

Multiple Virtual Storage (MVS)

Lab Book

Document Revision History

Date	Revision No.	Author	Summary of Changes
22-Jun-05	Version: 1.01		Added screen shots for options 3.12, 3.13, 3.14 and 3.15
26-Oct-09	Version 2.0D	Padmaja Purandare	Added extra Lab assignment
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Getting Started

Overview

This lab book is a guided tour for learning Mainframe Environment and setup. It comprises solved examples and 'To Do' assignments. Follow the steps provided in the solved examples and work out the 'To Do' assignments given.

Setup Checklist for MVS

Here is what is expected on your machine in order for the lab to work.

Minimum System Requirements

- Intel Pentium 90 or higher (P166 recommended)
- Microsoft Windows 95, 98, or NT 4.0, 2k, XP.
- Memory: 32MB of RAM (64MB or more recommended)
- Mainframe Connectivity using the Passport Client (Pc-to-Host software)

Please ensure that the following is done:

- CA-Relia software is already installed
- Passport PC-to-Host Terminal Software is installed to connect to MF Server

Instructions

- Note the Mainframe userid (for example: DSRP002 or DSRB002) and password for connecting to mainframe environment which would be given by the faculty. Remember the Mainframe ID to be used from now onward through all the MF courses henceforth.
- Create any PDS or PS with the following naming convention
 <<Userid>>.<<yourname>>.<<pdsname>>
• For Creating PS
 <<Userid>>.<<yourname>>.<<psname>>

• All lab exercise will be kept in a proper PDS.
- Debug all the COBOL programs offline without using MF connectivity (Dry run using Notepad and/or word documents for Pseudo Code and/or Code generation) prior to uploading in mainframe environment and check all programs are error and warning free.

Learning More (Bibliography if applicable)

- MVS JCL by Doug Lowe

- OS/VS2 MVS OVERVIEW by IBM
- THE MVS PRIMER by David Shelby Kirk
- EXPERT MVS/XA JCL by Caranthsis Mani
- MVS JCL, 2/ED. By Doug Lowe

Lab 1. Mainframe Environment

Goals	<ul style="list-style-type: none">• Logging in the mainframe environment.• Understand the TSO and the different ISPF menus
Time	15 Minutes

1.1: Logging in the mainframe environment.

Login to Mainframe Environment using Passport Client Software.

Solution:

Step 1: From the Start menu navigate to Programs → Passport Client → Passport PC-to-Host.

Step 2: Key in the **IP host name** (Get it from the faculty). Once IP is entered, the IBM mainframe will be connected.

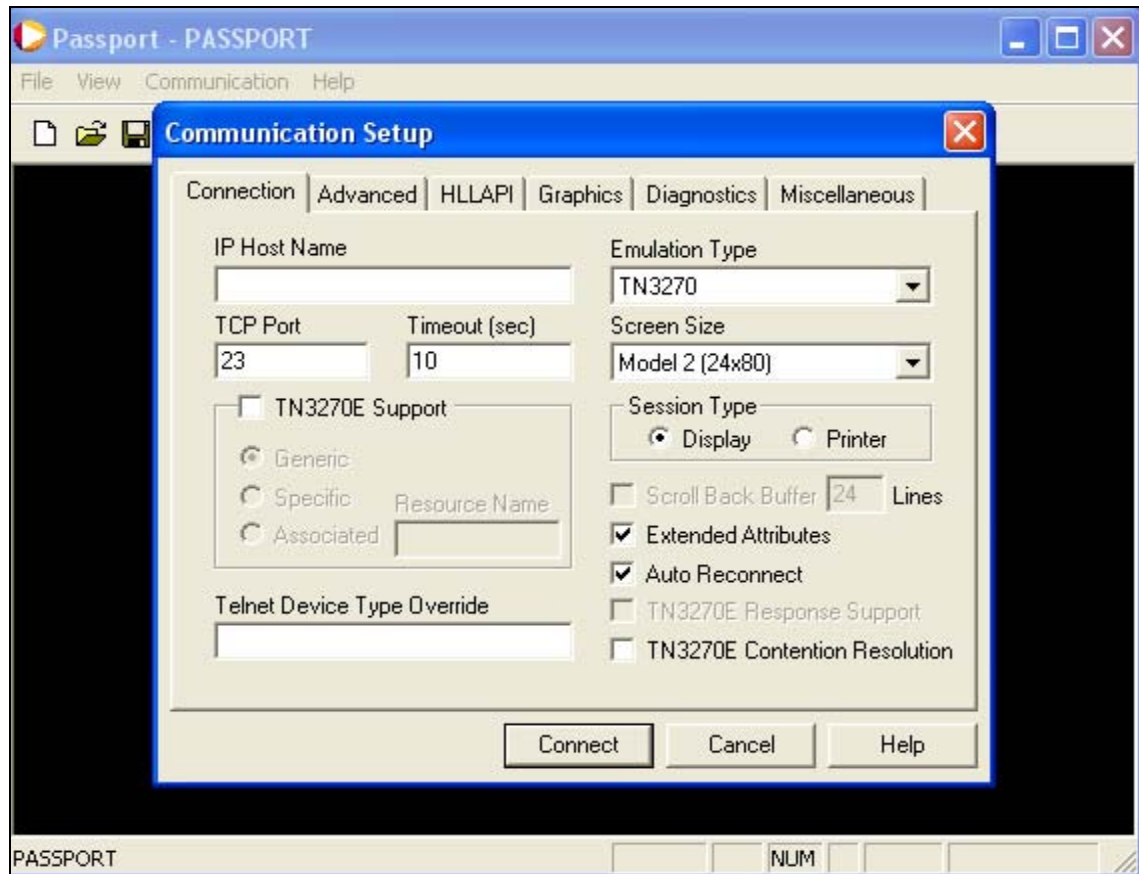


Figure 1: PC-to Host software

Step 3: Key in the TSO option. Key in the “TSO” command.

Step 4: Key in the Mainframe user id and password to logon to mainframe environment.

Note: Change the password at the very first logon and inform the faculty about the newly changed password.

Step 5: Key in the command “P” to enter the **ISPF menu**, which allows you to key in various commands.

1.2 Understand the TSO and the different ISPF menus

To Do: Go through the Primary Options Menu under ISPF

To Do: Use option 1 for Display source data or output listings (Refer to Appendix for various options under BROWSE)

To Do: Use Option 3 for understanding various utility functions

To Do: Exiting ISPF

Step: To terminate ISPF you can type =x at the command line or use the PF3 key to exit

Lab 2. Creation of PDS (Partitioned Dataset)

Goals	<ul style="list-style-type: none"> PDS Creation
Time	15 Minutes

2.1: Creation of COBOL PDS

Problem: Need to create PDS to save all COBOL programs.

Solution:

Step 1: Key in the command **3.2 (ISPF/PDF PRIMARY OPTION MENU Screen)**, which will take you to utilities for allocation (**UTILITY SELECTION MENU Screen**)

Step 2: Key in the option as **A (allocate)** on **DATA SET UTILITY Screen**, type your name as "group", and give an appropriate name for the PDS.

Example for the Name of PDS: DSRP001.SCOTT.COBOL

Step 3: Key in the option for dataset allocations on **ALLOCATE NEW DATA SET Screen**. The important ones are space units, primary quantity of units, secondary quantity of units, directory blocks (for storing member information in PDS), record format, record length, block size, and mainly the dataset name type (PDS).

Step 4: Press **ENTER** key on **DATA SET UTILITY Screen** to view the details of the dataset that is newly allocated.

2.2: Creation of JCL PDS

TO DO

Problem: Need to create PDS to save all JCL programs.



Hint: PDS is created is same as COBOL PDS

2.3: Creation of LOADLIB PDS

TO DO

Problem: Create a PDS for storing Load Module of the COBOL programs.



