display fmt 'AA' rcd fmt PAYBLE too large for console.

APPLICATION CREATION PROMPT

Enter the following:

Application name:	<u>AFD1XX</u>
Library name:	<u>GLC</u>
Public authority:	<u>1</u> (1-Normal 2-None 3-ALL)
Adopt owner's user profile:	<u>N</u> (Y-Yes N-No)
Source listing:	<u>N</u> (Y-Yes N-No)
Dump internal data areas:	<u>N</u> (Y-Yes N-No)
Generated code listing:	<u>N</u> (Y-Yes N-No)
Job description name:	<u>QBATCH</u> (*-Job description list)
Library name:	<u>GLC</u>

Display fmt 'AA' rcd fmt PAYBLE too large for console.

SOLUTION FOR MACHINE EXERCISE 1

DFU CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about an application
2. Create a new application
3. Change an existing application
4. Delete an existing application
5. Display status of applications submitted

Option: —

Application name: AFD1XX (*-Application selection list)

Library name: GLC

HELP--Help CF2--Previous display
Application definition saved in program AFD1XX.GLC.

DFU CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about an application
2. Create a new application
3. Change an existing application
4. Delete an existing application
5. Display status of applications submitted

Option: —

Application name: AFD1XX (*-Application selection list)

Library name: GLC

HELP--Help CF2--Previous display
Job AFD1XX.GLC.004913 submitted for application AFD1XX.GLC.

SOLUTION FOR MACHINE EXERCISE 1

DFU MENU

Select one of the following:

1. Create, change, or delete an application
2. Execute an application
3. Manage existing applications

Option: 2

Press HELP for instructions. Press CF1 to exit.

DFU EXECUTION MENU

Select one of the following and enter values below:

1. Display information about an application
2. Change data (add, delete, change, or verify records)
3. Display data (display data base records)

Option: 2

Application name: APD1XX (*-Application selection list)
Library name: GLC

HELP-Help CF2-Previous display

SOLUTION FOR MACHINE EXERCISE 1

```
                                DFU CHANGE DATA PROMPT
Application name:  AFD1XX          Library:  GLC

Enter application execution information:
Verify records:   N              (Y--Yes  N--No)
Run identifier:
File name:       APLTRNXX      (*--File selection list)
Library name:    GLC
Member name:     _____ (*--List Blank--First member)
```

HELP--Help CF2--Previous display CF3--File information

```
AA PAYBLE                                AFD1XX                                CHANGE
VENDOR      VENDOR
NUMBER      INVOICE
            NUMBER
_____    _____
```

SOLUTION FOR MACHINE EXERCISE 1

AA PAYBLE

AFD1XX

ADD

VENDOR
NUMBER

VENDOR
INVOICE
NUMBER

DATE
RECEIVED

MERCHANDISE
AMOUNT

STATUS
OF
RECORD

DEPARTMENT
NUMBER

E

AA PAYBLE

AFD1XX

ADD

VENDOR
NUMBER

VENDOR
INVOICE
NUMBER

DATE
RECEIVED

MERCHANDISE
AMOUNT

STATUS
OF
RECORD

DEPARTMENT
NUMBER

00714

A1005

082183

575000

E

010

SOLUTION FOR MACHINE EXERCISE 1

```
                                EXIT APPLICATION PROMPT

Enter the following:
Exit application:      Y (Y-Yes  N-No)

                                ADDED      DELETED      CHANGED      VERIFIED
                                6          0          0          0
```

```
                                DFU CHANGE DATA PROMPT

Application name:      APD1XX      Library:      GLC

Enter application execution information:
Verify records:      N          (Y-Yes  N-No)
Run identifier:
File name:      APLTRNXX      (*-File selection list)
Library name:      GLC
Member name:      _____ (*-List  Blank-First member)

HELP-Help  CF2-Previous display  CF3-File information
```

SOLUTION FOR MACHINE EXERCISE 1

DFU EXECUTION MENU

Select one of the following and enter values below:

1. Display information about an application
2. Change data (add, delete, change, or verify records)
3. Display data (display data base records)

Option: _

Application name: APD1XX (*-Application selection list)
Library name: GLC

HELP-Help CF2-Previous display

DFU MENU

Select one of the following:

1. Create, change, or delete an application
2. Execute an application
3. Manage existing applications

Option: _

Press HELP for instructions. Press CF1 to exit.

SOLUTION FOR MACHINE EXERCISE 2

DFU CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about an application
2. Create a new application
3. Change an existing application
4. Delete an existing application
5. Display status of applications submitted

Option: 3

Application name: APD1XX (M-Application selection list)
Library name: GLC

HELP-Help CF2-Previous display

DFU MODIFY MENU

Select one of the following:

1. Entry format definition
2. Field definition
3. Audit control parameters

Option:
Entry format identifier: 1

SOLUTION FOR MACHINE EXERCISE 2

ENTRY FORMAT DEFINITION PROMPT

For record format name FAYBLE enter:

Entry format identifier: AA

Entry format description: PAYBLE

Display one field per line: *NO

Display multiple records: *YES ◀

Redisplay changes: *NO

Chain to entry format ID: —

DFU CHANGE DATA PROMPT

Application name: AFD1XX Library: GLC

Enter application execution information:

Verify records: N (Y--Yes N--No)

Run identifier: —

File name: APLTRNXX (*--File selection list)

Library name: GLC

Member name: — (*--List Blank--First member)

HELP--Help CF2--Previous display CF3--File information

SOLUTION FOR MACHINE EXERCISE 2

AA PAYBLE		APD1XX		ADD	
VENDOR NUMBER	VENDOR INVOICE NUMBER	DATE RECEIVED	MERCHANDISE AMOUNT	STATUS OF RECORD	DEPARTMENT NUMBER
00221	188	082483	5000	E	010
10504	2025	083183	7500	E	220
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----
-----	-----	-----	-----	E	-----

AA PAYBLE		APD1XX		ADD	
VENDOR NUMBER	VENDOR INVOICE NUMBER	DATE RECEIVED	MERCHANDISE AMOUNT	STATUS OF RECORD	DEPARTMENT NUMBER
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----
10504	2025	-----	-----	E	-----

MACHINE EXERCISE 2 – CHANGING A DFU APPLICATION (OPTIONAL)

In this exercise you are to change your DFU application (APD1xx) of Exercise 1 to allow for multiple data entry records per display.

You make the change for this exercise on the ENTRY FORMAT DEFINITION PROMPT. Although the change is minor, the result is significant.

A solution is given following the instructions. As before, to get the most from the exercise, please look at the solution only if you get stuck or want to look at the course solution after you successfully do the exercise. The solution highlights only the DFU displays that you change.

Please read all the steps before you start doing the exercise.

Instructions

1. Sign on using the password GLC.
Select the Programmer Menu.
2. Enter option 1 on the Programmer Menu and press ENTER.
Check the prompt entries as you go through the DFU prompts to make sure they represent your entries.
3. When the ENTRY FORMAT DEFINITION PROMPT display appears, change "Display Multiple Records" to *YES.
Press ENTER, then CMD 1 to indicate you are finished making changes.
4. Create the application in batch using the job description QBATCH.GLC.

5. When you are notified that the application already exists, press CMD 11 to delete the existing application.
6. Run your modified DFU application.
7. When your entry display appears, the mode in the upper right hand corner will be CHANGE. Press CMD 9 to change to ADD mode.
8. Enter the following two records.

Vendor No.	Invoice No.	Date Rec'd	Merchandise Amount	Dept. No.
00221	188	08 24 83	5000	010
10504	2025	08 31 83	7500	220

9. Exit the DFU application with CMD 1.
10. At the Programmer Menu execute the following command to see the records you added:
 CPYF APLTRNxx TOFILE(*LIST) PRTFMT(*HEX)
11. When you get the copy file completion message, press CMD 6 then CMD 8 to remove any messages.
 Sign off and get your listings from the printer.



Return to your study carrel and continue your study with the "Unit Summary" of Unit 5 in Module 6.

SOLUTION FOR MACHINE EXERCISE 2

```
                                EXIT APPLICATION PROMPT
Enter the following:
Exit application:      Y (Y-Yes  N-No)

                        ADDED      DELETED      CHANGED      VERIFIED
                          2          0            0            0
```

MODULE CHECK

You may write your answers in the space provided.

1. What are the four functions of DFU?

2. What are the data base file requirements of DFU?

3. Briefly describe what occurs when the "Fast Path" method of DFU is used?

4. What Control Language command is reserved for Data Processing professionals because it can be used for all functions of DFU?

5. What Control Language commands can be used by user departments to do the following:

- Define a DFU application?

- Create a DFU application?

- Change a DFU application?

- Display data using a DFU application?

- Add, change or delete records in a file using a DFU application?

- Delete a DFU application that is no longer needed?



Review your answers with "Answers to Module Check" in Unit 7 of Module 6.

Chapter 7. Display Device Files

PURPOSE

Many of your applications will require interactive programs that go beyond the functions of the Data File Utility. Whenever you write such programs, you must also create display files.

This module teaches the following:

- Various uses of display files
- DDS coding for each of the uses
- The Control Language command used to create display files.

TIME ESTIMATE

4 hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- List the two general uses of display files.
- Describe the purpose of a subfile.
- Name the three levels of keyword entries on the Data Description Specification (DDS) for display files.
- Given a list of display attribute codes, describe the purpose of each.
- Name the Control Language command used to create a display file.
- Code the DDS for two display files to meet supplied requirements.
- Use SEU to place the DDS in source file members.
- Use the Control Language command to create the display files.
- Use override commands to test your display files with existing programs.

TERMS

The following terms are defined or described in this module text:

- Two dimensional formatting
- Field attributes
- Attribute bytes
- Function key assignments
- Error message function

MATERIALS NEEDED

For this module, you will need:

- CPF DDS Reference Manual (SC21-7806)
- SEU Reference Manual (SC21-7722)
- DDS Coding sheets (GX21-7754)



At this time, begin your study of Module 7.

DESK EXERCISE 1 – CODING A DISPLAY FILE

For this exercise, you are asked to code the DDS for a display file that will be used to enter Accounts Payable invoices. The format is similar to the display file format created by DFU in Module 6.

The Display Screen Layout Sheet on the facing page illustrates the format of the display file you are to code.

The following points will help you write the DDS code.

- The Field Reference File APPREF.GLC can be referenced to reduce coding. (See Appendix A of this Student Materials Book for field names.)
- The record format name **MUST** be APENTR. The supplied program you will use to test your display file specifies a format named APENTR when it processes the display file.
- If an incorrect vendor number is entered, the program sends indicator 50 to the display file. Therefore, the display should include an error message that is displayed when indicator 50 is "On."

The ERRMSG keyword should be coded immediately following VNDNBR so that VNDNBR will be displayed in reverse image.

The error message should be:

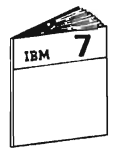
INVALID VENDOR NUMBER.

- Command Attention Key 1 is used to turn on indicator 99 to indicate end of job to the program.

Display Screen Layout Sheet

COLUMN

ROW	1-10		11-20		21-30		31-40		41-50		51-60		61-70		71-80					
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
01																				
02																				
03																				
04																				
05																				
06																				
07																				
08																				
09																				
10																				
11																				
12																				
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14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				



When you are finished, compare your coding to the solution in Module 7.

MACHINE EXERCISE 1 – CREATING A DISPLAY FILE

As you learned in the Module 7 text, this machine exercise involves a number of steps. When you sign on the System/38, you will:

- Use SEU to enter the DDS for the Display File.
- Create the Display File by executing the CRTDSPF command.
- Execute the OVRDSPF command so that an existing program can be used to test your Display File.
- Run the program and add records to the Accounts Payable transaction file via your Display File.

Read all of the instructions carefully before beginning the exercise.

Instructions

1. Go to a display station attached to a System/38 and sign on using the password GLCM7.
2. Select option 2 on the Student Exercise Menu to get the Programmer Menu.
3. On the Programmer Menu select option 8 to use SEU to enter your source code for your display file and enter the following parameters:

Parm: APDENTxx where xx are your first and last initials.

Type: DSPF

Src file: QDDSSRC (Optional)

Src lib: GLC

Obj lib: GLC

Jobd: APGLC

Double check your entries before pressing ENTER.

4. After you enter your source code and return to the Programmer Menu, select option 3 to create your display file.

Press ENTER.

The CRTDSPF command is submitted as a job to the batch subsystem.

5. Select option 7 to display submitted jobs.

Press ENTER.

6. On the display you will see an entry for your job APDENTxx. Type a 2 to the left of your job name and press ENTER.

A display will appear showing the status of the spooled printer files.

Note that a file called QPDDSSRC which contains your DDS source listing is ready to print from an output queue (OUTQ) named NMDGLC. No printer is started to this output queue.

The Guided Learning Center printer has been started for the output queue named GLCOUTQ. Therefore, you need to change the OUTQ value to GLCOUTQ in order to move your output file to this output queue and print your listing.

7. Type a 3 to the left of the QPDDSSRC file to indicate you want to get the Change Spooled File Attribute (CHGSPLFA) command prompt.

Press ENTER.

8. Find the OUTQ parameter and change NMDGLC to GLCOUTQ. Also, change the library name on the next line from GLC to *LIBL. GLCOUTQ is in the QGPL library and QGPL is in the user library list.

Press ENTER.

9. When the Spooled Output Files display appears, note the changed OUTQ value for the QDDSSRC file.

Press ENTER to return to the Submitted Jobs display.

10. Press ENTER to return to the Programmer Menu.

11. By now, a completion message should have been issued to let you know that your submitted job is finished. Press CMD 6 to see the messages. If your job completed normally, go to the next step.

Otherwise, get your listing from the printer, find your errors, and go back to step 3 and use SEU to make your corrections.

12. At this point you are ready to execute two override commands to override the display file and data file names in the program APR21 you will use.

Select option 5, then enter and execute the following commands:

```
OVRDSPF FILE(APDENT) TOFILE(APDENTxx.GLC)
```

```
OVRDBF FILE(APLTRN) TOFILE(APLTRNxx.GLC)
```

13. Run the program by selecting option 4 and entering the program named APR21 for the Parm: value.

If the data entry display does not appear or appears but is not correct, see the following diagnostic tips. One of them might explain your error.

- If the cursor is in the upper left corner and the input fields are not underlined, you either did not specify the entry fields as input fields or you put the I in the wrong column on your DDS. Make sure the I is in column 38.
- If a display does not appear you may have a level check error. This can occur if certain specifications in your display file format are different from those in the format of the APDENT file that you overrode. Compare your DDS to the solution in the Module 7 text. To see what specifications are used for level checking with a display file, read the section "Level Identifiers" in Chapter 7 of the CPF Programmer's Guide (SC21-7730).
- If you get the "Invalid Vendor Number" message for every record, you may not have coded ERRMSG to turn off its indicator. Check to see if you coded the indicator used for ERRMSG after the message to have CPF turn off the indicator.

- Edit codes are not valid for input fields.

14. Enter the following transaction records.

Vendor No.	Invoice No.	Date Rec'd	Merchandise Amount	Dept. No.
00010	79021	08 24 83	50.00	010
00221	800-A	08 31 83	75.00	151
62478	123	07 25 83	5.00	220

If your display file works properly, the last entry should present the "Invalid Vendor Number" message. Press the RESET key to unlock the keyboard to continue.

15. Press CMD 1 to end the job.
16. Back at the Programmer Menu press CMD 6 to display your messages, then use CMD 8 to delete them.
17. Sign off and be sure to get your listings from the printer.



Return to your study carrel and continue your study of display files at "Review of Machine Exercise 1" in Unit 3 of Module 7.

DESK EXERCISE 2 – CODING A SUBFILE

For this exercise, you are asked to code the DDS for the display file on the facing page. Note that the display file, used in this vendor search program, includes a subfile.

Observe the following when you write the DDS code:

- Use the Field Reference File (APPFREF.GLC) to reduce coding. (See Appendix A of this Student Materials Book for a listing of this file.)
- The subfile record format must be named SCHDTA to agree with the existing program's code.
- The subfile control record format must be named SCHCTL to agree with the existing program's code.
- The field name for the search characters must be CODE1 to agree with the existing program.
- The program uses the following indicators to control the subfile:

Indicator	Purpose
76	Display the subfile control record
75	Display the subfile record
77	Clear the subfile
99	Indicates End of Job when CMD 1 is pressed

Special Note: Normally, subfile keywords may be coded in any sequence. However, the display file you are coding will be used by an existing program through the OVRDSPF command. Therefore, to meet the requirements resulting from a display file override, be sure to specify your subfile keywords with their indicators in the following sequence.

Indicator	Keyword
76	SFLDSPCTL
75	SFLDSP
77	SFLCLR

Display Screen Layout Sheet										COLUMN															
1-10		11-20		21-30		31-40		41-50		51-60		61-70		71-80											
1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0						
01																									
02	VENDOR SEARCH																								
03																									
04	ENTER CHARACTERS FOR SEARCH										XXXXXXXXXXXX														
05																									
06	PRESS ENTER FOR SEARCH																								
07																									
08	COMMAND KEY J FOR END OF JOB																								
09																									
10	VENDOR NAME					SALESPERSON					ZIP					NUMBER									
11																									
12	X					X					X					XXXXX					XXXXX				
13																									
14																									
15																									
16																									
17																									
18																									
19																									
20																									
21	X					X					X					XXXXX					XXXXX				
22																									
23																									
24																									
1-10		11-20		21-30		31-40		41-50		51-60		61-70		71-80											
1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0						

- The subfile size should be 50.
- The subfile page should be 10.
- The name of the display file should be APDSRCxx. Replace the "xx" with your first and last initials.



When you are finished, compare your coding to the solution in Unit 4 of Module 7.

MACHINE EXERCISE 2 – CREATING A SUBFILE

This exercise is very similar to the first machine exercise in this chapter. You will:

- Use SEU to enter your DDS into a source file member.
- Create the display file.
- Execute the OVRDSPF command to allow an existing program to use your display file.

Note: To help you understand the override requirements, consider the following:

- When the program was compiled, a buffer was created based on the indicators and fields of the original display file.
- The indicators in a buffer are not identified by number. They are identified by their location within the buffer.
- The display file used as a result of an override must use the indicators in the same sequence so that they are placed in the proper locations within the buffer.

