Operating System Lab

(4ITRC2)

IT IV Semester

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23I4026

IT-A

Submitted to

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Session Jan-May, 2025

Study of Ubuntu Commands

Part -1 - Commands:-

1. **pwd -** Print Working Directory.
   output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ pwd
/home/himanshu
```

2. **cd –** Change Directory.
   output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd OS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$
```

3. **ls –** list information about file(s).
   output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls
Ashish  Desktop  Documents  Downloads  Music  OS  Pictures  Public  snap  Templates  Videos
```

4. **mkdir –** Creates a new directory.
   output -

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ mkdir newOS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
newOS
```

5. **touch –** Creates an empty file.
   output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ touch newfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
newfile.txt  newOS
```

6. **rm –** remove file(s).
   output -

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ rm newfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
newOS
```

7. **hostname –** print or set system name.
   output -

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ hostname
VivoBook-ASUSLaptop-X509DAP-M509DA
```

8. **cat –** Concatenate and print(display) the contents of file(s).

output -

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ cat oldfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ cat oldfile.txt
"Hello, this is cat COMMAND!!!"
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ cat oldfile.txt newfile.txt
"Hello, this is cat COMMAND!!!"
"This is new file"
```

9. **mv –** move or rename file(s) or directorie(s)

output -

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ mv newfile.txt /home/himanshu/Documents
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
newOS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd Documents
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ ls
newfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ mv newfile.txt oldfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ ls
oldfile.txt
```

10. **echo –** display message on screen

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ echo "Hello, World"
Hello, World
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ name="Himanshu"
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ echo $name
Himanshu
```

11. **fgrep –** Search file(s) for lines that match a fixed string.

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ fgrep "Hello" oldfile.txt
"Hello, this is cat COMMAND!!!"
```

12. **chmod –** change access permissions.

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ chmod 755 oldfile.txt
```

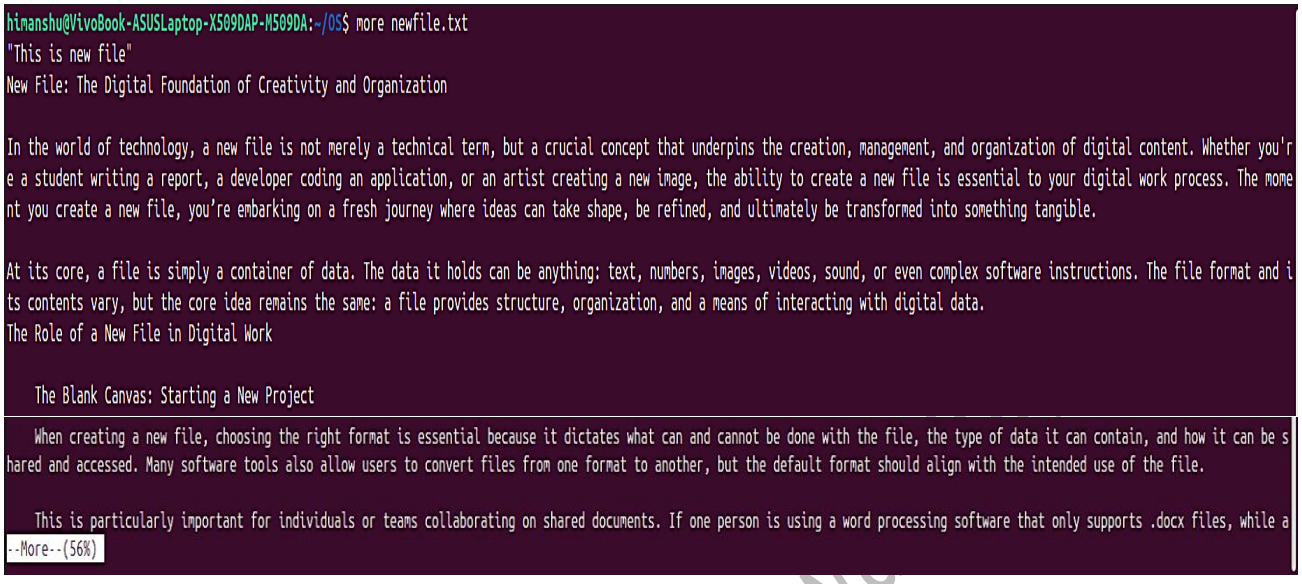
13. **cp –** copy one or more file to another location.