Hint: PDS is created is same as COBOL PDS. Change the parameter Record Format to 'U' as RECFM = U while creating LOADLIB PDS

To Do

Problem: Create a VSAM PDS same as JCL PDS.

Problem: Create a CICS PDS and DB2 PDS

Problem: Delete PDS

Step: The **D (delete)** option can be used to delete the PDS.

Lab 3. Creation of PSDS (Physical Sequential Data Set)

Goals	Create a flat file EMPLOYEE with the following structure
Time	15 minutes

3.1: Creation of PSDS

Problem: Create one flat file called EMPLOYEE with the following structure:

```

EMPNO      C      3
EMPNAME    C     10
EMPDEPT    C      3
EMPDESIG   C      4
EMPSAL     N      5
  
```

Solution:

Step 1: Key in the command **3.2** which will take you to utilities for allocation (**Primary Option Menu screen**)

Step 2: In the **Data Set Utility screen**, key in the option as **A (allocate)**, type your file in single quotes at **Data Set Name** (Here the name of the Data Set is **employee** under your own COBOL PDS)

Step 3: Key in the appropriate parameters on **Allocate New Data Set screen**. The difference in PDS and PSDS parameters is that for PSDS, **Directory Blocks** is Zero and **Data Set name type** should be blank for a PSDS.

Step 4: To see information about your Data Set allocation, the option should be kept blank. Press **ENTER** key on **DATA SET UTILITY Screen** to view the details of the dataset that is newly allocated

Step 5: Once the dataset is allocated, the records can be entered. Select option **2** from **ISPF (Edit)**. Type the dataset name in the **Edit Entry Panel**.

Step 6: Enter 10 records using the editor. Leave appropriate spaces for fields with less data.

Step 7: Type **Save** for saving the file or **Cancel** to discard changes. Press **F3** (function key) to save and exit.

3.2: Creation of Employee PSDS

Create a PSDS for storing Employee record using some other alternative method.



Hint: Check Option 2 in ISPF menu

Lab 4. View the Newly created PDS/PSDS, Browse, Edit

Goals	To view your PDS and file in the dataset list.
Time	10 minutes

Solution:

Step 1: Type option **3** in ISPF.

Step 2: Select **4** option for data set listing.

Step 3: Type the **login id** followed by * to see all the datasets or login id along with specific dataset.

Step 4: For any operation to be done on the Dataset, type **/ (slash)**.

Step 5: The following screen appears after the **/** option is selected. You can operate further on the file with the various options available. Select option **1** for editing the file. This will take you to the **Edit Entry Panel**.

Lab 5. Move, Copy, Rename members of PDS

Goals	Move / Copy, rename the members from one PDS to another.
Time	15 minutes

5.1: Move / Copy, rename the members from one PDS to another**TO DO**

Problem: Move newly created member EMPLOYEE from an existing PDS to some other PDS

Step 1: Key in option **M** for moving on MOVE/COPY Utility Screen. Give the source data set name with details (Group, Type, and Member).

TO DO

Problem: Copy newly created member EMPLOYEE from an existing PDS to some other PDS

Step 1: We can copy by selecting the option **C (Copy)**.

Lab 6. Using Data Shift Commands

Goals	Upload the COBOL program using the utility available in ISPF in mainframe environment and indent as required.
Time	15 minutes

6.1: Using Shift Commands, indenting the programs.

Solution:

Step 1: Upload the COBOL Program using the **ISPF menu 6**.

Step 2: Store the Cobol Program in COBOL PDS by specifying appropriate path.

Step 3: Use **Edit** option to change the COBOL program.

Step 4: Use data shift commands to indent the COBOL program. (As a part of lab practices, do code alignment offline itself in notepad/text editor)



Hint: Refer **Appendix** to use the Data Shift commands

Lab 7. Editor Commands

Goals	Study the various editor commands.
Time	20 minutes

7.1: Studying the various Editor commands**Solution:**

Step 1: Select option **2** from **ISPF** to go to the **Edit Entry Panel**.

Step 2: Select the file name to be edited, and give the right project, group.

Step 3: Type **COLS** in the command area to see the column numbers. This will be helpful while typing COBOL program.

Step 4: Use **d** to delete a line.

Step 5: To delete a set of lines, mark a block of lines with **DD** at the start and end.

Step 6: Select a line for copying by giving a **C** command at the source. At the destination, the command **B** or **A** can be used to copy before / after the current line.

Step 7: Similarly blocks for **copy** and **move** can be marked with **CC** and **MM**, respectively, and for copying before and after the command **B** or **A** can be used.

Step 8: You can use the **I10** command to insert 10 lines, **d10** to delete 10 lines. (Refer Appendix B).

Step 9: Finally, after all the changes are done, you can give the command to save.

Step 10: For changing a string, use the **C** Source-String Destination-String **ALL** command.

Step 11: Use the command **copy <filename>** to copy contents of a file to the current file.

Lab 8. Split Session

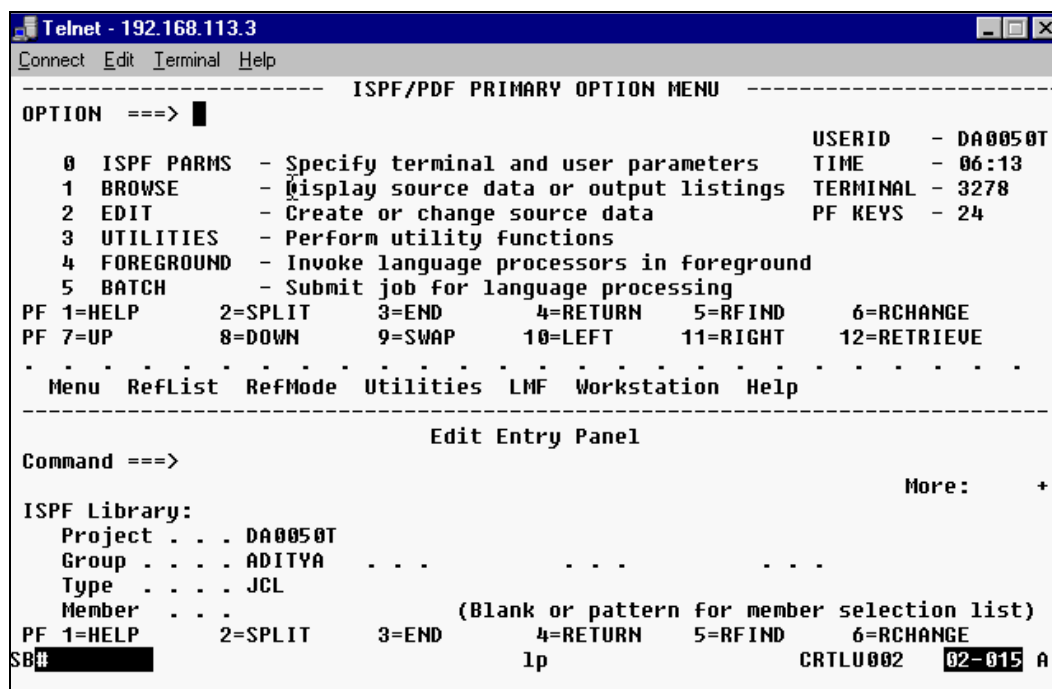
Goals	Split up the sessions and work in second session.
Time	10 minutes

8.1: Splitting a Session and working in the second session

Solution:

Step 1: Use **F2** key to split the session. Use **F9** key to switch between the sessions.

