# Assignment 1

## Problem 1

### 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.

**——> Step 1 : pwd : -To navigate into home directory**

**Step 2 : ls : - To list the content of the Home directory.**

**Step 3 :mkdir LinuxAssignment :- To create Directory**

**Step 4: cd LinuxAssignment :- To move into LinuxAssignment directory.**

```
saibabapc@MAHESHWARs-MacBook-Air ~ % pwd
/Users/saibabapc
saibabapc@MAHESHWARs-MacBook-Air ~ % la
zsh: command not found: la
saibabapc@MAHESHWARs-MacBook-Air ~ % ls
Applications                    LinuxAssignment                 first-react-app
Data structue Algorith          Movies                          java.java
Desktop                         Music                           mongodb-macos-aarch64-7.0.12 2
Documents                       Pictures                        node_modules
Downloads                       Postman                         package-lock.json
JavaScript                      Public                          package.json
Library                         data
saibabapc@MAHESHWARs-MacBook-Air ~ % cd LinuxAssignment
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

### b) File Management:

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

**——> Step 1 :touch file1.txt : - creating the file in LinuxAssignment directory.**

**Step 2 :cat file1.txt : - display the content of file1.txt**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % touch file1.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat file1.txt
Hello my name is Maheshwar Bagal

saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

### c) Directory Management:

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

**——> Step 1 : - cd .. :- to navigate from file1.txt to LinuxAssignment**

**Step 2 : - cd LinuxAssignment :- go to the LinuxAssignment directory**

**Step 3 : - touch docs : - creating docs directory in LinuxAssignment.**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cd ..
saibabapc@MAHESHWARs-MacBook-Air ~ % cd LinuxAssignment
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % touch docs
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

## d) Copy and Move Files:

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

**— —>Step 1 :- cp file1.txt docs/file2.txt : This copy file1.txt into docs and rename file2.txt.**

**Step 2 :- cd docs : - get into docs directory.**

**Step 3 :- ls :- check if the file is created or not.**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cd ..
saibabapc@MAHESHWARs-MacBook-Air ~ % cd LinuxAssignment
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % touch docs
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cp file1.txt docs/file2.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cd docs
saibabapc@MAHESHWARs-MacBook-Air docs % ls
file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs %
```

## 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.

**— —>Step 1 : chmod 744 docs/file2.txt :- changing permission of file2.txt**

**Step 2: ls -l docs/file2.txt :- Verify if the permission are change or not**

**Step 3: chown saibabapc doc/file2.txt :- to change the owner of file.**

**Step 4: ls -l docs/file2.txt :- Verify if the owner are change or not.**

```
saibabapc@MAHESHWARs-MacBook-Air ~ % cd LinuxAssignment
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        duplicate1.txt  file1           fruit.txt       number.txt
docs            duplicate.txt   extracted_docs  file1.txt       input.txt       output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cd docs
saibabapc@MAHESHWARs-MacBook-Air docs % ls
file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs % chmod 744 file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs % ls -l
total 8
-rwxr--r--  1 saibabapc  staff  34 Feb 27 19:36 file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs % chown saibabapc file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs % ls -l
total 8
-rwxr--r--  1 saibabapc  staff  34 Feb 27 19:36 file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs %
```

**f) Final Checklist:**

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

**— —>Step 1 : ls :- commanding ls in LinuxAssignment will give the docs and file1.txt file**

**Step 2: cd docs : - get into the docs directory.**

**Step 3 : ls :- check for the file2.txt is present in docs or not.**

```
saibabapc@MAHESHWARs-MacBook-Air docs % cd LinuxAssignment
cd: no such file or directory: LinuxAssignment
saibabapc@MAHESHWARs-MacBook-Air docs % cd ..
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cd docs
saibabapc@MAHESHWARs-MacBook-Air docs % ls
file2.txt
saibabapc@MAHESHWARs-MacBook-Air docs %
```

**g) File Searching:**

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

**— —>Step 1 : cd LinuxAssignment :- go into the LinuxAssignment directory.**

**Step 2: find . -type f -name "*.txt" :- it will search files with txt extension.**

```
saibabapc@MAHESHWARs-MacBook-Air ~ % cd LinuxAssignment
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % find . -type f -name "*.txt"
./duplicate.txt
./file1.txt
./number.txt
./docs/file2.txt
./fruit.txt
./input.txt
./extracted_docs/docs/file2.txt
./duplicate1.txt
./output.txt
./data.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

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

**— —>Step 1 : grep -i "world" docs/file2.txt:- This give line containing specific word.**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % grep -i "world" docs/file2.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        duplicate1.txt  file1           fruit.txt       number.txt
docs            duplicate.txt   extracted_docs  file1.txt       input.txt       output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cd docs
saibabapc@MAHESHWARs-MacBook-Air docs % grep -i "maheshwar" file2.txt
Hello my name is Maheshwar Bagal
saibabapc@MAHESHWARs-MacBook-Air docs %
```

## h) System Information:

a. Display the current system date and time.

