MVS Quick Reference

Advantages of Mainframe Computers:-

- Very Powerful Processors (Can process several millions of instructions per second)
- Large number of I/O devices
- Designed to connect I/O devices that span large distances
- Highly Secured
- Scalable
- Popular market of Mainframes is IBM
- Used in many large corporations across the globe and more

MVS Architecture and Concepts:

LPARs: A feature that allows Mainframe to be partitioned into separate logical computing systems. System resources (memory, processors and I/O devices) can be divided among many such independent logical partitions called LPARs. Each LPAR can support an Operating system.

I/O Devices: DASD (Direct Access Storage Device), Terminals (3270), Printers, Magnetic Tape devices

SYSPLEX: SYSPLEX (or Systems Complex) is one or more LPARs (Up to 32 LPARs) joined into a cooperative single unit using specialized hardware and software.

Multiprogramming: Z/OS (latest MVS OS used in IBM Mainframe) makes multiprogramming possible by capturing and saving all the relevant information about the interrupted program before allowing another program to execute. When the interrupted program is ready to execute again, it can resume execution just where it left off. Multiprogramming allows Z/OS to run thousands of programs simultaneously for users who might be working on different physical locations around the world.

Multiprocessing: This is the simultaneous operation of two or more processors that share the various hardware resources, such as memory and external storage devices.

Virtual Storage: A technique that lets a processor to simulate an amount of main storage (central storage) that is larger than the actual amount of real storage. For example a processor that has 2M bytes of real storage might use virtual storage to simulate 10M (say) bytes of main storage. To do this, mainframe computer uses Extended Storage and DASD as an extension to real Storage.

The key to understanding virtual storage is realizing at any given moment, only one program and data it accesses need to be in real storage. Other unused data and instructions can be placed temporarily on extended storage or DASD. In other words, data and instructions are transferred between real storage and DASD or Extended storage as they are needed.

Address Space: The range of virtual addresses that the Operating system assigns to a user or separately running programs is called an Address space. This is the area of contiguous virtual addresses available for executing instructions and storing data. The range of addresses in an address space starts at zero and can extend to the highest address permitted by the OS processor type. Z/OS provides each user with a unique address space and maintains the distinction between the programs and data belonging to each address space. Within each address space, user can start multiple tasks.

Swapping: It is the process of physically or logically moving a user's program and data from main storage to expanded storage and vice versa.

ISPF Panel Options & COMMANDS – Quick Reference

Allocation/Creation of a Physical Sequential dataset or a PDS in TSO-ISPF Panels

- Use Option 3.2

To Copy or Move Members of a PDS or copy a PS to a PS

- Use Option 3.3

To list the dataset names

- Use Option 3.4

  Ex:- USERID.* (Displays all datasets with Prefix USERID)
  SYS.* (Displays all datasets with prefix SYS)
  USERID* (Displays all datasets starting with first node as USERID)
  USERID.*.JCL (Displays all Datasets with first node as USERID and 3rd node as JCL)
  USERID.TEST.* (Displays all Datasets with first 2 nodes as USERID and TEST)
  USERID.**.LIBRARY (Displays all Datasets with first node as USERID and last node as LIBRARY)

To Compare 2 PS files or 2 PDS Members to check for any differences

- Use Option 3.13

To Search string in a PS file or a PDS members for its presence or not

- Use Option 3.14

To Browse/View/Edit/Delete/Rename a PS file, a PDS or a PDS Member – use the following commands

B – Browse/Read, V – View, E- Edit, D – Delete, R – Rename

To Copy or Move members from a PDS to another PDS – use the following commands on the command line left of the PDS member and press Enter and then type the destination PDS name

C – Copy, M – Move

Function keys

F1 – Help in any screen, Also use it when there is any error message thrown in the screen on the right hand top corner of screen by the system; when used it displays a dialog box with valid reason for error; this will aid in debugging the problem

F3 – Take back to previous screen, It also Saves a Dataset (PS or a PDS member) opened in an EDIT mode

F7 - Scroll Upward;

To Scroll 100 rows upwards; Type '100' in command line and press F7

Type 'M' in command line and press F7 to Scroll Maximum Up or Top

F8 - Scroll Downward; Type 'M' in command line and press F8 to Scroll Maximum down or Bottom