The following figure shows the look and feel of a split screen.



```

Telnet - 192.168.113.3
Connect Edit Terminal Help
----- ISPF/PDF PRIMARY OPTION MENU -----
OPTION ==> █

  0 ISPF PARMS - Specify terminal and user parameters
  1 BROWSE     - Display source data or output listings
  2 EDIT       - Create or change source data
  3 UTILITIES  - Perform utility functions
  4 FOREGROUND - Invoke language processors in foreground
  5 BATCH      - Submit job for language processing
PF 1=HELP      2=SPLIT    3=END      4=RETURN    5=RFIND    6=RCHANGE
PF 7=UP        8=DOWN    9=SWAP    10=LEFT    11=RIGHT   12=RETRIEVE
. . . . .
Menu RefList RefMode Utilities LMF Workstation Help
-----
Edit Entry Panel

Command ==>

ISPF Library:
Project . . . DA0050T
Group . . . ADITYA . . . . .
Type . . . JCL
Member . . . (Blank or pattern for member selection list)
PF 1=HELP      2=SPLIT    3=END      4=RETURN    5=RFIND    6=RCHANGE
SB# █          lp          CRTLU002 02-015 A
  
```

Figure 1: A split session

Lab 9. XMIT Command

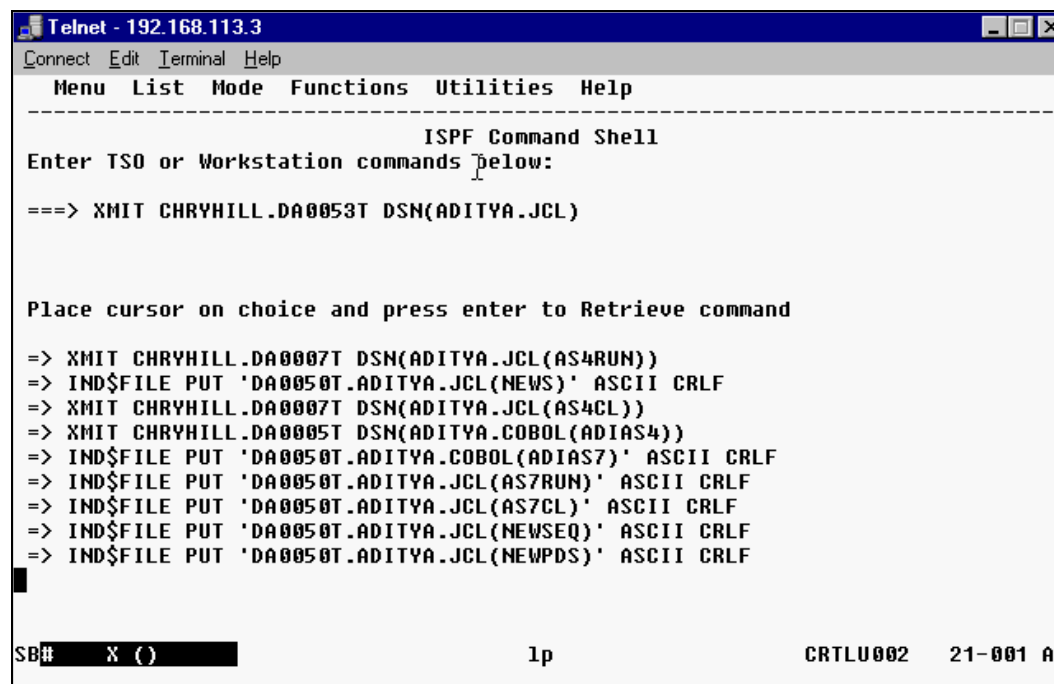
Goals	Transfer (XMIT) the given member JCL to another user.
Time	15 minutes

9.1: Using the XMIT Command

Solution:

Step 1: Select Option 6 (command) in ISPF.

Step 2: Type the command as shown in the following figure. The **da0053t** is the destination user who will be transmitted the **aditya.jcl** PDS.



```

Telnet - 192.168.113.3
Connect Edit Terminal Help
Menu List Mode Functions Utilities Help
-----
ISPF Command Shell
Enter TSO or Workstation commands below:
===> XMIT CHRYHILL.DA0053T DSN(ADITYA.JCL)

Place cursor on choice and press enter to Retrieve command

=> XMIT CHRYHILL.DA0007T DSN(ADITYA.JCL(AS4RUN))
=> IND$FILE PUT 'DA0050T.ADITYA.JCL(NEWS)' ASCII CRLF
=> XMIT CHRYHILL.DA0007T DSN(ADITYA.JCL(AS4CL))
=> XMIT CHRYHILL.DA0005T DSN(ADITYA.COBOL(ADIAS4))
=> IND$FILE PUT 'DA0050T.ADITYA.COBOL(ADIAS7)' ASCII CRLF
=> IND$FILE PUT 'DA0050T.ADITYA.JCL(AS7RUN)' ASCII CRLF
=> IND$FILE PUT 'DA0050T.ADITYA.JCL(AS7CL)' ASCII CRLF
=> IND$FILE PUT 'DA0050T.ADITYA.JCL(NEWSEQ)' ASCII CRLF
=> IND$FILE PUT 'DA0050T.ADITYA.JCL(NEWPDS)' ASCII CRLF

SB# X ( ) 1p CRTLU002 21-001 A
  
```

Figure 2: Transmitting aditya.jcl PDS

Step 3: The **da0053t** will have to receive the PDS with the **RECEIVE** command.

Lab 10. Comparison of two datasets (Standard)

Goals	To compare two datasets
Time	15 minutes

10.1: Comparing two standard datasets

Solution:

Step 1: From the **ISPF/PDF Primary Option Menu**, select option **3** to go to the **Utility selection Panel**.

Step 2: In the **Utility Selection Panel**, select option **12** to invoke the **SuperC** compare utility.

Step 3: Specify the name of the 'new' dataset that you want to compare. An '*' mark against a **Member** option indicates that you want to compare all the datasets. Press **Enter** key to continue.

Step 4: Specify the name of the 'old' dataset, which you want to compare with previously selected 'new' datasets. Press **Enter** key to continue.

Step 5: As the comparison process begins, a message " ***** SuperC LINE Compare invoked ***** " is displayed on the screen.

Step 6: The matches and the differences are displayed under the **SUPERC.LIST** view. Here, in the statistics, the letter '**I**' indicates **Insert**, that is added to the new data set, and does not appear in old data set. The letter '**D**' indicates **Delete**, that is it is visible in the old data set but is absent (deleted) from the new data set.

Step 7: Press **F11** key to see the matches / differences details. These details list the total number of matches and also suggest the deletions and insertions to be made to make the datasets identical.

Step 8: Press **F8** key to go forward to see the statistics.

Step 9: Press **F9** key to move down the screen to see the non-paired files, which cannot be compared since there are no matching files in the new data set.

Step 10: This screen provides the options that are used by this utility for listing type, columns to be compared, the longest line, and processing.

10.2: Comparison of two datasets (Extended)

Step 1: In the **Utility Selection Panel**, select option **13** to invoke the **SuperCE Utility** for dataset comparison utility.

Step 2: Key in the old and new dataset names that have to be compared, and mention the types of comparison to be made. There are four ways to compare the datasets, namely file, line, word, and byte.

Step 3: Press **Enter** key to continue. A message saying “ ***** SuperC FILE compare invoked. ***** ” will be flashed on the screen.

Step 4: And then you get the statistics.

Step 5: Press **F9** key to continue.

Step 6: For line-by-line comparisons, select the compare type as **2** while setting the parameters for the **SuperCE utility**.

Step 7: Invoking the **3.13** utility with compare option **2** is similar to using the **3.12** utility. **3.12** option.

Step 8: Get the statistics, and press **F9** key to continue.

Step 9: The following screen gives the overall statistics for Line based comparison of data sets.

Step 10: Press **F11** key to see the hidden statistics on the right.

Step 11: To perform the word based comparison, select option **3** as the compare type.