- Run the program and see how a subfile is used for an inquiry application.

Read all the instructions carefully before beginning the exercise.

Instructions

1. Go to a display station attached to a System/38 and sign on using the password GLC.
2. Select option 2 on the Student Exercise Menu to get the Programmer Menu.
3. On the Programmer Menu select option 8 to use SEU to enter your specifications for your display file and enter the following parameters:

Parm: APDSRCxx Replace xx with your first and last initials.
Type: DSPF
Src file: QDDSSRC or blank
Src lib: GLC or *LIBL
Obj lib: GLC
Jobd: QBATCH

Double check your entries before pressing ENTER.

4. After entering your specifications to the source file, select option 3 to create your display file.

If your display file is not created, get the compile listing, find the errors and use SEU to correct the errors. If the errors are not obvious, you may want to examine the solution again.

In any event, be sure to get your listings from the Guided Learning Center printer and examine them.

5. After your display file is successfully created, execute the following override display file command.

OVRDSPF FILE(APDSRC) TOFILE(APDSRCxx)

6. Run one of the following programs with the CALL command.

APR25 For RPG III users

APC25 For COBOL users

Note: You may get a level check message if your display file level identifier does not check with the program level identifier. If this happens, review your display file specifications with the Solution to Desk Exercise 2 in Unit 4 of Module 7. Resolve any discrepancies in your specifications that concern format length or field attributes and names.

7. When your VENDOR SEARCH display appears, enter BEST as the search value and press ENTER.

Your display should appear as follows:

```
VENDOR SEARCH

ENTER CHARACTERS FOR SEARCH      UUUUUUUU

PRESS ENTER FOR SEARCH

COMMAND KEY 1 FOR END OF JOB

      VENDOR NAME                SALESPERSON                ZIP        NUMBER
-----
BEST AND COMPANY                MARIE CORDUROY             30303      56567
T.H.BRAYTON JR.                 JAMES MARSHALL            56513      00145
THE BREAKERS INC.               ALICIA GORTON              02840      34681
WINSTON BUTLER ROSS INC.        TONY TAYLOR                34504      00305
ELLIS B. BUTTERFIELD, LTD       EDWARD KUI                 96543      96431
THOMAS B. CORLEY DDS            JOHN WARREN                 11014      94613
ROBERT COTTON INC.              ELIZABETH HUGHES           01643      63410
THE DEANA AGENCY                ROSS HUNTER                 10017      10504
THE DISK RECORD SHOP            JOYCE LYNCH                 91462      11002
THORTON DUDLEY LTD.             RON BAILEY                  01765      03535
```

The program is very simple. Each time you enter a search value, it gets records from the vendor file at a point where the key value is equal to or greater than the search value. Records are loaded to the subfile starting at the first subfile record. The program then displays the subfile with roll key support. (Real life programs would be much more complex to support the needs of a user.)

Next, enter ACE. This is the first record in the vendor file and all the data records are brought into the subfile.

Use the roll keys to display all the data records.

8. Press CMD 1 to end the job and return to the Programmer Menu.
9. Display messages with CMD 6. Remove the messages with CMD 8. Then sign off the display station.

Be sure to get your listings from the printer.



Return to your study carrel and continue your study at "Review of Machine Exercise 2" in Unit 4 of Module 7.

MODULE CHECK

You may write your answers in the space provided.

1. In what order must the DDS entries for a display device file be made?

- a. _____
- b. _____
- c. _____

2. What indicators are valid in positions 8 through 16 of the DDS for a display device file?

3. What level entries can be conditioned with the indicators?

4. What file level keyword is needed to use an "R" in position 29? What field level keyword provides the same function?

- a. File level – _____
- b. Field level – _____

5. What is the default display attribute for input capable fields?

6. What keyword permits a record to be sent to the program without the user having to press the ENTER key?

7. What steps are necessary to create a display file?

- _____
- _____
- _____



When you have finished answering the questions, return to Module 7 and check your answers.

Chapter 8. RPG III Interactive Programs

COBOL USERS MAY SKIP THIS MODULE

PURPOSE

In an interactive system, many of your data entry, inquiry, and file maintenance programs will be written in RPG III. This functionally advanced language will enable you to create audit trails and provide for back-up and recovery in a way not possible with utilities such as DFU.

Module 8 illustrates how RPG III can bring together the other System/38 objects—data base files and display files—that you have learned about.

Module 8 will show you the actual RPG III programs you used in Module 7 to test your display files. Discussions of the programs are limited to the features used to test the objects you created in earlier modules.

TIME ESTIMATE

45 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- Read and understand the RPG III coding statements that read and write a display file, and write records to a physical file using a logical file.
- Name the Control Language command used to compile an RPG III program.
- Name the Control Language command used to run an RPG III program.
- Describe the logical steps required to use a subfile in an inquiry program.

TERMS

The following term is described in this module:

Multi-user programs



At this time, begin your study of the Module 8 text.

OPTIONAL MACHINE EXERCISE 1 – DATA ENTRY

Using the sample RPG III program APR21 shown in Unit 2 of Module 8 as a guide, code and create an RPG III program to take data entered from your display file APDENTxx and add records to your transaction file APLTRNxx. You created APDENTxx in machine exercise 1 of Module 7 and you created APLTRNxx in machine exercise 1 of Module 4.

Name your program APR1xx.

As in the sample program, reject vendor numbers not in the vendor file.

When you are ready to enter, create and test your program, sign on with the password GLC. Then select the Programmer Menu; be sure the object library is GLC.

Enter your program into the QDDSSRC source file.

Please take the time to examine your compiler listing to see how the external file specifications are brought into your program.

Enter the following override command:

```
OVRDBF FILE(APLTRN) TOFILE(APLTRNxx)
```

Replace xx with your first and last initials.

Use the CALL command to run your program.

Use the transaction data from machine exercise 1 in Chapter 7 of your Student Materials Book to test your program.



When you have completed this exercise, return to your study carrel and continue your studies with the “Unit Summary” of Unit 2 in Module 8.

OPTIONAL MACHINE EXERCISE 2 – SUBFILE DISPLAY

Using the sample RPG III program APR25 in Unit 3 of Module 8 as a guide, code and create an RPG III program. This program will use your display file APDSRCxx to display the records in the APLSCHVN file through a subfile. You created APDSRCxx in machine exercise 2 of Module 7.

Name the program APR2xx.

When you are ready to go to a display station, sign on with the password GLC. Specify GLC for the object library on the Programmer Menu.

Enter your program into the QDDSSRC source file.

Use the CALL command to run your program.

Test your program with the following search arguments:

BEST
ACE
LINSEED

Use the roll keys as needed.



Return to your study carrel and continue your studies at the "Unit Summary" of Unit 3 in Module 8.

Chapter 9. COBOL Interactive Programs

RPG III USERS MAY SKIP THIS MODULE

PURPOSE

In an interactive system, many of your data entry, inquiry, and file maintenance programs will be written in COBOL. Like RPG III, this functionally advanced language will enable you to create audit trails and provide for back-up and recovery in a way not possible with utilities such as DFU.

Module 9 illustrates how COBOL can bring together the other System/38 objects—data base files and display files—that you have learned about.

Module 9 will show you the actual COBOL programs you used in Module 7 to test your display files. Discussions of the programs are limited to the features used to test the objects you created in earlier modules.

TIME ESTIMATE

45 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- Read and understand the COBOL coding statements that read and write a display file, and write records to a physical file using a logical file.
- Name the Control Language command used to compile a COBOL program.
- Name the Control Language command used to run a COBOL program.
- Describe the logical steps required to use a subfile in an inquiry program.

TERMS

The following term is described in this module:

Multi-user programs



At this time, begin your study of the Module 9 text.

OPTIONAL MACHINE EXERCISE 1 – DATA ENTRY

Using the sample COBOL program APC21 shown in Unit 2 of Module 8 as a guide, code and create a COBOL program to take data entered from your display file APDENTxx and add records to your transaction file APLTRNxx. You created APDENTxx in machine exercise 1 of Module 7 and you created APLTRNxx in machine exercise 1 of Module 4.

Name your program APC1xx.

As in the sample program, reject vendor numbers not in the vendor file.

When you are ready to enter, create and test your program, sign on a display station with the password GLC. Then select the Programmer Menu; be sure the object library is GLC on the Programmer Menu.

Enter your program into the QDDSSRC source file.

Please take the time to examine your compiler listing to see how the external file specifications are brought into your program.

Enter the following command:

```
OVDDBF FILE(APLTRN) TOFILE(APLTRNxx)
```

Replace xx with your first and last initials.

Use the CALL command to run your program.

Use the transaction data from machine exercise 1 in Chapter 7 of your Student Materials Book to test your program.



When you have completed this exercise, return to your study carrel and continue your studies with the "Unit Summary" of Unit 2 in Module 9.

OPTIONAL MACHINE EXERCISE 2 – SUBFILE DISPLAY

Using the sample COBOL program APC25 in Unit 3 of Module 8 as a guide, code and create a COBOL program. This program will use your display file APDSRCxx to display the records in the APLSCHVN file using a subfile.

Name the program APC2xx.

When you are ready to go to a display station, sign on with the password GLC. Specify GLC for the object library on the Programmer Menu.

Enter your program into the QDDSSRC source file.

Use the CALL command to run your program.

Test your program with the following search arguments:

BEST
ACE
LINSEED

Use the roll keys as needed.



Return to your study carrel and continue your studies at the "Unit Summary" of Unit 3 in Module 9.

Chapter 10. Introduction to Batch Processing

PURPOSE

Even in the most sophisticated interactive systems, certain processing requirements lend themselves to batch processing.

This module reviews the work management concepts of a batch subsystem. It discusses the various system objects directly involved in batch processing, and itemizes the steps required to process a batch job stream.

TIME ESTIMATE

3 hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- Describe two methods of placing jobs on the Job Queue.
- Name the two Control Language commands used to define the beginning and end of a batch job.
- Describe a Job Queue.
- State the purpose of a Job Description.
- Describe the relationship between the batch subsystem and the Spool subsystem.
- Name the Control Language command used to display the contents of a Job Queue.
- Name the Control Language command used to display the contents of an Output Queue.

TERMS

The following terms are defined or described in this module:

Batch Subsystem

Spool

Inline Data



At this time, begin your study of the Module 10 text.

MACHINE EXERCISE – BATCH JOB

In this exercise you prepare and run a batch job that prints two accounts payable reports. The data for the first report comes from a logical file which you create and code.

Also, you are to code and create a CL program which will be the mainline program of the batch job.

Instructions

- Use the following Data File Work Sheet to code the DDS for a logical file named APLCSHxx.
 - The format MSTINF is to use the Accounts Payable Vendor Master file APPVEND.
 - The format CHRGES is to use the Accounts Payable Transaction file APPTRN.

When you complete your DDS coding, ask the administrator to see the solution. Resolve any differences you might have with this solution using the DDS reference manual.

DATA FILE WORK SHEET						
APPLICATION:		ACCOUNTS PAYABLE	FILE NAME	APLCSHxx		
PHYSICAL		<input type="checkbox"/>				
LOGICAL		<input checked="" type="checkbox"/>	IF LOGICAL, PHYSICAL files used:		APPVEND	
					APPTRN	
Page		1	of		1	
FORMAT NAME	FIELD NAME	LENGTH	TYPE	DEC.	KEY FLD. (SEQ.)	COMMENTS
MSTINF	(MASTER RECORD INFORMATION – FROM APPVEND)					
	VNDNBR				1	
	VNDNAM					
CHRGES	(INVOICE TRANSACTIONS – FROM APPTRN)					
	VNDNBR				1	
	INVNBR				2	
	DATREC					
	MERCH	*				
	DEPTNO					

2. Go to a display station attached to a System/38.
Sign on with the password GLC.
Select option 2 on the Student Exercise Menu to get the Programmer Menu.
3. On the Programmer Menu, select option 8 to get SEU, and make the following entries:
Parm: APLCSHxx where xx are your first and last initials.
Type: LF
Src file: QDDSSRC or blank
Src lib: GLC
Obj lib: GLC
Jobd: QBATCH
Double check your entries before pressing ENTER.
4. Enter your source code for your logical file.
When you exit SEU, be sure exit option 2 appears. If it doesn't, go back and correct your source code.
5. Create the logical file using option 3 on the Programmer Menu.
6. When the file is created successfully, get and examine your listing from the printer.

Sign off the display station and return to your study carrel.

7. Code a CL program that:

- Executes the following data base override command to permit the existing program APR250 to use your logical file rather than the one specified in the program.

```
OVRDBF FILE(APLCSH) TOFILE(APLCSHxx)
```

- Executes the CALL command to run the program APR250 which is in the GLC library. This program produces a Cash Requirements report.
 - Executes the CALL command to run the program APR300 which is in the GLC library. This program produces a Purchase Analysis report.
8. When you finish coding your CL program, go to a display station attached to a System/38 and sign on with the password GLC.
9. Select option 2 on the Student Exercise Menu to get the Programmer Menu.
10. On the Programmer Menu, select option 8 and make the following entries:

Parm: APL3xx where xx are your first and last initials.

Type: CLP

Src file: QCLSRC or blank

Src lib: GLC

Obj lib: GLC

Jobd: QBATCH

Double check your entries, then press ENTER.

11. When the empty source member appears on the display, enter the insert line command I where the cursor is positioned.

Note, you do not need a prompt (P) or a format (F) because the CLP format is free form. Unlike DDS, which, as you know, requires specifications in designated positions in the source record, you can enter a command starting anywhere on the line.

The recommended way to enter CL is to let the CPF and SEU help you. Enter each CL command without parameter entries. Then press CMD 4 to get the prompting display for the command. When the prompting display appears, enter your parameter values, if any, and press ENTER. Doing it this way, CPF takes care of alignment, syntax, keywords, and continuation.

Try this by entering the command PGM, press CMD 4, and when the prompting display appears, press ENTER. Note how PGM is aligned at position 14. All the commands will be aligned at this position, making for neat coding.

Continue to use CMD 4 as you enter each command.

When you finish entering your CL program, be sure option 2 appears on the Exit Menu.

12. Create the CL program by entering option 3 on the Programmer Menu. Make sure you get a successful compile by checking the messages with CMD 6 and, also, by getting and examining your listing.

13. Execute the submit job command by selecting option 5, entering SBMJOB in the command field and pressing CMD 4 to get the prompt.

On the first prompt display, enter the following parameters:

JOB: (Your last name)

RQSDTA: CALL APL3xx

Press ENTER to submit the job.

CPF issues a message that the job was submitted to the QBATCH subsystem.

You should know that by default your batch job runs under the job description QBATCH. The QBATCH job description in the library GLC is used because the user library list you are running under contains the name GLC at the top of the list. This QBATCH job description has the correct library list and output queue specified for running your batch job.

The QBATCH job description that comes with CPF and resides in the QGPL library is not used because the library name QGPL comes after GLC in the user library list.

After you submit your job, listen for the sound of the alarm at your display station. When the alarm sounds, press CMD 6 to display messages. If the message tells you that your job has completed normally, go on to the next step.

On the other hand, if after a minute or so, you do not hear the alarm and get a successful completion message, your batch job has stopped because of a problem and is waiting for user intervention. You need to find out why your job has stopped. A message requesting a reply has probably been sent to the system operator. Do the following from your display station using the Programmer Menu:

- a. Enter option 7 to display submitted jobs. Press ENTER.
- b. On the Submitted Jobs display enter 1 for your job and press ENTER.
- c. On the Display Job Menu enter option 12 to get your batch Job Log Display and press ENTER.
- d. When the Job Log Display appears press CMD 7 to find out why and where your job failed. Examine the information carefully and note the error messages and their IDs. You will use this information to find and correct errors.
- e. Press ENTER until you return to the Submitted Jobs display. Then enter option 9 to cancel your batch job. Because of a delay built in to cancel a job, you will wait for about a minute before the alarm sounds that indicates your job is cancelled.
- f. Press ENTER to return to the Programmer Menu.
Enter option 7 to see that your batch job is no longer in the system.
- g. Correct your errors and try again.

14. Go to the printer and get your listings of the two reports and your job logs. The following two pages contain examples of the two reports.
15. Using the Programmer Menu, remove any messages; press CMD 6 to get the messages and then CMD 8 to remove them.

Sign off with option 90 and a blank Parm field.



Return to your study carrel and continue your study of batch processing in the Module 10 text.

