LINUX PROGRAMMING

ASSIGNMENT-3

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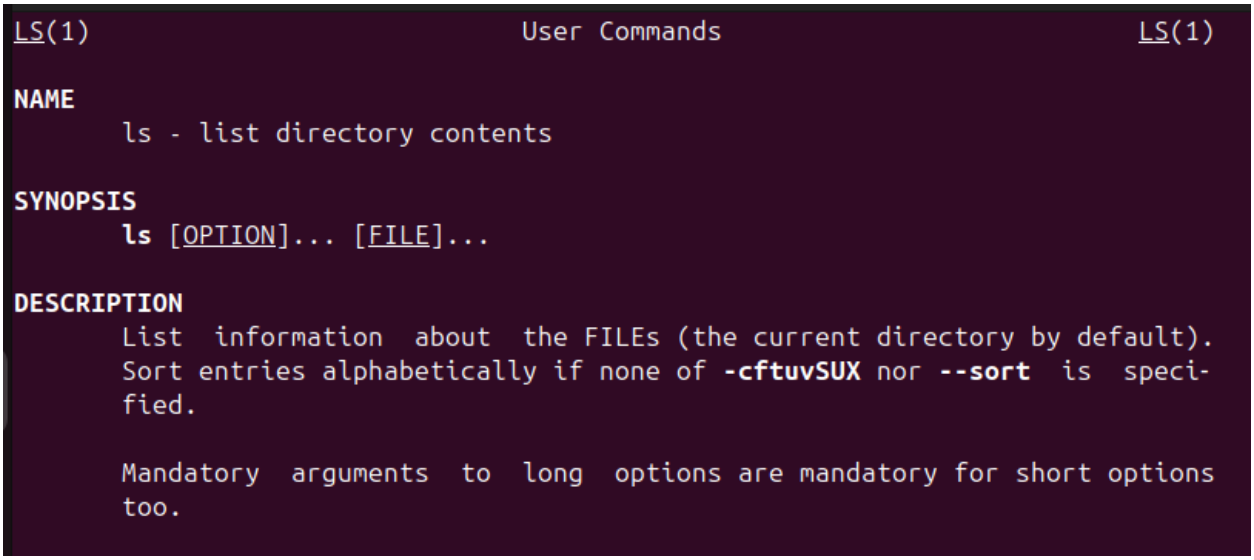
1. Distinguish between man and whatis commands? Justify with proper example.

A.

“man command” -

- “man” command gives the complete manual page for a command
- that includes a thorough description, options, Detailed and extensive information.
- Example: man ls = Opens the full manual of ls.
- For “man” command new window will be opened.
- In manual you can search for the specific option.
- Syntex: man <command name>.



“whatis command” -

- “whatis” gives a one-line description of a command.
- Very short, one-line summary.
- Example: whatis ls Displays: ls - list directory contents
- the output is directly in the terminal.
- Syntex; whatis <command name>.