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ cp newfile.txt /home/himanshu/OS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd OS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
newfile.txt  newOS
```

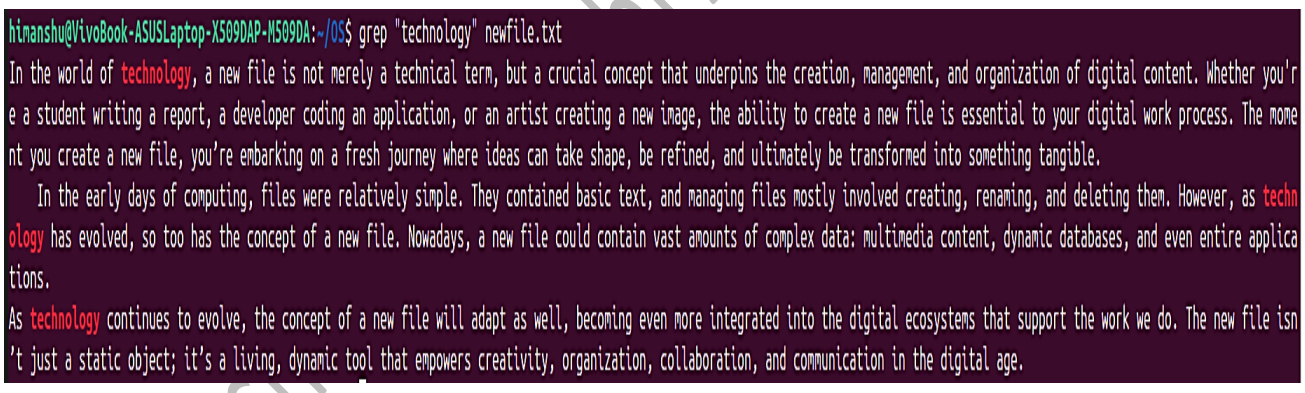
14. **more –** display output one screen at a time.

output –



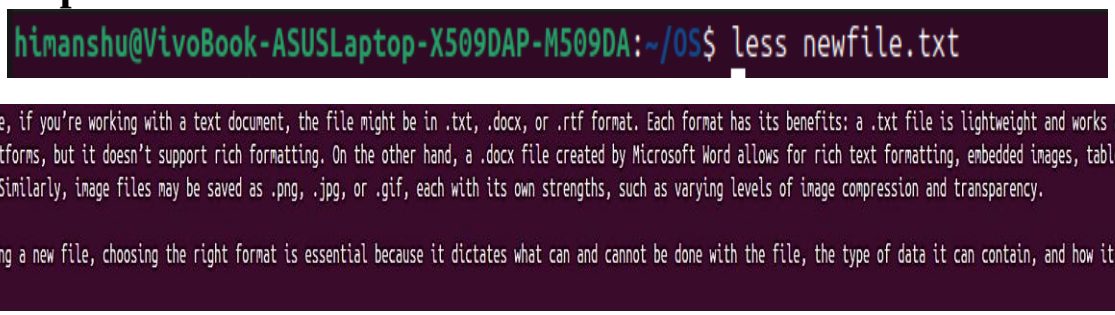
15. **grep** – search file(s) for lines that match a given pattern.

output –



16. **less** – viewing large text files one page at a time with navigation and search capabilities.

output –



```
are applications. From simple text files to complex multimedia files, each format serves its own purpose.

