**LAB Assignment 2**

Operating Systems (UCS-303)

1. Introduction of internal and external commands.

2. Feeding output of one command to another command by pipelining.

3. expr, locating command.

4. echo command.

5. Using . and ..

6. Ways for signing off from linux.

7. Ping, Man and help command.

8. Combining the commands.

9. File permissions and changing the access rights (chmod).

10. vi editor and its basics: write a small paragraph using vi editor.

Answer01:

INTERNAL COMMANDS

Commands that are executed by shell itself without invoking any external command, and are built in shell commands are called internal commands. Since, no external command is needed to invoked, they are compatibly faster than external cmds. Since they are shell commands, they need less resources to be executed along with this, they are always available to be used until the shell is running, such commands are used to operate the basic shell operations. Some examples are (cd, echo, pwd, set, history) etc. They don’t even need a path to be executed.

EXTERNAL COMMANDS

Commands that are not built in shell, rather exist as executable files. When we run external command, it use to find the PATH of executable file in environment variables to load it in memory and then execute it. External commands are standalone programs located in directories like /bin, /user/bin or /user/local/bin some examples include (ls, grep, cp, cat) etc.

Answer02:

It is possible to take output from one command and put it in another command using (“|“) pipeline command. Just like command1 | command2, command1 is executed first and its output is fed in command2. Pipeline is used to perform complex tasks without creating intermediate file. Some examples are

1. grep “search\_txt” filename.txt | wc -l

* grep "search\_txt" filename.txt: Searches for the word "search\_txt" in the file filename.txt.
* while, wc – l will count number of lines it appeared in.

1. cat filename.txt | sort | uniq

* cat filename.txt will read all text written in file, while | sort will organise it according to dictionary and uniq will filter out repeated lines from sorted array. Refer to mydir tree question for more clarification

Answer 3:

Since both of these commands are not inbuilt in shell, hence are external commands, they need other references to be executed. Since expr is an external utility, we can perform arithmetic operations in any shell, even in bourn shell! Some examples that shows usage of expr for arithmetic are:

* expr 5 + 3
* expr 10 / 4
* expr length "Hello" = 5
* expr substr "HelloWorld" 1 5 = hello //substring function
* expr 4 \\* 2 = 8 and many more

Similarly locate is another external utility command that could be run irrespective of shell type, and helps us to locate the location of file or directory on system! It searches a pre-built database rather than the filesystem directly, making it faster than commands like ‘find’. Some examples are

* locate filename.txt

this will search filename.txt in system’s local database

* locate \*.sh

this will locate all files ending with .sh in local system database

Answer 4:

“echo” is also both external and internal command, and helps to display the text. All the shells except boun shell have their inbuilt echo commands. Majorly when using a shell except bourn, “echo” used as built-in command while boun shell relay on using external echo command! There are slight difference while using built-in echo and and it’s external utility version. Example is:

* echo “hello world!”

Answer 5:

The single dot. refers to the **current directory**. It is used to represent the current working directory where the user is currently located. It is also used in executable files to run them for example ./script.sh and The double dots .. refer to the **parent directory** of the current directory. It is used to navigate up one level in the directory hierarchy. For example cd ..

Morover, .. is also used to specify path to move level up to certain directory

Answer 6:

Answer 7:

Ping, man and help are commands that are used for multipurpose. They help in network diagnose