

## Concepts of Operating System Assignment 1

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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.

```
/home
$ ls
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd/home
-bash: cd/home: No such file or directory
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd home/
-bash: cd: home/: No such file or directory
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd --
Amar Khare@LAPTOP-VFKB66T4 ~
$ pwd
/home/Amar Khare
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd --
Amar Khare@LAPTOP-VFKB66T4 ~
$ pwd
/home/Amar Khare
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd
Amar Khare@LAPTOP-VFKB66T4 ~
$ pwd
/home/Amar Khare
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd ..
Amar Khare@LAPTOP-VFKB66T4 /home
$ ls
'Amar Khare'
Amar Khare@LAPTOP-VFKB66T4 /home
$ mkdir LinuxAssignment
Amar Khare@LAPTOP-VFKB66T4 /home
$ ls
'Amar Khare' LinuxAssignment
Amar Khare@LAPTOP-VFKB66T4 /home
$
```

b) File Management:

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

```
/home/LinuxAssignment

Amar Khare@LAPTOP-VFKB66T4 /home
$ cd LinuxAssignment/

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$
```

c) Directory Management:

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

```
/home/LinuxAssignment

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ mkdir docs

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ |
```

d) Copy and Move Files:

- a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".
  - Searched command to copy and paste > cp source\_file destination.
  - Searched for To rename > mv prevname newname.

```
/home/LinuxAssignment/docs

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ mkdir docs

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man copy
No manual entry for copy

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man c
No manual entry for c

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs  file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cp file1.txt docs/

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs  file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cd docs/

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ls
file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ man rename

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ mv file1.txt file2.txt

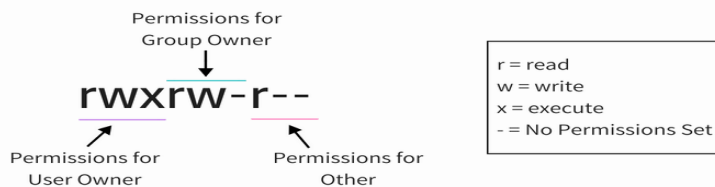
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ls
file2.txt

Amar Khare@LAPTOP-VFKB66T4 /home/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.

- Listing permission > `ls -l`
- Changing permission `chmod u=rws,o=r file2.txt`
- Before `-rw-r--r-- 1 Amar Khare None 0 Feb 26 22:39 file2.txt`
- After `-rwxr--r-- 1 Amar Khare None 0 Feb 26 22:39 file2.txt`
- The first character = '-', which means it's a file 'd', which means it's a directory.
- The next nine characters = (rw-r--r--) show the security
- The next column shows the owner of the file.
- The next column shows the group owner of the file. (which has special access to these files)
- The next column shows the size of the file in bytes.
- The next column shows the date and time the file was last modified.



```
/home/LinuxAssignment/docs
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ls -l
total 0
-rw-r--r-- 1 Amar Khare None 0 Feb 26 22:39 file2.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ stat
stat: missing operand
Try 'stat --help' for more information.
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ls -l file2.txt
-rw-r--r-- 1 Amar Khare None 0 Feb 26 22:39 file2.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ man ls -l
No manual entry for -l
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ man l
No manual entry for l
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ^C
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ^C
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ chmod u=rwx, o=r file2.txt
chmod: invalid mode: 'u=rwx,'
Try 'chmod --help' for more information.
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ chmod u=rwx,o=r file2.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ls -l
total 0
-rwxr--r-- 1 Amar Khare None 0 Feb 26 22:39 file2.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ |
```

- whoami – check the current user(who has logged in) – Amar Khare
- ls -l - shows the owner name (who has created file) – Amar Khare
- User is the one who has logged in currently. owner is the creator of the file/folder, which is shown when you do a "ls -l".