   For instance, if you're working with a text document, the file might be in .txt, .docx, or .rtf format. Each format has its benefits: a .txt file is lightweight and works across vi
rtually all platforms, but it doesn't support rich formatting. On the other hand, a .docx file created by Microsoft Word allows for rich text formatting, embedded images, tables, and o
ther features. Similarly, image files may be saved as .png, .jpg, or .gif, each with its own strengths, such as varying levels of image compression and transparency.
:

As technology continues to evolve, the concept of a new file will adapt as well, becoming even more integrated into the digital ecosystems that support the work we do. The new file isn
't just a static object; it's a living, dynamic tool that empowers creativity, organization, collaboration, and communication in the digital age.
(END)
```

17. **tail –** output the last part of file

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ tail newfile.txt

   In the early days of computing, files were relatively simple. They contained basic text, and managing files mostly involved creating, renaming, and deleting them. However, as techn
ology has evolved, so too has the concept of a new file. Nowadays, a new file could contain vast amounts of complex data: multimedia content, dynamic databases, and even entire applica
tions.

   With the advent of cloud computing, the way we interact with files has also evolved. We no longer have to worry about physical storage space on our devices. Files can be created an
d stored in the cloud, allowing for easy access from anywhere with an internet connection. Files are now dynamic, collaborative, and accessible on multiple devices simultaneously.

Conclusion: The Power of a New File

In conclusion, the act of creating a new file is much more than a technical task–it is a fundamental part of how we interact with, organize, and communicate in the digital world. From
the blank canvas that starts a new project to the security measures that ensure its safety, a new file plays an essential role in organizing and creating digital content. Whether for p
ersonal use, professional work, or collaborative projects, files are a cornerstone of modern computing. They allow us to organize our thoughts, share our work, and store our memories s
ecurely.

As technology continues to evolve, the concept of a new file will adapt as well, becoming even more integrated into the digital ecosystems that support the work we do. The new file isn
't just a static object; it's a living, dynamic tool that empowers creativity, organization, collaboration, and communication in the digital age.
```

18. **wc –** count the number of lines, words, and characters in a file.

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ wc newfile.txt
  55 1350 8491 newfile.txt
```

19. **awk–** pattern scanning, filtering, and data extraction in files or streams.

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ awk '{print $1, $2}' newfile.txt
"This is
New File:

In the

At its
The Role

The Blank

The creation

The initial

Organization in

Files are

For example,
```

20. **sed–** stream editor.

output –

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ sed 's/file/filees/g' newfile.txt
"This is new filees"
New File: The Digital Foundation of Creativity and Organization

In the world of technology, a new filees is not merely a technical term, but a crucial concept that underpins the creation, management, and organization of digital content. Whether you
're a student writing a report, a developer coding an application, or an artist creating a new image, the ability to create a new filees is essential to your digital work process. The
moment you create a new filees, you’re embarking on a fresh journey where ideas can take shape, be refined, and ultimately be transformed into something tangible.

At its core, a filees is simply a container of data. The data it holds can be anything: text, numbers, images, videos, sound, or even complex software instructions. The filees format a
nd its contents vary, but the core idea remains the same: a filees provides structure, organization, and a means of interacting with digital data.
The Role of a New File in Digital Work

    The Blank Canvas: Starting a New Project

    The creation of a new filees often symbolizes the beginning of a new endeavor. Much like an artist facing a blank canvas, a writer staring at an empty document, or a developer open
ing a code editor, creating a new filees is the first step in the journey of creation. It’s where ideas are formed, modified, and refined over time. Whether you're drafting a document,
 writing a script, coding a program, or creating a spreadsheet, that new filees marks the start of something with endless possibilities.

    The initial blank filees represents uncharted potential. You can add text, images, tables, numbers, or code, giving it form and purpose. At this stage, the filees holds no judgment
–it's just waiting to be filled with your thoughts, plans, or creative vision. It is a space for self-expression, organization, and communication. In the world of digital media, there
```

Part -2 - Answers to the following Questions:-

Q1. How to navigate to a Specific Directory?

using the cd (change directory) command.

Syntax: cd /path/to/directory

- navigate to a directory named Documents, use: cd ~/Documents (Here, ~ represents your home directory.)
- To go back to the previous directory: **cd -**
- To go up one level: **cd ..**
- To return to the home directory: **cd ~**

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:/$ cd /home/himanshu/OS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ cd newOS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS/newOS$ cd ..
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ cd ~
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$
```

Q2. How to see detailed information about files and directories using ls?

use the ls command with the -l option to see detailed information about files and directories.