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DATE - 3/25/86

CASH REQUIREMENTS

PAGE 1

VENDOR NUMBER	VENDOR NAME	INVOICE NUMBER	INVOICE DATE	MERCHANDISE AMOUNT	DEPARTMENT CHARGED
00010	JOHN M. SMITH & SONS	00079021	8/24/83	50.00	010
		5552	0/14/21	1,212.22	101
		79021	8/24/83	50.00	010
		79021	8/24/83	50.00	010
	TOTAL DUE VENDOR			1,362.22	***
00011	FETZNER & FETZNER				
00016	BRAND X BEER				
00021	MEMORIAL CARETAKERS				
00145	T.H.BRAYTON JR.				
00210	GEORGE BAILEY COLLEGE				
00221	JOHN M. SMITH & SONS	0000080}	8/31/83	75.00	151
		156	4/10/83	7,500.75	012
		156	4/10/83	7,500.75	012
		782	8/10/83	600.00	102
		782	8/10/83	600.00	102
		800-A	8/31/83	75.00	151
	TOTAL DUE VENDOR			16,351.50	***
00296	WOODSTOCK GRAINERY				

DATE - 3/25/86

PURCHASING ANALYSIS

PAGE 1

VENDOR NUMBER	VENDOR NAME	MONTH-TO-DATE PURCHASES	YEAR-TO-DATE PURCHASES
00016	BRAND X BEER	57,800.00	5,857,500.25
63410	ROBERT COTTON INC.	28,675.00	3,976,248.50
13130	T.M.ELLIOT INC.	5,700.00	687,500.75
00021	MEMORIAL CARETAKERS	5,756.00	657,560.00
00714	GUY COHRAN CORP.	8,542.15	573,684.21
00221	JOHN M. SMITH & SONS	5,200.00	275,600.00
01148	JOHNSON & SONS	5,200.00	105,200.00
00688	SHARON PHILIPS CORP.	5,400.00	100,857.75
88714	ROSS & ROSS	16,875.00	98,562.45
30188	H.M. LINSEED CORP.	150.00	98,250.00
00431	MARGARET HART INC.	1,050.00	84,581.25
00305	WINSTON BUTLER ROSS INC.	1,000.00	50,575.00
00210	GEORGE BAILEY COLLEGE	2,500.00	50,000.00
00011	FETZNER & FETZNER	5,000.00	34,500.00
96431	ELLIS B. BUTTERFIELD, LTD	29,456.21	29,456.21
10502	HUGH WILLSON & SON	15,785.00	27,500.85
84210	STAFF GENERAL HOSPITAL	27,500.00	27,500.00
05075	PETER VAN ROTH CORP.	19,500.00	19,500.00
00145	T.H.BRAYTON JR.	10,000.00	10,000.00
21178	THE FRAMING PLACE	.00	8,500.50
25256	C.C. GOODWILL INC.	1,500.00	6,875.50
56567	BEST AND COMPANY	1,005.78	4,607.92
07733	SEAL PRODUCTS INC.	.00	4,000.00
00313	JOHN HARVARD INC.	2,500.00	2,500.00
34681	THE BREAKERS INC.	1,867.50	1,867.50
56330	PINE TIMER CO, INC.	26.75	1,600.85
24133	PATRICK UNDERHILL	750.00	1,275.00
63218	ACE DISTRIBUTORS	37.61	973.62
03535	THORTON DUDLEY LTD.	100.00	525.00
11002	THE DISK RECORD SHOP	150.00	500.00
15864	A.B. GLOVER CORP	150.00	500.00
72302	NTNA & PAUL'S	.00	500.00
94613	THOMAS B. CORLEY DDS	.00	500.00
00010	JOHN M. SMITH & SONS	150.00	500.00
65321	FEDERAL CORP	52.00	375.00
07374	PHOTO LABS INC.	250.00	250.00
00296	WOODSTOCK GRAINERY	.00	175.00
06242	WORLD TRADE CORP.	150.75	150.75
24001	ST ALBANS UNIVERSITY	150.00	150.00
00612	R.H.GROCERY STORE	45.00	145.00
45892	PETE MOSS & SONS	82.00	82.00
06183	THE LEARNING INSTITUTE	65.00	65.00
33333	CLIFFORD PALEY MD	15.00	37.62
73013	WINTHROP BLISS INC.	15.00	15.00
63200	JOHN WINTHROP LTD.	10.00	10.00
94946	ALLEN'S HARDWARE INC.	10.00	10.00
10504	THE DEANA AGENCY	3.00	3.00
FINAL TOTALS		260,174.75	12,801,271.48

MODULE SUMMARY

This module was much more than an introductory module. Not only did it present the fundamental concepts of batch processing and discuss the program products that support batch processing, it also introduced many of the Work Management concepts.

You were also provided with other information to help put the concepts into perspective. You were shown the commands that control work management and were able to see interrelationships of Job Queues, Output Queues, Request Data, Class Descriptions, Job Descriptions, Subsystem Descriptions, and many other System/38 objects.

Chapter 11. RPG III Batch Programming

COBOL USERS MAY SKIP THIS MODULE

PURPOSE

The purpose of this module is to illustrate how RPG III can interact with the other System/38 objects about which you have learned.

Module 11 shows you the actual RPG III programs you used in Module 10 to run your batch job. Discussions of the programs are limited to the features used to override the specifications externally described using DDS.

TIME ESTIMATE

45 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- Read and understand the RPG III coding statements that process a file using the RPG III logic cycle.
- Describe the override entries that may be entered as Input specifications for externally described files.

TERMS

The following terms are defined or described within this module:

Control Level Indicators

Record ID Indicators

Matching Record Indicators

RPG III Logic Cycle



At this time, begin study of the Module 11 text.

OPTIONAL MACHINE EXERCISE – RPG III BATCH PROGRAMMING

In this exercise you are to code and create a program similar to the RPG III program APR250 you studied in the Module 11 text. You may recall from the Module 10 machine exercise that this program prints a Cash Requirements report. The program you are to code in this exercise is to print a Cash Requirements report, but only for vendors with outstanding invoices. These are the vendors in your transaction file APLTRNxx.

In doing this exercise you are to:

- Use the same print format, that is, the same print headings, field headings, and print positions used in the program APR250.
- Use your transaction file APLTRNxx to get the vendors with outstanding invoices.
- CHAIN to the vendor master file APLVEND to get the descriptive data needed for the report.
- Name your program APR3xx, where xx are your first and last initials.
- When you are ready to use the System/38, sign on with the password GLC. Select the Programmer Menu to enter and create your program. Be sure to specify GLC for the object library on the Programmer Menu.

Enter your program into the QDDSSRC source file.

- After you successfully create your program, run it as a batch job using the SBMJOB command.

If you have a problem with your program, the administrator can show you a solution.

Note: The number of records on your listing reflects the number of records you added to your APLTRNxx file in previous exercises.



When you complete the exercise, return to your study carrel and continue your study at the "Unit Summary" for Unit 2 of Module 11.

Chapter 12. COBOL Batch Programming

RPG III USERS MAY SKIP THIS MODULE

PURPOSE

The purpose of this module is to illustrate how COBOL can interact with the other System/38 objects about which you have learned.

Module 12 will show you the actual COBOL programs you used in Module 10 to run your batch job. Discussions of the programs are limited. Instead, emphasis is placed on using Printer Device Files—a System/38 tool that should greatly simplify your COBOL programming requirements.

TIME ESTIMATE

45 minutes

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- Read and understand the COBOL instructions that process a file and produce a printed report.
- Read and understand the DDS coding for Printer Device Files.
- Briefly describe how Printer Device Files are used by COBOL programs.

TERMS

The following term is defined or described in this module:

Printer Device Files



At this time, begin your study of the Module 12 text.

OPTIONAL MACHINE EXERCISE – COBOL BATCH PROGRAMMING

In this exercise you are to code and create a program similar to the COBOL program APC250 you studied in the Module 12 text. You may recall from the Module 10 machine exercise that this program prints a Cash Requirements report. The program you are to code in this exercise is to print a Cash Requirements report, but only for vendors with outstanding invoices. These are the vendors in your transaction file APLTRNxx.

In doing this exercise you are to:

- Use the same print format, that is, the same print headings, field headings, and print positions used in the program APC250.
- Use your transaction file APLTRNxx to get the vendors with outstanding invoices.
- CHAIN to the vendor master file APLVEND to get the descriptive data needed for the report.
- Name your program APC3xx, where xx are your first and last initials.
- When you are ready to use the System/38, sign on with the password GLC. Select the Programmer Menu to enter and create your program. Be sure to specify GLC for the object library on the Programmer Menu.

Enter your program into the QDDSSRC source file.

- After you successfully create your program, run it as a batch job using the SBMJOB command.

If you have a problem with your program, the administrator can show you a program solution.

Note: The number of records on your listing reflects the number of records you added to your APLTRNxx file in previous exercises.



When you complete the exercise, return to your study carrel and continue your study at the "Unit Summary" for Unit 2 of Module 12.

Chapter 13. The Query Facility

PURPOSE

This module teaches you how to use the Query utility to print or display data gathered from a file, in report format. As you may know, Query is especially suited to producing one time reports. On the other hand, a query can be used over and over. In this respect, a query can become a permanent part of an application, and as such, can be run interactively or as a batch job.

TIME ESTIMATE

2½ hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- State the purpose of QUERY.
- Describe two methods of processing multiple files with QUERY.
- List the Control Language commands used for QUERY.
- Create a new data field on a QUERY report.
- Use QUERY to produce an analytical report that meets a set of supplied requirements.
- Recognize various prompting displays and state the purpose of each.

TERMS

The following term is described in this module:

Record Sampling



At this time, begin your study of the Module 13 text.

MACHINE EXERCISE 1 – CREATING A QUERY

In this exercise you are to generate a report using Query, as follows:

- For selected vendors from the accounts payable vendor file, you are to show the dollar amount of their purchases year-to-date and amount of their discount year-to-date.
- You are to compute and show the average discount percent for each vendor based on these figures.
- You are to calculate the sum of the purchases and discounts for each class of vendor and get the average discount percent for a class.

You should read through the exercise before you start the first step. Also, do not rush through the exercise. Use the HELP key if you are not sure about an entry on a prompt display. Take the time to make this exercise a learning experience.

Instructions

1. Go to a display station attached to a System/38.

Sign on using the password GLC.

Select the Programmer Menu and make the following entries:

Option: 2
Parm: APQ4xx where xx are your first and last initials. This is the name of your query.
Type: Leave blank
Src file: Leave blank
Src lib: *LIBL
Obj lib: GLC
Jobd: QBATCH

2. You are to create your query as follows:

- Use the file APLVEND in the GLC library for the query. This file has one format named VENDMAST.
- Make the report heading or cover page:
"QUERY EXERCISE FOR – (your name)".
- Make the page headings:
"NON-PREFERRED VENDORS".
- On the field review prompt, select the fields you will list on the report and the fields you will use for record selection. You should select seven fields. See the following items for the fields to be listed and used for record selection.
- List these fields across the report page in the following order:
 1. VNDCLS – Vendor class
 2. VNDNBR – Vendor number
 3. VNDNAM – Vendor name
 4. PCHYTD – Purchase year-to-date
 5. DCTYTD – Discount year-to-date
 6. DISCPC – Average discount percent
- On the Query Definition Prompt, in addition to ordering the fields, do the following:
 - Calculate the sums of the fields PCHYTD and DCTYTD.
 - Get the average percent discount.
 - Sort the records on the VNDCLS and PCHYTD fields.
 - Test the SRVRTG and DELRTG fields for record selection.
- Calculate the average discount percent value for the new field DISCPC by dividing DCTYTD by PCHYTD and multiplying by 100.
- Select those vendors which do not have an "A" rating both for delivery (DELRTG) and service (SRVRTG). These are the non-preferred vendors. Be sure to specify "A" (uppercase and apostrophes) for the selection criteria.

- Change the label for the DISCPC field to:

AVERAGE
DISCOUNT
PERCENT

- List records in descending sequence of PCHYTD (minor) within ascending sequence of VNDCLS (major). Subtotal on a change of VNDCLS.

3. Create and run your Query application.

The report should look as follows.

03/28/86 09108145		NON-PREFERRED VENDORS				PAGE 1
CLASS	VENDOR NUMBER	VENDOR NAME	PURCHASES YTD	DISCOUNT TAKEN YTD	AVERAGE DISCOUNT PERCENT	
11	210	GEORGE BAILEY COLLEGE	50,000.00	7.50	.01	
			50,000.00	7.50		*
12	88,714	ROSS & ROSS	98,562.45	6,749.51	.01	/
12	7,733	SEAL PRODUCTS INC.	4,000.00	4.00	6.84	
			102,562.45	6,753.51	.10	*
15	5,075	PETER VAN ROTH CORP.	19,500.00	577.50	3.47	/
15	33,333	CLIFFORD PALEY MD	37.62	6.75	2.96	
			19,537.62	584.25	17.94	*
20	688	SHARDN PHILIPS CORP.	100,857.75	8,500.00	10.45	/
			100,857.75	8,500.00	8.42	*
22	63,410	ROBERT COTTON INC.	3,976,248.50	68,719.34	8.42	/
22	714	GUY COHRAN CORP.	573,684.21	575.00	1.72	
			4,549,932.71	69,294.34	.10	*
27	63,218	ACE DISTRIBUTORS	973.62	62.89	.91	/
27	72,302	NINA & PAUL'S	500.00	.00	6.45	
27	24,001	ST ALBANS UNIVERSITY	150.00	.25	.00	
			1,623.62	63.14	.16	*
33	305	WINSTON BUTLER ROSS INC.	50,575.00	5,756.25	2.20	/
33	11	FETZNER & FETZNER	34,500.00	150.00	11.38	
33	145	T.H.BRAYTON JR.	10,000.00	375.00	.43	
33	15,864	A.B. GLOVER CORP.	500.00	72.00	3.75	
33	73,013	WINTHROP BLISS INC.	15.00	2.47	14.40	
			95,590.00	6,355.72	16.46	*
42	13,130	T.M.ELLIOT INC.	687,500.75	.00	9.28	/
42	10,502	HUGH WILLSON & SON	27,500.85	4.62	.00	
42	56,330	PINE TIMER CO, INC.	1,400.85	.00	.01	
42	3,535	THORNTON DUDLEY LTD.	525.00	15.82	.00	
42	7,374	PHOTO LABS INC.	250.00	2.50	3.01	
42	6,242	WORLD TRADE CORP.	150.75	.52	1.00	
			717,528.20	23.46	.34	*
50	30,188	H.M. LINGEED CORP.	98,250.00	185.00	.73	/
50	34,681	THE BREAKERS INC.	1,867.50	684.25	.18	
50	65,321	FEDERAL CORP	375.00	12.47	36.63	
			100,492.50	881.72	3.32	*
			5,738,124.85	92,463.64	13.38	/
					5.42	**
						//

TOTAL NUMBER OF RECORDS PROCESSED 25

You may be wondering about the * and / on the report. The * indicates a sum and the / indicates an average.

If you get a report and it is not the same as the one shown, determine what you did differently. Then select the option to change an existing query. Use the Query Modify Menu and select the correct prompt display to make your change. Once you have made your changes, exit from the Query Modify Menu with CMD 1.

If you have problems, try to resolve them with the HELP text first, then the Query reference manual or the Module 13 text. If you get completely stuck, you will find a solution on the following pages. To get the most benefit from this exercise do not go to the solution except as a last resort.

If your report is the same as the one shown, remove your messages with CMD 6 and CMD 8, and sign off.



When you have completed the exercise, return to your study carrel and continue your study of Module 13.

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

```
PROGRAMMER MENU                                SYSTEM: ATLEDDEV

Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program               program name
5. Execute command            command
6. Submit job                 (job name), (command)
7. Display submitted jobs
8. Edit source                (srcmbr), (type), (text)
9. Design display format      (srcmbr)
90. Display Menu              (menu)
90. Sign off                  (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSFF, LF, MXDF, PF, FLI,
      PRTE, GRY, RPG, RPT, TXT
Option: 2  Parm: APQ4XX  Type: _____  Parm 2: _____
Command: _____

Text: _____  Log requests: *YES
Src file: _____  Src lib: *LIBL  Obj lib: GLC  Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
```

```
QUERY MENU

Select one of the following:
1. Create, change, or delete a query
2. Execute queries and display output
3. Manage existing queries

Option: 1
```

Press HELP for instructions. Press CF1 to exit.

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

QUERY CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about a query
2. Create a new query
3. Change an existing query
4. Delete an existing query
5. Display status of queries submitted

Option: 2

Query name: AFQ4XX (*-Query selection list)

Library name: GLC

HELP-Help CF2-Previous display

QUERY CREATE PROMPT

Query name: AFQ4XX Library: GLC

Enter information for new query:

Description: QUERY EXERCISE 1

File name: AFLVEND (*-File selection list)

Library name: GLC

Enter the following if file chaining is desired:

Secondary file name: _____ (*-File selection list)

Library name: _____

HELP-Help CF2-Previous display CF3-File information

SOLUTION MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

OUTPUT SPECIFICATION PROMPT

Enter the following:

Cover page: QUERY EXERCISE ---<STUDENT NAME>

Page heading: NON-PREFERRED VENDORS

Detail listing: *YES

Detail list double spaced: *NO

Output line width: 132

Separate record format headings: *YES

Record sampling: *NO

Field spacing: (*DFT, 0-99) *DFT

Record format review: *YES

Display all fields in prompt: *YES

Take defaults for all selected fields:

*NO

RECORD FORMAT REVIEW PROMPT FOR FILE APLVEND

For each record format to be used, enter R to review the fields,
A to select all fields, or E to enter the fields later:

RECORD FMT	DESCRIPTION
<u>R</u> VENDMAST	VENDMAST DB FORMAT

HELP-Help CF13-Status

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

FIELD REVIEW PROMPT FOR RECORD FORMAT VENDMAST

Enter an X next to each field to be used or enter *ALL: _____

X	ATTR	FIELD NAME	LENGTH	TYPE	DESCRIPTION
X	K	VNDNBR	5,0	P	VENDOR ID NUMBER
X		VNDNAM	25	A	VENDOR NAME
—		VNDAD1	25	A	ADDRESS LINE 1
—		VNDAD2	25	A	ADDRESS LINE 2
—		VNDAD3	25	A	ADDRESS LINE 3
—		VNDZIP	5,0	P	ZIP CODE
—		VNDACD	3,0	P	AREA CODE
—		VNDPHN	7,0	F	PHONE NUMBER
—		VTRMFC	3,3	P	NORMAL PROMPT PAY DISCOUNT X
—		VTRMDA	2,0	P	NORMAL NO. OF DAYS FOR TERMS
X		VNDCLS	2,0	P	VENDOR CLASS
—		ACTCD	1	A	A=ACTIVE D=DELETE S=SUSPEND
—		VNDSLS	25	A	VENDOR SALESMAN
—		DCTMTD	7,2	P	DISCOUNT TAKEN THIS MONTH
X		DCTYTD	9,2	P	DISCOUNT TAKEN THIS YEAR
—		PCHMTD	9,2	P	PURCHASES THIS MONTH

HELP-Help CF2-Previous displ

REMEMBER TO USE THE ROLL KEY TO DISPLAY THE SECOND SCREEN OF FIELD REVIEW PROMPTS.