F9 – Swap Screen

F10 – Scroll Left

F11- Scroll Right

SCROLL Option

PAGE – Page by Page

CSR - Based on cursor Position

Line Commands (Used in a PS file or a PDS member on the Line numbers)

I – Insert a single line ,I5 – Insert 5 lines, i9999 – Insert 9999 lines

R - Repeat a line once, R3 – Repeat a line 3 times

RR…..RR – Repeat a block of lines once
RR3…..RR – Repeat a block of lines thrice

C - Copy a single line and paste After or before a line by typing A or B on a line
C10 – Copy 10 lines and paste it After or before a line by typing A or B on a line
CC….CC – Copy a block of lines and paste it After or before a line by typing A or B on a line

M – Move a single line from the current location to another location by typing A or B on a line
M5 – Move 5 lines from the current location to another location by typing A or B on a line
MM….MM – Move a block of lines from the current location to another location by typing A or B on a line

D – Deletes a line
DD….DD - Blocks and deletes a set of lines

CUT and PASTE - CC…CC - Blocks the lines and type CUT on command prompt to cut lines and type PASTE in the same file or any other file where you want to paste using A (After) or B (Before) a line

F all item – Searches for the string 'Item'
C all item time – Changes all occurrences of 'item' with 'time'.
F all item 50 - Searches for all occurrences of the string 'item' starting at column50

TE – Text Entry

Uc – Convert any lower case alphabetical chars in a line to an Upper case
Lc - Convert any Upper case alphabetical chars in a line to a Lower case

X – Excludes that line
XX….XX – Excludes a block of lines
S - Shows the excluded line
X all; F all item – In View mode, shows lines only with string item, after executing this.
(Use Exclude in view mode to avoid any loss of lines as you could not save the changes)

COMMANDS that can be used on a command line of ISPF Panel
RES – Resets the display of ISPF screen
REF – Refresh the catalog info
COLS – Displays the column numbers
SAVE – SAVEs a Dataset (PS or a PDS member)
SUB – Submits a Job (Used in JCL) usually in a PDS member
PROF – Shows the profile of a PS or a PDS member
RECOVERY ON (or) REC ON – To Set Recovery status to ON so that backup is taken every time we press ENTER. Used to recover a file or a member in case of sudden system connection issues etc
UNDO – Undo the last unsaved change (Can be used after setting REC ON)
L <Member name> – Locate a member in a PDS
CAN or CANCEL – Cancels the changes to a dataset made in EDIT mode and comes out of the screen without saving
CREATE – Creates a Member in a PDS from contents of an existing member

COPY M2 – Copy contents of M2 (Member in a PDS) to another new member (say M3) that you are in EDIT mode
CAPS ON – Sets the profile of dataset or member of a PDS to CAPS ON mode such that even if a lower case character is typed it automatically converted to an upper case
CAPS OFF – Sets Caps mode to OFF. Usually done to enter lower case characters in a file
NUM OFF – Sets Number OFF mode in the profile to avoid automatic population of Line numbers in columns 73 – 80

Using Multiple Screens
START – Creates a new Session or Screen
SWAPBAR – Creates a menu bar at the bottom of the screen and you can use Tab and 'S' (select) to go to any screen of your choice
SCRNAME <Name> - Names the Screen based on your choice
SWAP LIST – Opens the Tool bar with the list of screens, you can point and go to any screen of your choice
LIST <Pressing F9> – Opens the Tool bar with the list of screens, you can point and go to any screen of your choice

Using Keyboard
HOME – Moves the cursor to the first position of Command line
INS – Inserts a Line
DEL – Deletes a Line
SPACEBAR – Enters a blank Space
TAB – Jumps to next unprotected variable
END – If cursor is placed in a line and END key is pressed, it blanks out all the characters of that line

Mainframe System	**Operating system**	**Average # of jobs in concurrency**	**Storage used**	**Virtual Storage**
System 360	MVT/MFT	<20	Main	No Virtual Storage
System 370	MVS	100s	Main , Auxiliary	16 megabytes Each program has its own address space
System 370/XA	MVS/XA	1000s	Main , Expanded , Auxiliary	2 gigabytes
System 390	MVS OS/390	1000s	Main , Expanded, Auxiliary	2 gigabytes, Addition of 2 new data storage areas - Data space - Hiperspace
Z Series	Z OS (64 Bit Processing)	10000s	Main , Expanded, Auxiliary	2 gigabytes, Addition of 2 new data storage areas - Data space - Hiperspace