Syntax: ls -l

- Include hidden files: **ls -la**
- Show file sizes in human-readable format: **ls -lh**
- Sort files by modification time (newest first): **ls -lt**

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls -l
total 44
drwxrwxr-x 2 himanshu himanshu 4096 Jan 23 13:54 Ashish
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Desktop
drwxr-xr-x 2 himanshu himanshu 4096 Mar 22 18:06 Documents
drwxr-xr-x 2 himanshu himanshu 4096 Mar 22 19:46 Downloads
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Music
drwxrwxr-x 3 himanshu himanshu 4096 Mar 22 18:10 OS
drwxr-xr-x 3 himanshu himanshu 4096 Mar 21 23:55 Pictures
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Public
drwx------ 5 himanshu himanshu 4096 Mar 22 00:00 snap
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Templates
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Videos
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls -la
total 96
drwxr-x--- 19 himanshu himanshu 4096 Mar 22 19:23 .
drwxr-xr-x  3 root     root     4096 Jan 21 00:40 ..
drwxrwxr-x  2 himanshu himanshu 4096 Jan 23 13:54 Ashish
-rw-------  1 himanshu himanshu 1317 Mar 22 19:46 .bash_history
-rw-r--r--  1 himanshu himanshu  220 Mar 31  2024 .bash_logout
-rw-r--r--  1 himanshu himanshu 3771 Mar 31  2024 .bashrc
drwx------ 14 himanshu himanshu 4096 Mar 22 19:23 .cache
drwx------ 15 himanshu himanshu 4096 Mar 22 19:24 .config
drwxr-xr-x  2 himanshu himanshu 4096 Jan 21 00:41 Desktop
drwxr-xr-x  2 himanshu himanshu 4096 Mar 22 18:06 Documents
drwxr-xr-x  2 himanshu himanshu 4096 Mar 22 19:46 Downloads
drwx------  2 himanshu himanshu 4096 Mar 22 19:47 .gnupg
-rw-------  1 himanshu himanshu   20 Mar 22 18:25 .lesshst
drwx------  4 himanshu himanshu 4096 Jan 21 00:41 .local
drwxr-xr-x  2 himanshu himanshu 4096 Jan 21 00:41 Music
drwxrwxr-x  3 himanshu himanshu 4096 Mar 22 18:10 OS
drwxr-xr-x  3 himanshu himanshu 4096 Mar 21 23:55 Pictures
-rw-r--r--  1 himanshu himanshu  807 Mar 31  2024 .profile
drwxr-xr-x  2 himanshu himanshu 4096 Jan 21 00:41 Public
drwx------  5 himanshu himanshu 4096 Mar 22 00:00 snap
drwx------  2 himanshu himanshu 4096 Jan 21 00:41 .ssh
-rw-r--r--  1 himanshu himanshu    0 Jan 23 13:51 .sudo_as_admin_successful
drwxr-xr-x  2 himanshu himanshu 4096 Jan 21 00:41 Templates
drwxr-xr-x  2 himanshu himanshu 4096 Jan 21 00:41 Videos
drwx------  3 himanshu himanshu 4096 Mar 22 19:23 .zen
```

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls -lh
total 44K
drwxrwxr-x 2 himanshu himanshu 4.0K Jan 23 13:54 Ashish
drwxr-xr-x 2 himanshu himanshu 4.0K Jan 21 00:41 Desktop
drwxr-xr-x 2 himanshu himanshu 4.0K Mar 22 18:06 Documents
drwxr-xr-x 2 himanshu himanshu 4.0K Mar 22 19:46 Downloads
drwxr-xr-x 2 himanshu himanshu 4.0K Jan 21 00:41 Music
drwxrwxr-x 3 himanshu himanshu 4.0K Mar 22 18:10 OS
drwxr-xr-x 3 himanshu himanshu 4.0K Mar 21 23:55 Pictures
drwxr-xr-x 2 himanshu himanshu 4.0K Jan 21 00:41 Public
drwx------ 5 himanshu himanshu 4.0K Mar 22 00:00 snap
drwxr-xr-x 2 himanshu himanshu 4.0K Jan 21 00:41 Templates
drwxr-xr-x 2 himanshu himanshu 4.0K Jan 21 00:41 Videos
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls -lt
total 44
drwxr-xr-x 2 himanshu himanshu 4096 Mar 22 19:46 Downloads
drwxrwxr-x 3 himanshu himanshu 4096 Mar 22 18:10 OS
drwxr-xr-x 2 himanshu himanshu 4096 Mar 22 18:06 Documents
drwx------ 5 himanshu himanshu 4096 Mar 22 00:00 snap
drwxr-xr-x 3 himanshu himanshu 4096 Mar 21 23:55 Pictures
drwxrwxr-x 2 himanshu himanshu 4096 Jan 23 13:54 Ashish
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Desktop
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Music
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Public
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Templates
drwxr-xr-x 2 himanshu himanshu 4096 Jan 21 00:41 Videos
```

