Fr. Conceicao Rodrigues College of Engineering Department of Computer Engineering			
Student's Roll No	**9913**	**Students Name**	**Mark Lopes**
Date of Performance	**25/01/2024**	**SE Computer – Div**	**A**

Aim:

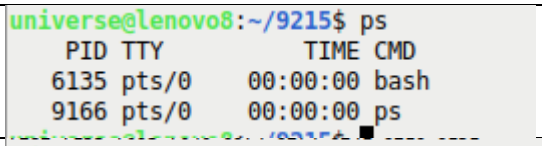
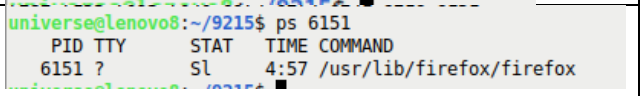
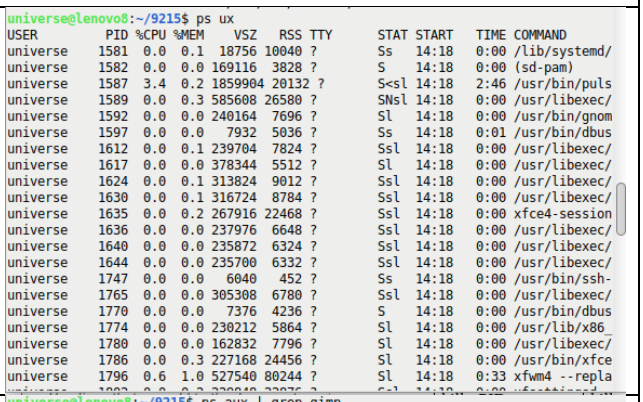
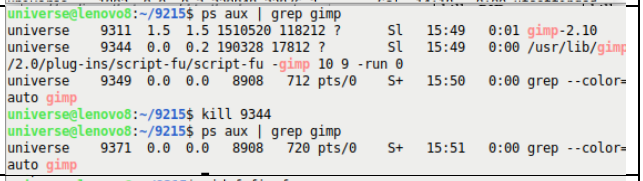
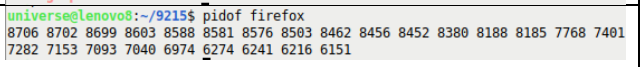
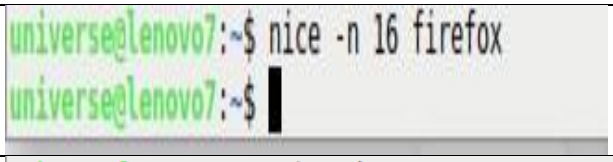
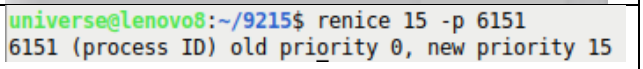
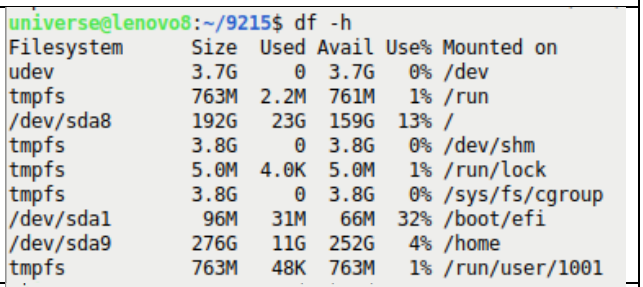
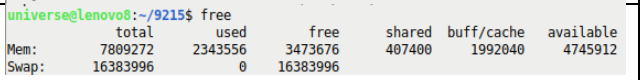
(a) Study Linux File System, Types of Users, Environment Variables