Step 12: Press **F9** key to get the word-wise details.

Step 13: Select option **4** as the **Compare Type** to perform byte-wise comparison of datasets.

Step 14: The byte-wise statistics will be displayed.

Lab 11. Search-For Utility (Standard)

Goals	To understand the use of Search-For Utility
Time	20 minutes

11.1: Using the Search-For Utility**Solution:**

Step 1: Select option **14** to invoke the **Search-For utility**.

Step 2: Key in the Search String, for example: EMPFILE, and the names of the datasets in which the string needs to be searched.

Step 3: Press **Enter** key to search. A message saying “ ***** Search in progress ***** ” is flashed on the screen.

Step 4: Press **F8** key to continue and to see the statistics.

11.2: Search-for utility (Extended)**To Do**

Step 1: In the **Utility Selection Panel**, select option **15 (Search-ForE)** to invoke the **Extended Search-For** utility.

Step 2: Key in the strings to be searched. Here, you can search for multiple strings.

Lab 12. Working with File Manager

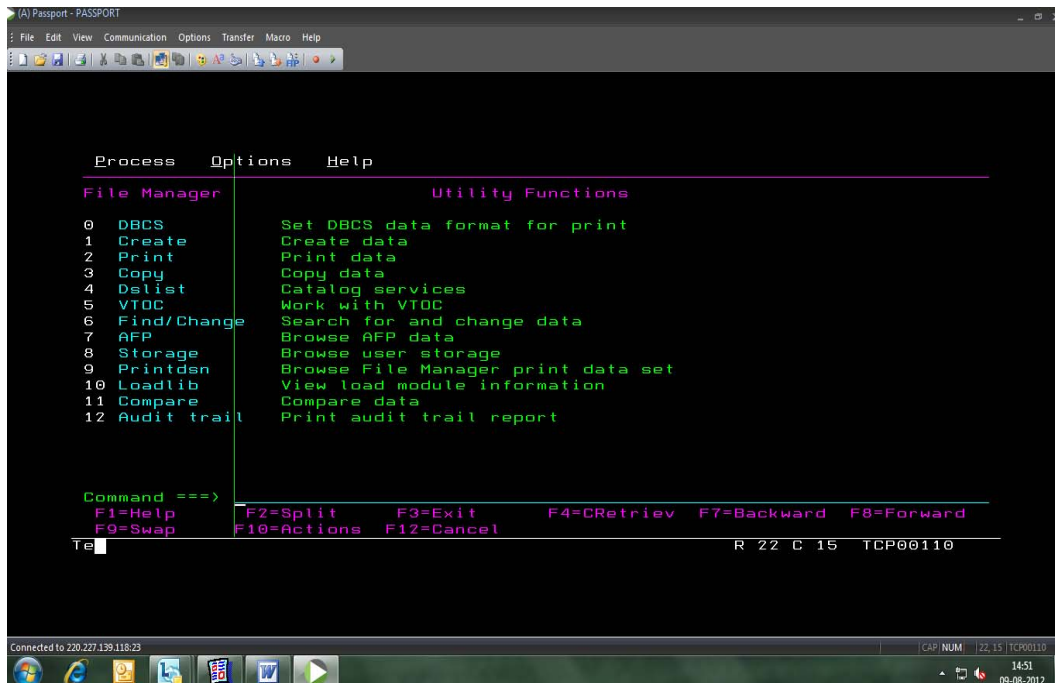
Goals	To understand the use of File Manager Utility
Time	60 minutes

11.1: Using the File Manager Utility

To Do:

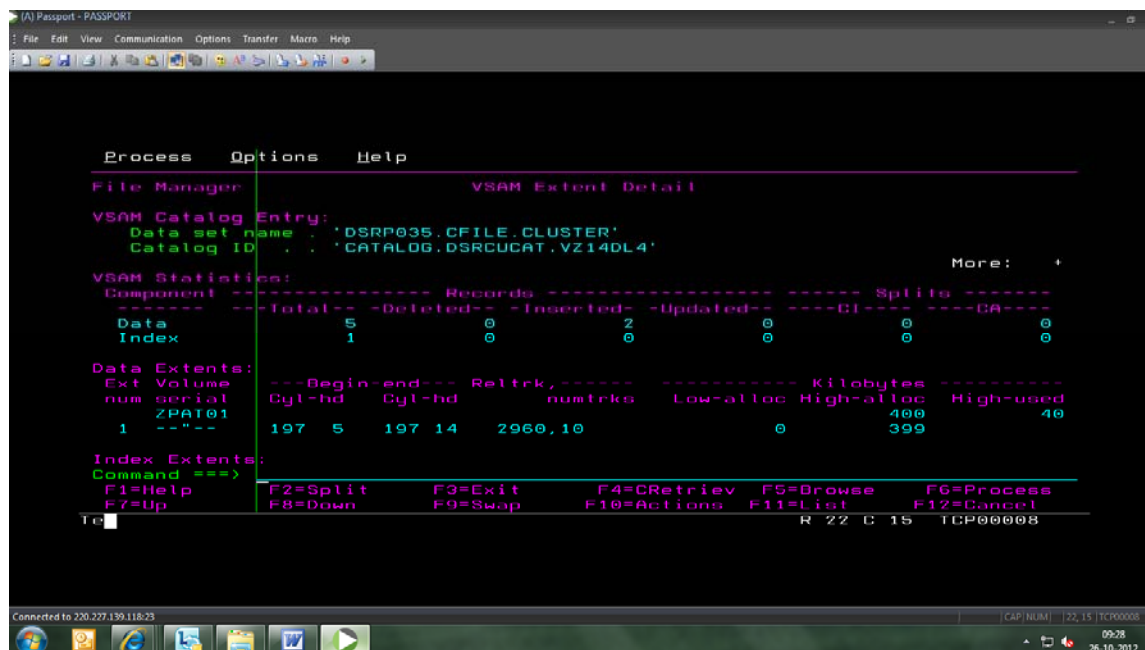
Do perform various editing operations across existing datasets such as find, copy, edit, print, compare and display data using File Manager utility.

(HINT: Use option 16 in ISPF Primary Options)



To Do:

Get the record count in VSAM file using file manager as shown in below screenshot.



(Hint: From the "UTILITY FUNCTIONS" screen choose option 4 (Dslist). On the "DATA SET LIST" screen put an "I" against the vsam file and enter. On the "VSAM ENTRY DETAIL" screen, press F11)

Appendix

Appendix – A: Compiling, linking, and executing a COBOL program

Solution:

Step 1: Key in the COBOL program using the **Edit Entry Panel**.

Step 2: We need to compile, link, and execute the COBOL program. Use the **Edit Entry Panel** to edit the **complink JCL**.

Step 3: Give the **source file name** and the **loadlib name** along with details.

Step 4: If there are no errors, then we can submit the JCL. Use the **SUBMIT** command.

Step 5: After submitting the JCL, a unique job id will be returned to us. This can be further used for identifying this job.

Step 6: If compilation is successful, then the return code will be Zero.

Step 7: Open the **Run JCL**, provide the **loadlib name** with details of the PDS, and submit the job.

Step 8: After submitting the JCL job, a unique job id will be given for the Job. The return code should be zero for successful execution of the program. View the spooler to view the output.

Step 9: Use the command **Start ST;SD on the command prompt to view the details**.

Step 10: Select the right job in the spooler area.

Step 11: Further details will be displayed. Select the SYSOUT RUN to view output.

