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.**

## Navigate and List:

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

sol:-1. I use pwd to check which directory I am in as I am already in the home directory. I don't have to navigate.

2.as i don't have a LinuxAssignment directory i use mkdir to create one with command mkdir LinuxAssignment then i use cd LinuxAssignment/ to navigate into the directory.

## File Management:

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

Sol:- 1. To create the file1.txt i use touch file1.txt as the file is empty i use nano file1.txt then i write a few lines in the file and use cat file1.txt to display the contents.

## Directory Management:

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

Sol:- to create a new directory i use mkdir docs command and create new directory

## Copy and Move Files:

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

Sol:- to do this we can use mv command as well we can rename it using mv at the same time to do that we have to use the command mv /home/ayush/LinuxAssignment/file1.txt /home/ayush/LinuxAssignment/docs/file2.txt

## Permissions and Ownership:

* 1. 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.

Sol:- to give all the read write and execute permission we use chmod u+rwx file2.txt and to give only read permission for the others we can use chmod o-wx file2.txt

to change the owner of the file2.txt we can use sudo chown newuser file2.txt.

## Final Checklist:

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

Sol:- ayush@DRAGO:~/LinuxAssignment$ ls -l

total 8

drwxr-xr-x 2 ayush ayush 4096 Aug 28 18:33 docs

-rwxr--r-- 1 ayush ayush 32 Aug 28 18:52 file1.txt

this is the output

## File Searching:

* 1. Search for all files with the extension ".txt" in the current directory and its subdirectories.
  2. Display lines containing a specific word in a file (provide a filename and the specific word to search).

Sol: a -> ayush@DRAGO:~/LinuxAssignment$ find /home/ayush/LinuxAssignment -name "\*.txt"

/home/ayush/LinuxAssignment/docs/file2.txt

/home/ayush/LinuxAssignment/file1.txt

we use find command with directory in which we have to find then -name and then “ \*.txt” where \* is to represent all files with .txt extension

b-> grep -w "hello" file1.txt we use this command to print line containing hello word we use -w to match the whole word

## System Information:

* 1. Display the current system date and time.

sol:- ayush@DRAGO:~/LinuxAssignment$ date

Wed Aug 28 19:15:46 IST 2024

## Networking:

* 1. Display the IP address of the system.
  2. Ping a remote server to check connectivity (provide a remote server address to ping).

Sol:- a)i can use ifconfig command and in the output it will show inet value

inet 172.24.234.140 this is the ipv4 address of the system

b)ayush@DRAGO:~/LinuxAssignment$ ping 8.8.8.8

PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.

64 bytes from 8.8.8.8: icmp\_seq=1 ttl=118 time=19.6 ms

64 bytes from 8.8.8.8: icmp\_seq=2 ttl=118 time=19.7 ms

64 bytes from 8.8.8.8: icmp\_seq=3 ttl=118 time=19.0 ms

64 bytes from 8.8.8.8: icmp\_seq=4 ttl=118 time=20.0 ms

64 bytes from 8.8.8.8: icmp\_seq=5 ttl=118 time=18.9 ms

64 bytes from 8.8.8.8: icmp\_seq=6 ttl=118 time=19.7 ms

64 bytes from 8.8.8.8: icmp\_seq=7 ttl=118 time=19.7 ms

64 bytes from 8.8.8.8: icmp\_seq=8 ttl=118 time=19.2 ms

64 bytes from 8.8.8.8: icmp\_seq=9 ttl=118 time=19.5 ms

64 bytes from 8.8.8.8: icmp\_seq=10 ttl=118 time=19.5 ms

64 bytes from 8.8.8.8: icmp\_seq=11 ttl=118 time=19.5 ms

64 bytes from 8.8.8.8: icmp\_seq=12 ttl=118 time=19.3 ms

64 bytes from 8.8.8.8: icmp\_seq=13 ttl=118 time=19.3 ms

64 bytes from 8.8.8.8: icmp\_seq=14 ttl=118 time=20.0 ms

64 bytes from 8.8.8.8: icmp\_seq=15 ttl=118 time=18.9 ms

^Z

[1]+ Stopped ping 8.8.8.8

## File Compression:

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

sol:- ayush@DRAGO:~/LinuxAssignment$ zip -r newzip.zip docs

adding: docs/ (stored 0%)

adding: docs/file2.txt (stored 0%)

to compress docs we use zip command recursively with -r option to zip doc directory in newzip.zip file

* 1. Extract the contents of the zip file into a new directory.

Sol :- ayush@DRAGO:~/LinuxAssignment$ unzip newzip.zip -d /home/ayush/LinuxAssignme

nt/extraction/

Archive: newzip.zip

creating: /home/ayush/LinuxAssignment/extraction/docs/

extracting: /home/ayush/LinuxAssignment/extraction/docs/file2.txt

to extract contents of the file we use unzip command with -d option which gives us the option to choose the directory we want to extract the files in and then we can use pathname to extract the files in desired location

## File Editing:

* 1. Open the "file1.txt" file in a text editor and add some text to it.
  2. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

Sol :- to open file and edit it we can use nano file1.txt command and then we add some text and can save and exit the file by ctrl x ,Y,enter in sequence.

to change a word in file1.txt we can use ayush@DRAGO:~/LinuxAssignment$ sed -i 's/hello/the/g' file1.txt command in this we are using sed or steam editor with -i to replace then we use s/ which is a search function then oldword / newword and then /g for global search in file and then file name

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

1. 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.

Sol: to do that we know when we use head in default context it displays first 10 lines so we can use head data.txt to get the desired output

1. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

Sol:- for this we can use tail command like tail -5 data.txt this will display last five lines of the file

1. 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.

Sol:- to display first 15 lines we can use head -15 numbers.txt

1. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

Sol- we use tail -3 numbers.txt

1. 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."

Sol :- i found out about tr or translator command when we use tr –help we can see it gives us option to use [:upper:],[:lower:] options on the file to separate file from operand we use <filename> notation and then output.txt as the target file where it will copy the content with modification we need not have output.txt previously created

ayush@DRAGO:~/LinuxAssignment$ tr [:lower:] [:upper:] <input.txt> output.txt

ayush@DRAGO:~/LinuxAssignment$ cat output.txt

HI

THIS IS ME

HELLO HOW ARE YOU

ayush@DRAGO:~/LinuxAssignment$ tr [:lower:] [:upper:] input.txt output1.txt

tr: extra operand ‘input.txt’

Try 'tr --help' for more information.

ayush@DRAGO:~/LinuxAssignment$ cat input.txt

hi

This is me

Hello how aRe you

1. 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."

Sol:- ayush@DRAGO:~/LinuxAssignment$ cat duplicate.txt

1

1

2

2

3

4

this is our duplicate file first i tried using sort -u duplicate.txt command but when we use this command we get each line once instead of getting unique lines

to solve this i found we can use uniq command with -u option the command i used is uniq -u duplicate.txt

ayush@DRAGO:~/LinuxAssignment$ uniq -u duplicate.txt

3

4

this is the output

1. 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."

Sol : - while exploring uniq –help i found -c option which gives count of the line by number of occurrences we can use uniq -c fruit we will get

ayush@DRAGO:~/LinuxAssignment$ uniq -c fruit.txt

2 apple

1 mango

3 grape

1 mango

1 banana

and this is the original fruit file

ayush@DRAGO:~/LinuxAssignment$ cat fruit.txt

apple

apple

mango

grape

grape

grape

mango

banana

but this dosent work if we the word are in different casing

## 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.