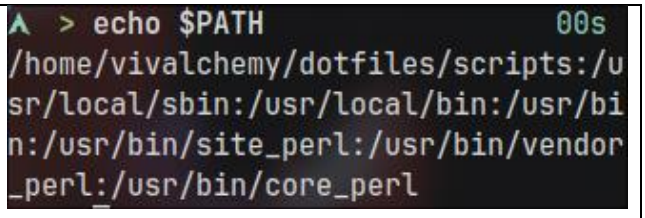
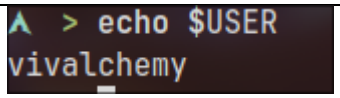
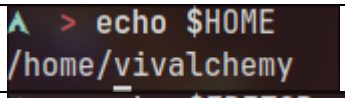
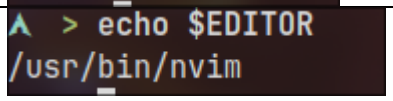
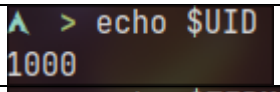
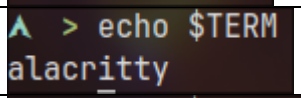
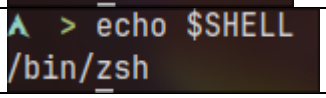
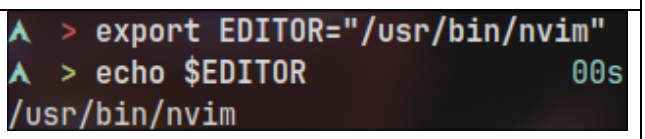
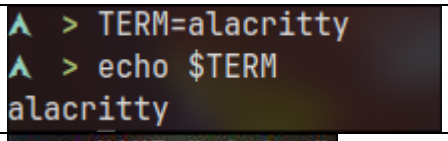
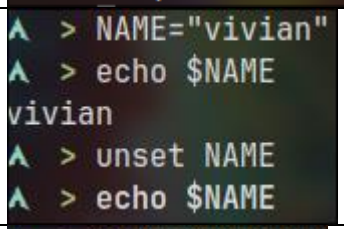
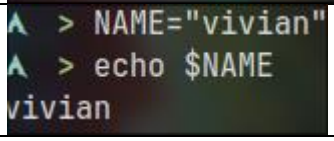
(b) Study basic commands, User , File and Process related commands

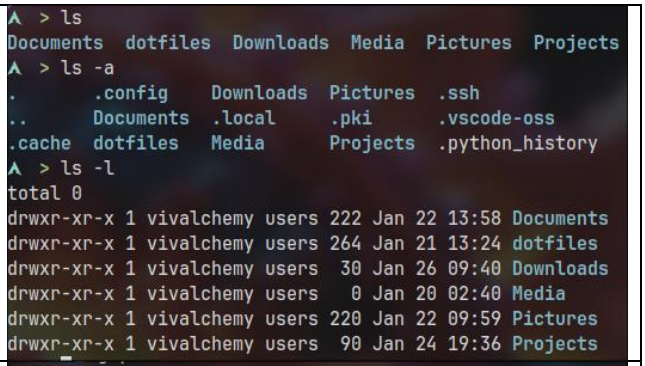
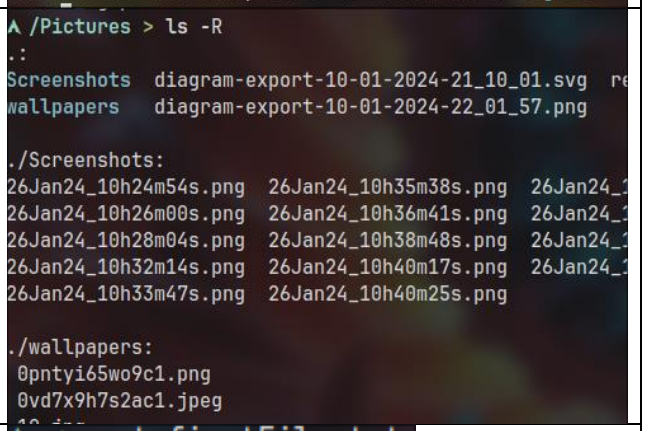
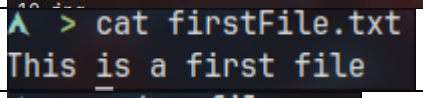
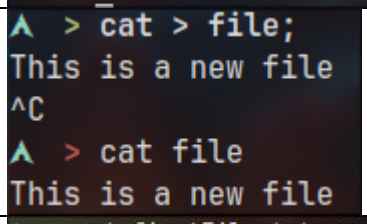
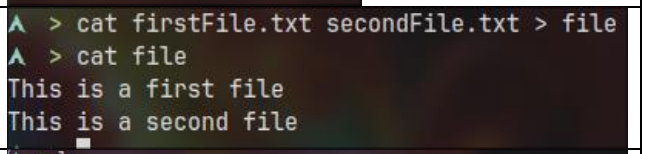
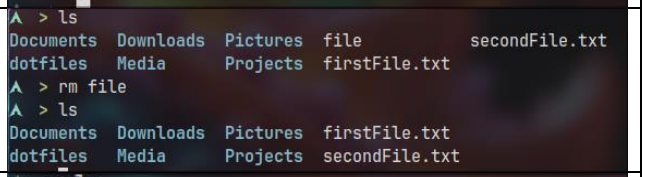
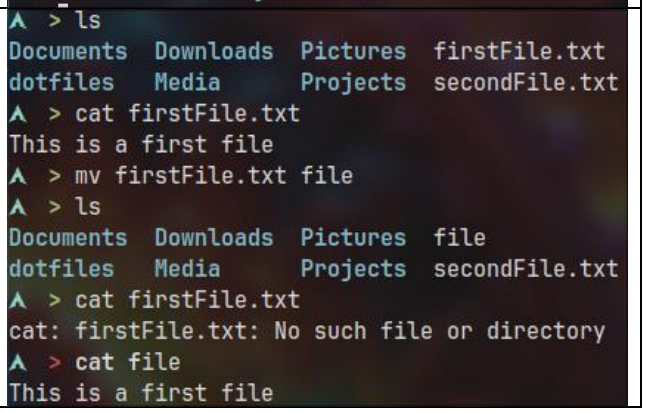
Lab Outcome:
CSL403.1: Demonstrate basic Operating system Commands, Shell scripts, System Calls and API wrt Linux.