Appendix - B: Compilation and Run JCL

```
EDIT    DA0001T.PRASANNA.JCL(COMPLINK) - 01.99      Columns 00001 00072
Command ==>                                         Scroll ==> CSR
***** ***** Top of Data *****
000100 //DA0001TC JOB LA2719,'PRASANNA',NOTIFY=DA0001T,
000110 //          MSGCLASS=X,TIME=(0,1)
000112 //*****
000120 //* STEP TO COMPILE A PROGRAM
000130 //* COMPILER PROGRAM NAME - IKFCBL00
000140 //* LIBRARY NAME - SYS1.COBCOMP
000150 //* SYSLIN - OUTPUT FILE NAME
```

```

000160 /* SYSIN - INPUT FILE NAME (I.E. COBOL PROGRAM NAME)
000170 /* SYSUT1,2,3, - TEMPORARY FILES REQUIRED BY COBOL COMPILER
000180 /******
000200 //COB          EXEC PGM=IKFCBL00,REGION=1024K,
000210 //
PARM='NOTRUNC,NODYNAM,LIB,SIZE=4096K,BUF=116K,APOST,NORES'
000400 //SYSLIB      DD DSN=SYS1.COBCOMP,DISP=SHR
000500 //SYSPRINT DD SYSOUT=*
000600 //SYSLIN      DD DSN=&&TEMP,DISP=(NEW,PASS),
000700 //              UNIT=SYSALLDA,SPACE=(TRK,(40,40))
000710 //SYSUT1      DD UNIT=SYSALLDA,SPACE=(TRK,(6,1))
000800 //SYSUT2      DD UNIT=SYSALLDA,SPACE=(CYL,(6,1))
000900 //SYSUT3      DD UNIT=SYSALLDA,SPACE=(CYL,(6,1))
000910 //SYSUT4      DD UNIT=SYSALLDA,SPACE=(CYL,(6,1))
001000 //SYSIN       DD DSN=DA0001T.PRASANNA.COBOL(PRG1),DISP=SHR
001100 /******
001110 /* STEP TO LINK THE COBOL PROGRAM
001120 /* LINKER PROGRAM NAME - IEWL
001130 /* LIBRARY NAME - SYS1.COBLIB
001140 /* SYSLMOD - OUTPUT DATASET NAME
001150 /* SYSLIN - INPUT DATASET NAME
001160 /******
001200 //LKED          EXEC PGM=IEWL,PARM='LIST,XREF,LET,MAP',
001300 //              REGION=4096K,COND=(0,LT,COB)
001400 //SYSLIN      DD DSN=&&TEMP,DISP=(OLD,DELETE)
001500 //SYSLIB      DD DSN=SYS1.COBLIB,DISP=SHR
001600 //SYSLMOD     DD DSN=DA0001T.PRASANNA.LOADLIB(PRG1),
001610 //              DISP=SHR,UNIT=SYSALLDA
001800 //SYSUT1      DD UNIT=SYSALLDA,SPACE=(1024,(50,20))
001900 //SYSPRINT    DD SYSOUT=*
002000 //
***** ***** Bottom of Data *****

```

```
EDIT    DA0001T.PRASANNA.JCL(RUN) - 01.23          Columns 00001 00072
Command ==>                                         Scroll ==>
CSR
***** Top of Data *****
000100 //DA0001TR JOB LA2719,'PRASANNA',NOTIFY=DA0001T,
000200 //      MSGCLASS=X,TIME=(0,1)
000300 //*****
000400 //*STEP TO RUN COMPILED COBOL PROGRAM
000500 //COBRUN      EXEC PGM=PRG1
000600 //STEPLIB      DD DSN=DA0001T.PRASANNA.LOADLIB,DISP=SHR
000700 //SYSPRINT      DD SYSOUT=*
000810 //INF1          DD DSN=DA0001T.EMPDATA,DISP=SHR
000900 //OTF1          DD DSN=DA0001T.L3,DISP=(NEW,CATLG,DELETE),
001000 //              UNIT=SYSDA,SPACE=(TRK,(1,1)),
001100 //              DCB=(LRECL=80,RECFM=FB,BLKSIZE=800,DSORG=PS)
001200 //SYSOUT      DD SYSOUT=*
***** Bottom of Data *****
```

Appendix - C: ISPF (Interactive System Productivity Facility)

Primary Options Menu:

Access to ISPF is gained by keying in ISPF at the READY prompt. This is done as default in the auto executed CLIST at startup. When this command is keyed in, you get the Primary Options Menu.

```

----- ISPF/PDF PRIMARY OPTION MENU -----
OPTION ==> pfshow                                USERID - DA0034T

  0 ISPF PARMS      - Specify terminal and user parameters      TIME - 06:58
  1 BROWSE          - Display source data or output listings    TERMINAL -
3278
  2 EDIT            - Create or change source data              PF KEYS - 12
  3 UTILITIES       - Perform utility functions
  4 FOREGROUND      - Invoke language processors in foreground
  5 BATCH           - Submit job for language processing
  6 COMMAND         - Enter TSO Command, CLIST, or REXX exec
  7 DIALOG TEST     - Perform dialog testing
  8 LM UTILITIES    - Perform library administrator utility functions
  9 IBM PRODUCTS    - Additional IBM program development products
10 SCLM             - Software Configuration and Library Manager
C CHANGES         - Display summary of changes for this release
T TUTORIAL         - Display information about ISPF/PDF
X EXIT             - Terminate ISPF using log and list defaults
D DATACENTER       - Perform Datacenter Defined Functions
S SDSF             - Spool Display and Search Facility
U USER            - Perform User Defined Functions

F1=HELP  F2=SPLIT  F3=END  F4=RETURN  F5=RFIND  F6=RCHANGE
  • F7=UP    F8=DOWN  F9=SWAP  F10=LEFT  F11=RIGHT
    F12=RETRIEVE
  
```

Browsing Datasets (Option 1)

```
----- BROWSE - ENTRY PANEL -----  
COMMAND ==>  
  
ISPF LIBRARY:  
  PROJECT ==> DA0034T  
  GROUP   ==> TRG      ==>      ==>      ==>  
  TYPE    ==> JCL  
  MEMBER ==>          (Blank or pattern for member selection list)  
  
OTHER PARTITIONED OR SEQUENTIAL DATA SET:  
  DATA SET NAME ==>  
  VOLUME SERIAL ==>      (If not cataloged)  
  
DATA SET PASSWORD ==>      (If password protected)  
MIXED MODE        ==> NO    (Specify YES or NO)  
FORMAT NAME       ==>
```

Browse Commands

- Type "COLS" command for displaying columns.
- Scroll up, down, left right with PF7, PF8, PF10, and PF11 respectively.
- Set Scroll amount to CRSR, HALF, PAGE, n lines, max, DATA
- Scroll by n lines, to top, or bottom
- Define / LOCATE {line number}/label.
- FIND string {NEXT/PREV/FIRST/LAST/ALL}.
- PF5 for repeat find and use of "&".
- Use of PF12 to recall last command.
- Terminate Browse with PF3 Key.
- FIND string {NEXT/PREV/FIRST/LAST/ALL} {CHAR/PREFIX/SUFFIX/WORD}
col-1 col-2
- Column limitation search
- T 'text' - for case insensitive search
- X 'hex-string' for a hex search

Editing Datasets (Option 2)

- The Primary Editor entry is similar to that for Browse as regards concatenating datasets and dataset selection.
- Labels can be defined as in browse but may be entered as line commands.
- Error messages may be removed by typing RESET on the command line.

Standard editing commands

I/In	Insert 1 or n lines.
D(n)	Delete line or n lines.
DD	Delete the block marked by the 2 DD line commands.
R(n)	Repeat 1 or n lines.
RR	Repeat the block marked by the 2 RR line commands.
C(n)	Copy 1 or n lines.
CC	Copy the block marked between the 2 CC line commands.
M(n)	Move 1 or n lines.
MM	Move the block marked between the 2 CC line commands.
A(n)	Copy or Move lines 1 or n times after this line.
B(n)	Copy or Move lines 1 or n times before this line.