Q3. How to create multiple directories in Linux using `mkdir` command?

using the mkdir command.

Syntax: mkdir dir1 dir2 dir3

- Create nested directories (parent-child structure):
  mkdir -p parent/child1 child2

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ mkdir "Assignment 1" "Assignment 2" "Assignment 3"
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls
 Ashish  'Assignment 1'  'Assignment 2'  'Assignment 3'   Desktop   Documents   Downloads   Music   OS
```

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ mkdir -p "Assignment 1/lab1"
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd 'Assignment 1'
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment 1$ ls
lab1
```

Q4. How to remove multiple files at once with rm?

using the rm command.

Syntax: rm file1 file2 file3

- Remove all files with a specific extension: **rm *.txt**

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ rm file_1.txt file_2.txt file_3.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
file_4.txt  file_5.txt  newfile.txt  newOS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ rm *.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
newOS
```

Q5. Can rm be used to delete directories?

Yes, rm can be used to delete directories.

- Remove an empty directory: **rm -d directory_name**
  This deletes directory_name only if it's empty.
- Remove a directory and its contents (including files & subdirectories): **rm -r directory_name**
  The -r (recursive) flag removes the directory and everything inside it.
- Force delete a directory (without confirmation):
  rm -rf directory_name

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ rm -d 'Assignment 2'
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ rm -r 'Assignment 1'
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ rm -rf 'Assignment 3'
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ ls
Ashish  child2  Desktop  Documents  Downloads  lab2  Music  OS  Pictures  Public  snap  Templates  Videos
```

Q6. How do you copy files and directories in Linux?

using the cp (copy) command.

- Copy a Single File: **cp source_file destination**
- Copy a Directory (Recursively):
  cp -r source_directory destination

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ cp oldfile.txt /home/himanshu/Assignment2
```

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd Assignment2
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ ls
oldfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ cp -r newOS /home/himanshu/Assignment2
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd Assignment2
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ ls
newOS   oldfile.txt
```

Q7. How to rename a file in Linux using mv?

using the mv command.

Syntax: mv oldname.txt newname.txt

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ mv oldfile.txt newfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ ls
newfile.txt  newOS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$
```

Q8. How to Move Multiple files in Linux Using mv Command?

- Move multiple files to a directory:
  mv file1.txt file2.txt /destination/

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ mv file_{1..3}.txt /home/himanshu/OS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ cd ..
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~$ cd OS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$ ls
file_1.txt  file_2.txt  file_3.txt  newOS  oldfile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/OS$
```

