**Operating Systems Lab**

**Assignment 1**

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**Experiment Number: 01**

**TITLE: Study Of Unix Commands**

**OBJECTIVES:**

1. To understand how to use Unix commands.

2. To understand How and Why they are used in Shell Programming

**Problems to be solved in the lab:**

1. Change your password to a password you would like to use for the remainder of

the semester.

**mustafaajnawala@Ubuntu22:~$ passwd**

2. Display the system’s date.

**mustafaajnawala@Ubuntu22:~$ date**

3. Count the number of lines in the /etc/passwd file.

**mustafaajnawala@Ubuntu22:~$ wc -c 'OSL Assign 1.odt'**

**mustafaajnawala@Ubuntu22:~$ wc -w 'OSL Assign 1.odt'**

**mustafaajnawala@Ubuntu22:~$ wc -l 'OSL Assign 1.odt'**

4. Find out who else is on the system.

**mustafaajnawala@Ubuntu22:~$ who**

5. Direct the output of the man pages for the date command to a file named *mydate*.

**mustafaajnawala@Ubuntu22:~$ man date > mydate**

6. Create a subdirectory called *mydir*.

**mustafaajnawala@Ubuntu22:~$ mkdir OS**

7. Move the file *mydate* into the new subdirectory.

**mustafaajnawala@Ubuntu22:~$ mv mydate OS/**

8. Go to the subdirectory *mydir* and copy the file *mydate* to a new file called *ourdate*

**mustafaajnawala@Ubuntu22:~$ cd mydir**

**mustafaajnawala@Ubuntu22:~/mydir$ cp mydate ourdate**

9. List the contents of *mydir*.

**mustafaajnawala@Ubuntu22:~$ ls**

10. Do a long listing on the file *ourdate* and note the permissions.

**mustafaajnawala@Ubuntu22:~$ ls -l**

11. Display the name of the current directory starting from the root.

**mustafaajnawala@Ubuntu22:~$ pwd**

12. Move the files in the directory *mydir* back to the HOME directory.

**mustafaajnawala@Ubuntu22:~$ mv myd**ir/\* ~/

13. List all the files in your HOME directory.

**mustafaajnawala@Ubuntu22:~$ ls**

14. Display the first 5 lines of *mydate*.

**mustafaajnawala@Ubuntu22:~$ head -5 mydate**

15. Display the last 8 lines of *mydate*.

**mustafaajnawala@Ubuntu22:~$ tail -8 mydate**

16. Remove the directory *mydir*.

**mustafaajnawala@Ubuntu22:~$ rmdir mydir**

17. Redirect the output of the long listing of files to a file named *list*.

**mustafaajnawala@Ubuntu22:~$ ls -l >list**

18. Select any 5 capitals of states in India and enter them in a file named *capitals1*.

Choose 5 more capitals and enter them in a file named *capitals2*. Choose 5 more

capitals and enter them in a file named *capitals3*. Concatenate all 3 files and

redirect the output to a file named *capitals*.

**mustafaajnawala@Ubuntu22:~$ echo Hyderabad Jaipur Lucknow Patna Bhopal >capitals1**

**mustafaajnawala@Ubuntu22:~$ echo Chandigarh Thiruvananthapuram Ranchi Guwahati Bhubaneswar >capitals2**

**mustafaajnawala@Ubuntu22:~$ echo New Delhi Mumbai Chennai Kolkata Bengaluru >capitals3**

**mustafaajnawala@Ubuntu22:~$ cat capitals1 capitals2 capitals3 > capitals**

**mustafaajnawala@Ubuntu22:~$ cat capitals**

19. Concatenate the file *capitals2* at the end of file *capitals*.

**mustafaajnawala@Ubuntu22:~$ cat capitals capitals2**

20. Redirect the file *capitals* as an input to the command “wc –l”.

**mustafaajnawala@Ubuntu22:~$ wc -l<capitals**

21. Give read and write permissions to all users for the file *capitals*.

**mustafaajnawala@Ubuntu22:~$ chmod 666 capitals**

22. Give read permissions only to the owner of the file *capitals*. Open the file, make

some changes and try to save it. What happens ?