Creating datasets and exiting editor

- To create a new member, specify non-existent member name in the current PDS.
- You can quit the editor without saving changes by the CANCEL command.
- You can update the dataset with the SAVE command.
- You can exit with implicit save using the END command or PF3 key.

Edit Profiles

- Edit profiles control editing options.
- Normal editing of a new dataset uses the default profile - the dataset type.
- To display the edit profile, type PROFILE on the command line in the editor.
- To remove it from the screen, type RESET.
- This gives you a display as shown below:

```

EDIT ---- DA0034T.TRG.JCL(JCL1) - 01.27 ----- COLUMNS 001 072
COMMAND ===>                                SCROLL ===> CSR
***** ***** TOP OF DATA *****
=PROF> ....STD (FIXED - 150)....RECOVERY OFF....NUMBER ON STD.....
=PROF> ....CAPS ON....HEX OFF....NULLS ON STD....TABS ON STD....SETUNDO
OFF....
=PROF> ....AUTOSAVE ON....AUTONUM OFF....AUTOLIST OFF....STATS ON.....
=PROF> ....PROFILE UNLOCK....IMACRO NONE....PACK OFF....NOTE ON.....
=BND> <
=TAB>
=COL> ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
000100 //DA0034TA JOB LA2719,'PARAG',NOTIFY=DA0034T,
000200 //      CLASS=A,MSGCLASS=X
000300 //*
000400 //COBRUN EXEC PGM=PROG11
000500 //STEPLIB DD DSN=DA0034T.TRG.LNK,DISP=SHR
000510 //*STEPLIB DD DSN=DA0034T.TRG.COBO2,DISP=SHR
000600 //INVMAS DD DSN=DA0034T.TRG.INVMAS,DISP=SHR
000700 //OP1 DD SYSOUT=*
000710 //*OP1 DD DSN=DA0034T.TRG.EXE7,DISP=(NEW,CATLG,CATLG),
  
```

Profile Settings

- To switch to a different profile, key in "profile <"profile-name">"
- To lock a profile, at the command line key in "PROFILE LOCK"
- Any changes made to the locked profile are not saved permanently.
- Caps, number Pack, and STATS modes are set each time you begin an edit session.
- To define tab stops, key in TABS on the command line and place '@' on the tabs line one character before where you would like a tab stop. On the command line, key in TABS ON/OFF <tab-character>.
- If you omit the tabbing character, hardware tabbing is assumed.
- Line control Commands:
 - Nonumber/NUM OFF turns off line numbering
 - NUM ON turns on line numbering
 - AUTONUM resequence line numbers on save

- RENUM resequence line numbers
- NUM ON COBOL checks for valid COBOL numbering
- NUM ON STD checks for standard line numbering
- UNNUM removes line numbering.

Edit Modes

- STATS ON/OFF : Controls dataset statistics
- AUTOLIST ON/OFF : Controls Automatic listing
- NULLS ON/OFF : Controls if nulls or spaces are padded
- RECOVERY ON/OFF : Recovers a dataset being edited in case of a system crash.
- UNDO command : This works up to the last save only
- HEX ON/OFF : Displays data in HEX/ASCII mode
- CAPS ON/OFF : Converts Lower case letters to uppercase if set to on Line. Commands for this function are LC or UC. LCLC and UCUC are blocked line commands.
- PACK ON/OFF : Specifies that the data is stored in compressed mode.
- AUTOSAVE ON/
OFF PROMPT/
NOPROMPT : Auto save data when PF3 key is pressed
- IMACRO : Specify initial macro to be run at startup.

Advanced Edit Options

To locate a String within another use the following command:

**FIND string range NEXT/PREV/FIRST/LAST/ALL CHARS/PREFIX/SUFFIX/WORD
X/NX col-1 col-2**

where:

- | | |
|-------------|--|
| Range | : is denoted by 2 labels |
| String | : is the string to be found |
| NEXT | : indicates start search at current line and locate the next occurrence of the string (default). |
| PREV | : indicates start search at current line and locate the previous occurrence of the string. |
| FIRST | : indicates locate the first occurrence of the string |
| LAST | : indicates locate the last occurrence of the string |
| ALL | : indicates same as first but count the occurrences in the file. |
| CHARS | : indicates any occurrence of the string |
| PREFIX | : indicates string must be at the beginning of the word |
| SUFFIX | : indicates string must be at the end of a word |
| X/NX | : indicates search only excluded/Non excluded lines |
| col-1 col-2 | : indicates starting and ending column numbers defining the search boundaries. |

To Modify/Change a string with another String;

CHANGE string1 string2 range NEXT/PREV/FIRST/LAST/ALL
CHARS/PREFIX/SUFFIX/WORD X/NX col-1 col-2

String2 replaces string1

Shifting text source

<-----Data shift----->				<----- Column shift ----->		
<	<n	<<	((n	((n	left shifts
>	>n	>>))n))n	right shifts

Data shifts

- Does not drop blank characters
- Does not combine words by drooping spaces
- Does not delete spaces within apostrophes
- COPY [member] [AFTER/BEFORE label]
- MOVE [member] [AFTER/BEFORE label]
- CREATE [member] [range]
- REPLACE [member] [range]
- Edit member-name to edit recursively

Library Utility

Option 3.1

```

----- LIBRARY UTILITY -----
OPTION ==>

blank - Display member list  B - Browse member
C - Compress data set        P - Print member
X - Print index listing      R - Rename member
L - Print entire data set    D - Delete member
I - Data set information     E - Edit member
                             S - Data set information (short)

ISPF LIBRARY:
PROJECT ==> DA0034T
GROUP  ==> TRG      ==>      ==>      ==>
TYPE   ==> JCL
MEMBER ==>          (If "P", "R", "D", "B", "E" or blank selected)
NEWNAME ==>         (If "R" selected)

OTHER PARTITIONED OR SEQUENTIAL DATA SET:
DATA SET NAME ==>
VOLUME SERIAL ==>   (If not cataloged)

DATA SET PASSWORD ==>   (If password protected)

```

DSLISL Commands

M	-	Member list
C	-	Catalog a dataset
D	-	Delete a dataset
E	-	Edit a dataset
F	-	Free unused dataspace in a dataset
I	-	Display information for a dataset
M	-	Display a memberlist
P	-	Print a dataset
R	-	Rename a dataset
S	-	Display a shortened version of dataset information
U	-	Uncatalog a dataset
X	-	Print a dataset indexed listing
Z	-	<i>Compress a dataset</i>
=	-	Repeat the last command

Primary Commands

LOCATE	- To locate a dataset
TSO SUBMIT	- To execute Clists from the command line
SHOWCMD ON/OFF	- To show the expanded form of the command
CONFIRM ON/OFF	- Same as Confirm delete request Yes/NO on the delete
panel	
SORT	- Sorts the dataset list based on the fields shown on the next transparency
FIND	- Finds occurrence of a string with the list of datasets
SAVE dataset-name	- Saves the current dataset list into the dataset name
specified	
SELECT pattern [line command]	- To make a selection of datasets to be acted upon determined by the line command

Reset**Option 3.5**

```
----- RESET ISPF STATISTICS -----
OPTION ==>

  R - Reset (create/update) ISPF statistics
  D - Delete ISPF statistics

NEW USERID          ==>      (If userid is to be changed)
NEW VERSION NUMBER   ==>      (If version number is to be changed)
  RESET MOD LEVEL           ==> YES  (YES or NO)
  RESET SEQ NUMBERS        ==> YES  (YES or NO)

ISPF LIBRARY:
  PROJECT ==> DA0034T
  GROUP   ==> TRG
  TYPE    ==> JCL
  MEMBER  ==>          (Blank or pattern for member selection
                        list, '*' for all members)

OTHER PARTITIONED DATA SET:
  DATA SET NAME ==>
  VOLUME SERIAL ==>      (If not cataloged)
```

Appendix - D: File Aid

File-AID is a data manipulation program developed by COMPUWARE that consolidates the functions of most standard IBM Utilities.