FIELD REVIEW PROMPT FOR RECORD FORMAT VENDMAST

Enter an X next to each field to be used or enter *ALL: _____

X	ATTR	FIELD NAME	LENGTH	TYPE	DESCRIPTION
X		PCHYTD	11,2	P	PURCHASES THIS YEAR
—		BALOWE	9,2	P	BALANCE OWED
X		SRVRTG	1	A	SERVICE RATING
X		DELRTG	1	A	DELIVERY RATING
—		COMNTS	25	A	COMMENTS ABOUT THIS VENDOR
—		SCHCOD	10	A	SEARCH CODE

HELP-Help CF2-Previous display CF13-Status

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

QUERY DEFINITION PROMPT

For record format name VENDMAST enter:

FIELD NAME	ORDER	SUM	AVG	SORT	TEST	XLIST	TABLE
VNDNBB	2.0	-	-	-	-	-	-
VNDNAM	3.0	-	-	-	-	-	-
VNDCLS	1.0	-	-	X	-	-	-
DCIYID	5.0	X	-	-	-	-	-
ECHYID	4.0	X	-	X	-	-	-
SRVBIG		-	-	-	X	-	-
RELBIG		-	-	-	X	-	-
DISCPC	6.0	-	X	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-
		-	-	-	-	-	-

+

COMPUTE PROCESSING PROMPT

For result field DISCPC enter:
 Computed value: (DCIYID / ECHYID) * 100

Use decimal numbers and field names combined by +, -, *, /, //. Multiply(*), divide(/), and remainder(//) are done before +, -.

For example, to compute a 10% sales commission based on a field named AMOUNT, enter: AMOUNT * .10

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

EXTENDED LIST PROMPT FOR FIELD DISCFC

Enter the following:

		OUTPUT SIZE	FIELD SIZE
LIST:	<input checked="" type="checkbox"/> YES	14 2	14 2
SUM:	<input checked="" type="checkbox"/> NO	12 2	19 2
AVG:	<input checked="" type="checkbox"/> YES	14 2	14 2
List only if change:	<input checked="" type="checkbox"/> NO		
Label:		AVERAGE_____	
		DISCOUNT_____	
		PERCENT_____	
Field spacing:	<input checked="" type="checkbox"/> DEI		
Edit code:	J		

SORT SPECIFICATION PROMPT

Enter change:

FIELD NAME	ORDER	SPACE BEFORE	SPACE AFTER	SUBTOTAL	SURTABLE	DESCEND	ABSNER
VNICLS	1	0		X			
ECHYTD	2	0				X	

+

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

EXIT APPLICATION DEFINITION MENU

Select one of the following:

1. Restart definition
2. Modify definition
3. Delete definition
4. Save definition
5. Create application interactively
6. Create application in batch

Option: 6

APPLICATION CREATION PROMPT

Enter the following:

Application name:	<u>APQ4XX</u>	
Library name:	<u>GLC</u>	
Public authority:	<u>1</u>	(1-Normal 2-None 3-All)
Adopt owner's user profile:	<u>N</u>	(Y-Yes N-No)
Optimize Query:	<u>Y</u>	(Y-Yes N-No)
Source listing:	<u>N</u>	(Y-Yes N-No)
Dump internal data areas:	<u>N</u>	(Y-Yes N-No)
Generated code listing:	<u>N</u>	(Y-Yes N-No)
Job description name:	<u>QBATCH</u>	(*--Job description list)
Library name:	<u>GLC</u>	
Execution following creation:	<u>Y</u>	(Y-Yes N-No)

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

```

                                QUERY EXECUTION PROMPT
Query name:      APQ4XX          Library:      GLC
File name:      APLVEND

Enter the following:
Type of output:      1          (1-Report 2-File 3-Both)
Input file member:   (Blank)      (*-List Blank-First member)
Number of records to query: (Blank) (Blank-ALL records)
Job description:     QBATCH
Library name:       GLC

HELP-Help  CF2-Previous display
```

```

                                QUERY REPORT SPECIFICATION PROMPT

Enter the following:
Forms width:      132          (50 to 198)
Hold output for display: N      (Y-Yes N-No)

HELP-Help  CF2-Previous display
```

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

QUERY CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about a query
2. Create a new query
3. Change an existing query
4. Delete an existing query
5. Display status of queries submitted

Option: 5

Query name: AFQ4XX (*-Query selection list)

Library name: GLC

HELP--Help CF2--Previous display
Job AFQ4XX.GLC.005072 submitted for application AFQ4XX.GLC.

QUERY CREATION/EXECUTION STATUS

APPLICATION	LIBRARY	WHEN SUBMITTED	STATUS
_AFQ4XX	GLC	03/27/86 09:54:29	Completed

1--Job information CFS--Redisplay CF12--Group by STATUS

SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

QUERY CREATE/CHANGE/DELETE MENU


Select one of the following and enter values below:

1. Display information about a query
2. Create a new query
3. Change an existing query
4. Delete an existing query
5. Display status of queries submitted

Option: —

Query name: APQ4XX (*-Query selection list)
Library name: GLC

HELP--Help CF2--Previous display




QUERY MENU

Select one of the following:

1. Create, change, or delete a query
2. Execute queries and display output
3. Manage existing queries

Option: —

Press HELP for instructions. Press CF1 to exit.



SOLUTION TO MACHINE EXERCISE 1 – NON-PREFERRED VENDORS

PRINTOUT FROM QUERY CREATION
LOOK ON YOUR GLC PRINTER

DATE 04/03/86 TIME 11:15:27

QUERY EXERCISE FOR - (STUDENT NAME)

Application: AFR4XX.GLC

Queried file: AFLVEND.GLC Member: AFLVEND

File resorted according to following sort order:

RECORD	FORMAT	FIELD	SEQUENCE	SIGN
VENDMAST		VNDCLS	ASCEND	*YES
		FCHYTD	DESCEND	*YES

User specified record selection criteria:

RECORD	FORMAT	OPTION	FIELD	SELECTION TEST
VENDMAST		*SELECT	SRVRTG	*NE 'A'
			DELRTG	*NE 'A'

MACHINE EXERCISE 2 – CHANGING A QUERY

In machine exercise 1 you created a query that listed the non-preferred vendors, that is, vendors that do not have a delivery and service rating of "A". In this exercise you are to select the vendors with a service and delivery rating of "A", which are the preferred vendors.

The report format and field sequence remains the same.

Instructions

1. Sign on with the password GLC and select the Programmer Menu.
2. Make the same entries on the Programmer Menu as you did in machine exercise 1.
3. Make changes on two Query prompts:
 - Change the page heading on the Output Specification Prompt to "PREFERRED VENDORS".
 - On the Selection Test Prompt change the select/omit test to select vendors with an "A" rating for delivery and service.

Note that you need to press CMD 1 to exit the Query Modify Menu.

Your listing should agree with the one below. If it does not, make the appropriate changes and rerun the Query.

03/27/86 09154158		PREFERRED VENDORS			PAGE 1
CLASS	VENDOR NUMBER	VENDOR NAME	PURCHASES YTD	DISCOUNT TAKEN YTD	AVERAGE DISCOUNT PERCENT
11	16	IRAND X BEER	5,857,500.25	15,821.00	.27
11	221	JOHN M. SMITH & SONS	275,600.00	374.50	.09
11	10	JOHN M. SMITH & SONS	500.00	72.00	14.40
11	45,892	PETE HUGG & SONS	82.00	.00	.00
11	6,183	THE LEARNING INSTITUTE	65.00	.00	.00
			6,133,747.25	16,167.50	
12	612	R.H.GROCERY STORE	145.00	.00	2.95 /
			145.00	.00	.00 /
15	21	MEMORIAL CARETAKERS	657,560.00	.00	.00 /
15	94,946	ALLEN'S HARDWARE INC.	10.00	.25	2.50 /
			657,570.00	.25	.00 /
20	296	WOODSTOCK GRAINERY	175.00	50.00	28.57 /
			175.00	50.00	.00 /
27	11,002	THE DISK RECORD SHOP	500.00	.00	.00 /
			500.00	.00	.00 /
33	1,148	JOHNSON & SONS	105,200.00	1,052.00	1.00 /
33	96,431	ELLIS R. BUTTERFIELD, LTD	29,456.21	2,764.50	9.38 /
			134,656.21	3,816.50	5.19 /
35	84,210	STAFF GENERAL HOSPITAL	27,500.00	.00	.00 /
35	21,178	THE FRAMING PLACE	8,500.50	72.00	.84 /
35	10,504	THE DEANA AGENCY	3.00	1.50	50.00 /
			36,003.50	73.50	16.95 /
			6,962,796.96	20,107.75	7.14 //

TOTAL NUMBER OF RECORDS PROCESSED 15

If you continue to have problems, review the solution on the following pages.



When you have finished, return to your study carrel and continue your studies with the "Unit Summary" of Unit 4 in Module 13.

SOLUTION TO MACHINE EXERCISE 2 – PREFERRED VENDORS

QUERY CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about a query
2. Create a new query
3. Change an existing query
4. Delete an existing query
5. Display status of queries submitted

Option: 3

Query name: APQ4XX (*-Query selection list)

Library name: GLC

HELP--Help CF2--Previous display

QUERY MODIFY MENU

Select one of the following:

- | | |
|-------------------------|---------------------------|
| 1. Output specification | 6. Compute processing |
| 2. Record sampling | 7. Select/omit processing |
| 3. Delete record format | 8. Table definition |
| 4. Add record format | 9. Sort specification |
| 5. Field definition | |

Option: 1
Qualifying record format name: VENDMAST
Add/delete record format name: _____

HELP--Help CF13--Status CF14--Review fields CF15--Review DDS

SOLUTION TO MACHINE EXERCISE 2 – PREFERRED VENDORS

OUTPUT SPECIFICATION PROMPT

Enter the following:

Cover page: QUERY EXERCISE --- (STUDENT NAME)

Page heading: PREFERRED VENDORS

Detail listing: *YES

Detail list double spaced: *NO

Output line width: 132

Separate record format headings: *YES

Field spacing: (*DFT, 0-99) *DET

QUERY MODIFY MENU

Select one of the following:

- | | |
|-------------------------|---------------------------|
| 1. Output specification | 6. Compute processing |
| 2. Record sampling | 7. Select/omit processing |
| 3. Delete record format | 8. Table definition |
| 4. Add record format | 9. Sort specification |
| 5. Field definition | |

Option: 7

Qualifying record format name: VENIMAST

Add/delete record format name: _____

HELP--Help CF13--Status CF14--Review fields CF15--Review DDS

SOLUTION TO MACHINE EXERCISE 2 – PREFERRED VENDORS

SELECTION TEST PROMPT

Enter tests for *SELECT/*OMIT group: *SELECI

FIELD NAME	REL	VALUES	
SBVRTG	*EQ	'A'	+
DELETG	*EQ	'A'	-
			-
			-
			-
			-
			-
			-
			-
			-
			-
			-
			-

THIS GROUP OF LINES WILL
BE ANDED TOGETHER.

QUERY MODIFY MENU

Select one of the following:

- | | |
|-------------------------|---------------------------|
| 1. Output specification | 6. Compute processing |
| 2. Record sampling | 7. Select/omit processing |
| 3. Delete record format | 8. Table definition |
| 4. Add record format | 9. Sort specification |
| 5. Field definition | |

Option: 7
 Qualifying record format name: VENDMAST
 Add/delete record format name: _____

USE CF1 TO EXIT APPLICATION
DEFINITION MENU.

HELP--Help CF13--Status CF14--Review fields CF15--Review DDS

SOLUTION TO MACHINE EXERCISE 2 – PREFERRED VENDORS

APPLICATION CREATION PROMPT

Enter the following:

Application name:	<u>APQ4XX</u>	
Library name:	<u>GLC</u>	
Public authority:	<u>1</u>	(1-Normal 2-None 3-All)
Adopt owner's user profile:	<u>N</u>	(Y-Yes N-No)
Optimize Query:	<u>Y</u>	(Y-Yes N-No)
Source listing:	<u>N</u>	(Y-Yes N-No)
Dump internal data areas:	<u>N</u>	(Y-Yes N-No)
Generated code listing:	<u>N</u>	(Y-Yes N-No)
Job description name:	<u>QBATCH</u>	(*-Job description list)
Library name:	<u>GLC</u>	
Execution following creation:	<u>Y</u>	(Y-Yes N-No)

PRESS ENTER THEN CF11

QUERY EXECUTION PROMPT

Query name:	APQ4XX	Library:	GLC
File name:	APLVEND		

Enter the following:

Type of output:	<u>1</u>	(1-Report 2-File 3-Both)
Input file member:	<u> </u>	(*-List Blank-First member)
Number of records to query:	<u> </u>	(Blank-ALL records)
Job description:	<u>QBATCH</u>	
Library name:	<u>GLC</u>	

HELP--Help CF2--Previous display
Existing application will be deleted at job submission time.

SOLUTION TO MACHINE EXERCISE 2 – PREFERRED VENDORS

QUERY CREATE/CHANGE/DELETE MENU

Select one of the following and enter values below:

1. Display information about a query
2. Create a new query
3. Change an existing query
4. Delete an existing query
5. Display status of queries submitted

Option: _____

Query name: AFQ4XX (*-Query selection list)

Library name: GLC

CF1 TO RETURN TO THE
PROGRAMMER MENU

HELP--Help CF2--Previous display

Job AFQ4XX.GLC.005090 submitted for application AFQ4XX.GLC.

DATE 04/03/86 TIME 13:21:31

QUERY EXERCISE FOR -- (STUDENT NAME)

PRINTOUT FROM QUERY CREATION
LOOK ON YOUR GLC PRINTER

Application: AFQ4XX.GLC

Queried file: APLVEND.GLC

Member: APLVEND

File resorted according to following sort order:

RECORD	FORMAT	FIELD	SEQUENCE	SIGN
--------	--------	-------	----------	------

	VENDMAST	VNDCLS	ASCEND	*YES
--	----------	--------	--------	------

		PCHYTD	DESCEND	*YES
--	--	--------	---------	------

User specified record selection criteria:

RECORD	FORMAT	OPTION	FIELD	SELECTION TEST
--------	--------	--------	-------	----------------

VENDMAST		*SELECT	SRVRTG	*EQ 'A'
----------	--	---------	--------	---------

			DELRTG	*EQ 'A'
--	--	--	--------	---------



MODULE SUMMARY

You learned many things about the Query Facility. You learned about the Control Language commands, prompting displays, and uses of Query. You also learned that Query is very similar to DFU. Many of the prompting displays are the same, and both utilities have these phases: definition, creation, and execution.



Chapter 14. DEBUG Facilities

PURPOSE

In this module you learn about the diagnostic or debugging facilities available through the CPF. You do a machine exercise which illustrates their use.

One advantage of using the CPF debug facilities is that they do not have to be written into your program and then later removed or crippled when the program runs correctly. A person who has used a language like COBOL, where the debug facilities must be coded in a program, can especially appreciate this feature of the CPF debugging facility.

TIME ESTIMATE

2 hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- List as least four commands that can be used in Debug mode.
- Use the ENTDBG command to enter Debug mode at a display station.
- Use various Control Language commands while in Debug mode.
- Use the ENDDBG command.
- Briefly explain the purpose of a test library.
- List the steps required to create a testing environment.

TERMS

The following terms are defined or described in this module:

Debug Mode

Trace

Breakpoint

Program variable



At this time, begin your study of the Module 14 text.

MACHINE EXERCISE – DEBUG FACILITIES

In this exercise you use the debugging facilities of the CPF without having to find a programming error.

In doing this exercise, it is recommended that you use CMD 4 to get the command prompt when you are instructed to enter a command.

Instructions

1. Sign on using the password GLC and select the Command Entry Display.
 2. Execute the Enter Debug (ENTDBG) command to get into debug mode, specifying:
 - APR21 as the program to be debugged. This is an RPG III program.
 - *YES for the UPDPROD parameter value. You will be updating your APLTRNxx transaction file.
- Note:** There is no successful completion message for the ENTDBG command. However, if you are already in debug mode, you will get a message that the command will not execute "in this mode."
3. Using the Add Breakpoint (ADDBKP) command, add breakpoints at statement numbers 600, 900, and 1100.

To help you understand the purpose of the breakpoints, the RPG III program statements are listed below.

600	99	SETON	LR
900		VNDNBR CHAIN	APLVEND 50
1100	N50	WRITE	PAYBLE

4. Execute the Override Data Base File command, as follows, to change the file APLTRN specified in the program APR21 to your file name.

OVRDBF FILE(APLTRN) TOFILE(APLTRNxx)

5. Execute a Display Override (DSPOVR) command to see that your override is in effect.
6. Run the program APR21 using the CALL command.

When the data entry display appears, enter whatever values you want. Record the values you enter below.

VNDNBR _____

INVNBR _____

DATREC _____

MERCH _____

DEPTNO _____

Statement number 500 presents the data entry display. The next statement, 600, is the first breakpoint.

Press ENTER to continue.

7. At the 600 breakpoint press CMD 3 to get the Command Entry Display. Note that this is one of the command keys listed at the bottom of the display.
8. Display the indicator 99 using the Display Program Variable (DSPPGMVAR) command. Indicator fields are named *INnn. If you want to display all 99 numeric indicators, simply enter *IN.

Is indicator 99 ON or OFF?
9. Next, display some of the values you entered on the data entry display. Get the field names from Step 6 above.

If you haven't already done so, take the time to look at all the information given on the Program Variable Display.
10. When you are finished displaying values, you can either enter the Resume Breakpoint (RSMBKP) command, or press CMD 1 to return to the Breakpoint Display and then press ENTER, to resume processing and continue to the next breakpoint (900).

11. At the 900 breakpoint, request the Command Entry Display.

Display the field name VNDNBR.

If the vendor number field is invalid, not on the list below, change it to a valid number with the Change Program Variable (CHGPGMVAR) command.

VALID VENDOR NUMBERS		
00010	05075	34681
00011	06183	45892
00016	06242	56330
00021	07374	56567
00145	07733	63200
00210	10502	63218
00221	10504	63410
00296	11002	65321
00305	13130	72302
00313	15864	73013
00431	21178	84210
00612	24001	88714
00688	24133	94613
00714	25256	94946
01148	30188	96431
03535	33333	

12. Resume processing to get to breakpoint 1100.
13. At the 1100 breakpoint, request the Command Entry Display and display the value in the vendor name (VNDNAM) field. You will find the field is not available because it is not used in the program.

Resume program processing.

14. At the data entry display, enter whatever values you like and record them below.

VNDNBR _____

INVNBR _____

DATREC _____

MERCH _____

DEPTNO _____

Press ENTER.

15. Press ENTER to get to the 900 breakpoint. Make sure the vendor number is invalid. See the vendor number list on the previous page.

Resume program processing.

16. At breakpoint 1100, do the following:

- Change the value of *IN50 to '0' (Off).
- Add a trace from statement 400 to statement 1300, and display the indicator variable *IN50 whenever its value changes.
- Remove the three breakpoints (RMVBKP).
- Resume program processing.

