

Lab # 2: CMS Commands

In this lab exercise, a list of actions and questions follows each task. This lab has been designed to reinforce concepts mentioned in the CMS module. We will be talking (at a high level) about specific commands and what they do in z/VM. The only limitation at this point is that every student is a Class G user (G is for general rather than privileged). This class will prevent us from working with privileged CMS commands, but after you create a second level user you will have the ability to perform any task at any time. So in the scope of this lab, you are held back from using commands that could be system-altering.

As a quick review, CMS provides an end user with an interactive interface for z/VM. You use CMS to edit and run execs or programs, and to modify your CMS virtual machine environment and your z/VM system. CMS will be our primary interface.

1) HELP command:

First, let's take a look at the HELP command. The HELP command is a useful tool when you are not sure of the format or operands of a CMS command or really want to see a menu of what commands are available. So, after you log on to your z/VM system, you can begin entering commands. Let's try the CMS HELP command first.

Here is a list of commands: Test each command and indicate whether it is valid or not.

```
→ help CMS      _____  
→ help all      _____  
→ help          _____  
→ help help     _____
```

1a) When you type in **help CMS**, list a few of the menu panel help options (denoted with an *) and the task panel option (denoted with an :).

Answer: _____

1b) What would you do to quit or exit help?

Answer: _____

Using the PF7 and PF8 keys, you can page up and page down to see the complete list of CMS commands that HELP is offering to you. To get help on a specific CMS command you can move the cursor over the command and press the **Enter** key. Note the ascending right to left order of the command names.

1c) What is the very last command in the list, ascending left to right and top to bottom?

Answer: _____

2) QUERY Command:

Within the HELP CMS menu, use the PF keys (if the command is not on the screen) to scroll to find the QUERY command. Move the cursor to that command and double left click on it, or you can move the cursor to the menu label or command of interest and press **Enter**. The detailed help provides the syntax diagram we explained earlier, a description or purpose, the authorization required to use the command, and the various operands you may use with the QUERY command, as well as the error messages associated with the command. To get out of the help screen, just look at the PF key commands below. The **PF3** key is used to Quit from your current location back to the Menu Help Information screen. When you are in this HELP screen, find the *PIPE menu panel (the asterisk indicates there is a set of menu options for the command.) Select the *PIPE menu help by moving your cursor to *PIPE and double-clicking with the left mouse button.

- 2a) When you are in the *PIPE help area, notice the following:
- a) The syntax diagram, the description, and the usage notes
 - b) The subcommands and stages used with PIPE
 - c) An area where you can enter PIPE commands
 - d) Some useful examples for using PIPEs

Now, find your way out of the HELP command area and get back to the Ready prompt. If you know what command you need help on (for example, the QUERY command), you can type **help query** and press **Enter** in CMS, rather than typing **help cms** and then finding the QUERY command in the list. Enter the following:

→ **help query**

2b) Did this take you where you thought you were going to go? (Y/N) _____

Some commands have abbreviations or short names. For QUERY, the abbreviation is **q**. Enter:

→ **help q**

2c) Did this take you where you thought you were going to go? (Y/N) _____

Next, enter the following command:

→ **query disk**
 or
 → **q disk**

The output should be similar to what you see below:

```
Ready; T=0.01/0.01 14:29:14
query disk
LABEL  VDEV  M  STAT  CYL  TYPE  BLKSZ  FILES  BLKS  BLKS  BLK
        USED-(%)  LEFT  TOTAL
-      DIR   A   R/W   -    -    4096    3      -      -      -
MARIST 19F   B/B  R/O    30 3390 4096   418    2586-48  2814  5400
GDDM32 319   P/P  R/O    40 3390 4096   555    6686-93   514  7200
MNT190 190   S    R/O   100 3390 4096   692   14299-79  3701 18000
MNT19E 19E   Y/S  R/O   200 3390 4096  1231   27471-76  8529 36000
MNT19D 19D   Z/Z  R/O   146 3390 4096   703   22733-87  3547 26280
Ready; T=0.01/0.01 14:29:44
```

After processing the QUERY DISK command, we return to the Ready prompt. The QUERY DISK command returns some valuable information.. We can see this user has 5 minidisks accessed plus an SFS (Shared File System segment) as mode A (the DIR under VDEV tells us it is an SFS). We can see the minidisk labels, their virtual device addresses (for example, 19F, 319, ... their access modes (shown by M), their status (Read/Write and Read/Only), their allocated size, the type of DASD, the blocksize, the number of files allocated on the minidisk, and usage information.

3) Minidisks:

Minidisks are z/VM's way of virtualizing DASD volumes by logically partitioning the disks. Just as you can divide a PC hard drive into multiple physical partitions and then add logical drives, using z/VM you can create multiple minidisks on a mainframe disk volume. A minidisk in z/VM could be considered analogous to a logical drive on a PC.

In the previous **query disk** command, the output accessed 5 minidisks. Look back a bit to note the third field reported. It was the symbol M, which represents the *file mode*. The order in which the file mode is displayed is the order of the minidisks search access, which is very important. CMS uses the access order as its search order. CMS searches for executables or files across the minidisks based on the ascending alphabetical access order or file mode.

3a) Which minidisk or area is searched first if CMS is looking for a file?

Answer: _____

3b) Which minidisk is searched second, if the file is not found in the first area searched?

Answer: _____

4) ACCESS and RELEASE commands:

You can change this access order and add disks to your access list with the ACCESS command. Let's query disk again to see what we have.

