CDAC MUMBAI

Concepts of Operating System
Assignment 1

Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a) Navigate and List:

a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.

Ans: pwd : This command is used to see the current directory path and then can perform ls to list the directory content then to create the “LinuxAssignment” we can use **mkdir LinuxAssignment** command to create a new directory

b) File Management:

a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.

Ans: To create a new text file we can use **touch file1.txt** and to display its content we can use **head file1.txt** this command will display first 10 lines from the file.

c) Directory Management:

a. Create a new directory named "docs" inside the "LinuxAssignment" directory.

Ans: To create a directory we need to get in the LinuxAssignment directory by using cd LinuxAssignment and the mkdir docs.

d) Copy and Move Files:

a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".

Ans: to copy the file into the docs directory we need to use **cp file1 /home/cdac/LinuxAssignment/docs** this will copy the file1 into the docs directory and then we can do mv file1.txt file2.txt to rename the file name.

e) Permissions and Ownership:

a. Change the permissions of "file2.txt" to allow read, write, and execute permissions for the owner and only read permissions for others. Then, change the owner of "file2.txt" to the current user.

Ans: To Change the permission of file2.txt we can view the permission by ls -l and then type **chmod u+rwx og-w file2.txt** this will give the desired permission to the entity. To change the owner of the file we can command chown user name this will update the owner for the file2.txt.

f) Final Checklist:

a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.

Ans: To check the content of the LinuxAssignment we can use **ls in the correct directory**.

g) File Searching:

a. Search for all files with the extension ".txt" in the current directory and its subdirectories.

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).

Ans: To find the file in a particular directory we can use the **find /home/cdac/ -name “*txt”** this command will display all the files with .txt in that as well as the other directories present in the given path. **grep -l text Test1.txt Test2.txt** is used to display lines containing word in a file.

h) System Information:

a. Display the current system date and time.

Ans: To display the current date and time we can use **date** command.

i) Networking:

a. Display the IP address of the system.

b. Ping a remote server to check connectivity (provide a remote server address to ping).

Ans: We can use the **ip a or ip addr** command to display the ip address of the system.

We can use the **ping www.google.com** command to ping the server and stop the process by using the ctrl+c.

j) File Compression:

a. Compress the "docs" directory into a zip file.

b. Extract the contents of the zip file into a new directory.

Ans: To compress docs into a zip file we can use **zip -r docs.zip docs** after the process is completed it will display the % of compressed file.

To unzip the file into a particular directory we can use **unzip docs.zip -d /home/cdac** to do the following task.

k) File Editing:

a. Open the "file1.txt" file in a text editor and add some text to it.

b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

Ans: To open a file we can use **nano file1.txt** then we can add the lines of text and save it by using ctrl+s and enter to exit.

Then we can use the **sed -i -e "s/Good/Hello/g" /home/cdac/docs/file1.txt** command to change the Good word in the file to Hello this will replace all the words from Good to Hello.

Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a. Suppose you have a file named "data.txt" containing important information. Display the first 10 lines of this file to quickly glance at its contents using a command.
Ans: We can use **head -10 data.txt** to display the first 10 lines of code in the data.txt file.

b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.
Ans: We can use **tail -5 data.txt** to display the last 5 lines of code in the data.txt file.

c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.
Ans: We can use **head -15 numbers.txt** to display the first 15 lines of code in the numbers.txt file.

d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".
Ans: We can use **tail -3 numbers.txt** to display the last 3 lines of code in the numbers.txt file.

e. Imagine you have a file named "input.txt" with text content. Use a command to translate all lowercase letters to uppercase in "input.txt" and save the modified text in a new file named "output.txt."
Ans: To translate the lowercase characters into the uppercase we can use the command as: **tr 'a-z' 'A-z' <input.txt> output.txt** this will translate the lowercase to upper case and create a another file as the output.txt.

f. In a file named "duplicate.txt," there are several lines of text, some of which are duplicates. Use a command to display only the unique lines from "duplicate.txt."
Ans: To display on unique lines of code from the txt file we can use command as **sort duplicate.txt | uniq** this command will print the unique line which are not repeated.

g. In a file named "fruit.txt," there is a list of fruits, but some fruits are repeated. Use a command to display each unique fruit along with the count of its occurrences in "fruit.txt."
Ans:

```
cdac@LOST:~/docs$ nano fruit.txt
cdac@LOST:~/docs$ sort fruit.txt | uniq -c | awk '{print $2, "Occurs", $1, "Times"}'
 Occurs 1 Times
apple Occurs 4 Times
kiwi Occurs 5 Times
mango Occurs 2 Times
pineapple Occurs 2 Times
```

Submission Guidelines:

- Document each step of your solution and any challenges faced.
- Upload it on your GitHub repository

Additional Tips:

- Experiment with different options and parameters of each command to explore their functionalities.