17. Using the data entry display, add two records with a valid vendor number and one record with an invalid vendor number.

18. End program processing with CMD 1.

19. Display the trace data at your display station using the Display Trace Data (DSPTRCDTA) command. Note the changes in the *IN50 indicator value.
20. End debug mode by entering the End Debug (ENDDBG) command.
21. Sign off (SIGNOFF).



Return to your study carrel and continue your study of the Module 14 text.



MODULE SUMMARY

This module introduced you to the testing environment. It taught you that Debug Mode, in addition to helping you debug programs, is a useful tool for training new users.

You learned the purpose of test libraries and were taught the steps to create a test environment.

Finally, you were given the chance to try some of the diagnostic commands while in Debug Mode.

Naturally, all the concepts learned in this module will be much more meaningful when you apply them to your own programming problems.



NOTES

Lined area for notes with horizontal ruling lines.



Chapter 15. Control Language Programs

PURPOSE

In this module you learn to code a Control Language program to control a menu display file. In addition, several commands used only in a CL program are introduced and their use described.

TIME ESTIMATE

2½ hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- Describe the purpose of a syntax diagram.
- Describe the difference between a batch CL program and a CL program that “drives” a menu.
- Describe the importance of “existence testing.”
- Describe the purpose of the MONMSG command.
- List four commands that are used in a Control Language program to “drive” a menu.
- Create a Control Language program to “drive” a supplied menu.



At this time, begin your study of the Module 15 text.

MACHINE EXERCISE – CL PROGRAMMING

As mentioned in the module text, this exercise consists of two parts. The first part, which is optional, directs you to code and create a menu display file. The second part directs you to code and create a CL program to control the menu display file.

If you do not wish to do the first part of the exercise, use the existing display file named APDMEN.

Option 4 of either menu runs the query you created in Module 13. If you did not do Machine Exercise 2 of Module 13, your query prints non-preferred vendors instead of preferred vendors referred to in this exercise. This exercise works with either query.

Instructions for Part One

1. Code the DDS for the display layout shown below.

Display Screen Layout Sheet		COLUMN							
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

2. Sign on using the password GLC. Select the Programmer Menu on the Student Exercise Menu.

3. Enter the following values on the Programmer Menu:

Option: 8
Parm: APDMENUxx This is your source member name. Replace xx with your initials.

Type: DSPF
Src file: QDDSSRC or blank
Src lib: GLC
Obj lib: GLC
Jobd: QBATCH

Please double check your entries before pressing ENTER.

4. Enter your source statements.

5. Back at the Programmer Menu, enter option 3 to create the display file. Be sure to get your listing from the printer and make sure your display file was successfully created.

6. If your file is successfully created, remove your messages with CMD 6 and CMD 8. Sign off the display station and return to your study carrel to start the second part of your exercise.

Otherwise, correct your source errors using edit source and create your display file.

Instructions for Part Two

1. Code a CL program to control the display file you just created or the display file APDMEN.

If you elect to use APDMEN, the record format name is MENUA and the option field name is OPT.

For option 4 of your menu, use the Query Data (QRYDTA) command to run the query application you created in Module 13. As you may know, you cannot use the Call (CALL) command to run a query.

2. Sign on a display station using the password GLC. Select the Programmer Menu and make the following entries:

Option: 8
Parm: APL8xx This is your source member name.
 Replace xx with your initials.
Type: CLP
Src file: QCLSRC or blank
Src lib: GLC
Obj lib: GLC
Jobd: QBATCH

Please check your entries before pressing ENTER.

3. Enter your source code by entering a command and then pressing CMD 4 to get the prompt for that command.
4. Back at the Programmer Menu, create your CL program by entering option 3. Get your listing to verify that your program is successfully created.
5. Run your program by selecting option 4.

You can use the following valid vendor numbers for testing option 1.

00010	11002
00011	33333
00021	72302

6. When your program runs successfully, remove your messages with CMD 6 and CMD 8, and sign off the display station.

Otherwise, correct your program or display file and try again. If you fix your display file, remember to also recompile your program so it uses the changes you made to your display file—remember level checking.

If you get stuck and cannot create a workable program, a solution is shown on the following pages.



When finished, be sure to get your listings from the printer, return to your study carrel and continue your studies with the Unit 3 Summary.

SOLUTION TO CL PROGRAMMING MACHINE EXERCISE

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program               program name
5. Execute command            command
6. Submit job                 (job name), (command)
7. Display submitted jobs
8. Edit source                 (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                   (*NDLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 8 Parm: APIMENUXX Type: DSPF Parm 2: _____
Command: _____

Text: _____ Log requests: _____
Src file: QDDSSRC Src lib: GLC Obj lib: GLC Job: QBATCH
CF3-Command entry CF4-Prompt (3,5 & 6 only) CF6-DSPMSG

```

```

5714UT1 R07M00 850913                                SEU SOURCE LISTING
SOURCE FILE:      QDDSSRC.GLC                        MEMBER:  APIMEN
SEQNBR*... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
100      A          R MENUA
200      A
300      A          3 31'ACCOUNTS PAYABLE MENU'
400      A          5 26'1 - ENTER INVOICES'
500      A          5 54'(AFR21)'
600      A          6 26'2 - PRINT CASH REQUIREMENTS'
700      A          6 54'(AFR250)'
800      A          7 26'3 - PRINT VENDOR ANALYSIS'
900      A          7 54'(AFR300)'
1000     A          8 26'4 - PRINT PREFERRED VENDORS'
1100     A          8 54'(AFQ4XX)'
1200     A          10 26'5 - RETURN TO PREVIOUS DISPLAY'
1300     A          11 25'90 - SIGN OFF'
1400     A          13 36'ENTER OPTION'
                2 0I 13 54CHECK(ER)

***** END OF SOURCE *****

CHECK(ER) WAS CODED TO CAUSE
THE FIELD EXIT KEY TO RIGHT
ADJUST AND EXECUTE THE CHOSEN
OPTION.

```

SOLUTION TO CL PROGRAMMING MACHINE EXERCISE

```

                                PROGRAMMER MENU                                SYSTEM: ATLEIDDEV
Select one of the following:
  1. Design/execute DFU app      (app), ,(options)
  2. Design/execute query app   (app), ,(options)
  3. Create object              object name, type, pgm for CMD, (text)
  4. Call program               program name
  5. Execute command            command
  6. Submit job                 (job name), (command)
  7. Display submitted jobs
  8. Edit source                (srcmbr), (type), (text)
  9. Design display format      (srcmbr)
  0. Display Menu              (menu)
  9. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RFG, RPT, TXT
Option: 3 Parm: AFDMENUXX Type: DSPF Parm 2: _____
Command: _____

Text: _____ Log requests: _____
Src file: QDDSSRC Src Lib: GLC Obj Lib: GLC Jobd: QBATCH
CF3-Command entry CF4-Prompt (3,5 & 6 only) CF6-DSPMSG

```

```

                                PROGRAMMER MENU                                SYSTEM: ATLEIDDEV
Select one of the following:
  1. Design/execute DFU app      (app), ,(options)
  2. Design/execute query app   (app), ,(options)
  3. Create object              object name, type, pgm for CMD, (text)
  4. Call program               program name
  5. Execute command            command
  6. Submit job                 (job name), (command)
  7. Display submitted jobs
  8. Edit source                (srcmbr), (type), (text)
  9. Design display format      (srcmbr)
  0. Display Menu              (menu)
  9. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RFG, RPT, TXT
Option: 0 Parm: AFLBXX Type: CLP Parm 2: _____
Command: _____

Text: _____ Log requests: _____
Src file: QCLSRC Src Lib: GLC Obj Lib: GLC Jobd: QBATCH
CF3-Command entry CF4-Prompt (3,5 & 6 only) CF6-DSPMSG

```

SOLUTION TO CL PROGRAMMING MACHINE EXERCISE

```

5714UT1 R07M00 850913                      SEU SOURCE LISTING
SOURCE FILE:      QCLSRC.GLC                MEMBER:      APLBXX

SEQNBR*... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ..

100          FGM
200          DCLF          FILE(AFDMEN.GLC)
300 FIRST:   SNIIRCVF     RCDJFMT(MENUA)
400          IF           COND(&OFT *EQ 1) THEN(CALL FGM(APR21))
500          IF           COND(&OFT *EQ 2) THEN(CALL FGM(APR250))
600          IF           COND(&OFT *EQ 3) THEN(CALL FGM(APR300))
700          IF           COND(&OFT *EQ 4) THEN(QRYDTA +
800          AFF(APQ4XX.GLC) OUTPUT(*LIST))
900          IF           COND(&OFT *EQ 5) THEN(RETURN)
1000         IF           COND(&OFT *EQ 90) THEN(SIGNOFF)
1100         GOTO         CMDLBL(FIRST)
1200         ENDPGM

                * * * * * E N D   O F   S O U R C E * * * * *

```

PROGRAMMER MENU SYSTEM: ATLEDDEV

Select one of the following:

1. Design/execute DFU app	(app), ,(options)
2. Design/execute query app	(app), ,(options)
3. Create object	object name, type, pgm for CMD, (text)
4. Call program	program name
5. Execute command	command
6. Submit job	(job name), (command)
7. Display submitted jobs	
8. Edit source	(srcmbr), (type), (text)
9. Design display format	(srcmbr)
80. Display Menu	(menu)
90. Sign off	(*NOLIST *LIST)

Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
PRTF, QRY, RPG, RPT, TXT

Option: 3 Parm: APLBXX Type: CLP Parm 2: _____

Command: _____

Text: _____ Log requests: _____

Src file: QCLSRC Src lib: GLC Obj lib: GLC Jobd: QBATCH

CF3-Command entry CF4-Prompt (3,5 & 6 only) CF6-DSPMSG

SOLUTION TO CL PROGRAMMING MACHINE EXERCISE

```
                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program               program name
5. Execute command            command
6. Submit job                 (job name), (command)
7. Display submitted jobs
8. Edit source                (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                  (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTE, QRY, RPG, RPT, TXT
Option: 4  Parm: AFLBXX  Type:  Parm 2:
Command:
-----
Text:
Src file: RCLSRC  Src lib: GLC  Obj lib: GLC  Log requests:
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG  Jobd: QRATCH
```



MODULE SUMMARY

In this module you learned to write a CL program to control a menu display file. In particular you learned to use the logical IF command to identify the option entered by the user. You learned about the Declare File (DCLF) command used to identify a file to the compiler. You learned about the Send and Receive File (SNDRCVF) command which is used to both write and read a display file.

In addition, in the exercise you learned how to run a Query application interactively. This is important to know because you cannot just CALL a utility application as you would a user-written program.



Chapter 16. Screen Design Aid

PURPOSE

The purpose of this module is to teach the use of the Screen Design Aid (SDA) utility. SDA provides an alternative, and very productive, method for creating display device files.

TIME ESTIMATE

2½ hours

MODULE OBJECTIVES

After successfully completing this module, you should be able to:

- List the three major functions of the Screen Design Aid (SDA) utility.
- Describe two ways to request SDA.
- Re-create two display files that were created earlier in this course using DDS.
- Use SDA to test a display file's format(s).
- Use SDA to create a CL program that displays a menu.

MATERIALS NEEDED

For this module, you will need a copy of the *Screen Design Aid Reference Manual and User's Guide*, SC21-7755.



At this time, begin your study of the Module 16 text.

MACHINE EXERCISE 1 – TESTING A DISPLAY FILE

In this exercise you are to test your display file APDENTxx. You created this display file in machine exercise 1 of Module 7.

1. Go to a display station attached to a System/38 and sign on using the password GLC.
2. Select the Programmer Menu.
3. On the Programmer Menu, enter option 9 and press ENTER.
4. Select option 3 on the OPTION MENU to test your display file.

Enter the required (R) information on the following prompts.

5. When your APDENTxx file display appears, enter data. Some valid vendor numbers are as follows:

00010
00011
00016
00688
30188

When the Output Data For Test Display appears again, change the output indicator to 1 to test the indicator operation.

Press CMD 1 when the data entry display appears.

Feel free to try any other tests. For instance, you may try to enter letters into a numeric field.

6. When finished, exit SDA and sign off the display station.



Return to your study carrel and continue your studies with Unit 4 of Module 16.

MACHINE EXERCISE 2 – USING SDA TO CREATE A MENU AND CL PROGRAM

In this exercise you use SDA to create a menu and the CL program to control it. This exercise reinforces what you learned in doing machine exercise 3 in the Module 16 text.

You should not rush through this exercise. Read the following instructions carefully. Use the HELP key and reference material if you are not sure about an entry. Also, you may find it helpful to use the roadmap of SDA displays, which is Figure 3-1 in the SDA Reference Manual (SC21-7755).

If you get bogged down in doing this exercise, a display-by-display solution follows the exercise instructions.

Instructions

1. Go to a display station attached to a System/38 and sign on using the password GLC.
2. Select the Programmer Menu.
3. Select SDA with option 9.

- On the Option Menu, select option 2 to design a menu. The screen layout for the menu is shown below. This is the Accounts Payable Menu you used in the Module 15 machine exercise. Here, you will create it again under a different name using SDA.

Display Screen Layout Sheet

COLUMN

ROW	1-10										11-20										21-30										31-40										41-50										51-60										61-70										71-80																		
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
01																																																																																									
02																																																																																									
03	ACCOUNTS PAYABLE MENU																																																																																								
04																																																																																									
05	1 - ENTER INVOICES (APR21)																																																																																								
06	2 - PRINT CASH REQUIREMENTS (APR25)																																																																																								
07	3 - PRINT VENDOR ANALYSIS (APR30)																																																																																								
08	4 - PRINT PREFERRED VENDORS (APR4xx)																																																																																								
09																																																																																									
10	5 - RETURN TO PREVIOUS DISPLAY																																																																																								
11	90 - SIGN OFF																																																																																								
12																																																																																									
13	ENTER OPTION: XX																																																																																								
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In creating the menu please note the following:

- There is one important, yet subtle, difference between this exercise and the example you studied in Unit 4 of the Module 16 text. In the example in the text, the name of the display file and the CL program were the same. SDA presumes the same name will be used for the display file and the CL program. You can use the prompts and specify different names for the display file and the program. In this exercise you are to use the name `APSMENxx` for the display file and the name `APSCLxx` for the CL program, where `xx` are your first and last initials.

To get off to a correct start, you enter your CL program name `APSCLxx` on the INITIAL MENU DEFINITION prompt.

- When using the Menu Definition Display, it is not important to get the blank line between options 4 and 5, as shown on the screen layout.
- Option 4 of the menu is to run the query application you created in Module 13. To run an existing query you use either the Design Query Application (`DSNQRYAPP`) command to run it in batch, or the Query Data (`QRYDATA`) command to run it interactively.

In the machine exercise in Module 15, you used `QRYDTA`. For this exercise use `DSNQRYAPP`. In reality, an interactive query could take ten or more minutes and you probably would not want to tie up a display station for this length of time.

To do the 4 option, in addition to entering the material shown on the screen layout, enter a `P` in the first column, a `C` in the `TYPE` column and the `DSNQRYAPP` command in the `PGM/CMD` column. To see why you entered a `P` and a `C`, look at the explanations at the bottom of the display or use the `HELP` key.

- Complete the menu definition as shown in the display screen layout. Remember, SDA supplies the enter option prompt for you.

When you finish your menu definition, press ENTER. You will get the prompt for the DSNQRYAPP command.

Enter your query name APQ4xx and a 2 on both option lines. The latter entries eliminate getting the first two prompting screens of this command at execution time. Refer to the CL Reference Manual (SC21-7731) for an explanation of the option parameter for DSNQRYAPP.

Press ENTER.

- Exit the Menu Definition Display with CMD 1.
- The SAVE DDS/CREATE DISPLAY FILE prompt is displayed with the name of the CL program. You need to change this name to the name of your display file, APSMENxx. Also, change the name of the library into which the file is to be created from QGPL to GLC.

The SAVE CL/CREATE CL PROGRAM prompt should show the correct names.

5. After you create both your display file and CL program, get your listings to verify that both objects are created in the GLC library. If the objects are not created in the correct library, you'll have to re-create them using the correct library parameter.
6. Back at the Programmer Menu, enter option 4 and your CL program name APSClxx in order to run and test your menu.

When you select option 4 on your menu, you get a prompt requesting the file member name to be used in this query. Just press ENTER to continue.
7. If you experience problems, use SDA to make corrections and try again. If you feel you are stuck and need help, use the display-by-display solution that follows to guide you.
8. When you are ready to sign off, display your messages with CMD 6 and then remove them with CMD 8.
9. Sign off the display station and be sure to get your listings from the printer.



Return to your study carrel and continue your studies with Unit 5 of Module 16.

SOLUTION TO MACHINE EXERCISE 2

```
                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
10. Display Menu              (menu)
10. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 9  Para: _____  Type: _____  Para 2: _____
Command: _____

Text: _____  Log request: _____
Src file: _____  Src lib: *LIBL  Obj lib: GLC  Job: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
```

```
SDA                                OPTION MENU
```

```
Select one of the following:
 1. Design display record format
 2. Design a menu
 3. Test an existing display record format
```

```
Option: 2
```

Within SDA:

Press HELP key to display help text for the current display.
Press CF1 key to exit any option and allow saving the changes.
Press CF2 key to back up to the previous display in a series.
Press ENTER/REC ADV to advance to the next display.

SOLUTION TO MACHINE EXERCISE 2

```

SDA                                INITIAL MENU DEFINITION
Menu/member:                        AESCLXX___
  (blank for MEMBER LIST display)
CL source file:                     QCLSRC___
Library:                             GLC_____

Command to be executed
when CF1 pressed on the menu:    RETURN_____ (CF4 for prompt)
Type:                               C          F-Call pgm   C-CL command
                                      L-with parms E-execution prompt

Number of columns for the menu (1 or 2):  1

Allow this menu on the following display sizes:
DISPLAY SIZE      (Y N)
*DS4, 27x132:      -
*DS3, 24x80:       Y
*DS2, 12x80:       -
*DS1, 16x64:       - (1-column menu only)

Display date and time on the menu:      Y (Ignored for *DS1)