→ **query disk**

4a) List the minidisk labels, virtual device addresses and their access modes.

Answer: _____

Use the following command to see which minidisks are ATTACHED to your virtual machine. Not all disks are necessarily accessed by your virtual machine. How might we know what is attached? Issue the following command:

→ **query dasd**

4b) List the minidisk VOLUME allocation names that match the Volume Devices displayed with QUERY DISK and write down the defined name for each. An example is shown below. Complete the list. (**q disk** and **q dasd**).

Answer: 19F MARIST = MAR9A0 which is R/O

Before, we change the search order of our mode B disk, we must release it. Then let's check to see if the access list and the attached lists are the same.

→ **release 19f**
→ **query disk**
→ **query dasd**

4c) Explain what occurred when you used the RELEASE command. What is different (look for 19F in each output, **q disk** and **q dasd**.)

(19F is no longer listed in the Access list but it is still on the list of the attached DASD volumes)

Now, access disk 19F, listed under B, and change it to file mode T:

→ **access 19f t**
→ **query disk**

This command accesses the 19F disk to file mode T.

4d) Enter the commands needed to place 19F back to mode B.

5) FILELIST command:

Use the help facility to find the complete description of the CMS FILELIST command. Please read the command description. When you are done reading, try the following commands:

→ **filelist**

Files on CMS minidisks are saved using three pieces of information as part of their name: File name, File type, File mode; as explained in the first lab exercise. When you are done looking at what this command can do, go to the ready prompt.

We have explained much of this earlier, so let's just jump right in. Try the following command:

→ **filel profile exec a**

Type an **x** next to the line: PROFILE EXEC A in the list of files and press **Enter**. **X** is short for Xedit and it is the primary editor used in CMS. You should now be editing the file PROFILE EXEC A, which looks something like the following:

```
/* Profile exec for student accounts */
```

Address Command

Type **qq** and press **Enter** to exit from xedit.

At this time, this tells you virtually nothing about your system profile, but when we bring up your second level guest this will display the system resources, minidisks accessed, and other system preferences.

Let's try a simple exercise to learn a little more about CMS. Return to the Ready prompt if you are not already there. Now, you will create your own exec. Enter the following command:

```
→ xedit new exec a
```

We are going to create a rather simple exec, which is called NEW EXEC, on the "A" disk. When the Xedit session opens type **i** on the command line to enter input mode; then enter the following (your first REXX exec):

```
→ /* */  
→ say 'hi from the a-disk'
```

File your changes by pressing **Enter** to leave input mode and typing **file** on the command line to file your changes. You could also type **save** on the command line and then **qq** to quit from the file.

Next run your new exec:

```
→ new
```

5a) What is displayed on your screen?

Answer: _____

Next enter:

```
→ filel new * a
```

The FILEL command output places your cursor next to NEW EXEC A, enabling you to enter line commands. Type the following on the line to copy NEW EXEC C to your "A" disk:

```
→ copy / new2 = a  
→ copy / new3 = =
```

When you type in these commands, they will overstrike what is there. Don't get too excited and type in other stuff. After doing the copies, hit PF2 for refresh. What happened?

What is the difference before and after the refresh? Something to think about, but the exact explanation of the tasks is described on the next page.

By typing **copy /** you're telling CMS to copy "this file" (the one on the FILEL command output line where you're typing). **new2 =** tells CMS to create a new file with the filename of "NEW2", the same filetype and the default filemode (usually a), and copy it to the disk you have accessed as file mode "A". The = is like a variable substitution, the EXEC (file type) is substituted from the original file while giving it the **new2** or **new3** name. The == allows both the filetype and filemode to be substituted. If you were to type it completely out it would look like the following: **copy new exec a new2 exec a**

Press **Enter** to perform the copy operation.

Return to the ready prompt and enter the following command to verify the copy command was effective:

```
→ filel * exec a
```

5b) What do you see when this command is executed? _____

(You should see three files named NEW EXEC, NEW2 EXEC and NEW3 EXEC on your A-disk.)

You can use the asterisk as a wildcard for searching.

```
→ filel n* * a
```

5c) What do you see when this command is executed?: _____

(You should see the same three files, NEW, NEW2 and NEW3 on your A-disk.)

If you want to try something a little broader, try:

```
→ filel n* * *
```

5d) Describe what you get when this command is executed: _____

(all files in the search order that have a filename beginning with n).

Edit the file **new2 exec a** and change the text that is written to say **hi from the a-disk this is NEW2**, file your changes, and return to your Ready prompt.

Execute the new2 exec again by entering:

```
→ new2
```

You should see **hi from the a-disk this is NEW2**.

From the CMS Ready prompt, type the command:

```
→ discard new2 exec a
```

5d) What happened? You got an error message and it told you where you could use DISCARD.

Now type **file1 new* exec** and press **Enter**.

On the line containing NEW2 EXEC enter DISCARD:

→ **discard**

5e) What is now displayed on that line? _____

Press PF2 to refresh after the discard and exit from filelist.

5f) Try to run NEW2. What happened and did you expect it to happen? (Y/N) _____

Answer: _____

5g) Now from the Ready prompt, type **erase new3 exec** and then try running NEW3. What happened and why?

Answer: _____

You have just used two frightening and powerful commands. DISCARD and ERASE. Do not use without adult supervision!!!

This is the end of Lab #2, z/VM and CMS commands.