```
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ whoami
Amar Khare

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ man chown

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ chown Amar Khare file2.txt
chown: invalid user: 'Amar'

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ chown 'Amar khare' file2.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ ls -l
total 0
-rwxr--r-- 1 Amar Khare None 0 Feb 26 22:39 file2.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$
```

f) Final Checklist:

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

```
/home/LinuxAssignment
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cd

Amar Khare@LAPTOP-VFKB66T4 ~
$ ls

Amar Khare@LAPTOP-VFKB66T4 ~
$ man ls

Amar Khare@LAPTOP-VFKB66T4 ~
$ ls a
ls: cannot access 'a': No such file or directory

Amar Khare@LAPTOP-VFKB66T4 ~
$ la -a
-bash: la: command not found

Amar Khare@LAPTOP-VFKB66T4 ~
$ ls -a
.  ..  .bash_history  .bash_profile  .bashrc  .inputrc  .lessht  .profile

Amar Khare@LAPTOP-VFKB66T4 ~
$ cd ..

Amar Khare@LAPTOP-VFKB66T4 /home
$ cd ..

Amar Khare@LAPTOP-VFKB66T4 /
$ ls
Cygwin-Terminal.ico  Cygwin.ico  cygdrive  etc  lib  sbin  usr
Cygwin.bat          bin         dev       home  proc  tmp   var

Amar Khare@LAPTOP-VFKB66T4 /
$ cd home/

Amar Khare@LAPTOP-VFKB66T4 /home
$ cd LinuxAssignment/

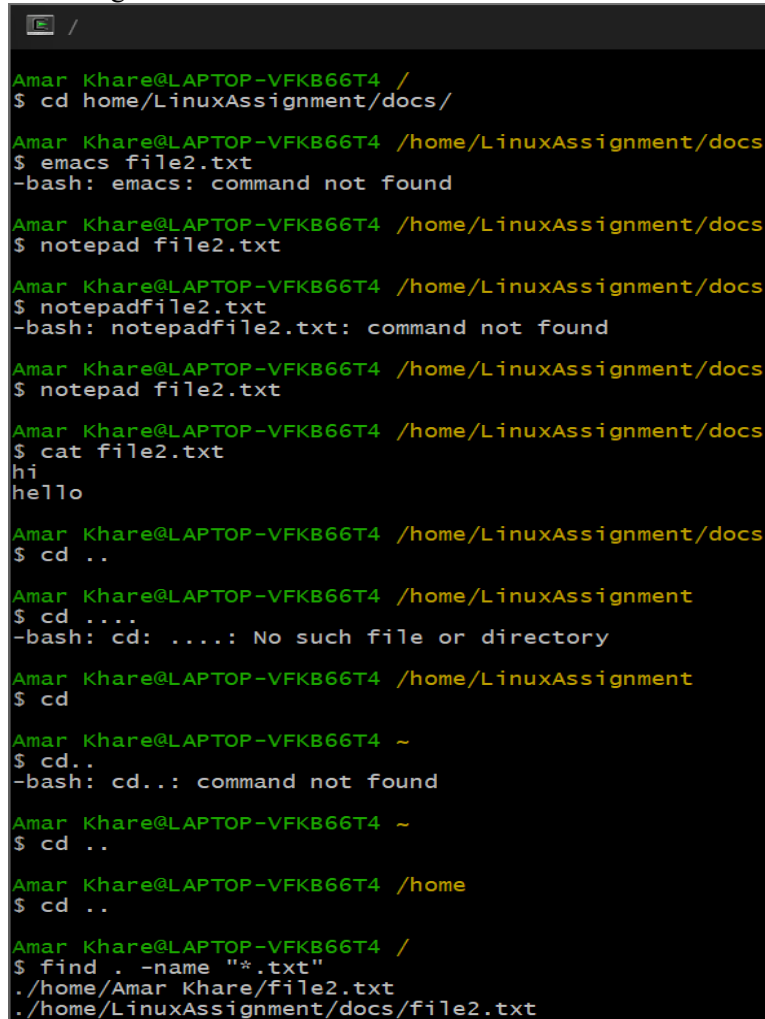
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs  file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man ls