Menu Title:  ACCOUNTS_PAYABLE_MENU_____
    
```

```

SDA                                MENU DEFINITION
Title:  ACCOUNTS_PAYABLE_MENU_____
OPTION  MENU PROMPT                                     06 options of 20
TYPE PGM/CMD
1 ENTER INVOICES (AEB21)                               E AEB21
2 PRINT CASH REQUIREMENTS (AEB250)                     E AEB250
3 PRINT VENDOR ANALYSIS (AEB300)                       E AEB300
P 4 PRINT PREFERRED VENDORS (AEP4XX)                   C ISNGBYAEP
5 RETURN TO PREVIOUS DISPLAY                            C RETURN
20 SIGN OFF                                             C SIGNOFF

I-Insert   D-Delete      TYPE - Call program:   Other commands:
C-Copy     A-After      F-No parameters   C-CL command
P-Prompt for command now  L-Parameter List  E-Execution time prompt
    
```

SOLUTION TO MACHINE EXERCISE 2

```

          Design Query Application (DSNQRYP) Prompt
Enter the following!
Label!
Query name!                APP      P  AFQ4XX
Library name!              *PRU
Option!                     OPTION  P  2
                               2
Library for output file!   OUTLIB *PROMPT
Authority for output file! PUBAUT  *PROMPT
    
```

PRESS ENTER THEN
CF1 TO EXIT

```

SDA                SAVE DDS/CREATE DISPLAY FILE

Save the generated DDS source                (Y N): Y
Source file where DDS is to be saved!      R QDDBSRC
Library!                                    GLC
Member!                                     APSCCLXX
      (blank for MEMBER LIST display)

Create a display file from the DDS          (Y N): Y
Display file!                              R APSMENXX
Library!                                    GLC
If create fails, display spooled listing   (Y N): Y
Replace existing file                      (Y N): —
Prompt for additional CRTDSPF parameters   (Y N): —
Create file if DDS message severity
  is less than GENLVL                      (0 10 20 or 30): 20

Submit display file creation in batch      (Y N): Y
Job description!                          QBATCH
Library!                                    *LIBL
    
```

SOLUTION TO MACHINE EXERCISE 2

```

SDA                                SAVE CL/CREATE CL PROGRAM

Source file where CL is to be saved:
Library:                            R QCLSRC
Member:                              GLC
                                     AFSCCLXX
      (blank for MEMBER LIST display)

Create a CL program from the CL source      (Y N): Y
CL program:                              R AFSCCLXX
Library:                                  GLC
If create fails, display spooled listing   (Y N): Y
Replace existing program                   (Y N): _
Prompt for additional CRTCLPGM parameters (Y N): _

Submit the CL creation in batch            (Y N): Y
Job description:                          QBATCH
Library:                                   *LIBL
    
```

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV

Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program                program name
5. Execute command            command
6. Submit job                  (job name), (command)
7. Display submitted jobs
8. Edit source                 (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                   (*NCLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DBPF, LF, MXDF, PF, PLI,
      PRIF, QRY, RPG, RPT, TXT
Option: 4  Parm: AFSCCLXX  Type: _____  Parm 2: _____
Command: _____

Text: _____  Log requests: _____
Src file: _____  Src lib: *LIBL  Obj lib: GLC  Job: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
    
```

SOLUTION TO MACHINE EXERCISE 2

```
4/03/86                                ACCOUNTS PAYABLE MENU                                15:37:04
Select one of the following:
1.  ENTER INVOICES                       (APR21)
2.  PRINT CASH REQUIREMENTS (APR250)
3.  PRINT VENDOR ANALYSIS   (APR300)
4.  PRINT PREFERRED VENDORS (APR4XX)
5.  RETURN TO PREVIOUS DISPLAY
90. SIGN OFF
```

Option:

MACHINE EXERCISE 4 – USING SDA TO CREATE A SUBFILE

Using SDA can be very productive, therefore, you are encouraged to take the time to do this optional exercise.

The exercise has two parts. In the first part you are to do a hands-on example in the SDA reference manual. This example takes you step-by-step through the design and creation of a display file with a subfile. It reinforces what you just studied in the module text.

In the second part of this exercise you use SDA to design and create a display file with a subfile.

Part 1

Do the hands-on example in the chapter entitled "Example: How to Design and Create a Subfile" in the SDA Reference Manual (SC21-7755). This example is quite complex, because you will be designing both a subfile format and a subfile control format. Follow the instructions carefully making sure of your entries.

Instructions

1. To do the example, sign on with the password GLC.

Enter your initials or ID and select the Programmer Menu.

On the ! WELCOME BACK ! display you may see at the bottom of the display the question "Are you performing Exercise 4 of Module 16?" If this question appears, leave the answer N and press ENTER to continue.

2. Do the example instructions except as follows:

- Use the name EXAMPLExx both for the member and file name. Replace xx with your first and last initials.
- One helpful hint when you do this example: position the ruler on line 2 of the work display, rather than line 1 as instructed.

If you position the ruler on line 1, you will enter a heading over the ruler and lose alignment ability. In general, you should make a point of putting the ruler on a line where no or few entries are to be made.

- On the SAVE DDS/CREATE DISPLAY FILE prompt, change the library where the file is to be created from QGPL to GLC.

3. If you are confused after you have gone through this example once, you may want to go through it again after removing your source member and deleting your file.

```
RMVM FILE(QDDSSRC.GLC) MBR(EXAMPLExx)
DLTF FILE(EXAMPLExx.GLC)
```

4. Get and examine your listings from the printer. Verify that your display file was created in the GLC library.

Use the commands in step 3 above to remove your source member and delete your file.

Part 2

In this part you design and create the display file shown below using SDA. This is the Vendor Search display file you defined and created in the desk and machine exercise 2 of Chapter 7. You will not use this previous material. You will start from scratch by using a different name for the display file you design and create here.

Display Screen Layout Sheet		COLUMN							
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
		1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0
01									
02		VENDOR SEARCH							
03									
04		ENTER CHARACTERS FOR SEARCH				XXXXXXXXXXXX			
05									
06		PRESS ENTER FOR SEARCH							
07									
08		COMMAND KEY J FOR END OF JOB							
09									
10		VENDOR NAME			SALESPERSON			ZIP NUMBER	
11									
12		X-----X			X-----X			XXXXX XXXXX	
13		}							
14		}							
15		}							
16		}							
17		}							
18		}							
19		}							
20		}							
21		X-----X			X-----X			XXXXX XXXXX	
22									
23									
24									
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
		1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

After creating your display file, you test it with the same existing program APR25 you used in Chapter 7. Note that names used in APR25 determine names you must use in your display file design. The names required are given in the following instructions.

Because this exercise is a simpler version of the example exercise you just completed in Part 1, you should, to avoid confusion, follow the sequence of SDA displays used in the example. Where there are deviations from this sequence, they will be explained to you.

A solution follows this exercise. To get the most from this exercise, use the solution only after you have successfully created your display file and wish to review the course solution, or if you become completely bogged down.

Please read the instructions for each step carefully before doing the step.

Instructions

1. If you signed off, sign on to a System/38 display station with the password GLC and select the Programmer Menu.
2. On the Programmer Menu select option 9 and make the following entries:

Parm: APSSRCxx This is your source member name.
Replace xx with your first and last initials. It will also be your display file name.

Type: DSPF
Src file: QDDSSRC or blank
Src lib: GLC
Obj lib: GLC
Jobd: QBATCH

3. The existing program you will use to test your display file requires the following entries on the appropriate SDA prompts:
 - Name your subfile control record format SCHCTL.
 - Name your subfile record format SCHDTA.
 - The data file used is named APLSCHVN.
 - Indicator 99 is used with Command key 1, CA01, for end of job.

- The following indicators are used for the listed keywords.

75	DSPSFL
76	DSPSFLCTL
77	DSPCLR

Following are additional instructions and entries you are to make.

- Make the subfile size 50. Make the page size 10.
- No messages are displayed because for this simplified example, the program does not check for an invalid vendor search value.
- After selecting Field Definition to design the subfile control record, press CMD 11 to get fields from the data file APLSCHVN. Note that the field SCHCOD is the vendor search field. Select this field as an input field. Later, you will change the name of this field to CODE1 as required by the program.
- Enter the column headings for the subfile records as constants, rather than use the method of the Example you did in Part 1.

When you finish designing the subfile control record on the work display, press CMD 10 and change the field name SCHCOD to CODE1 on the Field List Display.

- When you get to the SAVE DDS/CREATE DISPLAY FILE prompt, you must make an adjustment to your SDA-generated source before you create the display file. This is required because you use an existing program to process your display file. The indicators 75, 76, and 77 with their keywords are in the following sequence in the existing program:

76	SFLDSPCTL
75	SFLDSP
77	SFLCLR

This sequence is different from the sequence in your display file source generated by SDA.

You need to do the following:

- On the SAVE DDS/CREATE DISPLAY FILE prompt, change the Y to N so as not to create the display file at this time. You do want to save the source.

Press ENTER.

Press CMD 1 (CF1) until you get back to the Programmer Menu.

- Enter option 8 on the Programmer Menu and when the source appears, move the specification 76 DSPSFLCTL to get the order shown.

Exit SEU.

4. Enter option 3 on the Programmer Menu to create your display file.
5. Execute the following override display file command to direct the existing program to your display file.

```
OVRDSPF FILE(APDSRC) TOFILE(APSSRCxx)
```

6. Call the program named APR25 using option 4 on the Programmer Menu.
7. When your display file appears, type in BEST for the vendor search value, press ENTER. Your display should list vendors starting with BEST AND COMPANY.

If you wish to do some more tests, the following are valid search arguments:

```
LINSEED          UNDERHILL  
PINE             WINTHROP  
ACE
```

8. Back at the Programmer Menu, press CMD 6 to display messages, then remove the messages with CMD 8.
9. Sign off the display station and get your listings from the printer.

10. Because this is the last machine exercise you will do, you need to remove your exercise material from the system. To do this, sign on with the password GLC.

Enter your initials and select option 2 on the Student Exercise Display.

When the ! WELCOME BACK ! display appears answer Y to the question at the bottom of the display. It will take a little time to delete your material.

Now sign off. Thank you for deleting your material.



Return to your study carrel and continue studies in Module 16 with Unit 6.

SOLUTION TO MACHINE EXERCISE 4

```
                                PROGRAMMER MENU                                SYSTEM: ATLEDDEV
Select one of the following:
 1. Design/execute DFU app      (app), ,(options)
 2. Design/execute query app   (app), ,(options)
 3. Create object              object name, type, pgm for CMD, (text)
 4. Call program               program name
 5. Execute command            command
 6. Submit job                 (job name), (command)
 7. Display submitted jobs
 8. Edit source                (srcmbr), (type), (text)
 9. Design display format      (srcmbr)
80. Display Menu               (menu)
90. Sign off                   (*NOLIST *LIST)
Typest BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 9  Parm: AFSSRCXX  Type: DSPF  Parm 2: _____
Command: _____

Text: _____ Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
```

```
SDA                                OPTION MENU
Select one of the following:
 1. Design display record formats
 2. Design a menu
 3. Test an existing display record format

Option: 1
```

Within SDA:

- Press HELP key to display help text for the current display.
- Press CF1 key to exit any option and allow saving the changes.
- Press CF2 key to back up to the previous display in a series.
- Press ENTER/REC ADV to advance to the next display.

SOLUTION TO MACHINE EXERCISE 4

SDA DESIGN RECORD FORMAT MENU

Select one of the following:

1. File Definition
2. Record Format Definition
3. Field Definition
4. Subfile Control Record Definition
5. Subfile Record Format Definition
6. Save DDS/Create Display or Mixed File

Option: 4

New or existing display record format
(blank for RECORD FORMAT LIST display)

Record format: SCHCTL

Enter the source file for DDS

DDS source file: QDDSSRC
Library: GLC

New or existing member name
(blank for MEMBER LIST display)

Member: APSSRCXX

Source type (DSPF, MXDF or blank for default)

Type: _____

Enter additional record formats to be
displayed on the WORK DISPLAY

Additional records: _____

SDA SUBFILE CONTROL RECORD DEFINITION

Record: SCHCTL TEXT: SUBFILE CONTROL RECORD

1. General Control Record Keywords
2. Subfile Display Layout
3. Subfile Messages
4. Subfile Message Record

Option: 2

----- 1. General Control Record Keywords -----

Enter the name of the related subfile record SFLCTL R SCHCTL

Enter a CA or CF key to switch from folding to truncating records when the key is pressed SFLDROP

If ENTER/REC ADV is to be used as ROLLUP specify CA or CF key used in place of ENTER/REC ADV SFLENTER

		(Y N)	Nnn	Nnn	Nnn	or +
Display subfile records	SFLDISP	R Y	25	---	---	
Display control record	SFLDISPCTL	Y	26	---	---	
Initialize subfile fields	SFLINZ		---	---	---	
Delete subfile area	SFLDLT		---	---	---	
Clear subfile of records for input	SFLCLR		27	---	---	
Display + for more records	SFLEND		---	---	---	
Record not active	SFLRNA	-	---	---	---	
Invite devices for later read	INVITE	-	---	---	---	

SOLUTION TO MACHINE EXERCISE 4

```

SDA                                SUBFILE CONTROL RECORD DEFINITION
Record: SCHCTL    TEXT: SUBFILE CONTROL RECORD
  1. General Control Record Keywords      3. Subfile Messages
  2. Subfile Display Layout                4. Subfile Message Record
Option: 3

```

----- 2. Subfile Display Layout -----

The following keywords will determine the subfile display layout:

			DISPLAY SIZE	More
Number of records in subfile	SFLSIZ	R <u>50</u>	_____	-
Number of records per display	SFLPAG	R <u>10</u>	_____	-
Number of spaces between records	SFLLIN	_____	_____	-

PRESS CF2 TO RETURN TO
DESIGN RECORD FORMAT MENU

```

SDA                                DESIGN RECORD FORMAT MENU
Select one of the following:
  1. File Definition
  2. Record Format Definition
  3. Field Definition
  4. Subfile Control Record Definition
  5. Subfile Record Format Definition
  6. Save DDS/Create Display or Mixed File

```

Option: 2

New or existing display record format (blank for RECORD FORMAT LIST display)	Record format:	<u>SCHCTL</u>
Enter the source file for DDS	DDS source file:	<u>QDDSSRC</u>
	Library:	<u>GLC</u>
New or existing member name (blank for MEMBER LIST display)	Member:	<u>APSSRCXX</u>
Source type (DSPF, MXDF or blank for default)	Type:	<u>ISPF</u>
Enter additional record formats to be displayed on the WORK DISPLAY	Additional records:	_____

SOLUTION TO MACHINE EXERCISE 4

PRESS CF11 TO GET THE DATA
BASE FILE DISPLAY

SDA Work Display: Press HELP for list of valid commands and CF keys.

SDA

DATA BASE FILE DISPLAY

Enter data base file names from which fields are to be displayed.
For X-I-O-B: Enter an X to display DATA BASE FIELD DISPLAY
Enter usage attribute: I to assign field as input field
O to assign field as output field
B to assign field as both field

X-I-O-B	DATA BASE FILE	LIBRARY	RECORD FORMAT
X	AELSCHVN__	*LIBL_____	_____
-	_____	*LIBL_____	_____
-	_____	*LIBL_____	_____
-	_____	*LIBL_____	_____

SOLUTION TO MACHINE EXERCISE 4

```
SDA                                DATA BASE FORMAT LIST
Data base file:  APLSCHVN  Library: *LIBL
```

Record format list:

1 VEND

1 - Select record format to use with DATA BASE FILE DISPLAY

```
SDA                                DATA BASE FIELD DISPLAY                                +++
```

Record: VEND

To scroll the file enter the number of fields to roll Roll: 15

To search the file for a field enter the field name Field: _____

For X-I-O-B Enter X for the EXTENDED DATA BASE FIELD DISPLAY.

Enter I, O, or B for usage and selection of the field.