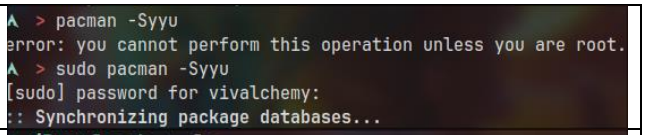
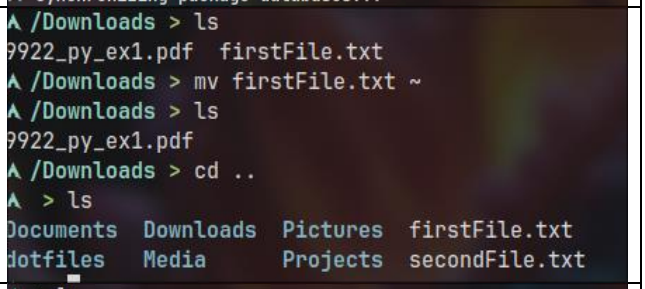
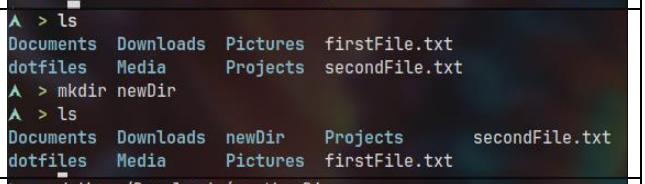
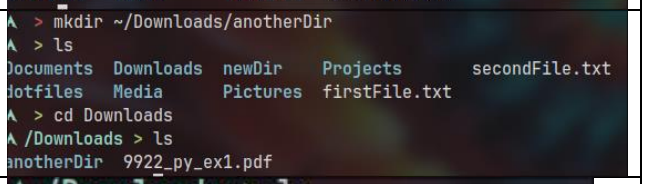
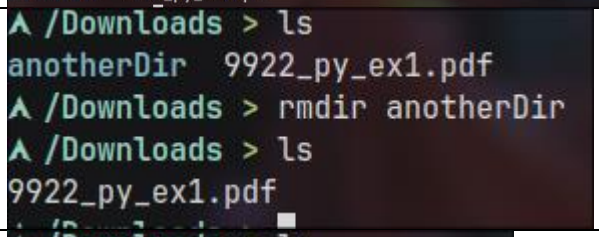
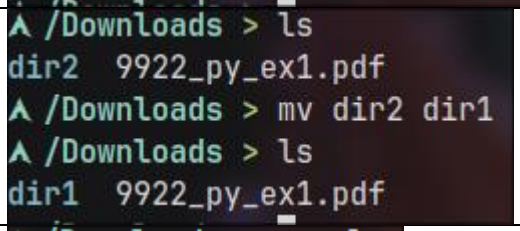
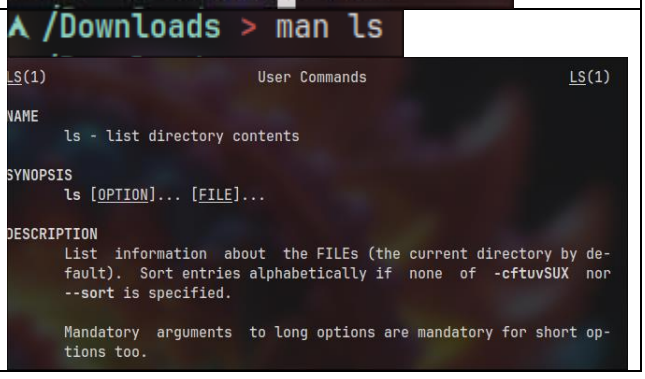
Problem Statement:
Explore the linux commands.

