

ASSIGNMENT -01

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.

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~$ pwd
/home/cdac
cdac@ADITI:~$ mkdir feb25
cdac@ADITI:~$ ls
feb25
cdac@ADITI:~$ mkdir LinuxAssignment
cdac@ADITI:~$ ls
LinuxAssignment feb25
cdac@ADITI:~$ cd Linux Assignment
-bash: cd: too many arguments
cdac@ADITI:~$ cd LinuxAssignment
cdac@ADITI:~/LinuxAssignment$
```

b) File Management:

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

```
Select cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ touch file1.txt
cdac@ADITI:~/LinuxAssignment$ ls
file1.txt
cdac@ADITI:~/LinuxAssignment$ nano file1.txt
cdac@ADITI:~/LinuxAssignment$ cat file1.txt
Aditi Pateria
Cdac Mumbai
Feb25
cdac@ADITI:~/LinuxAssignment$
```

c) Directory Management:

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

Ans.

```
Select cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ mkdir docs
mkdir: cannot create directory 'docs': File exists
cdac@ADITI:~/LinuxAssignment$ ls
docs file1.txt
cdac@ADITI:~/LinuxAssignment$
```

d) Copy and Move Files:

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

Ans.

```
cdac@ADITI: ~/LinuxAssignment/docs
cdac@ADITI:~/LinuxAssignment/docs$ ls
data.txt  docs  docs.zip  duplicate.txt  file1.txt  fruits.txt  input.txt  numbers.txt  output.txt
cdac@ADITI:~/LinuxAssignment/docs$ cp file1.txt docs
cdac@ADITI:~/LinuxAssignment/docs$ cd docs/
cdac@ADITI:~/LinuxAssignment/docs$ ls
file1.txt  file2.txt
cdac@ADITI:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@ADITI:~/LinuxAssignment/docs$ ls
file2.txt
cdac@ADITI:~/LinuxAssignment/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.

```
cdac@ADITI: ~/LinuxAssignment/docs
cdac@ADITI:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@ADITI:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 33 Feb 26 23:42 file2.txt
cdac@ADITI:~/LinuxAssignment/docs$ chown $(whoami) file2.txt
cdac@ADITI:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 33 Feb 26 23:42 file2.txt
cdac@ADITI:~/LinuxAssignment/docs$
```

f. f) Final Checklist:

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

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~$ cd LinuxAssignment/
cdac@ADITI:~/LinuxAssignment$ ls -l~/LinuxAssignment
ls: invalid option -- '~'
Try 'ls --help' for more information.
cdac@ADITI:~/LinuxAssignment$ ls -l ~/LinuxAssignment
total 8
drwxr-xr-x 2 cdac cdac 4096 Feb 26 23:43 docs
-rw-r--r-- 1 cdac cdac 33 Feb 26 23:05 file1.txt
cdac@ADITI:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Feb 26 23:43 docs
-rw-r--r-- 1 cdac cdac 33 Feb 26 23:05 file1.txt
cdac@ADITI:~/LinuxAssignment$ ls -l/
ls: invalid option -- '/'
Try 'ls --help' for more information.
cdac@ADITI:~/LinuxAssignment$ ls -l /
total 1472
lrwxrwxrwx 1 root root 7 Jan 7 03:05 bin -> usr/bin
drwxr-xr-x 2 root root 4096 Apr 18 2022 boot
drwxr-xr-x 8 root root 2940 Feb 27 17:33 dev
drwxr-xr-x 81 root root 4096 Feb 27 17:33 etc
drwxr-xr-x 3 root root 4096 Feb 24 18:12 home
-rwxr-xr-x 3 root root 1440152 May 7 2022 init
lrwxrwxrwx 1 root root 7 Jan 7 03:05 lib -> usr/lib
lrwxrwxrwx 1 root root 9 Jan 7 03:05 lib32 -> usr/lib32
lrwxrwxrwx 1 root root 9 Jan 7 03:05 lib64 -> usr/lib64
lrwxrwxrwx 1 root root 10 Jan 7 03:05 libx32 -> usr/libx32
drwx----- 2 root root 16384 Apr 10 2019 lost+found
drwxr-xr-x 2 root root 4096 Jan 7 03:05 media
drwxr-xr-x 4 root root 4096 Feb 24 18:12 mnt
drwxr-xr-x 2 root root 4096 Jan 7 03:05 opt
dr-xr-xr-x 168 root root 0 Feb 27 17:33 proc
drwx----- 2 root root 4096 Jan 7 03:07 root
drwxr-xr-x 6 root root 120 Feb 27 17:33 run
lrwxrwxrwx 1 root root 8 Jan 7 03:05/sbin -> usr/sbin
drwxr-xr-x 2 root root 4096 Oct 11 13:35 snap
drwxr-xr-x 2 root root 4096 Jan 7 03:05 srv
dr-xr-xr-x 11 root root 0 Feb 27 17:33 sys
drwxrwxrwt 2 root root 4096 Feb 26 16:28 tmp
drwxr-xr-x 14 root root 4096 Jan 7 03:05 usr
drwxr-xr-x 13 root root 4096 Jan 7 03:07 var
cdac@ADITI:~/LinuxAssignment$
```

g. g) File Searching:

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

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./file1.txt
cdac@ADITI:~/LinuxAssignment$ cat file2.txt
cat: file2.txt: No such file or directory
cdac@ADITI:~/LinuxAssignment$ cat file1.txt
Aditi Pateria
Cdac Mumbai
Feb25
cdac@ADITI:~/LinuxAssignment$ nano file1.txt
cdac@ADITI:~/LinuxAssignment$ grep season file1.txt
Seasons are distinct periods of the year, each characterized by different weather patterns and environmental changes. The four main seasons--spring, summer, autumn (fall), and winter--are a result of Earth's tilt and its orbit around the sun. During spring, temperatures warm up, flowers bloom, and animals emerge from hibernation. Summer brings the warmest weather, with long days filled with sunshine. As autumn arrives, the weather cools, leaves change color, and many plants prepare for the cold months ahead. Winter is marked by the coldest temperatures, shorter days, and, in some regions, snow and ice. These seasonal changes not only shape the climate but also influence the activities and lifestyles of people across the globe.
cdac@ADITI:~/LinuxAssignment$ grep "specific word" filename.txt
grep: filename.txt: No such file or directory
cdac@ADITI:~/LinuxAssignment$
```

h) System Information:

- Display the current system date and time.

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ date
Thu Feb 27 18:14:01 IST 2025
cdac@ADITI:~/LinuxAssignment$ date "+%Y-%m-%d %H:%M:%S"
2025-02-27 18:14:12
cdac@ADITI:~/LinuxAssignment$ date "+%A, %B %d, %Y %I:%M %p"
Thursday, February 27, 2025 06:22 PM
cdac@ADITI:~/LinuxAssignment$
```

i) Networking:

a. Display the IP address of the system.

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ ipconfig.exe
Windows IP Configuration

Wireless LAN adapter Local Area Connection* 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 12:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::6dd4:559b:7049:5581%4
    IPv4 Address. . . . . : 192.168.137.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2405:201:3005:e2d1:9b56:86d0:4c1:9062
    Temporary IPv6 Address. . . . . : 2405:201:3005:e2d1:7c98:41b7:b704:e1ce
    Link-local IPv6 Address . . . . . : fe80::a93f:b7fd:fb00:5770%11
    IPv4 Address. . . . . : 192.168.29.95
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::b6a7:c6ff:fe98:d350%11
                                192.168.29.1

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter vEthernet (WSL):

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::8756:2d5e:375a:7f1a%47
    IPv4 Address. . . . . : 172.18.144.1
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . :
cdac@ADITI:~/LinuxAssignment$
```

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

```
Select cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ ping -c 4 google.com
PING google.com (142.250.77.206) 56(84) bytes of data:
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=1 ttl=111 time=37.2 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=2 ttl=111 time=39.0 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=3 ttl=111 time=37.9 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=4 ttl=111 time=36.8 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 36.804/37.734/39.018/0.938 ms
cdac@ADITI:~/LinuxAssignment$ ping -c 6 jio.com
PING jio.com (49.40.8.183) 56(84) bytes of data:

--- jio.com ping statistics ---
6 packets transmitted, 0 received, 100% packet loss, time 5179ms

cdac@ADITI:~/LinuxAssignment$
cdac@ADITI:~/LinuxAssignment$ ping -c 4 google.com
PING google.com (142.250.77.206) 56(84) bytes of data:
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=1 ttl=111 time=38.3 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=2 ttl=111 time=38.3 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=3 ttl=111 time=42.5 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=4 ttl=111 time=39.8 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 38.319/39.737/42.522/1.709 ms
cdac@ADITI:~/LinuxAssignment$
```

j) File Compression:

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

```
cdac@ADITI:~/LinuxAssignment/docs1
cdac@ADITI:~/LinuxAssignment$ zip -r docs.zip docs
Command 'zip' not found, but can be installed with:
sudo apt install zip
cdac@ADITI:~/LinuxAssignment$
cdac@ADITI:~/LinuxAssignment$ sudo apt install zip
[sudo] password for cdac:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  unzip
The following NEW packages will be installed:
  unzip zip
0 upgraded, 2 newly installed, 0 to remove and 44 not upgraded.
Need to get 350 kB of archives.
After this operation, 930 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 unzip amd64 6.0-26ubuntu3.2 [175 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/main amd64 zip amd64 3.0-12build2 [176 kB]
Fetched 350 kB in 5s (72.7 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 42986 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-26ubuntu3.2_amd64.deb ...
Unpacking unzip (6.0-26ubuntu3.2) ...
Selecting previously unselected package zip.
Preparing to unpack .../zip_3.0-12build2_amd64.deb ...
Unpacking zip (3.0-12build2) ...
Setting up unzip (6.0-26ubuntu3.2) ...
Setting up zip (3.0-12build2) ...
Processing triggers for man-db (2.10.2-1) ...
cdac@ADITI:~/LinuxAssignment$ zip -r docs.zip docs
adding: docs/ (stored 0%)
adding: docs/file2.txt (stored 0%)
cdac@ADITI:~/LinuxAssignment$ unzip docs.zip -d docs1
Archive:  docs.zip
  creating: docs1/docs/
    extracting: docs1/docs/file2.txt
cdac@ADITI:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@ADITI:~/LinuxAssignment$ cd docs1
cdac@ADITI:~/LinuxAssignment/docs1$ ls
docs
cdac@ADITI:~/LinuxAssignment/docs1$
```

k) File Editing:

- 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).

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~$ cd LinuxAssignment/
cdac@ADITI:~/LinuxAssignment$ ls
docs  docs.zip  docsl  file1.txt  file1.txt.save
cdac@ADITI:~/LinuxAssignment$ nano file1.txt
cdac@ADITI:~/LinuxAssignment$
cdac@ADITI:~/LinuxAssignment$ cat file1.txt
Aditi Pateria
Cdac Mumbai
feb25
Seasons are distinct periods of the year, each characterized by different weather patterns and environmental changes. The four main seasons—spring, summer, autumn (fall), and winter—are a result of Earth's tilt and its orbit around the sun. During spring, temperatures warm up, flowers bloom, and animals emerge from hibernation. Summer brings the warmest weather, with long days filled with sunshine. As autumn arrives, the weather cools, leaves change color, and many plants prepare for the cold months ahead. Winter is marked by the coldest temperatures, shorter days, and, in some regions, snow and ice. These seasonal changes not only shape the climate but also influence the activities and lifestyles of people across the globe.

cdac@ADITI:~/LinuxAssignment$ sed -i 's/seasons/books/g' file1.txt
cdac@ADITI:~/LinuxAssignment$ ls
docs  docs.zip  docsl  file1.txt  file1.txt.save
cdac@ADITI:~/LinuxAssignment$ cat file1.txt
Aditi Pateria
Cdac Mumbai
feb25
Seasons are distinct periods of the year, each characterized by different weather patterns and environmental changes. The four main books—spring, summer, autumn (fall), and winter—are a result of Earth's tilt and its orbit around the sun. During spring, temperatures warm up, flowers bloom, and animals emerge from hibernation. Summer brings the warmest weather, with long days filled with sunshine. As autumn arrives, the weather cools, leaves change color, and many plants prepare for the cold months ahead. Winter is marked by the coldest temperatures, shorter days, and, in some regions, snow and ice. These seasonal changes not only shape the climate but also influence the activities and lifestyles of people across the globe.

cdac@ADITI:~/LinuxAssignment$
```

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.

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