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$
```

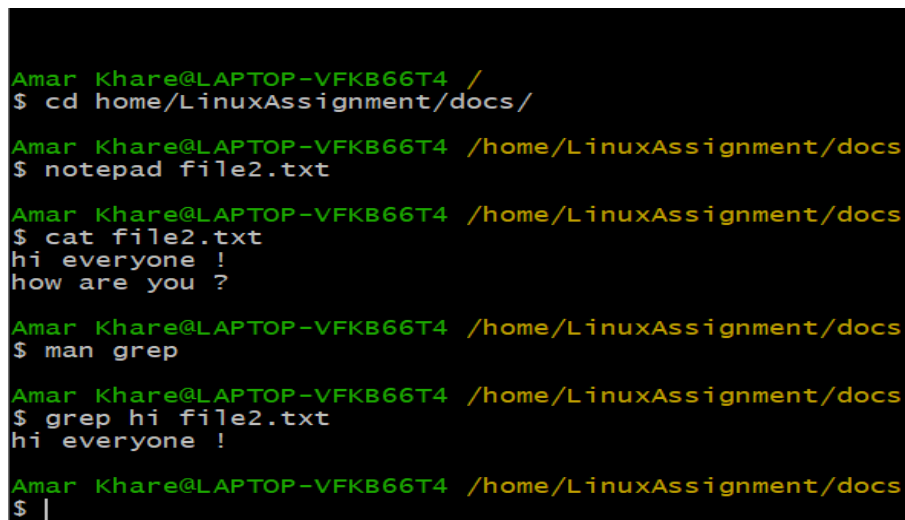
g) File Searching:

- 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).
- Searching file = `$ find . -name "*.txt"`



```
Amar Khare@LAPTOP-VFKB66T4 /  
$ cd home/LinuxAssignment/docs/  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ emacs file2.txt  
-bash: emacs: command not found  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ notepad file2.txt  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ notepadfile2.txt  
-bash: notepadfile2.txt: command not found  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ notepad file2.txt  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ cat file2.txt  
hi  
hello  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ cd ..  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment  
$ cd ....  
-bash: cd: ....: No such file or directory  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment  
$ cd  
  
Amar Khare@LAPTOP-VFKB66T4 ~  
$ cd..  
-bash: cd..: command not found  
  
Amar Khare@LAPTOP-VFKB66T4 ~  
$ cd ..  
  
Amar Khare@LAPTOP-VFKB66T4 /home  
$ cd ..  
  
Amar Khare@LAPTOP-VFKB66T4 /  
$ find . -name "*.txt"  
./home/Amar Khare/file2.txt  
./home/LinuxAssignment/docs/file2.txt
```

- Searching and displaying : `Grep hi file2.txt`



```
Amar Khare@LAPTOP-VFKB66T4 /  
$ cd home/LinuxAssignment/docs/  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ notepad file2.txt  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ cat file2.txt  
hi everyone !  
how are you ?  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ man grep  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ grep hi file2.txt  
hi everyone !  
  
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs  
$ |
```

h) System Information:

- a. Display the current system date and time.

```
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ date
Thu Feb 27 01:19:42 IST 2025

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ |
```

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). j)

A ping is a basic Internet command that allows a user to test and verify whether a given destination IP address exists and can accept requests in computer network administration. Ping is also used for diagnosis to confirm that the computer the user tries to reach is operational. Ping can be used with any operating system (OS) that supports networking, including the majority of embedded network administration software.

```
$ man hostname
Amar Khare@LAPTOP-VFKB66T4 ~
$ hostname -i
fe80::d995:a35f:f98d:a0ef%9 2401:4900:562f:cf66:1484:e4c9:176:8b75 2401:4900:562f:cf66:973c:ec6b:13c4:3588 192.168.143.93
Amar Khare@LAPTOP-VFKB66T4 ~
$ ping
Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
          [-r count] [-s count] [[-j host-list] | [-k host-list]]
          [-w timeout] [-R] [-S srcaddr] [-c compartment] [-p]
          [-4] [-6] target_name