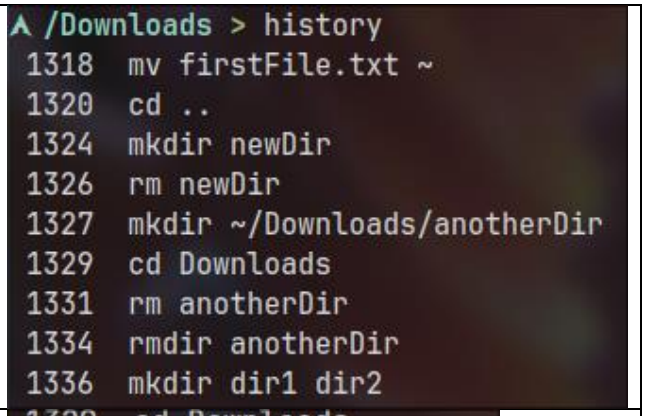
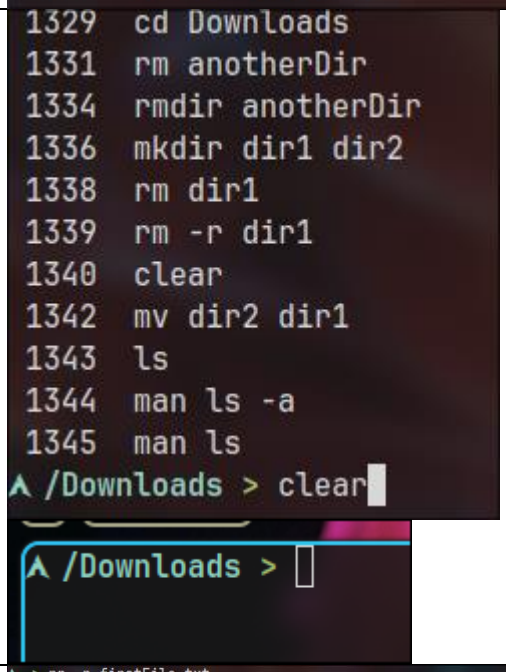
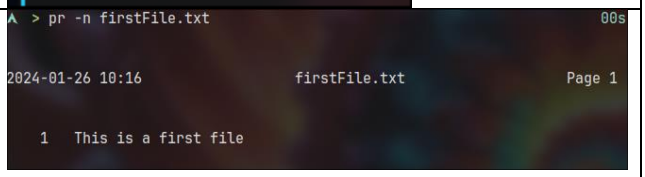
Copy paste the executed instructions here		
Command	**Description**	**Output**
Process Commands		
bg	Sends a process to background	universe@lenovo8:~/9215$ sleep 100 ^Z [1]+ Stopped sleep 100 universe@lenovo8:~/9215$ jobs [1]+ Stopped sleep 100 universe@lenovo8:~/9215$ bg %1 [1]+ sleep 100 &
fg	To bring a stopped process to foreground	universe@lenovo8:~/9215$ jobs universe@lenovo8:~/9215$ sleep 100 ^Z [1]+ Stopped sleep 100 universe@lenovo8:~/9215$ jobs [1]+ Stopped sleep 100 universe@lenovo8:~/9215$ fg %1 sleep 100
top	displays the linux processes	top - 15:41:15 up 1:23, 1 user, load average: 0.97, 0.78, 0.62 Tasks: 270 total, 2 running, 268 sleeping, 0 stopped, 0 zombie %Cpu(s): 2.1 us, 2.4 sy, 0.0 ni, 95.5 id, 0.0 wa, 0.0 hi, 0.1 si, 0.0 st MiB Mem : 7811.4 total, 337.6 free, 2310.6 used, 5163.0 buff/cache MiB Swap: 16000.0 total, 16000.0 free, 0.0 used. 4623.5 avail Mem PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND 1587 universe 9 -11 1859904 20132 15500 S 8.6 0.3 2:53.67 pulseau+ 1045 root 20 0 557136 82676 48008 S 5.6 1.1 1:59.33 Xorg 7282 universe 20 0 2870948 317040 111324 R 4.0 4.1 1:46.07 Isolate+ 1796 universe 20 0 527540 80244 62252 S 2.3 1.0 0:34.39 xfwm4 9173 universe 20 0 322188 41092 33176 S 2.3 0.5 0:00.20 xfce4-s+ 6151 universe 20 0 3800252 469152 220292 S 1.3 6.0 5:06.29 firefox 8456 universe 20 0 2596876 175684 92232 S 0.7 2.2 0:13.84 Isolate+ 14 root 20 0 0 0 0 I 0.3 0.0 0:01.96 rcu_sch+ 1287 mysql 20 0 2244644 388412 36728 S 0.3 5.0 0:16.01 mysqld 6274 universe 20 0 2433884 101736 80984 S 0.3 1.3 0:01.95 WebExte+ 6584 root 20 0 0 0 0 I 0.3 0.0 0:00.64 kworker+ 6974 universe 20 0 3039368 516956 139044 S 0.3 6.6 2:36.73 Isolate+ 7040 universe 20 0 2461900 94604 80772 S 0.3 1.2 0:01.15 Isolate+ 8271 root 20 0 0 0 0 I 0.3 0.0 0:03.65 kworker+ 8452 universe 20 0 2628940 150320 104732 S 0.3 1.9 0:06.52 Isolate+ 1 root 20 0 167712 11764 8312 S 0.0 0.2 0:01.81 systemd 2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd

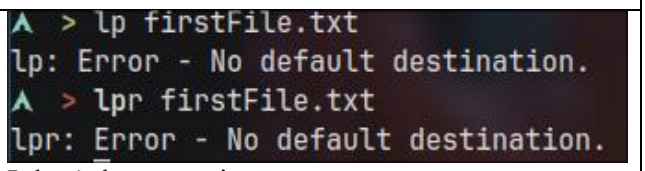
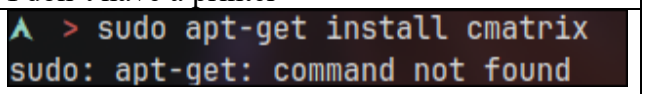
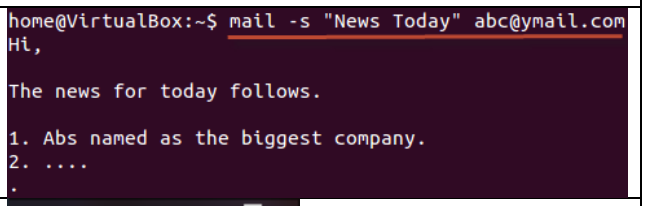
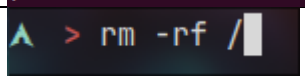
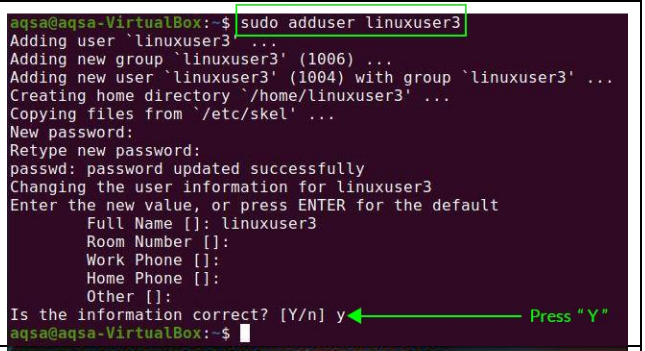
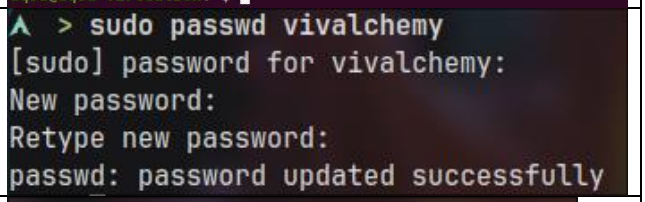
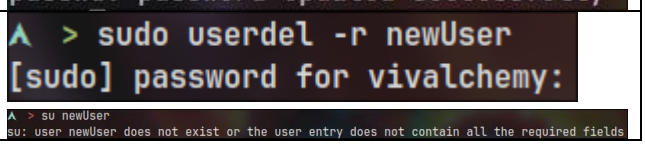
ps	report a snapshot of the current processes.	
ps <PID>	show to detail of the process based on its process id	
ps ux	report a snapshot of the user process	
kill <PID>	kill an ongoing process that has the same PID as the PID mentioned	
pidof <Process_name>	outputs the pid of the process mentioned	
nice -n <a number between -20 to 19> <process name>	run a program with the modified scheduling priority	
renice <a number between -20 to 19> -p <PID>	Change the priority of the already running process	
df -h	give the filesystem disk space usage. -h flag is used to convert the output into a readable format	
free -m	show the detail of ram and swap memory. -m flag is used to show the output in a readable format	
Environment Variables		