File-AID Utility has two possible modes of Operation:

- Online Mode (Using =F option within ISPF Menu)
- Batch Mode (JCL)

(Note: This presentation aims at unfolding the frequently used online capabilities of File-AID utility)

F.1 Browse

File-AID enables you to browse a file created through any standard MVS access method (including IAM files). You can display the entire dataset or a selected subset of records.

You can supply record layouts and view your data in three display modes:

- i) Character
- ii) Vertical formatted
- iii) Formatted

Character Mode:

Step 1: Key in dataset name and record layout of the dataset that you want to browse.

```
File-AID ----- Browse - Dataset Specification -----
COMMAND ===>

Browse Mode          ===> C      (F=Formatted; C=Char; V=Vertical)

Specify Browse Information:
Browse dataset name   ===> "USERID9.FASAMP.EMPMAS"
Member name          ===>        (Blank or pattern for member list)
Volume serial        ===>        (If dataset is not cataloged)

Specify Record Layout and XREF Information:
Record layout usage   ===> S      (S = Single; X = XREF; N = None)
Record layout dataset ===> FASAMP.LAYOUTS
Member name          ===> EMPLOYEE (Blank or pattern for member list)
XREF dataset name     ===>
Member name          ===>        (Blank or pattern for member list)

Specify Selection Criteria Information: (E = Existing; T = Temporary;
Selection criteria usage ===> N      M = Modify; Q = Quick; N = None)
Selection dataset name  ===>
Member name            ===>        (Blank or pattern for member list)
```

F.1 Browse screen

```
File-AID - Browse - USERID9.FASAMP.EMPMAS ----- LINE 0000 COL 1 8
COMMAND ==>                                SCROLL ==> PAGE|
***** TOP OF DATA *****CAPS OFF-|
00090MARTIN      EDWARD  M AIRPLANE MANUFACTURER  427890125 101954
----- 1 RECORD(S) NOT SELECTED|
00200JACKSON    JOSEPH  C ORATOR                  275587177 020462
10000ANDREWS    GEORGE   ACTOR                    576312032 042248
15000MURPHY     RONALD  L PAINTER                  987654321 120255
18034SCHNEIDER  ELLEN   C NURSE                    341559549 032960
21035JONES      GEORGE  B COUNTRY SINGER          463813456 090944
25100ROBERTS    WILLIAM R POLITICIAN          879563325 050865
27007ALLEN      JOYCE   M AUTHOR                    783458334 012132
30001RICHARDS   REX     W RODEO CLOWN                    632764534 040140
31000SAVAGE     JONATHON C ELECTRICIAN          348567992 062250
34010SMITH      JANET      AIRLINE ATTENDANT  557782984 112359
34011JACOBS     DIANA      DOCTOR                      225368395 021757
***** BOTTOM OF DATA *****-CAPS OFF-*
|
Enter FMT for formatted mode, VFMT for vertical format, HEX ON for He
```

Vertical Formatted Mode (VFMT) :

Step 2: Type **VFMT** at command prompt from Character Mode or Select Browse Mode as "V" at F.1 screen.

```
File-AID - Browse - USERID9.FASAMP.EMPMAS - 
COMMAND ==> VFMT
-----1-----2-----3-----4-----5-----
***** TOP OF DATA *****
00090MARTIN      EDWARD  M AIRPLANE MANUFACTURER
```

Step 3: This expands record as per the file layout columns

```
File-AID - Browse - USERID9.FASAMP.EMPMAS - LINE 0000 COL 1 4|
COMMAND ==> SCROLL ==> PAGE|
EMP-NUMBER EMP-LAST-NAME EMP-FIRST-NAME EMP-MID-INIT FILLER EMP-
TITLE |
5/AN 15/AN 10/AN 1/AN 2/AN 30/AN
(1-5) (6-20) (21-30) (31-31) (32-33) (34-49)
1-----2-----3-----4-----5-----6-----
***** TOP OF DATA *****-CAPS OFF-*
00090 MARTIN EDWARD M AIRPLANE MANUFA
----- 1 RECORD(S) NOT SELECTED
00200 JACKSON JOSEPH C ORATOR
10000 ANDREWS GEORGE ACTOR
15000 MURPHY RONALD L PAINTER
18034 SCHNEIDER ELLEN C NURSE
21035 JONES GEORGE B COUNTRY SINGER
```


Format Mode (FMT):

Step 4: Type **FMT** at command prompt from Character Mode or select Browse Mode as "F" at F.1 Screen.

```
File-AID - Browse - USERID9.FASAMP.EMPMAS ----- COL 1 92
COMMAND ==>                                SCROLL ==> PAGE
RECORD: 1          EMPLOYEE-MASTER-FILE          LENGTH: 198 ---- FIELD LEVEL/NAME --
----- COLUMNS- -----1-----2-----3-----4|
5 EMP-NUMBER              1  00090
5 EMP-LAST-NAME           6  MARTIN
5 EMP-FIRST-NAME          21  EDWARD
5 EMP-MID-INIT            31  M
5 FILLER                  32
5 EMP-TITLE               34  AIRPLANE MANUFACTURER
5 EMP-PERSONAL-INFO SYNC   64
10 EMP-NATL-ID-NUMBER      64  427890125
10 FILLER                  73
10 EMP-DATE-OF-BIRTH       74  101954
10 EMP-DOB-REDEF REDEFINES EMP-DATE-OF-BIRTH
10 EMP-DOB-REDEF SYNC      74
15 EMP-DOB-MM              74  10
15 EMP-DOB-DD              76  19
15 EMP-DOB-YY              78  54
10 EMP-HIRE-DATE           80  920101
10 EMP-MARITAL-STATUS      86  M
5 EMP-WITHOLD-INFO SYNC    87
10 EMP-LIFE-INS-WITHOLD-AMT 87  30000}
Enter CHAR for character mode, VFMT for vertical format mode
```

Navigating To Browse Your Formatted Records

Each of the navigation commands has a corresponding **PF** key set as the default in your user profile.

The default settings are:

```
PF7   UP
PF8   DOWN
PF10  LEFT (BACK)
PF11  RIGHT (FORWARD)
```

You can specify a number of records to scroll forward. For example, if record number 10 is the currently displayed record.

F.2 Edit

Step 1: Select F.2 and key in the name of the dataset you want to edit. Press **Enter** key to go to next screen. Edit the data and type **SAVE** at command prompt to save the data.

```
File-AID ----- Edit - Dataset Specification -----
COMMAND ==>

Edit Mode          ==> C      (F=Formatted; C=Char; V=Vertical)

Specify Edit Information:
Edit dataset name   ==> "USERID9.FASAMP.EMPMAS"
Member name        ==>      (Blank or pattern for member list)
Volume serial      ==>      (If dataset is not cataloged)

Specify Record Layout and XREF Information:
Record layout usage ==> N      (S = Single; X = XREF; N = None)
Record layout dataset ==>
Member name        ==>      (Blank or pattern for member list)
XREF dataset name   ==>
Member name        ==>      (Blank or pattern for member list)

Specify Selection Criteria Information: (E = Existing; T = Temporary;
Selection criteria usage ==> N      M = Modify; Q = Quick; N = None)
Selection dataset name ==>
Member name        ==>      (Blank or pattern for member list)
```

F.3 Utilities

File Copy Utility:

Step 1: Key in **3** at the Option Prompt.

```
File-AID 8.8.2 ----- Primary Option Menu -----  
OPTION ==> 3  
  
0 PARAMETERS - Specify ISPF and File-AID parameters      USERID - USERID9  
1 BROWSE      - Display file contents                     PF KEYS - 24  
2 EDIT        - Create or change file contents           TERMINAL - 3278  
3 UTILITIES   - File-AID/SPF extended utilities          TIME    - 01:10  
5 PRINT       - Print file contents                       JULIAN   - 05.194  
6 SELECTION   - Create or change selection criteria       DATE    - 05/07/13  
7 XREF        - Create or change record layout cross reference  
8 VIEW        - View interpreted record layout  
9 REFORMAT    - Convert file from one format to another  
10 COMPARE    - Compare file contents  
C CHANGES    - Display summary of File-AID changes  
T TUTORIAL    - Display information about File-AID  
X EXIT        - Terminate File-AID and return to ISPF
```

Use END to terminate File-AID

Step 2: We will reach the below mentioned screen. Enter **3** for Copy option.