**— —>Step 1 :date :- To check the current date, day, and time.**

**Step 2 :date + "%H:%M:%S":- to get the time in hour, min, sec format.**

```
saibabapc@MAHESHWARs-MacBook-Air docs % date
Thu Feb 27 19:49:04 IST 2025
saibabapc@MAHESHWARs-MacBook-Air docs % date + "%H:%M:%S"
date: illegal time format
usage: date [-jnRu] [-r seconds|file] [-v[+|-]val[ymwdHMS]]
            [-I[date | hours | minutes | seconds]]
            [-f fmt date | [[[mm]dd]HH]MM[[cc]yy][.ss]] [+format]
saibabapc@MAHESHWARs-MacBook-Air docs % date +"%H:%M:%S"
19:49:50
saibabapc@MAHESHWARs-MacBook-Air docs %
```

## i) Networking:

- Display the IP address of the system.

**— —>Step : ipconfig getifaddr en0 : this will check the IP address.**

```
saibabapc@MAHESHWARs-MacBook-Air docs % ipconfig getifaddr en0
192.168.197.32
saibabapc@MAHESHWARs-MacBook-Air docs %
```

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

**— — —> Step : ping** google.com **:- this will check the server connectivity.**

```
saibabapc@MAHESHWARs-MacBook-Air docs % ping google.com
PING google.com (216.58.200.174): 56 data bytes
64 bytes from 216.58.200.174: icmp_seq=0 ttl=54 time=170.013 ms
64 bytes from 216.58.200.174: icmp_seq=1 ttl=54 time=123.657 ms
64 bytes from 216.58.200.174: icmp_seq=2 ttl=54 time=156.111 ms
64 bytes from 216.58.200.174: icmp_seq=3 ttl=54 time=260.921 ms
64 bytes from 216.58.200.174: icmp_seq=4 ttl=54 time=183.380 ms
64 bytes from 216.58.200.174: icmp_seq=5 ttl=54 time=141.023 ms
64 bytes from 216.58.200.174: icmp_seq=6 ttl=54 time=189.220 ms
64 bytes from 216.58.200.174: icmp_seq=7 ttl=54 time=211.440 ms
64 bytes from 216.58.200.174: icmp_seq=8 ttl=54 time=171.125 ms
64 bytes from 216.58.200.174: icmp_seq=9 ttl=54 time=173.803 ms
64 bytes from 216.58.200.174: icmp_seq=10 ttl=54 time=170.501 ms
64 bytes from 216.58.200.174: icmp_seq=11 ttl=54 time=158.418 ms
64 bytes from 216.58.200.174: icmp_seq=12 ttl=54 time=152.480 ms
```

**j) File Compression:**

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

**———>Step : zip -r docs.zip docs :- It will zip the file docs and name it as docs.zip**

```
Last login: Thu Feb 27 17:26:03 on ttys000
saibabapc@MAHESHWARs-MacBook-Air ~ % cd linuxAssignment
saibabapc@MAHESHWARs-MacBook-Air linuxAssignment % ls
data.txt        duplicate.txt   file1           input.txt
docs            duplicate1.txt  file1.txt       number.txt
docs.zip        extracted_docs  fruit.txt       output.txt
saibabapc@MAHESHWARs-MacBook-Air linuxAssignment % zip -r docs.zip docs
updating: docs/ (stored 0%)
updating: docs/file2.txt (stored 0%)
saibabapc@MAHESHWARs-MacBook-Air linuxAssignment %
```

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

**———->Step : unzip docs.zip -d extracted_docs : - unzip doc.zip file first and then make a extracted_docs file with having a content of docs.zip file.**