Options:
  -t          Ping the specified host until stopped.
              To see statistics and continue - type Control-Break;
              To stop - type Control-C.
  -a          Resolve addresses to hostnames.
  -n count    Number of echo requests to send.
  -l size     Send buffer size.
  -f          Set Don't Fragment flag in packet (IPv4-only).
  -i TTL      Time To Live.
  -v TOS      Type Of Service (IPv4-only. This setting has been deprecated
              and has no effect on the type of service field in the IP
              Header).
  -r count    Record route for count hops (IPv4-only).
  -s count    Timestamp for count hops (IPv4-only).
  -j host-list Loose source route along host-list (IPv4-only).
  -k host-list Strict source route along host-list (IPv4-only).
  -w timeout  Timeout in milliseconds to wait for each reply.
  -R          Use routing header to test reverse route also (IPv6-only).
              Per RFC 5095 the use of this routing header has been
              deprecated. Some systems may drop echo requests if
              this header is used.
  -S srcaddr  Source address to use.
  -c compartment Routing compartment identifier.
  -p          Ping a Hyper-V Network Virtualization provider address.
  -4          Force using IPv4.
  -6          Force using IPv6.

Amar Khare@LAPTOP-VFKB66T4 ~
$ ping 192.168.143.93
Pinging 192.168.143.93 with 32 bytes of data:
Reply from 192.168.143.93: bytes=32 time<1ms TTL=128
Reply from 192.168.143.93: bytes=32 time<1ms TTL=128
Reply from 192.168.143.93: bytes=32 time<1ms TTL=128
Reply from 192.168.143.93: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.143.93:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

Amar Khare@LAPTOP-VFKB66T4 ~
$ |
```

### File Compression:

- a. Compress the "docs" directory into a zip file.
  - b. Extract the contents of the zip file into a new directory.
- Zip command was not working so used tar command
  - Creating compressed directory : `$ tar -czvf docsarchive.tar.gz docs`
    - -c: Create an archive.
    - -z: Compress the archive with gzip.
    - -v: Display progress in the terminal while creating the archive, also known as "verbose" mode. The v is always optional in these commands, but it's helpful.
    - -f: Allows you to specify the filename of the archive.
    - -x : to extract
  - Extracting files : `$ tar -xzvf docsarchive.tar.gz -C docs1/`

```
/home/LinuxAssignment/docs1/docs
Amar Khare@LAPTOP-VFKB66T4 ~
$ man zip
No manual entry for zip
Amar Khare@LAPTOP-VFKB66T4 ~
$ man tar
Amar Khare@LAPTOP-VFKB66T4 ~
$ cd ..
Amar Khare@LAPTOP-VFKB66T4 /home
$ cd LinuxAssignment/
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ tar -czvf docsarchive.tar.gz docs
docs/
docs/file2.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs  docsarchive.tar.gz  file1.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ mkdir docs1
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs  docs1  docsarchive.tar.gz  file1.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cd docs
docs/                  docs1/                  docsarchive.tar.gz
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cd docs1
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1
$ tar -xzvf docsarchive.tar.gz
tar (child): docsarchive.tar.gz: Cannot open: No such file or directory
tar (child): Error is not recoverable: exiting now
tar: Child returned status 2
tar: Error is not recoverable: exiting now
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1
$ tar -xzvf docsarchive.tar.gz -C /docs1
tar (child): docsarchive.tar.gz: Cannot open: No such file or directory
tar (child): Error is not recoverable: exiting now
tar: Child returned status 2
tar: Error is not recoverable: exiting now
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1
$ cd ..
```

[illegible]

```
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cd docs1

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1
$ ls
docs

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1
$ cd docs

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1/docs
$ ls
file2.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs1/docs
$
```



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).

```
/home/LinuxAssignment

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ cd..
-bash: cd..: command not found

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment/docs
$ cd ..

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs docs1 docsarchive.tar.gz file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat file1.txt
hi everyone!
how are you?