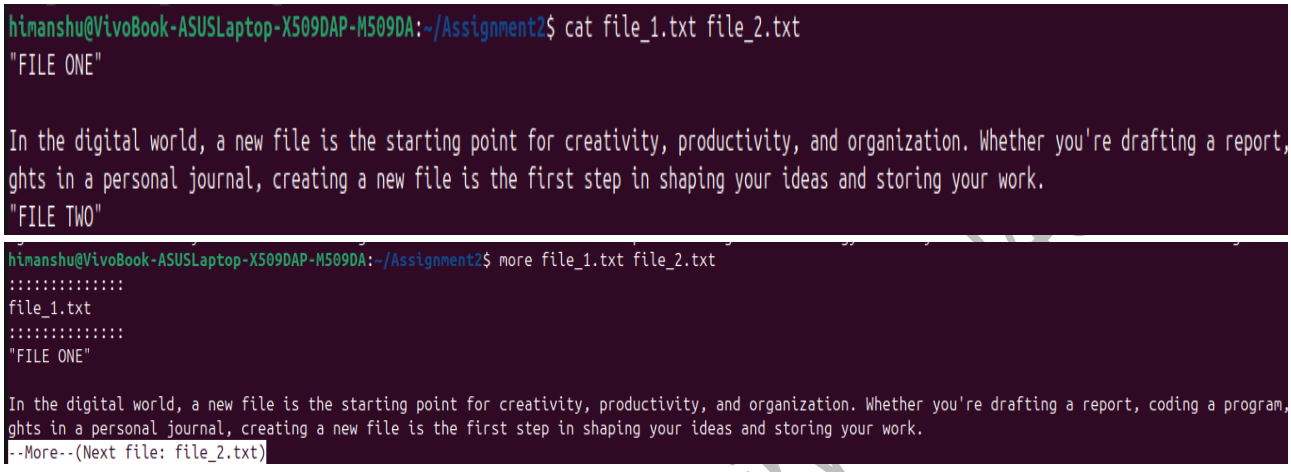
Q9. How to create multiple empty files using touch?

- create multiple files at once: **touch file1.txt file2.txt file3.txt**

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ touch file_{1..3}.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ ls
file_1.txt  file_2.txt  file_3.txt  newfile.txt  newOS
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$
```

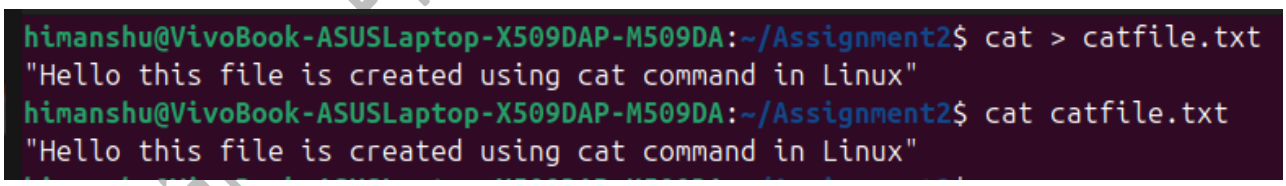
Q10. How to view the content of multiple files in Linux?

- View Multiple Files Using cat: **cat file1.txt file2.txt**
  Displays the content of file1.txt and file2.txt in sequence.
- View Multiple Files Page by Page (more): **more file1.txt file2.txt**
  only scrolls forward.



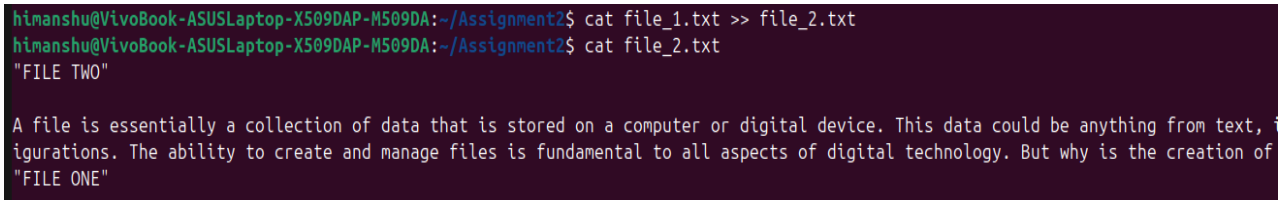
Q11. How to create a file and add content using cat?

- Create a New File and Add Content: **cat > filename.txt**
  This creates (or overwrites) filename.txt and allows to start typing content.
- Press Ctrl + D to save and exit.



Q12. How to Append the Contents of One File to the End of Another File using cat command?

- Append content of file1.txt to file2.txt: **cat file1.txt >> file2.txt**



Q13. How to use cat command if the file has a lot of content and can't fit in the terminal.

- Use less to navigate through large files: **cat file.txt | less**

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ cat newfile.txt|less
```

```
"This is new file"
New File: The Foundation of Digital Organization

In the digital world, a new file is the starting point for creativity, productivity, and organization. Whether you're drafting a report, coding a program, or keeping track of your thou
ghts in a personal journal, creating a new file is the first step in shaping your ideas and storing your work.

A file is essentially a collection of data that is stored on a computer or digital device. This data could be anything from text, images, or videos to software code or even system conf
igurations. The ability to create and manage files is fundamental to all aspects of digital technology. But why is the creation of a new file so significant?

    The Beginning of a Task or Project: When you create a new file, you're typically starting a fresh project or task. It could be as simple as opening a text editor to write an email,
 or as complex as initiating a new software development project. In any case, the new file is the blank canvas, ready for your ideas to come to life.

    Digital Organization: Files help to organize information in a way that is easy to manage and access. Whether it's a personal diary, work project, or a company document, the act of
creating a new file ensures that each piece of data is stored separately, preventing confusion and clutter.

    Collaboration and Sharing: Files are central to modern collaboration. A new file, whether it's a Word document, spreadsheet, or programming script, can be easily shared among team
members. Digital files allow people to collaborate in real-time, across the world, and still maintain clear, organized, and editable work.

    File Formats and Their Purpose: The creation of a new file also comes with choosing the appropriate file format. From text files (.txt), rich text files (.rtf), or PDF documents (.
pdf), to more specialized formats like image files (.png, .jpg), video files (.mp4), or audio files (.mp3), the file format you choose depends on the content and how it will be used. E
ach format serves a unique purpose, enhancing the way we work with data and media.

    Security and Backup: Creating a new file often involves considerations for its security and backup. For sensitive information, encryption can be applied to ensure that only authori
zed individuals have access. Regularly backing up files ensures that work is not lost due to system failures or accidents.

In conclusion, a new file is much more than just a technical concept; it's an essential part of how we create, store, and manage digital information in our everyday lives. It symbolize
s the start of a new endeavor and represents the potential of what can be achieved when data is captured, organized, and shared effectively.
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(END)
```