**k) File Editing:**

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

**———>Step 1 : nano file1.txt : - This will open file in text editor**

**Step 2 : write what you want and press ctrl O then press tab then ctrl x to exit.**

```
saibabapc@MAHESHWARs-MacBook-Air linuxAssignment % nano file1.txt
saibabapc@MAHESHWARs-MacBook-Air linuxAssignment % cat file1.txt
Hello my name is Maheshwar Bagal

saibabapc@MAHESHWARs-MacBook-Air linuxAssignment %
```

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

**——>Step : sed ‘’-i ’s/word to be changed/ changeable word/g’ file1.txt**

```
Hello my name is Maheshwar Bagal

saibabapc@MAHESHWARs-MacBook-Air linuxAssignment % sed -i '' 's/Bagal/Patil/g' file1.txt

saibabapc@MAHESHWARs-MacBook-Air linuxAssignment % cat file1.txt
Hello my name is Maheshwar Patil

saibabapc@MAHESHWARs-MacBook-Air linuxAssignment %
```

## Problem 2

**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.

**——>Step 1 : - touch data.txt : creating empty file.**

**Step 2 : - nano data.txt : adding info to file.**

**Step 3 : -head -10 data.txt. : reading the first 10 line of file.**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        duplicate1.txt  file1.txt       input.txt       output.txt
docs            duplicate.txt   extracted_docs  fruit.txt       number.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % touch data.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        duplicate1.txt  file1.txt       input.txt       output.txt
docs            duplicate.txt   extracted_docs  fruit.txt       number.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % nano data.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % head -10 data.txt
hii
there
i
am
maheshwar
bagal
from
cdac
khargar
pg
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

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

**——>Step 1 : - tail -5 data.txt : this will show last 5 line .**

```
pg
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % tail -5 data.txt
khargar
pg
dac
course

saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

**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.

**——>Step 1 : - touch number.txt : creating empty file.**

**Step 2 : - nano number.txt : adding info to file.**

**Step 3 : -head -15 number.txt. : reading the first 15 line of file.**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % touch number.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % nano number.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % head -15 number.txt
1
2
3
4
5
6
6
7
8
9
02
3
4
5
6
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

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

**——>Step 1 : - tail -3 number.txt : this will show last 3 line .**

```
6
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % tail -3 number.txt
7
8
9
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

**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."

**——>Step 1 : -LC_ALL=C tr ‘a-z’ ‘A-Z’ <input.txt>.output.txt**

```
hii ,
i am maheshwar bagal,
pg dac student at cdac mumbai
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % tr 'a-b' 'A-Z'<input.txt> output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        file1.txt       number.txt
docs            extracted_docs  input.txt       output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat output.txt
hii ,
i Am mAheshwAr BAgAl,
pg dAc student At cdAc mumBAi
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % LC_ALL=C tr 'a-z' 'A-Z' <input.txt> output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        file1.txt       number.txt
docs            extracted_docs  input.txt       output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat output.txt
HII ,
I AM MAHESHWAR BAGAL,
PG DAC STUDENT AT CDAC MUMBAI
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

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."

**——>Step : cat duplicate.txt | sort | uniq > duplicate1.txt**

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % nano duplicate.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat duplicate.txt
india
pakistan
nepal
Afganistan
sri lanka
bhutan
china
india
pakistan
bhutan

saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat duplicate.txt | sort | uniq > duplicate1.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        duplicate1.txt  file1.txt       number.txt
docs            duplicate.txt   extracted_docs  input.txt       output.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat duplicate1.txt

Afganistan
bhutan
china
india
nepal
pakistan
sri lanka
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

```
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % nano fruit.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % ls
data.txt        docs.zip        duplicate1.txt  file1.txt       input.txt       output.txt
docs            duplicate.txt   extracted_docs  fruit.txt       number.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat fruit.txt
mango
apple
banana
grapes
apple
orange
mango
banana
cherry
apple
mango
grapes
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % fruit.txt | sort | uniq -c
zsh: command not found: fruit.txt
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment % cat fruit.txt | sort | uniq -c
   3 apple
   2 banana
   1 cherry
   2 grapes
   3 mango
   1 orange
saibabapc@MAHESHWARs-MacBook-Air LinuxAssignment %
```

**This will sort duplicate.txt file and unique all the content in file and make new file duplicate1.txt and push unique content in it.**

**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."

**——->Step : cat fruit.txt | sort | uniq -c**

**This command will display fruit.txt content with uniq fruits and -c will describe the occurrences of fruits**