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man sed

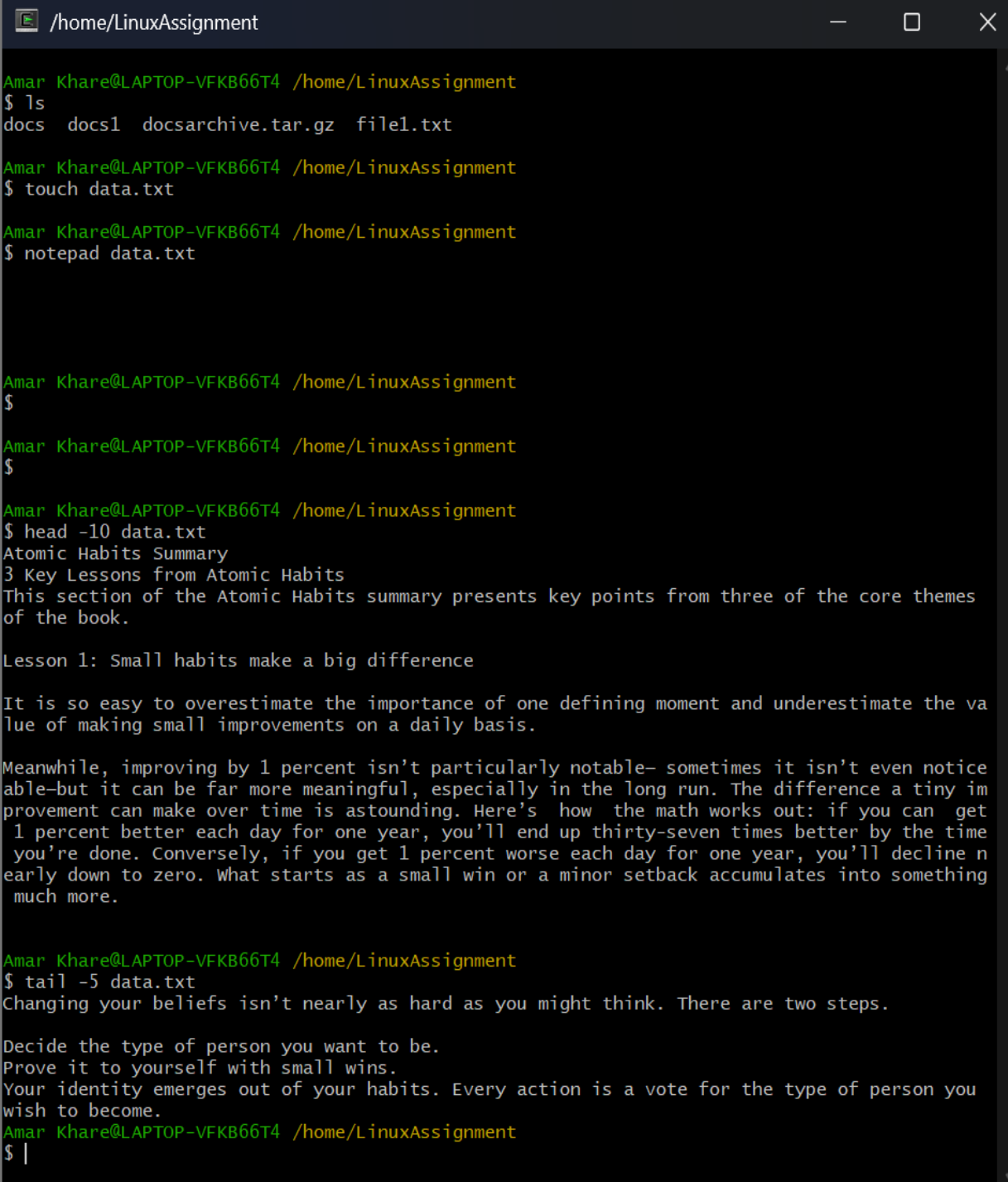
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ sed -i 's/hi/hey/g' file1.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat file1.txt
hey everyone!
how are you?

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$
```

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

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



```
/home/LinuxAssignment
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
docs docs1 docsarchive.tar.gz file1.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch data.txt
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad data.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ head -10 data.txt
Atomic Habits Summary
3 Key Lessons from Atomic Habits
This section of the Atomic Habits summary presents key points from three of the core themes of the book.