**mustafaajnawala@Ubuntu22:~$ chmod 400 capitals**

**observation: after setting the permission to read only it doesn’t allow to make changes to the file in any way, saying that it’s of read only file type**

23. Create an alias to concatenate the 3 files *capitals1*, *capitals2*, *capitals3* and

redirect the output to a file named *capitals*. Activate the alias and make it run.

**In .bashrc file: alias catCapitals='cat capitals1 capitals2 capitals3 > capitals'**

**mustafaajnawala@Ubuntu22:~$ catCapitals**

24. What are the environment variables PATH, HOME and TERM set to on your

terminal ?

**mustafaajnawala@Ubuntu22:~$ echo $HOME**

**mustafaajnawala@Ubuntu22:~$ echo $PATH**

**mustafaajnawala@Ubuntu22:~$ echo $TERM**

25. Find out the number of times the string “the” appears in the file *mydate*.

**mustafaajnawala@Ubuntu22:~$ grep -c “the” mydate**

26. Find out the line numbers on which the string “date” exists in *mydate*.

**mustafaajnawala@Ubuntu22:~$ grep -n “date” mydate**

27. Print all lines of *mydate* except those that have the letter “i” in them.

**mustafaajnawala@Ubuntu22:~$ grep -v “i” mydate**

28. Create the file *monotonic* as follows:

^a?b?b?c?…………..x?y?z$

Run the egrep command for *monotonic* against /usr/dict/words and search for all 4

letter words.

**mustafaajnawala@Ubuntu22:~$ echo "^a?b?c?d?e?f?g?h?i?j?k?l?m?n?o?p?q?r?s?t?u?v?w?x?y?z$" > monotonic**

**mustafaajnawala@Ubuntu22:~$ egrep '^....$' /usr/share/dict/words**

29. List 5 states in north east India in a file *mystates*. List their corresponding capitals

in a file *mycapitals*. Use the *paste* command to join the 2 files.

**mustafaajnawala@Ubuntu22:~$ echo Assam Meghalaya Manipur Nagaland Tripura > mystates**

mustafaajnawala@Ubuntu22:~$ echo Dispur Shillong Imphal Kohima Agartala > mycapitals

**mustafaajnawala@Ubuntu22:~$ paste mystates mycapitals > joined\_states\_capitals**

30. Use the *cut* command to print the 1st and 3rd columns of the /etc/passwd file for all

students in this class.

**mustafaajnawala@Ubuntu22:~$ cut -d: -f 1,3 /etc/passwd**

31. Count the number of people logged in and also trap the users in a file using the *tee*

command.

**mustafaajnawala@Ubuntu22:~$ who | tee logged\_in\_users.txt | wc -l**

**APPLICATIONS**

1. To enable the user to communicate with the kernel through the command

interpreter.

2. Useful in Shell Programming

**FAQS**

1. What is a pipe?

Ans: A pipe (|) in Linux and Unix-like systems is used to connect the output of one command directly into the input of another command. It allows you to chain multiple commands together, enabling complex processing of data in a streamlined manner.

1. What is a filter?

Ans: A filter is a type of command that processes an input stream of data and produces an output stream. Filters are often used in combination with pipes to transform or extract information from data. Example: grep, sort, awk, more, sed.

1. What is the purpose of the grep command?

Ans: The grep command is used to search for specific patterns (usually text) within files or input streams. It stands for "Global Regular Expression Print." grep supports regular expressions, making it very powerful for pattern matching.

1. How does input output redirection take place?

Ans: Input/output redirection allows you to change the standard input/output streams from their default (keyboard for input, terminal for output) to files or other commands.

**Example**:

1. ls > filelist.txt: Redirects the output of a command to a file, overwriting the file if it exists.
2. ls >> filelist.txt: Appends the output to the file instead of overwriting it.
3. sort < unsorted.txt: Redirects a file's content as input to a command.
4. What is an alias?

Ans: An alias is a shortcut or custom command that you define in your shell to represent a longer command or a series of commands. Aliases help save time and reduce typing, especially for frequently used commands or complex sequences of commands.