```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ ls
docs docs.zip docsl file1.txt
cdac@ADITI:~/LinuxAssignment$ touch data.txt
cdac@ADITI:~/LinuxAssignment$ nano data.txt
cdac@ADITI:~/LinuxAssignment$ cat data.txt
Apple - ID: 101
Banana - ID: 102
Cherry - ID: 103
Date - ID: 104
Elderberry - ID: 105
Fig - ID: 106
Grape - ID: 107
Honeydew - ID: 108
Kiwi - ID: 109
Lime - ID: 110
Mango - ID: 111
Nectarine - ID: 112
Orange - ID: 113
Papaya - ID: 114
Pineapple - ID: 115
cdac@ADITI:~/LinuxAssignment$ head -10 data.txt
Apple - ID: 101
Banana - ID: 102
Cherry - ID: 103
Date - ID: 104
Elderberry - ID: 105
Fig - ID: 106
Grape - ID: 107
Honeydew - ID: 108
Kiwi - ID: 109
Lime - ID: 110
cdac@ADITI:~/LinuxAssignment$ tail -5 data.txt
Mango - ID: 111
Nectarine - ID: 112
Orange - ID: 113
Papaya - ID: 114
Pineapple - ID: 115
cdac@ADITI:~/LinuxAssignment$ b. Now, to check the end of the file for any recent additions, display the last 5 lines of
ta.txt" using another command.: command not found
cdac@ADITI:~/LinuxAssignment$ "data.txt" using another command_
```

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.

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

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ ls
data.txt docs docs.zip docsl file1.txt
cdac@ADITI:~/LinuxAssignment$ touch numbers.txt
cdac@ADITI:~/LinuxAssignment$ nano numbers.txt
cdac@ADITI:~/LinuxAssignment$ cat numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
cdac@ADITI:~/LinuxAssignment$ head -10 numbers.txt
1
2
3
4
5
6
7
8
9
10
cdac@ADITI:~/LinuxAssignment$ tail -3 numbers.txt
18
19
20
cdac@ADITI:~/LinuxAssignment$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
```

After 9 10 11 12 13 14 15 all numbers are there .

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."

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ nano input.txt
cdac@ADITI:~/LinuxAssignment$ cat input.txt
THIS IS A TEST .
this is a test.
some text missing.
hello world .
cdac@ADITI:~/LinuxAssignment$ tr '[:lower:]' '[:upper:]'<input.txt >output.txt
cdac@ADITI:~/LinuxAssignment$ cat output.txt
THIS IS A TEST .
THIS IS A TEST.
SOME TEXT MISSING.
HELLO WORLD .
cdac@ADITI:~/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."

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ cat duplicate.txt
aditi
lakshit
saket
saket
aditi
lakshit
aditi
mrunal
lakshit
sanket
mrunal

cdac@ADITI:~/LinuxAssignment$ sort duplicate.txt | uniq
aditi
lakshit
mrunal
saket
sanket
cdac@ADITI:~/LinuxAssignment$
```

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."

```
cdac@ADITI: ~/LinuxAssignment
cdac@ADITI:~/LinuxAssignment$ ls
data.txt  docs  docs.zip  docs1  duplicate.txt  file1.txt  fruits.txt  fruits1.txt  input.txt  numbers.txt  output.txt
cdac@ADITI:~/LinuxAssignment$ rm fruits.txt fruits1.txt
cdac@ADITI:~/LinuxAssignment$ ls
data.txt  docs  docs.zip  docs1  duplicate.txt  file1.txt  input.txt  numbers.txt  output.txt
cdac@ADITI:~/LinuxAssignment$ nano fruits.txt
cdac@ADITI:~/LinuxAssignment$ cat fruits.txt
apple
banana
apple
orange
grapes
kiwi
banana
pear
watermelon
apple
watermelon
pineapple
pineapple
orange
grapes
cdac@ADITI:~/LinuxAssignment$ sort fruits.txt | uniq
apple
banana
grapes
kiwi
orange
pear
pineapple
watermelon
cdac@ADITI:~/LinuxAssignment$ sort fruits.txt | uniq -c
 3 apple
 2 banana
 2 grapes
 1 kiwi
 2 orange
 1 pear
 2 pineapple
 2 watermelon
cdac@ADITI:~/LinuxAssignment$
```