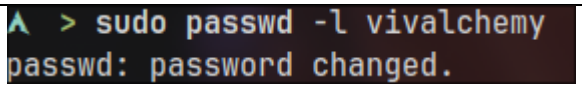
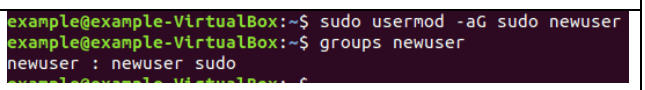
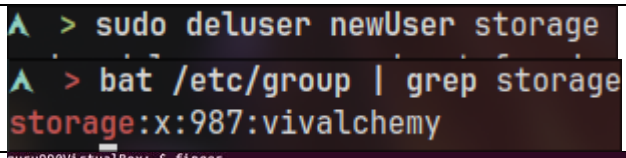
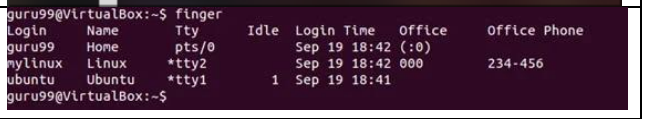
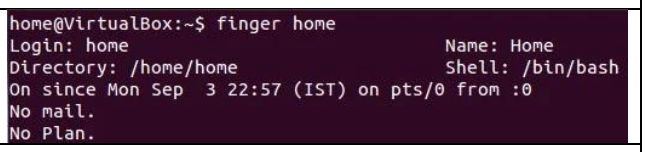
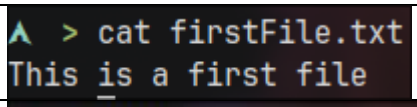
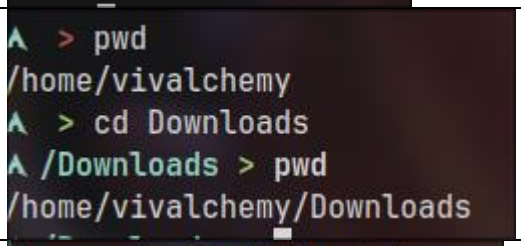
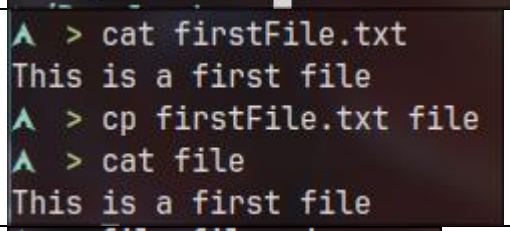
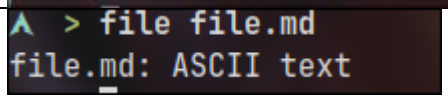
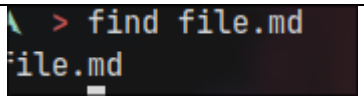
PATH	This contains list of directories separated by ':' where the system looks for executable files. Files in this dirs can be executed just by invoking their name instead of the whole path	
USER	The name of the user of the current session	
HOME	Path for the user's home directory	
EDITOR	Path to the editor which edits the contents of a file	
UID	Current user unique id	
TERM	Default terminal emulator	
SHELL	Default shell of the user	
NOTE: never put space between variable_name, = and value		
export <VARIABLE>=<VALUE>	Creates a environment variabel for the current shell as well as its subshell.	
<VARIABLE>=<VALUE>	Creates a new variable	
unset <VARIABLE>	Removes a variable	
echo $<VARIABLE>	prints the variables value	
Basic linux commands		