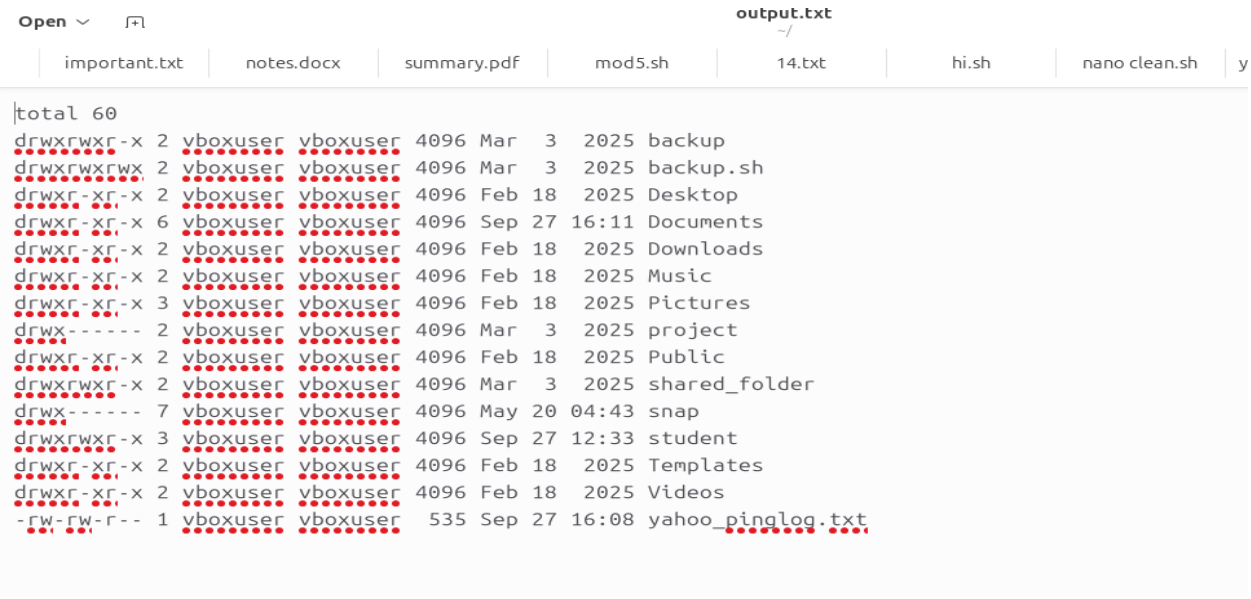
2. Use the tee command to save the output of ls -l into a file while also displaying?

A.

“tee command” -

We can use the tee command to write the output of a command to a file, while also displaying it on the terminal.

- ls -l: lists files with additional detail.
- |: pipes the output of ls -l the next command.
- tee filename.txt: writes the output to filename.txt and displays it in the terminal at the same time.




```
vboxuser@abyukth:~$ ls -l | tee output.txt
total 60
drwxrwxr-x 2 vboxuser vboxuser 4096 Mar  3  2025 backup
drwxrwxrwx 2 vboxuser vboxuser 4096 Mar  3  2025 backup.sh
drwxr-xr-x 2 vboxuser vboxuser 4096 Feb 18  2025 Desktop
drwxr-xr-x 6 vboxuser vboxuser 4096 Sep 27 16:11 Documents
drwxr-xr-x 2 vboxuser vboxuser 4096 Feb 18  2025 Downloads
drwxr-xr-x 2 vboxuser vboxuser 4096 Feb 18  2025 Music
drwxr-xr-x 3 vboxuser vboxuser 4096 Feb 18  2025 Pictures
drwx------ 2 vboxuser vboxuser 4096 Mar  3  2025 project
drwxr-xr-x 2 vboxuser vboxuser 4096 Feb 18  2025 Public
drwxrwxr-x 2 vboxuser vboxuser 4096 Mar  3  2025 shared_folder
drwx------ 7 vboxuser vboxuser 4096 May 20 04:43 snap
drwxrwxr-x 3 vboxuser vboxuser 4096 Sep 27 12:33 student
drwxr-xr-x 2 vboxuser vboxuser 4096 Feb 18  2025 Templates
drwxr-xr-x 2 vboxuser vboxuser 4096 Feb 18  2025 Videos
-rw-rw-r-- 1 vboxuser vboxuser  535 Sep 27 16:08 yahoo_pinglog.txt
```

3. Explain with an example how the tee command can be used in logging?

A.

The tee command is special in Linux because it can do two things at once:

- It shows the output of a command on the screen (standard output).
- It also saves the same output into a file at the same time.