Lesson 1: Small habits make a big difference

It is so easy to overestimate the importance of one defining moment and underestimate the value of making small improvements on a daily basis.

Meanwhile, improving by 1 percent isn't particularly notable— sometimes it isn't even noticeable—but it can be far more meaningful, especially in the long run. The difference a tiny improvement can make over time is astounding. Here's how the math works out: if you can get 1 percent better each day for one year, you'll end up thirty-seven times better by the time you're done. Conversely, if you get 1 percent worse each day for one year, you'll decline nearly down to zero. What starts as a small win or a minor setback accumulates into something much more.

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ tail -5 data.txt
Changing your beliefs isn't nearly as hard as you might think. There are two steps.

Decide the type of person you want to be.
Prove it to yourself with small wins.
Your identity emerges out of your habits. Every action is a vote for the type of person you wish to become.
Amar Khare@LAPTOP-VFKB66T4 /home/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.
- d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

```
/home/LinuxAssignment

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch number.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad number.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ head -15 number.txt
 2    3    5    7
11   13   17   19
23   29   31   37
41   43   47   53
59   61   67   71
73   79   83   89
97  101  103  107
109 113  127  131
137 139  149  151
157 163  167  173
179 181  191  193
197 199  211  223
227 229  233  239
241 251  257  263
269 271  277  281

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ tail -3 number.txt
347 349 353 359
367 373 379 383
389 397 401 409

Amar Khare@LAPTOP-VFKB66T4 /home/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."

```
/home/LinuxAssignment
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch input.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad input.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat input.txt
Artificial Intelligence: Revolutionizing the Future
Artificial Intelligence (AI) is one of the most transformative technologies of the 21st century. It refers to machines' ability to perform tasks that typically require human intelligence, such as problem-solving, decision-making, and learning. AI is rapidly changing various industries, from healthcare to finance, making processes faster and more efficient.

The origins of AI date back to the 1950s when scientists first began developing machines that could mimic human thought processes. Today, AI has evolved into different branches, including Machine Learning (ML), Deep Learning, and Natural Language Processing (NLP). These technologies power virtual assistants like Siri and Alexa, recommendation systems on Netflix, and even self-driving cars.

One of AI's biggest contributions is in healthcare. AI-driven algorithms help doctors diagnose diseases early, predict patient outcomes, and assist in robotic surgeries. In the financial sector, AI helps detect fraudulent transactions, manage risks, and automate trading. Similarly, in education, AI-driven tutoring systems personalize learning experiences for students.

Despite its advantages, AI also raises ethical concerns. Many fear job displacement as machines replace human labor. Additionally, AI systems can be biased if trained on flawed data, leading to unfair decisions in hiring or lending. The rise of AI-powered surveillance also sparks privacy debates worldwide.

To ensure AI benefits society, it is crucial to implement regulations and ethical frameworks. Governments and tech companies must work together to create AI systems that are fair, transparent, and safe. The future of AI is promising, and with responsible development, it can solve some of the world's biggest challenges, from climate change to disease control.

Artificial Intelligence is not just a technology; it is a revolution shaping the future of humanity. As AI continues to evolve, it is our responsibility to use it wisely for the betterment of all.

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch output.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man tr

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man tr

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ tr a-z A-Z < ./input.txt > output.txt
```

```
/home/LinuxAssignment
$ man tr

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ tr a-z A-Z < ./input.txt > output.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat input.txt
Artificial Intelligence: Revolutionizing the Future
Artificial Intelligence (AI) is one of the most transformative technologies of the 21st century. It refers to machines' ability to perform tasks that typically require human intelligence, such as problem-solving, decision-making, and learning. AI is rapidly changing various industries, from healthcare to finance, making processes faster and more efficient.

The origins of AI date back to the 1950s when scientists first began developing machines that could mimic human thought processes. Today, AI has evolved into different branches, including Machine Learning (ML), Deep Learning, and Natural Language Processing (NLP). These technologies power virtual assistants like Siri and Alexa, recommendation systems on Netflix, and even self-driving cars.