Q14. How to Merge Contents of Multiple Files Using `cat` Command?

- Merge file1.txt and file2.txt into merged.txt:
  cat file1.txt file2.txt > merged.txt

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ cat file_1.txt file_2.txt > mergeFile.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ cat mergeFile.txt
"FILE ONE"

In the digital world, a new file is the starting point for creativity, productivity, and organization. Whether you're drafting a report, coding a program, or keeping track of your thou
ghts in a personal journal, creating a new file is the first step in shaping your ideas and storing your work.
"FILE TWO"

A file is essentially a collection of data that is stored on a computer or digital device. This data could be anything from text, images, or videos to software code or even system conf
igurations. The ability to create and manage files is fundamental to all aspects of digital technology. But why is the creation of a new file so significant?
```

Q15. How to use cat Command to Append to an Existing File?

- Append text to an existing file**: cat >> myfile.txt**
- Press Ctrl + D to save and exit.

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ cat >> file_3.txt
This is appended text.
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ cat file_3.txt
"THIS IS FILE THREE"
This is appended text.
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$
```

Q16. What is "chmod 777 ", "chmod 755" and "chmod +x " or "chmod a+x"?

chmod is used to change file permissions.

- **chmod 777 filename → Full Permissions**
  Syntax: chmod 777 filename.txt
  7 (rwx) → Read, Write, Execute (**Owner**)
  7 (rwx) → Read, Write, Execute (**Group**)
  7 (rwx) → Read, Write, Execute (**Others**)
  Everyone can read, write, and execute the file. (Not secure)

- **chmod 755 filename → Standard Executable Permission**
  Syntax: chmod 755 filename.txt
  7 (rwx) → Full permissions (**Owner**)
  5 (r-x) → Read & Execute (**Group**)
  5 (r-x) → Read & Execute (**Others**)
  Owner can edit, but others can only read and execute.
  (More secure)

- **chmod +x filename → Make a File Executable**
  Syntax: chmod +x filename.txt
  Adds execute (x) permission for all users.
  Useful for running scripts (.sh files) as programs.