X-I-O-B	FIELD	LENGTH	TYPE	COLUMN HEADING
<u>O</u>	UNDNAM	25	A	VENDOR NAME
<u>O</u>	UNDSL	25	A	SALESPERSON
<u>O</u>	UNIZIP	5,0	P	ZIP CODE
<u>O</u>	UNDNBR	5,0	P	VENDOR NUMBER
<u>I</u>	SCHCOD	10	A	SEARCH CODE

PRESS ENTER TO RETURN TO
DATA BASE FILE DISPLAY

THEN CF2 TO RETURN TO THE
WORK DISPLAY

SOLUTION TO MACHINE EXERCISE 4

POSITION THE CURSOR TO LINE 1
POSITION 1 THEN PRESS CF8

1:VNDNAM 2:VNDCLS 3:VNDZIF 4:VNDNBR 5:SCHCOD

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
1:VNDNAM 2:VNDCLS 3:VNDZIF 4:VNDNBR 5:SCHCOD
```

SOLUTION TO MACHINE EXERCISE 4

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          'VENDOR SEARCH'
3
4  'ENTER CHARACTERS FOR SEARCH'      &5
5
'PRESS ENTER FOR SEARCH'
7
'COMMAND KEY 1 FOR END OF JOB'
9
10         'VENDOR NAME'              'SALESPERSON'              'ZIP'      'NUMBER'
11
12
13
14
15
16
17
18
19
20
21
22
23
1:VNDNAM 2:VNDSL5 3:VNDZIP 4:VNDNBR 5:SCHCOD
```

AFTER ENTERING THE DATA AS SHOWN
PRESS ENTER

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          VENDOR SEARCH
3
4  ENTER CHARACTERS FOR SEARCH      IIIIIIIIII
5
PRESS ENTER FOR SEARCH
7
COMMAND KEY 1 FOR END OF JOB
9
10         VENDOR NAME              SALESPERSON              ZIP      NUMBER
11
12
13
14
15
16
17
18
19
20
21
22
23
1:VNDNAM 2:VNDSL5 3:VNDZIP 4:VNDNBR
```

PRESS CF10 TO DISPLAY
THE FIELD LIST PROMPT

SOLUTION TO MACHINE EXERCISE 4

SDA
Record: SCHCTL

Number of fields to roll: 16

ORDER	FIELD NAME	TYPE	USE	LENGTH	LINE	POS	REF	CONDITION	OVERLAP
<u>10</u>	VENDOR SEA	C		13	02	31			
<u>20</u>	ENTER CHAR	C		27	04	06			
<u>30</u>	SCHCOD		I	10	04	41	Y		
<u>40</u>	PRESS ENTE	C		22	06	02			
<u>50</u>	COMMAND KE	C		28	08	02			
<u>60</u>	VENDOR NAM	C		11	10	09			
<u>70</u>	SALESPERSO	C		11	10	36			
<u>80</u>	ZIP	C		3	10	62			
<u>90</u>	NUMBER	C		6	10	70			

1 - Extended definition 9 - Delete field CF3 - Sort fields by Line/Pos

Add a hidden field: Name: _____ Order: _____ Length: _____
 Add a message field: Name: _____ Order: _____ Length: _____

SDA
Record: SCHCTL

Number of fields to roll: 16

ORDER	FIELD NAME	TYPE	USE	LENGTH	LINE	POS	REF	CONDITION	OVERLAP
<u>10</u>	VENDOR SEA	C		13	02	31			
<u>20</u>	ENTER CHAR	C		27	04	06			
<u>30</u>	CODE1		I	10	04	41	Y		
<u>40</u>	PRESS ENTE	C		22	06	02			
<u>50</u>	COMMAND KE	C		28	08	02			
<u>60</u>	VENDOR NAM	C		11	10	09			
<u>70</u>	SALESPERSO	C		11	10	36			
<u>80</u>	ZIP	C		3	10	62			
<u>90</u>	NUMBER	C		6	10	70			

AFTER ENTERING THE DATA
 PRESS CF2 TO RETURN TO
 THE WORK DISPLAY

1 - Extended definition 9 - Delete field CF3 - Sort fields by Line/Pos

Add a hidden field: Name: _____ Order: _____ Length: _____
 Add a message field: Name: _____ Order: _____ Length: _____

SOLUTION TO MACHINE EXERCISE 4

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          VENDOR SEARCH
3
4  ENTER CHARACTERS FOR SEARCH      SIIIIIIIIII
5
6  PRESS ENTER FOR SEARCH
7
8  COMMAND KEY 1 FOR END OF JOB
9
10         VENDOR NAME                SALESPERSON                ZIP        NUMBER
11
12
13
14
15         ENTER AN S TO INDICATE
16         COLUMN SEPARATORS FOR
17         CODE1 FIELD PRESS ENTER
18
19
20
21
22
23
1:VNDNAM 2:VND SLS 3:VNDZIP 4:VNDNBR
```

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          VENDOR SEARCH
3
4  ENTER CHARACTERS FOR SEARCH      IIIIIIIIII
5
6  PRESS ENTER FOR SEARCH
7
8  COMMAND KEY 1 FOR END OF JOB
9
10         VENDOR NAME                SALESPERSON                ZIP        NUMBER
11
12
13
14
15
16
17         PRESS CF8 TO REMOVE RULER
18
19
20
21
22
23
1:VNDNAM 2:VND SLS 3:VNDZIP 4:VNDNBR
```

SOLUTION TO MACHINE EXERCISE 4

```
                                VENDOR SEARCH

ENTER CHARACTERS FOR SEARCH      XXXXXXXXXX

PRESS ENTER FOR SEARCH

COMMAND KEY 1 FOR END OF JOB

      VENDOR NAME              SALESPERSON              ZIP      NUMBER

                                PRESS CF2 TO RETURN TO
                                DESIGN RECORD FORMAT MENU

1:VNDNAM 2:VNDCLS 3:VNDZIP 4:VNDNR
```

```
SDA                                DESIGN RECORD FORMAT MENU
Select one of the following:
 1. File Definition
 2. Record Format Definition
 3. Field Definition
 4. Subfile Control Record Definition
 5. Subfile Record Format Definition
 6. Save DDS/Create Display or Mixed File

Option: 5

New or existing display record format
  (blank for RECORD FORMAT LIST display)      Record format: SCHDTA

Enter the source file for DDS                  DDS source file: QDUSSRC
                                                Library: GLC

New or existing member name
  (blank for MEMBER LIST display)             Member: AFSSRCXX
Source type (ISPF, MXDF or blank for default) Type: ISPF

Enter additional record formats to be
  displayed on the WORK DISPLAY                Additional records: SCHCTL
                                                _____
                                                _____
```

SOLUTION TO MACHINE EXERCISE 4

```

SDA                SUBFILE RECORD FORMAT DEFINITION
Record: SCHDTA    TEXT: SUBFILE RECORD FORMAT
  1. General Subfile Keywords      3. Subfile Message Record
  2. Indicator Keywords
Option: 2

----- 1. General Subfile Keywords -----

Return this record on read next changed      SFLNXTCHG  (Y N) Nnn Nnn Nnn or +
Write this record to the job log              LOGOUT     _ _ _ _ _
Write this record to the job log              LOGINP    _ _ _ _ _

Allow blanks in input fields                  CHECK(AB) : _
Move cursor right-to-left with               CHECK(RL) : _
Display and/or change defaults for input fields (Y),
or cancel all previously set defaults (N)    CHGINPDEF : _

Keep this record and any others on the display when
closing (the default is to erase it)         KEEP : _
  
```

PRESS CF2 TO RETURN TO
DESIGN RECORD FORMAT MENU

```

SDA                DESIGN RECORD FORMAT MENU
Select one of the following:
  1. File Definition
  2. Record Format Definition
  3. Field Definition
  4. Subfile Control Record Definition
  5. Subfile Record Format Definition
  6. Save DDS/Create Display or Mixed File

Option: 3

New or existing display record format
(blank for RECORD FORMAT LIST display)      Record format:  SCHDTA
Enter the source file for DDS                DDS source file: QDSSRC
Library:                                     GLC
New or existing member name
(blank for MEMBER LIST display)             Member:         APSSRCXX
Source type (DSPF, MXDF or blank for default) Type:       DSPF
Enter additional record formats to be
displayed on the WORK DISPLAY               Additional records: SCHCTL
  
```

SOLUTION TO MACHINE EXERCISE 4

```
VENDOR SEARCH

ENTER CHARACTERS FOR SEARCH  XXXXXXXXXX
PRESS ENTER FOR SEARCH
COMMAND KEY 1 FOR END OF JOB

VENDOR NAME                SALESPERSON                ZIP        NUMBER


```

POSITION THE CURSOR TO LINE 11
POSITION 1 THEN PRESS CF8

```
1:VNDNAM 2:VNDISLS 3:VNDIZIP 4:VNDNBR
```

```
1
2
3
4  ENTER CHARACTERS FOR SEARCH  XXXXXXXXXX
5
6  PRESS ENTER FOR SEARCH
7
8  COMMAND KEY 1 FOR END OF JOB
9
10
11  VENDOR NAME                SALESPERSON                ZIP        NUMBER
12  ... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
13
14
15
16
17
18
19
20
21
22
23
1:VNDNAM 2:VNDISLS 3:VNDIZIP 4:VNDNBR
```


SOLUTION TO MACHINE EXERCISE 4

```

1
2          VENDOR SEARCH
3
4  ENTER CHARACTERS FOR SEARCH      xxxxxxxxxx
5
6  PRESS ENTER FOR SEARCH
7
8  COMMAND KEY 1 FOR END OF JOB
9
10         VENDOR NAME                SALESPERSON                ZIP        NUMBER
11         ... 1 ... 2 ... 3 ... 4 ... 5 ... 6 ... 7 ... 8
12         &1                          &2                          &3          &4
13
14
15
16
17
18
19         [PRESS CF8 TO REMOVE RULER]
20
21
22
23
1:VNDNAM 2:VNDISLS 3:VNDZIP 4:VNDNBR
    
```

```

          VENDOR SEARCH

    ENTER CHARACTERS FOR SEARCH      xxxxxxxxxx

    PRESS ENTER FOR SEARCH

    COMMAND KEY 1 FOR END OF JOB

          VENDOR NAME                SALESPERSON                ZIP        NUMBER

0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666
0000000000000000000000000000000000  0000000000000000000000000000000000  66666        66666

    [PRESS CF6 TO PRINT THE WORK DISPLAY
    (A SAMPLE PRINTOUT IS INCLUDED IN THE SOLUTION)]
    
```


SOLUTION TO MACHINE EXERCISE 4

```
SDA                                RECORD FORMAT LIST
DDS source file: QDDSSRC           Lib: GLC           Mbr: APSSRCXX   Src type: DSFF
Enter new record name or select record from list below:
CONTROL  ORDER  RECORD  INITIAL ERROR  TYPE  RELATED SUBFILE
  2      10    SCHCTL
  -      20    SCHDTA
                        SFLCTL
                        SFL
                        *ERROR
                        *ERROR
```

1 - Select record to be processed 2,3,4 - Additional records to display
8 - Use as base for new record 9 - Remove record format

```
SDA                                RECORD FORMAT LIST
DDS source file: QDDSSRC           Lib: GLC           Mbr: APSSRCXX   Src type: DSFF
Enter new record name or select record from list below:
CONTROL  ORDER  RECORD  INITIAL ERROR  TYPE  RELATED SUBFILE
  2      20    SCHCTL
  -      10    SCHDTA
                        SFLCTL
                        SFL
                        *ERROR
                        *ERROR
```

CHANGE ORDER TO CORRECT
*ERROR PRESS ENTER

1 - Select record to be processed 2,3,4 - Additional records to display
8 - Use as base for new record 9 - Remove record format

SOLUTION TO MACHINE EXERCISE 4

```

SDA                                RECORD FORMAT LIST
DDS source file: QDSSSRC           Lib: GLC           Mbr: AFSSRCXX   Src type: DSPF
Enter new record name or select record from list below:
CONTROL  ORDER    RECORD    INITIAL ERROR    TYPE    RELATED SUBFILE
  2       10      SCHDTA
  2       20      SCHCTL          SFL          SFLCTL          SCHDTA
  
```

PRESS CF2 TO RETURN TO
DESIGN RECORD FORMAT MENU

1 - Select record to be processed 2,3,4 - Additional records to display
8 - Use as base for new record 9 - Remove record format

```

SDA                                DESIGN RECORD FORMAT MENU
  
```

Select one of the following:

1. File Definition
2. Record Format Definition
3. Field Definition
4. Subfile Control Record Definition
5. Subfile Record Format Definition
6. Save DDS/Create Display or Mixed File

Option: 6

```

New or existing display record format          Record format: _____
(blank for RECORD FORMAT LIST display)

Enter the source file for DDS                  DDS source file: QDSSSRC
                                                Library:         GLC

New or existing member name                   Member:         AFSSRCXX
(blank for MEMBER LIST display)               Type:          DSPF

Source type (DSPF, MXDF or blank for default) Additional records: SCHCTL
                                                _____
                                                _____

Enter additional record formats to be         Additional records: SCHCTL
displayed on the WORK DISPLAY                  _____
                                                _____
  
```

SOLUTION TO MACHINE EXERCISE 4

```
SDA                                SAVE DDS/CREATE DISPLAY FILE

Save the generated DDS source      (Y N): Y
Source file where DDS is to be saved: R QDDSSRC
Library:                           GLC
Member:                             AFSSRCXX
      (blank for MEMBER LIST display)

Create a display file from the DDS  (Y N): N
Display file:                       R APSSRCXX
Library:                             GLC
If create fails, display spooled listing (Y N): Y
Replace existing file               (Y N): _
Prompt for additional CRTDSPF parameters (Y N): _
Create file if DDS message severity  (0 10 20 or 30): 20
is less than GENLVL

Submit display file creation in batch (Y N): Y
Job description:                    QBATCH
Library:                             *LIBL
```

```
SDA                                SAVE DDS/CREATE DISPLAY FILE

Save the generated DDS source      (Y N): Y
Source file where DDS is to be saved: R QDDSSRC
Library:                           GLC
Member:                             APSSRCXX
      (blank for MEMBER LIST display)

Create a display file from the DDS  (Y N): N
Display file:                       R APSSRCXX
Library:                             GLC
If create fails, display spooled listing (Y N): Y
Replace existing file               (Y N): _
Prompt for additional CRTDSPF parameters (Y N): _
Create file if DDS message severity  (0 10 20 or 30): 20
is less than GENLVL

Submit display file creation in batch (Y N): Y
Job description:                    QBATCH
Library:                             *LIBL
```

* DDS saved in member APSSRCXX. Press ENTER.

SOLUTION TO MACHINE EXERCISE 4

```

SDA                                DESIGN RECORD FORMAT MENU
Select one of the following:
  1. File Definition
  2. Record Format Definition
  3. Field Definition
  4. Subfile Control Record Definition
  5. Subfile Record Format Definition
  6. Save DDS/Create Display or Mixed File

Option: __

New or existing display record format
  (blank for RECORD FORMAT LIST display)
Record format: _____

Enter the source file PRESS CF1 TWICE TO RETURN
                    TO THE PROGRAMMER MENU
                    DDS source file: QDDSSRC
                    library: GLC

New or existing member name
  (blank for MEMBER LIST display)
Member: APSSRCXX
Source type (ISPF, MXDF or blank for default)
Type: ISPF

Enter additional record formats to be
  displayed on the WORK DISPLAY
Additional records: SCHCTL
                    _____
                    _____

```

```

                                PROGRAMMER MENU                                SYSTEM: ATLEDEV
Select one of the following:
  1. Design/execute DFU app      (app), ,(options)
  2. Design/execute query app   (app), ,(options)
  3. Create object              object name, type, pgm for CMD, (text)
  4. Call program               program name
  5. Execute command           command
  6. Submit job                 (job name), (command)
  7. Display submitted jobs
  8. Edit source                (srcmbr), (type), (text)
  9. Design display format      (srcmbr)
  0. Display Menu              (menu)
  0. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMI, CMNF, DFU, DSFF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 8  Parm: APSSRCXX  Type: DSFF  Parm 2: _____
Command: _____

Text: _____ Log request: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3--Command entry  CF4--Prompt (3,5 & 6 only)  CF6--DSPMSG

```

SOLUTION TO MACHINE EXERCISE 4

```

EDIT      US W:1      Mbr: APSSRCXX      Scan: _____
FMT A*    .....A*. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7
          ****BEGINNING OF DATA****
0000.10   A*          11:27:42      GLC      REL-R07M00  5714-UT1
0000.20   A          DSPSIZ(24 80 *IS3)
0000.30   A          R SCHDTA      SFL
0000.40   A*          11:27:42      GLC      REL-R07M00  5714-UT1
0000.50   A          TEXT('SUBFILE RECORD FORMAT
0000.60   A          UNINAM      R      0 12 2REFFLD(UNINAM,VEND AFLSCHVN
0000.70   A          VNDISLS     R      0 12 31REFFLD(VNDISLS,VEND AFLSCHVN
0000.80   A          VNDZIP      R      0 12 61REFFLD(VNDZIP,VEND AFLSCHVN
0000.90   A          UNINBR      R      0 12 71REFFLD(UNINBR,VEND AFLSCHVN
0001.00   A          R SCHCTL      SFLCTL(SCHDTA)
0001.10   A*          11:27:42      GLC      REL-R07M00  5714-UT1
0001.20   A          TEXT('SUBFILE CONTROL RECOR
0001.30   A          CA01(99 'END OF JOB')
0001.40   A 75          SFLDSP
0001.50   A 76          SFLDSPCTL
0001.60   A 77          SFLCLR
0001.70   A          SFLSIZ(0050)
0001.80   A          SFLPAG(0010)
0001.90   A          2 31'VENDOR SEARCH'
0002.00   A          4 6'ENTER CHARACTERS FOR SEAR
  
```

```

EDIT      US W:1      Mbr: APSSRCXX      Scan: _____
FMT A*    .....A*. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7
          ****BEGINNING OF DATA****
0000.10   A*          14:25:07      GLC      REL-R07M00  5714-UT1
0000.20   A          DSPSIZ(24 80 *IS3)
0000.30   A          R SCHDTA      SFL
0000.40   A*          14:25:07      GLC      REL-R07M00  5714-UT1
0000.50   A          UNINAM      R      0 12 2REFFLD(UNINAM,VEND AFLSCHVN
0000.60   A          VNDISLS     R      0 12 31REFFLD(VNDISLS,VEND AFLSCHVN
0000.70   A          VNDZIP      R      0 12 61REFFLD(VNDZIP,VEND AFLSCHVN
0000.80   A          UNINBR      R      0 12 71REFFLD(UNINBR,VEND AFLSCHVN
0000.90   A          R SCHCTL      SFLCTL(SCHDTA)
0001.00   A*          14:25:07      GLC      REL-R07M00  5714-UT1
0001.10   A          TEXT('SUBFILE CONTROL RECOR
0001.20   A          CA01(99 'END OF JOB')
E 01.30   A 75          SFLDSP
M 01.40   A 76          SFLDSPCTL
0001.50   A 77          SFLCLR
0001.60   A          SFLSIZ(0050)
0001.70   A          SFLPAG(0010)
0001.80   A          2 31'VENDOR SEARCH'
0001.90   A          4 6'ENTER CHARACTERS FOR SEAR
0002.00   A          CODE1      R      I 4 41REFFLD(SCHCOD,VEND AFLSCHVN
  
```

CHANGE INDICATOR ORDER
PRESS ENTER

SOLUTION TO MACHINE EXERCISE 4

```

EDIT      US W:1      Mbr: AFSSRCXX      Scan:_____
FMT A*  .....A*. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7
          *****BEGINNING OF DATA*****
0000.10  A*                11:27:42      GLC      REL-R07M00  5714-UT1
0000.20  A                  DSPSIZ(24 80 *DS3)
0000.30  A                  R SCHDTA      SFL
0000.40  A*                11:27:42      GLC      REL-R07M00  5714-UT1
0000.50  A                  TEXT('SUBFILE RECORD FORMAT
0000.60  A                  UNDNAM      R      0 12 2REFFLD(UNDNAM.VEND AFLSCHVN
0000.70  A                  UNISLS      R      0 12 31REFFLD(UNISLS.VEND AFLSCHVN
0000.80  A                  UNIZIP      R      0 12 61REFFLD(UNIZIP.VEND AFLSCHVN
0000.90  A                  UNINBR      R      0 12 71REFFLD(UNINBR.VEND AFLSCHVN
0001.00  A                  R SCHCTL      SFLCTL(SCHDTA)
0001.10  A*                11:27:42      GLC      REL-R07M00  5714-UT1
0001.20  A                  TEXT('SUBFILE CONTROL RECOR
0001.30  A                  CA01(99 'END OF JOB')
0001.31  A 76              SFLDSPCTL
0001.40  A 75              SFLDSP
0001.60  A 77              SFLCLR
0001.70  A                  SFLSIZ(0050)
0001.80  A                  SFLPAG(0010)
0001.90  A                  CF1 TO EXIT SEU      2 31'VENDOR SEARCH'
0002.00  A                  4 6'ENTER CHARACTERS FOR SEAR

```