One of AI's biggest contributions is in healthcare. AI-driven algorithms help doctors diagnose diseases early, predict patient outcomes, and assist in robotic surgeries. In the financial sector, AI helps detect fraudulent transactions, manage risks, and automate trading. Similarly, in education, AI-driven tutoring systems personalize learning experiences for students.

Despite its advantages, AI also raises ethical concerns. Many fear job displacement as machines replace human labor. Additionally, AI systems can be biased if trained on flawed data, leading to unfair decisions in hiring or lending. The rise of AI-powered surveillance also sparks privacy debates worldwide.

To ensure AI benefits society, it is crucial to implement regulations and ethical frameworks. Governments and tech companies must work together to create AI systems that are fair, transparent, and safe. The future of AI is promising, and with responsible development, it can solve some of the world's biggest challenges, from climate change to disease control.

Artificial Intelligence is not just a technology; it is a revolution shaping the future of humanity. As AI continues to evolve, it is our responsibility to use it wisely for the betterment of all.

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat output.txt
ARTIFICIAL INTELLIGENCE: REVOLUTIONIZING THE FUTURE
ARTIFICIAL INTELLIGENCE (AI) IS ONE OF THE MOST TRANSFORMATIVE TECHNOLOGIES OF THE 21ST CENTURY. IT REFERS TO MACHINES' ABILITY TO PERFORM TASKS THAT TYPICALLY REQUIRE HUMAN INTELLIGENCE, SUCH AS PROBLEM-SOLVING, DECISION-MAKING, AND LEARNING. AI IS RAPIDLY CHANGING VARIOUS INDUSTRIES, FROM HEALTHCARE TO FINANCE, MAKING PROCESSES FASTER AND MORE EFFICIENT.

THE ORIGINS OF AI DATE BACK TO THE 1950S WHEN SCIENTISTS FIRST BEGAN DEVELOPING MACHINES THAT COULD MIMIC HUMAN THOUGHT PROCESSES. TODAY, AI HAS EVOLVED INTO DIFFERENT BRANCHES, INCLUDING MACHINE LEARNING (ML), DEEP LEARNING, AND NATURAL LANGUAGE PROCESSING (NLP). THESE TECHNOLOGIES POWER VIRTUAL ASSISTANTS LIKE SIRI AND ALEXA, RECOMMENDATION SYSTEMS ON NETFLIX, AND EVEN SELF-DRIVING CARS.
```

- 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."

```
/home/LinuxAssignment

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
data.txt docs docs1 docsarchive.tar.gz file1.txt input.txt number.txt output.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch duplicate.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad duplicate.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ uniq duplicate.txt
i love travelling.
i enjoy playing cricket.

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ duplicate.txt
-bash: duplicate.txt: command not found

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat duplicate.txt
i love travelling.
i love travelling.
i enjoy playing cricket.
Amar Khare@LAPTOP-VFKB66T4 /home/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."
- I had to sort it before printing no of unique values

```
/home/LinuxAssignment

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ touch fruit.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad.txt
-bash: notepad.txt: command not found

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad fruit.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ cat fruit.txt
Apple
Orange
Mango
Apple
Orange
Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ uniq fruit.txt
Apple
Orange
Mango
Apple
Orange

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ ls
data.txt  docs1  duplicate.txt  fruit.txt  number.txt
docs      docsarchive.tar.gz  file1.txt  input.txt  output.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ man uniq

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ uniq fruit.txt
Apple
Orange
Mango
Apple
Orange

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ notepad fruit.txt

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ uniq -c fruit.txt
  1 Apple
  1 Orange
  1 Mango
  1 Apple
  1 Orange

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ sort fruit.txt
Apple
Apple
Mango
Orange
Orange

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ uniq -c fruit.txt
  1 Apple
  1 Orange
  1 Mango
  1 Apple
  1 Orange

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ sort fruit.txt | uniq c
uniq: c: No such file or directory

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ sort fruit.txt | uniq -c
  2 Apple
  1 Mango
  1 Orange
  1 Orange

Amar Khare@LAPTOP-VFKB66T4 /home/LinuxAssignment
$ |
```