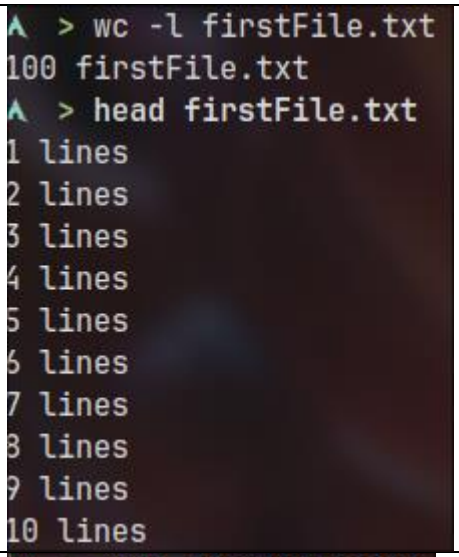
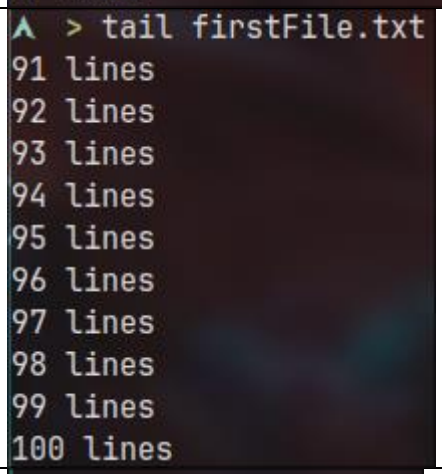
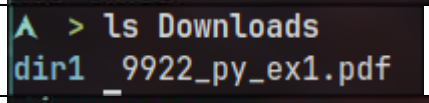
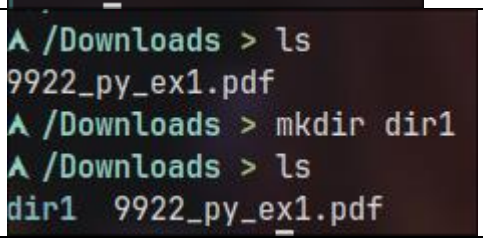
ls -al	It list the files and dirs in the current directory -a: list all hidden as well as non hidden -l: Gives detailed information	
ls -R	Displays the files recusively	
cat <filename>	View the content of a file	
cat > <filename>	Create a new file	
cat <file1> <file2> > <output_file>	Merge two or more files into one file	
rm <filename>	Remove a file	
mv <input_file> <output_file>	Rename a file	

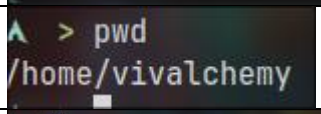
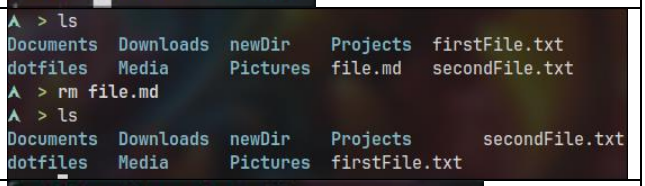
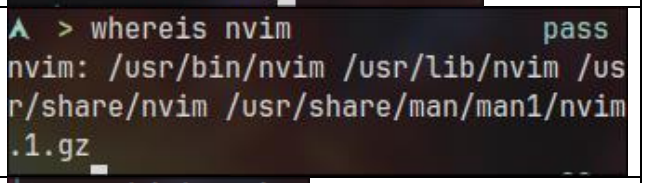
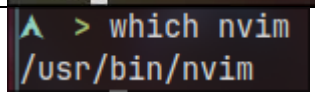
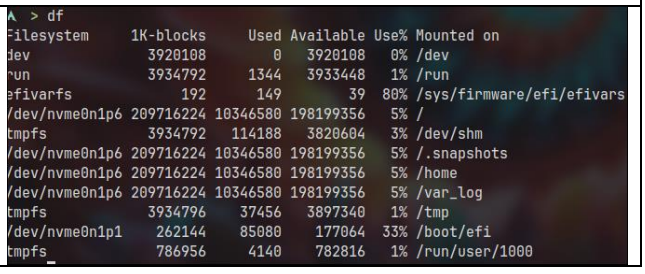
sudo <command>	Give admin privileges to a command	
mv <file> <directory>	Move file to the new location	
mkdir <directory_name>	Make a new directory in the current location	
mkdir <directory_location>/<directory_name>	Make the new directory in different location	
rmdir <directory_name>	Remove an empty directory	
mv <input_dir> <output_dir>	Rename the directory	
man <command>	Display the manual page for that command	