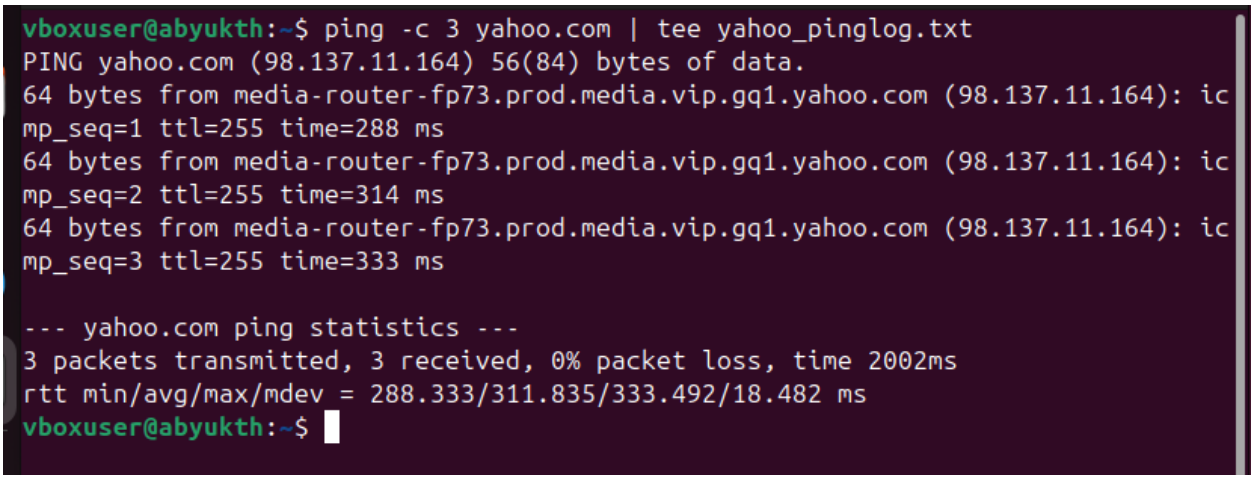
This makes it very useful for logging purposes, because you don't lose the live output while keeping a permanent record of it.

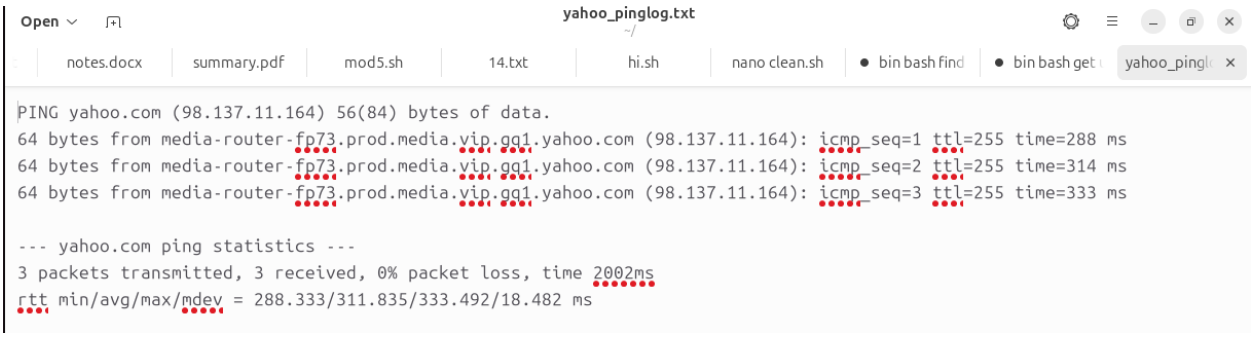
Example:

Suppose you want to check the network connectivity by running a ping command:

ping -c 3 yahoo.com | tee yahoo_pinglog.txt

- Sends 3 ping requests to yahoo.com.
- It will show the results on screen.
- It will Logs the output into yahoo_pinglog.txt.





4. List the steps involved in installing Ubuntu 25.04 LTS on Oracle VirtualBox?

A.

Procedure for Installing Ubuntu 25.04 LTS on VirtualBox

1. Download Necessary Software:

- Obtain Oracle VirtualBox from its website and set it up on your computer.
- Acquire the Ubuntu 25.04 LTS ISO image from the Ubuntu website.

2. Create a Virtual Appliance

- Open VirtualBox and select “New”.
- Type in the name of your new VM.
- Set the Type as Linux, and Version as Ubuntu (64-bit).
- Then select the Next button.

