

LINUX PROGRAMMING

ASSIGNMENT-1

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

The 'man' command displays the full manual page for a command, including description, options, usage, and examples. Example: 'man ls'.

The 'whatis' command shows only a one-line summary of the command from the manual database. Example: 'whatis ls' → 'ls (1) - list directory contents'.

Thus, 'man' gives detailed documentation while 'whatis' provides a quick overview.

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

The 'tee' command copies standard input to both standard output and a file.

Example:

```
ls -l | tee ls-l-output.txt
```

This displays the output on screen and saves it to the file. Use '-a' to append instead of overwrite.

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

The 'tee' command can log outputs while showing them in real time.

Example:

```
tail -f /var/log/syslog | tee -a ~/syslog-monitor.log
```

This displays system log updates in the terminal and saves them to 'syslog-monitor.log'.

It is useful for monitoring and recording outputs simultaneously.

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

Steps:

1. Download Ubuntu 25.04 ISO from official site.
2. Install Oracle VirtualBox on the host system.
3. Create a new VM (type: Linux, version: Ubuntu 64-bit).
4. Assign memory ($\geq 2\text{GB}$), disk ($\geq 20\text{GB}$), processors.
5. Attach the ISO in the VM storage settings.
6. Boot the VM and start the Ubuntu installer.
7. Follow the installer prompts (language, keyboard, partitioning, etc.).
8. After installation, install VirtualBox Guest Additions for better integration.

5. During Ubuntu OS installation, you face a Kernel Panic Error. How would you troubleshoot it? (C03)

Steps:

- Verify the ISO checksum to ensure no corruption.
- Try booting in safe/compatibility mode.
- Use kernel boot options like 'nomodeset' for GPU issues.
- If upgrading, try booting an older kernel.
- Inspect logs using 'journalctl -xb' or from a live CD.
- Rebuild initramfs or reinstall kernel if necessary.
- Check VirtualBox settings (chipset, EFI, VT-x/AMD-V).
- Disable Secure Boot if driver signature issues occur.

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

Display hostname:

hostname

Change hostname using sysctl:

```
sudo sysctl -w kernel.hostname=newname
```

To make persistent, add 'kernel.hostname = newname' in /etc/sysctl.conf and reload using 'sudo sysctl -p'.

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

To show entire year: cal 1984

To show August only: cal 8 1984

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

Use:

w

This command displays uptime, users, and their activities together.
Alternatively: uptime && who

9. Use the find command to list all “.c” files in /home/user.

Command:

```
find /home/user -type f -name '*.c'
```

This lists all .c files in the /home/user directory and subdirectories.

Use -iname for case-insensitive search.

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

Command:

```
chmod 600 filename
```

This gives owner read+write (rw-), group and others no permissions.
Symbolic form: chmod u=rw,go= filename