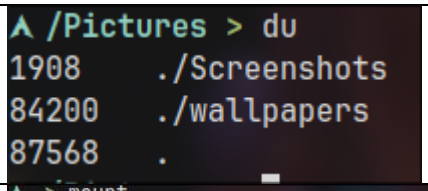
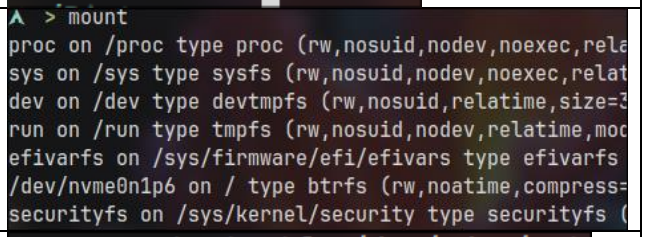
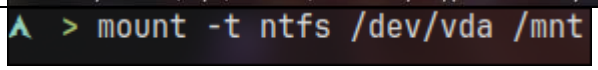
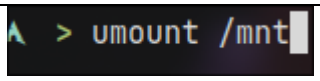
history	Display the command that you used in the past	
clear	clears the terminal screen	
pr	Formatting a file while it prints on the terminal -x Divides the data into 'x' columns -h "header" Assigns "header" value as the report header -t Does not print the header and top/bottom margins -d Double spaces the output file -n Denotes all line with numbers -l page length Defines the	

	lines (page length) in a page. Default is 56 -o margin Formats the page by the margin number	
lp <filename> or lpr <filename>	Sends the file to the printer to print	 I don't have a printer
sudo apt–get install <package_name>	Install a package on your system Note: Only works on debian based distros	
mail -s "<Subject>" –account "<receiver_email_id>"	Sends an email via terminal	
rm -rf	removes a file -r: remove the files in a directory recusively -f: removes them forcefully	
User Commands		
sudo addUser <username>	add a new user	
sudo passwd <username>	change the passwd of the user	
sudo userdel -r <username>	delete the user	

sudo passwd -l <username>	remove the password of the user	
sudo usermod -a -G "<list_of_groups> " <username>	add new groups to the user. Tip: You can check the default group in the file /etc/group	
sudo deluser <username> <group>	Remove a user from a group	
finger	give the information on all users	
finger <username>	Gives the details the user	
File system Commands		
cat <file>	Print the file content in stdout	
cd <directory>	Change the working directory	
cp <input_file> <output_file>	Copy the file content from one file to another	
file <filename>	Identifies the file type based on its contents	
find <filename> or find <dir>	finds the file or directory	

head <filename>	prints the first few lines of a file	
tail <filename>	prints the last few lines of a file	
ls <directory>	prints the contents of the directory	
mkdir <directory>	make a new directory	

more <filename>	Pages through the file contents one screenful at a time	
pwd	prints the current working directory	
rm <filename>	remove the file	
rmdir <dirname>	Removes an empty directory	
whereis <filename>	shows the location of the command's binary, source, and man pages	
which <filename>	Shows the location of the file in your path	
df	Shows the disk usage	

du	Show the disk usage of the sub-directories	
mount	Shows the mounted filesystems	
mount -t <file_system> <device_to_mount> <mount_location>	Mount the device to a specific location	 no output generated for successful execution. Use lsblk ot verify
umount <mounted_device>	Removes a mounted drive	 no output generated for successful execution. Use lsblk to verify

References:

Section (a)

https://www.geeksforgeeks.org/linux-file-hierarchy-structure/
https://www.guru99.com/file-permissions.html

Environment Variables: https://www.guru99.com/linux-environment-variables.html

Section (b)

Basic Commands https://www.guru99.com/must-know-linux-commands.html

Process Commands: **https://www.guru99.com/managing-processes-in-linux.html**

User Commands: **https://www.guru99.com/linux-admin.html**

or https://www.tutorialspoint.com/unix/unix-user-administration.htm

File Commands: **https://www.tutorialspoint.com/unix/unix-file-system.htm**

On time Submission(2)	**Knowledge of Topic(4)**	**Implementation and Demonstraion(4)**	**Total (10)**
Signature of Faculty		**Date of Submission**	