OPTION ==> 3

- 1 LIBRARY - Display and modify directory entries; display load module CSECT maps; browse, delete, rename PDS members
- 2 DATASET - Display dataset information; allocate non-VSAM datasets and GDGs; catalog, uncatalog, delete, or rename datasets
- 3 COPY - Copy entire datasets; copy selected records; copy PDS members based on name, statistics and/or content
- 4 CATALOG - Display generic catalog entries or VSAM datasets on a volume in list form and do dataset list processing
- 5 VSAM - Allocate, display, delete, modify, or rename VSAM clusters, alternate indexes, or paths; manage IAM files
- 6 SEARCH/UPDATE - FIND and CHANGE across PDS members. Search for and/or update data globally in any type of dataset.
- 7 VTOC - Display and process datasets on a volume(s)
- 8 INTERACTIVE - Execute File-AID/Batch
- 9 BATCH SUBMIT - Build batch jobstreams
- G XMLGEN - Generate an XML tagged document from data file

Step 3: Key in the dataset name to be copied, and the new dataset name. In case you wish to copy into an existing dataset, give the DISP as old.

```
File-AID ----- Copy Utility -----  
COMMAND ==>  
  
Specify "FROM" Dataset or HFS Path Information:  
Dataset or path ==> 'USERID9.FASAMP.EMPMAS'T'  
Volume serial ==>                (If not cataloged)  
  
Specify "TO" Dataset or HFS Path Information:  
Dataset or path ==> 'USERID9.FASAMP.EMPMAS'T.NEW'  
Volume serial ==>                (If not cataloged)  
Disposition ==> NEW                (OLD, MOD, NEW)  
  
Specify Execution Information:  
Process online or batch ==> O      (O = Online; B = Batch)  
  
Specify Selection Criteria Information: (E = Existing; T = Temporary;  
Selection criteria usage ==> T      M = Modify; Q = Quick; N = None)  
Selection dataset name ==>  
Member name ==>                (Blank or pattern for member list)
```

Step 4: The new dataset will have the same parameters as the original one. We can change the same over here. Press **Enter** key to move to next screen.

```
File-AID ----- Allocate New SMS Dataset -----  
COMMAND ==>  
  
Dataset name: USERID9.FASAMP.EMPMAS.TNEW  
  
Management Class ==> CS843I (Blank for default)  
Storage Class ==> CSNORM (Blank for default)  
Volume serial ==> CST006 (Blank for authorized default volume)  
Data Class ==> (Blank for default)  
Space units ==> BLKS (BLKS; TRKS; CYLS; KB; or MB)  
Primary quantity ==> 120 (In above units)  
Secondary quantity ==> 24 (In above units)  
Directory quantity ==> 0 (Partitioned only)  
Record format ==> VB  
Record length ==> 255  
Block size ==> 6233  
Expiration date ==> (YYYY/MM/DD or blank)  
Dataset Name Type ==> (Library (PDS/E); PDS; or blank)  
Number of Volumes ==> (No. of VOLS or blank for SMS default)
```

Step 5: Key in **1** at the **Option** prompt for selective Copying of records.

```
File-AID - Selection Criteria Menu - TEMPORARY -----
OPTION ==> 1
                                     - Status -
  1 OPTIONS   - Enter selection criteria options   default
  2 FORMATTED - Edit formatted selection criteria   0 sets
  3 UNFORMATTED - Edit unformatted selection criteria 0 sets
```

Member list description ==> _____

Long ==> _____

Description ==> _____

Use VIEW command to display selection criteria summary
Use SAVE command to write selection criteria request
Use END to continue processing
Use CANCEL to return to main panel

Step 6: We can provide the number of records to skip, select, and start record as options while copying as shown below:

```
File-AID ----- Selection Criteria Options -----  
COMMAND ===>  
  
Specify Selection Criteria Options:  
                                Start at the following record key  
                                (both blank for start of dataset)  
Starting record key          ===>  
- OR -                      OR at the following RBA or RRN  
Starting RBA or RRN          ===>  
  
Initial records to skip      ===> 50      then skip this many records  
  
Subsequent Selection Interval:      then repeat the following  
Records to select            ===> 10      - select this many records  
Records to skip              ===> 5      - then skip this many records  
                                until  
Number of records to search ===> ALL      you have read this many records  
Number of records to select ===> ALL      or selected this many records  
  
SEQ/VSAM processing direction ===> F      (F = Forward; B = Backward)  
  
Use ENTER to return to selection criteria menu
```


Step 7: Once we key in the required criteria and press **Enter** key, we get to the screen shown below. Here we can press **PF3** key or type 'enter' at command prompt to complete the copying process.

File-AID - Selection Criteria Menu - TEMPORARY -----
OPTION ==>

- Status -

- 1 OPTIONS - Enter selection criteria options default
- 2 FORMATTED - Edit formatted selection criteria 0 sets
- 3 UNFORMATTED - Edit unformatted selection criteria 0 sets

Member list description ==> _____

Long ==>

Description ==>

Use VIEW command to display selection criteria summary
Use SAVE command to write selection criteria request
Use END to continue processing
Use CANCEL to return to main panel

Step 8: The screen given below shows that 71 records have been copied from the original file.

File-AID ----- Copy Utility ----- 71 RECORDS COPIED
COMMAND ==>

Specify "FROM" Dataset or HFS Path Information:

Dataset or path ==> 'USERID9.FASAMP.EMPMASST'

Volume serial ==> (If not cataloged)

Specify "TO" Dataset or HFS Path Information:

Dataset or path ==> 'USERID9.FASAMP.EMPMASST.NEW'

Volume serial ==> (If not cataloged)

Disposition ==> OLD (OLD, MOD, NEW)

Specify Execution Information:

Process online or batch ==> O (O = Online; B = Batch)

Specify Selection Criteria Information: (E = Existing; T = Temporary;

Selection criteria usage ==> T M = Modify; Q = Quick; N = None)

Selection dataset name ==>

Member name ==> (Blank or pattern for member list)

Step 9: The below screen is for direct copying without any selection criteria. Please note that we need to set the selection criteria as **N**.

```
File-AID ----- Copy Utility -----  
COMMAND ==>  
  
Specify "FROM" Dataset or HFS Path Information:  
Dataset or path ==> 'USERID9.FASAMP.EMPMAS'T'  
Volume serial ==> (If not cataloged)  
  
Specify "TO" Dataset or HFS Path Information:  
Dataset or path ==> 'USERID9.FASAMP.EMPMAS'T.NEW1'  
Volume serial ==> (If not cataloged)  
Disposition ==> NEW (OLD, MOD, NEW)  
  
Specify Execution Information:  
Process online or batch ==> O (O = Online; B = Batch)  
  
Specify Selection Criteria Information: (E = Existing; T = Temporary;  
Selection criteria usage ==> N M = Modify; Q = Quick; N = None)  
Selection dataset name ==>  
Member name ==> (Blank or pattern for member list)
```