```

SEU                EXIT

Select one of the following:
 1. Exit without update
 2. Exit and update member
 3. Exit and create a new member
 4. Update member, no exit
 5. Create member, no exit
 6. Return to editing

Option:  2

          MEMBER      FILE      LIBRARY
For options 2 to 5:  AFSSRCXX    QDDSSRC    GLC
Text (description):
Resequence member (Y N):  Y  Start:   1.00  Increment:  1.00

For options 1 to 3:
Return to member list (Y N):  N

For options 1 to 6:
Print source listing (Y N):  N

          TOTAL RECORDS      ADDED      CHANGED      DELETED      SYNTAX ERRORS LEFT
                28                 1

```


SOLUTION TO MACHINE EXERCISE 4

```
PROGRAMMER MENU                                SYSTEM: ATLEIDDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program                program name
5. Execute command            command
6. Submit job                  (job name), (command)
7. Display submitted jobs
8. Edit source                 (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 1  Parm: APSSRCXX  Type: DSPE Parm 2:
Command:

Text:                                     Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
Member APSSRCXX file QDDSSRC.GLC updated with 28 records.
```

SEU MESSAGE APPEARS

```
PROGRAMMER MENU                                SYSTEM: ATLEIDDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program                program name
5. Execute command            command
6. Submit job                  (job name), (command)
7. Display submitted jobs
8. Edit source                 (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 3  Parm: APSSRCXX  Type: DSPE Parm 2:
Command:

Text:                                     Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
Member APSSRCXX file QDDSSRC.GLC updated with 28 records.
```

SOLUTION TO MACHINE EXERCISE 4

```

                                PROGRAMMER MENU                                SYSTEM: ATLEIDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program               program name
5. Execute command            command
6. Submit job                 (job name), (command)
7. Display submitted jobs
8. Edit source                (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                  (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSFF, LF, MXDF, PF, PLI,
      PRTF, QRY, RFG, RPT, TXT
Option:  Param: APSSRCXX  Type: DSFF  Param 2:
Command:

Text:                               Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3--Command entry  CF4--Prompt (3,5 & 6 only)  CF6--DSPMSG
Job APSSRCXX.GLC.005315 submitted to job QBATCH.QGPL.

```

PRESS CF6 FOR MESSAGES

```

                                PROGRAMMER MENU                                SYSTEM: ATLEIDEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program               program name
5. Execute command            command
6. Submit job                 (job name), (command)
7. Display submitted jobs
8. Edit source                (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu              (menu)
90. Sign off                  (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSFF, LF, MXDF, PF, PLI,
      PRTF, QRY, RFG, RPT, TXT
Option: 5  Param: APSSRCXX  Type: DSFF  Param 2:
Command: OVRDSFF FILE(APDSRC) TOFILE(APSSRCXX)

Text:                               Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3--Command entry  CF4--Prompt (3,5 & 6 only)  CF6--DSPMSG

```

SOLUTION TO MACHINE EXERCISE 4

```
                                PROGRAMMER MENU                                SYSTEM: ATLEDDIEV
Select one of the following:
1. Design/execute DFU app      (app), ,(options)
2. Design/execute query app   (app), ,(options)
3. Create object              object name, type, pgm for CMD, (text)
4. Call program                program name
5. Execute command            command
6. Submit job                  (job name), (command)
7. Display submitted jobs
8. Edit source                 (srcmbr), (type), (text)
9. Design display format      (srcmbr)
80. Display Menu               (menu)
90. Sign off                   (*NOLIST *LIST)
Types: BAS, BASP, BSCF, CBL, CL, CLP, CMD, CMNF, DFU, DSPF, LF, MXDF, PF, PLI,
      PRTF, QRY, RPG, RPT, TXT
Option: 4  Parm: APR25  Type: _____  Parm 2: _____
Command: _____

Text: _____  Log requests: *YES
Src file: QDDSSRC  Src lib: GLC  Obj lib: GLC  Jobd: QBATCH
CF3-Command entry  CF4-Prompt (3,5 & 6 only)  CF6-DSPMSG
```

```
                                VENDOR SEARCH
ENTER CHARACTERS FOR SEARCH      UUUUUUUUUU
PRESS ENTER FOR SEARCH
COMMAND KEY 1 FOR END OF JOB

VENDOR NAME                      SALESPERSON                      ZIP      NUMBER
```

SOLUTION TO MACHINE EXERCISE 4

VENDOR SEARCH

ENTER CHARACTERS FOR SEARCH ~~BEST~~.....

PRESS ENTER FOR SEARCH

COMMAND KEY 1 FOR END OF JOB

VENDOR NAME	SALESPERSON	ZIP	NUMBER
-------------	-------------	-----	--------

VENDOR SEARCH

ENTER CHARACTERS FOR SEARCH U.....

PRESS ENTER FOR SEARCH

COMMAND KEY 1 FOR END OF JOB

VENDOR NAME	SALESPERSON	ZIP	NUMBER
BEST AND COMPANY	MARIE CORDUROY	30303	56567
T.H.BRAYTON JR.	JAMES MARSHALL	56513	00145
THE BREAKERS INC.	ALICIA GORTON	02840	34681
WINSTON BUTLER ROSS INC.	TONY TAYLOR	34506	00305
ELLIS B. BUTTERFIELD, LTD	EDWARD KUI	96543	96431
THOMAS B. CORLEY DDS	JOHN WARREN	11014	94613
ROBERT COTTON INC.	ELIZABETH HUGHES	01643	63410
THE DEANA AGENCY	ROSS HUNTER	10017	10504
THE DISK RECORD SHOP	JOYCE LYNCH	91462	11002
THORTON DUDLEY LTD.	RON BAILEY	01765	03535

5714UT1 R07M00 850913

SDA DISPLAY DEFINITION

04/08/86 15:05:27

PAGE 1

DISPLAY FILE APSSRCXX

RECORD NAME SCHDTA SUBFILE RECORD FORMAT'

SOURCE FILE QDSSRC.GLC MEMBER APSSRCXX 04/08/86 14:46:57

PRINTOUT OF THE WORK DISPLAY
CHECK YOUR GLC PRINTER

RECORD NAME	SCHDTA	SUBFILE RECORD FORMAT'				
ORDER	NAME	TYPE	LENGTH	LINE	POS	
1	VNDNAM	0	25	12	2	VENDOR NAME'
2	VNDISLS	0	25	12	31	VENDOR SALESMAN'
3	VNDZIP	0	5,0	12	61	ZIP CODE'
4	VNDINBR	0	5,0	12	71	VENDOR ID NUMBER'

***** END OF LISTING *****

***** END OF LISTING *****

PRINTOUT OF THE WORK DISPLAY
CHECK YOUR GLC PRINTER

5714SS1 R07 M00 850913 DATA DESCRIPTION AFSSRCXX.GLC 04/09/86 9:06:38 PAGE 1

```
File name -      AFSSRCXX.GLC      Type of file -  DISPLAY
Source file -   QDDSSRC.GLC      Member -      AFSSRCXX      04/09/86  9:05:59
Type of data -  *DATA
Options -       *SRC  *LIST
Genlvl -       20
Authority -     *NORMAL
Text -
Compiler -     IBM System/38 Data Description Processor
```

DATA DESCRIPTION SOURCE

SEQNBR	*... .. 1 2 3 4 5 6 7 8	DATE
100	A*		08:36:20	GLC	REL-R07M00	5714-UT1			04/09/86
200	A				DSFPIZ(24	B0 *DS3)			04/09/86
300	A	R	SCHDTA		SFL				04/09/86
400	A*		08:36:20	GLC	REL-R07M00	5714-UT1			04/09/86
500	A				TEXT('subfile record format')				04/09/86
600	A		VNDNAM	R	0	12	2REFFLD(VNDNAM.VEND	AFLSCHVN.*LIBL)	04/09/86
700	A		VNDSLS	R	0	12	31REFFLD(VNDSLS.VEND	AFLSCHVN.*LIBL)	04/09/86
800	A		VNDZIP	R	0	12	61REFFLD(VNDZIP.VEND	AFLSCHVN.*LIBL)	04/09/86
900	A		VNDNBR	R	0	12	71REFFLD(VNDNBR.VEND	AFLSCHVN.*LIBL)	04/09/86
1000	A	R	SCHCTL		SFLCTL(SCHDTA)				04/09/86
1100	A*		08:36:20	GLC	REL-R07M00	5714-UT1			04/09/86
1200	A				TEXT('SUBFILE CONTROL RECORD')				04/09/86
1300	A				CA01(99 'end of job')				04/09/86
1400	A	76			SFLDSPCTL				04/09/86
1500	A	75			SFLDSP				04/09/86
1600	A	77			SFLCLR				04/09/86
1700	A				SFLSIZ(0050)				04/09/86
1800	A				SFLPAG(0010)				04/09/86
1900	A				2	31	'VENDOR SEARCH'		04/09/86
2000	A				4	6	'ENTER CHARACTERS FOR SEARCH'		04/09/86
2100	A		CODE1	R	I	4	41REFFLD(SCHDD.VEND	AFLSCHVN.*LIBL)	04/09/86
2200	A				DSFATR(CS)				04/09/86
2300	A				6	2	'PRSS ENTER FOR SEARCH'		04/09/86
2400	A				8	2	'COMMAND KEY 1 FOR END OF JOB'		04/09/86
2500	A				10	9	'VENDOR NAME'		04/09/86
2600	A				10	36	'SALESPERSON'		04/09/86
2700	A				10	62	'ZIP'		04/09/86
2800	A				10	70	'NUMBER'		04/09/86

***** END OF SOURCE *****

OUR DDS LISTING

MODULE SUMMARY

You should now have a good understanding of what SDA can do, and you might have some opinions as to which functions you find most useful.

Until you have worked with SDA extensively, you might find some functions clumsy and continue to perform them the old-fashioned way. We recommend that you begin by using SDA to test display files, and create menus and the CL programs to control the menus.

After you have used these functions, you will feel more comfortable with SDA and be ready to expand your use of it.



Appendix A. Accounts Payable Field Reference File

```

A*
A** FIELD REFERENCE FILE FOR ACCOUNTS PAYABLE
A** STUDENT EXERCISES
A*
A          R REFFMT          TEXT('FIELD REFERENCE FILE')
A*
A** FIELDS USED IN MULTIPLE RECORDS
A*
A          VNDNBR          5  0          TEXT('VENDOR ID NUMBER')
A          COLHDG('VENDOR' 'NUMBER')
A          DEPTNO          3  0          TEXT('DEPARTMENT CHARGED')
A          COLHDG('DEPARTMENT' 'NUMBER')
A          ACTCD          1          TEXT('A=ACTIVE D=DELETE S=SUSPEND')
A          COLHDG('ACTIVE' 'RECORD' 'CODE')
A*
A** FIELDS IN VENDOR MASTER RECORD
A*
A          VNDNAM          25 -          TEXT('VENDOR NAME')
A          COLHDG('VENDOR' 'NAME')
A          VNDAD1          25          TEXT('ADDRESS LINE 1')
A          COLHDG('ADDRESS LINE 1')
A          VNDAD2          25          TEXT('ADDRESS LINE 2')
A          COLHDG('ADDRESS LINE 2')
A          VNDAD3          25          TEXT('ADDRESS LINE 3')
A          COLHDG('ADDRESS LINE 3')
A          VNDZIP          5  0 -          TEXT('ZIP CODE')
A          COLHDG('ZIP' 'CODE')
A          VNDACD          3  0          TEXT('AREA CODE')
A          COLHDG('AREA' 'CODE')
A          VNDPHN          7  0          TEXT('PHONE NUMBER')
A          COLHDG('PHONE')
A          VTRMPC          3  3          TEXT('NORMAL PROMPT PAY DISCOUNT %')
A          COLHDG('TERMS' '%')
A          VTRMDA          2  0          TEXT('NORMAL NO. OF DAYS FOR TERMS')
A          COLHDG('TERMS' 'DAYS')
A          VNDCLS          2  0          TEXT('VENDOR CLASS')
A          COLHDG('CLASS')
A          VNDCLS          25 -          TEXT('VENDOR SALESMAN')
A          COLHDG('SALESPERSON')
A          DCTMTD          7  2          TEXT('DISCOUNT TAKEN THIS MONTH')
A          COLHDG('DISCOUNT' 'TAKEN' 'MTD')
A          DCTYTD          9  2          TEXT('DISCOUNT TAKEN THIS YEAR ')
A          COLHDG('DISCOUNT' 'TAKEN' 'YTD')
A          PCHMTD          9  2          TEXT('PURCHASES THIS MONTH')
A          COLHDG('PURCHASES' 'YTD')
A          PCHYTD          11  2          TEXT('PURCHASES THIS YEAR')
A          COLHDG('PURCHASES' 'YTD')
A          BALOWE          9  2          TEXT('BALANCE OWED')
A          COLHDG('BALANCE' 'OWED')
A          SRVRTG          1          TEXT('SERVICE RATING')
A          COLHDG('SERVICE' 'RATING')
A          DELRTG          1          TEXT('DELIVERY RATING')
A          COLHDG('DELIVERY' 'RATING')

```

```

A          SCHCOD          10A          TEXT('SEARCH CODE')
A          COLHDG('SEARCH' 'CODE')
A          CHECK(ME)
A          COMNTS          25          TEXT('COMMENTS ABOUT THIS VENDOR')
A          COLHDG('COMMENTS ABOUT' 'VENDOR')
A*
A** FIELDS USED IN TRANSACTION RECORD
A*
A          INVNBR          8          TEXT('VENDORS INVOICE NUMBER')
A          COLHDG('VENDOR' 'INVOICE' 'NUMBER')
A          DATREC          6 0          TEXT('DATE RECEIVED')
A          COLHDG('DATE' 'RECEIVED')
A          MERCH          7 2          TEXT('MERCHANDISE AMOUNT')
A          COLHDG('MERCHANDISE' 'AMOUNT')
A          NET          7 2          TEXT('NET AMOUNT PAID')
A          COLHDG('NET' 'AMOUNT' 'PAID')
A          STATUS          1          TEXT('E=ENTERED T=TO PAY D=DELETE +
A          P=PAID')
A          COLHDG('STATUS' 'OF' 'RECORD')
A          DTPAID          6 0          TEXT('DATE PAID')
A          COLHDG('DATE' 'PAID')
A          CHECK#          6 0          TEXT('CHECK NUMBER')
A          COLHDG('CHECK' 'NUMBER')
A*
A** FIELDS USED IN DEPARTMENT MASTER
A*
A          DNAME          15          TEXT('DEPARTMENT NAME')
A          COLHDG('DEPARTMENT' 'NAME')
A          BUDMTD          9 2          TEXT('AMOUNT BUDGETED THIS MONTH')
A          COLHDG('BUDGET' 'AMOUNT' 'MTD')
A          BUDYTD          11 2          TEXT('AMOUNT BUDGETED THIS YEAR ')
A          COLHDG('BUDGET' 'AMOUNT' 'YTD')
A          DISMTD          9 2          TEXT('AMOUNT DISPERSED THIS MONTH')
A          COLHDG('DISPERSED' 'MTD')
A          DISYTD          11 2          TEXT('AMOUNT DISPERSED THIS YEAR ')
A          COLHDG('DISPERSED' 'YTD')
A          GLACT          6 0          TEXT('GENERAL LEDGER ACCOUNT NBR')
A          COLHDG('G/L' 'ACCOUNT' 'NUMBER')

```

Appendix B. SEU User's Guide

The next few pages are a summary of the SEU Line Commands and Format Identifiers.

SEU LINE COMMANDS

Code	Function
I	Insert a record.
In	Insert a specified number (n) of records.
IF	Insert with Format. (Use the same format as the line on which the Line Command is specified.)
IFxx	Insert with Format. (Use the format specified on the Line Command [xx].)
IP	Insert with Prompt. (Use the same format as the line on which the Line Command is specified.)
IPxx	Insert with Prompt. (Use the format specified on the Line Command [xx].)
C	Copy a statement.
Cn	Copy a number (n) of statements.
CC	Copy all the statements between two CC Line Commands. (Must specify CC on the first and last of the statements to be copied.)
A	Copy the statements to the statement <u>After</u> the "target" Line Command.
B	Copy the statements to the statement <u>Before</u> the "target" Line Command.
M	Move a statement.
Mn	Move a number (n) of statements.
MM	Move all the statements between two MM Line Commands. (See CC Copy.)
A	Move the statements to the statement <u>After</u> the "target" Line Command.
B	Move the statements to the statement <u>Before</u> the "target" Line Command.

Code	Functions
D	Delete a statement.
Dn	Delete a number (n) of statements.
DD	Delete all statements between two DD Line Commands.

This is not a complete list of the SEU Line Commands. These Line Commands are the only ones you should need during the System/38 Application Programming course. Refer to the SEU Reference Manual and User's Guide for the complete list of Line Commands.

SEU FORMAT IDENTIFIERS

	ID	Format Description
RPG III	*	Comment
	H	Control Specification
	F	File Description
	FC	File Description Continuation
	FX	File Description – External
	E	File Extension
	L	Line Specification
	I	Input Record Specification
	J	Input Field
	IX	Input Record Specification – External
	JX	Input Field – External
	DS	Data Structure Specification
	SS	Data Structure Subfield
	C	Calculation Specification
	O	Output Identification and Control
	P	Output Field
	U	Auto Report Specifications
COBOL	C*	Comment
	CB	COBOL Statement
Data Base Files	A*	Comment
	PF	Physical File DDS
	LF	Logical File DDS
Display Files	A*	Comment
	DP	Display File DDS



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