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ chmod 777 file_1.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ chmod 755 file_2.txt
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Assignment2$ chmod +x file_3.txt
```

Q17. How to find the number of lines that matches the given string/pattern

the number of lines that match a specific string using the grep command.

- Count Matching Lines in a File: **grep -c "string" filename.txt**
  *-c counts the number of **l**ines containing "string".*

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ grep -c "File" newfile.txt
4
```

Q18. How to display files that contain a specific string?

display files that contain a specific string using the grep command**.**

- Find Files Containing a Specific String in a Directory:
  grep -l "search_string" *
  - *-l (**lowercase L**) lists only the filenames containing "search_string".*
  - *searches in **all files** in the current directory.*

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ grep -l "Collaboration" *.txt
newfile.txt
oldfile.txt
```

Q19. How to show the line number of file with the line matched?

- Show Line Numbers of Matches in a Single File:
  grep -n "search_string" filename.txt
  - *-n displays **line numbers** of matching lines.*

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ grep -n "File" newfile.txt
2:New File: The Foundation of Digital Organization
10:    Digital Organization: Files help to organize information in a way that is easy to manage and access. Whether it's a personal diary, work project, or a company document, the act
of creating a new file ensures that each piece of data is stored separately, preventing confusion and clutter.
12:    Collaboration and Sharing: Files are central to modern collaboration. A new file, whether it's a Word document, spreadsheet, or programming script, can be easily shared among t
am members. Digital files allow people to collaborate in real-time, across the world, and still maintain clear, organized, and editable work.
14:    File Formats and Their Purpose: The creation of a new file also comes with choosing the appropriate file format. From text files (.txt), rich text files (.rtf), or PDF document
 (.pdf), to more specialized formats like image files (.png, .jpg), video files (.mp4), or audio files (.mp3), the file format you choose depends on the content and how it will be use
. Each format serves a unique purpose, enhancing the way we work with data and media.
```

Q20. How to match the lines that start with a string using grep

start with a specific string using the grep command with the ^ (caret) symbol.

- Match Lines That Start with a Specific String:
  grep "^string" filename.txt
- ^ *ensures that the match* ***only occurs at the beginning of the line***.

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ grep "^The" newfile.txt
The Beginning of a Task or Project: When you create a new file, you're typically starting a fresh project or task. It could be as simple as opening a text editor to write an email, or
as complex as initiating a new software development project. In any case, the new file is the blank canvas, ready for your ideas to come to life.
The File Formats and Their Purpose: The creation of a new file also comes with choosing the appropriate file format. From text files (.txt), rich text files (.rtf), or PDF documents (
pdf), to more specialized formats like image files (.png, .jpg), video files (.mp4), or audio files (.mp3), the file format you choose depends on the content and how it will be used.
ach format serves a unique purpose, enhancing the way we work with data and media.
```

Q21. Can the 'sort' command be used to sort files in descending order by default?

No, the sort command *sorts in ascending order by default*. However, you can use the **-r** option to *sort in descending order*.

- Sort a File in Descending Order: **sort -r filename.txt**
  -r reverses the default ascending order.

```
himanshu@VivoBook-ASUSLaptop-X509DAP-M509DA:~/Documents$ sort -r fruits.txt
watermelon
pineapple
orange
mango
banana
apple
```

Q22. How can I sort a file based on a specific column using the 'sort' command?

sort a file based on a *specific column* using the ***sort -k*** option.

Syntax: sort -k<column_number> filename.txt

- -k<column_number> specifies which **column** to sort by.
- Columns are **separated by spaces or tabs**.

- Sort Numerically by a Column: **sort -k2 -n filename.txt**
  *-n ensures **numeric sorting** instead of alphabetical.*