3. Allocate Memory (RAM):

- Decide on the amount of RAM to assign.
- Select the Next button.

4. Create the virtual hard disk:

- Select "Create a virtual hard disk now" and click create.
- Select VirtualBox Disk Image and click Next.
- Select Dynamically allocated and click Next.
- Select the amount of required disk size and click create.

5. Mount the Ubuntu ISO image:

- Select the VM and select Settings --- Storage.
- Under Controller: IDE, select the empty disk image.
- Select the button that is a disk image next to “Optical Drive” Choose a disk file.
- Select the downloaded Ubuntu 25.04 ISO image and select Ok.

6. Start the Virtual Appliance:

- Select Start which will boot the VM.
- The installation of Ubuntu will begin from the ISO.

- Install the Ubuntu Operating System

7. Install Ubuntu:

- Select the “Install Ubuntu” option from the welcome screen.
- Choose your keyboard layout and click Continue.
- Select either Normal installation or Minimal installation and click Continue.
- Select the Erase disk and install Ubuntu option (this option only affects the virtual disk).
- Click Install now, confirm, and set your time zone.

8.Wait for the installation to finish:

- Once it has, it will prompt you to click Restart Now.
- When it shuts down, remove the ISO from the virtual drive.

9.after installation;

- Now open VM
- Start the ubuntu 25.04.

5.During Ubuntu OS installation, you face a Kernel Panic Error. How would you troubleshoot it?

A.

Resolution of Kernel Panic During Ubuntu System Installation:

1. Confirm ISO File -- Ensure the ISO file you downloaded for Ubuntu is not corrupted by validating the checksum on the download page.
2. Change Virtual Machine Settings -- Check the RAM, CPU cores, and enable virtualization.
3. Use Boot Options -- Add the option nomadized in the GRUB menu to avoid issues related to video drivers.
4. Check Hardware Compatibility -- Ensure CPU, RAM, and GPU support Ubuntu, and unplug any unnecessary peripherals and devices.
5. Update Software -- Update the system VirtualBox/VMware. If problem persists, try installing an older version of Ubuntu.

6.Write the command to display the system's hostname? How to change hostname using sysctl command?

A.

1.To displaying the hostname:

- The hostname command is used to show the current hostname of the system.
- Example: run command "hostname"
- Output: saidatta

2. Changing the hostname using sysctl:

- The hostname is controlled by the kernel parameter kernel.hostname.
- You can temporarily change it using the sysctl command:
- Sudo sysctl kernel.host_name=new_name

Point to be noted:

- This change is temporary. Once you reboot, the hostname will go back to the old one.
- To make it permanent, you must edit the file /etc/hostname and also update /etc/hosts.

7.Which command is used to show the calendar of the year 1984 with August month?

A.

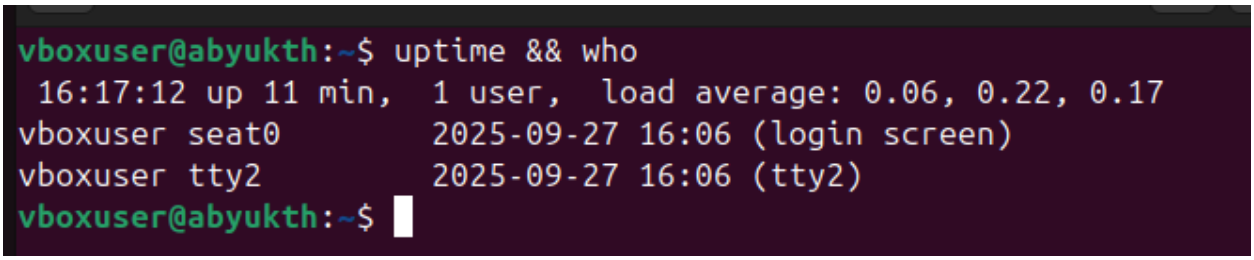
the "cal" command is used to display a calendar in the terminal.

Syntex: cal <month> <year>.

8.Write a command to display system uptime and logged-in users together?

A.

- uptime --- Displays how long the system has been up, current time, user count, and load averages.
- who --- Displays all currently logged in users.
- && --- Runs who only after uptime has exited normally.



9. Use the find command to list all ".c" files in /home/user?

A.

The find command is one of the most powerful tools in Linux for searching files and directories. It scans through directories and lists files that match the conditions you specify.

Syntex: find <path> -name <pattern>

Form the question:

- (find /home/user -type f -name "*.c")
- /home/user -- Specifies the directory where the search will be performed.
- -type f -- Ensures that only files are listed.
- -name "*.c" -- Searches for files ending with .c.

Few Outputs:

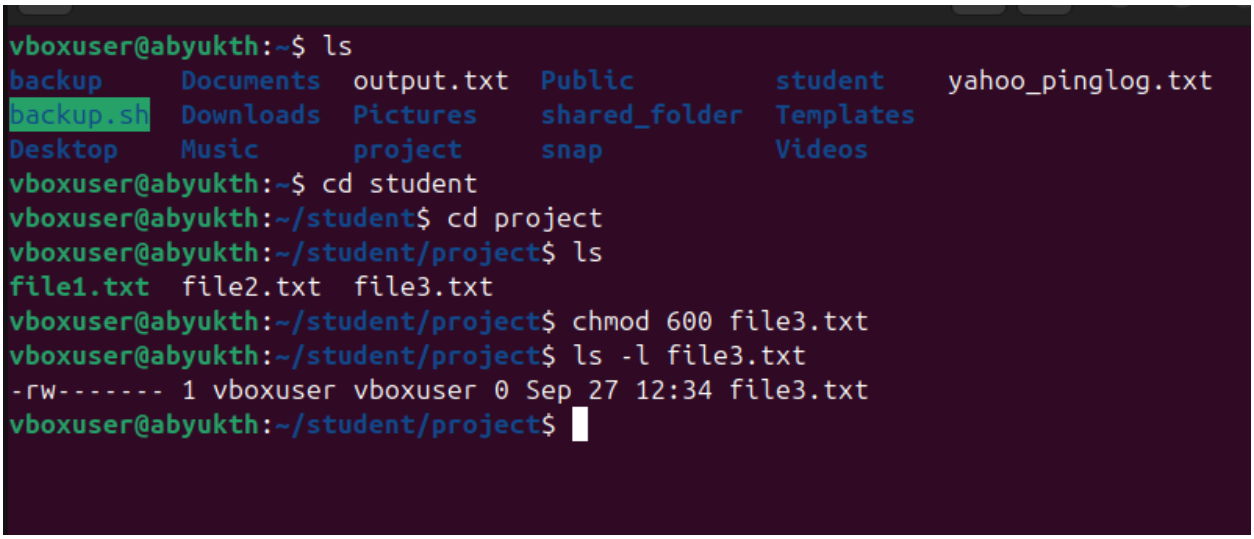
- /home/user/project3/main.c
- /home/user/student/test.c

10. How do you change file permissions to allow only the owner to read and write?

A.

"chmod" -- A command that modifies file permissions.

- 600→ The numeric permission code:
  - 6 = Owner can read (4) + write (2) = 6
  - 0 = Group has no permissions
  - 0 = Others have no permissions
- Filename = Change to the file you would like to change.


vboxuser@abyukth:~$ ls
backup Documents output.txt Public student yahoo_pinglog.txt
backup.sh Downloads Pictures shared_folder Templates
Desktop Music project snap Videos
vboxuser@abyukth:~$ cd student
vboxuser@abyukth:~/student$ cd project
vboxuser@abyukth:~/student/project$ ls
file1.txt file2.txt file3.txt
vboxuser@abyukth:~/student/project$ chmod 600 file3.txt
vboxuser@abyukth:~/student/project$ ls -l file3.txt
-rw------- 1 vboxuser vboxuser 0 Sep 27 12:34 file3.txt
vboxuser@abyukth:~/student/project$