free :-

The free command gives information about used and unused memory
usage and swap memory of a system. By default, it displays memory in kb (kilobytes). Memory mainly consists of RAM (random access memory) and swap memory.
Swap memory is a part of hard disk drive that acts like a virtual RAM.

free -b ------> display information in Bytes
free -m ------> display information in Megabytes free -g ------> display information in Gigabytes
free -h ------> human readable form
free -t > It adds an additional line in the output showing the column totals.
free -sh

df :-
The df command stands for disk free, and it shows you the amount of
space taken up by different drives. By default, df displays values in 1-kilobyte blocks.

df -h > human readable form
df -Bg > block size in gb
df -Bm > block size in mb

```
Filesystem      Size      Used     Avail    Use%    Mounted on

udev            210M        0       210M     0%       /dev

tmpfs           49M       1004K      48M      3%       /run

/dev/sda2       7.9G       4.3G      3.2G     58%      /
```

Your output may have more entries. The columns should be self-explanatory:

- **Filesystem** – This is the name of each particular drive. This includes physical hard drives, logical (partitioned) drives, and virtual or temporary drives.
- **Size** – The size of the filesystem.
- **Used –** Amount of space used on each filesystem.
- **Avail –** The amount of unused (free) space on the filesystem.
- **Use% –** Shows the percent of the disk used.
- **Mounted on –** This is the directory where the file system is located. This is also sometimes called a **mount point**.

du :-

Command du stands for Disk Usage. It is used to check the information of disk usage of files and directories on a system.

Command du display a list of all the files along with their respective sizes. By default, size given is in kilobytes.
File names are used as arguments to get the file size. du ---> show disk usage of current directory
du file/directory ---> show disk usage of perticular file or folder
du -a > for all files and directory
du -h > human readable form
du -Bg > block size in gb
du -Bm> block size in mb
du -h --exclude=excluded_directory /path/to/directory

du -h /path/to/directory | sort -rh

fdisk :-
fdisk is used for view, create, delete, change , resize, copy and move partitions on a hard drive
A partition is a logical division of a hard disk that is treated as a separate unit by operating systems (OSes)
and file systems. The OSes and file systems can manage information on each partition as if it were a
distinct hard drive
-l: Lists the partition table of the specified device(s) without making any changes.
-n: Creates a new partition.
-d: Deletes a partition.
-p: Prints the partition table of the specified device(s).
-t: Changes the system ID (type) of a partition.
-u: Changes the display units to sectors.
-v: Shows the version of the fdisk command.
-h or --help: Shows the help message.

1) sudo fdisk -l
2) sudo fdisk (path) → Gives an interactive output

1. What is the primary function of the Linux kernel in an operating system?
   A) Managing user applications
   B) Handling input/output devices
   C) Running graphical user interfaces
   D) Providing web browsing capabilities
   Answer: B) Handling input/output devices

2. Which component of the Linux kernel is responsible for process scheduling and memory management?
   A) Kernel modules
   B) System libraries
   C) Kernel scheduler
   D) Process scheduler
   Answer: D) Process scheduler

3. The Linux kernel can be classified as a _____ operating system kernel, which means it allows multiple processes to run simultaneously.
   A) Monolithic
   B) Microkernel
   C) Hybrid
   D) Nano
   Answer: A) Monolithic

4. Which part of the Linux kernel is responsible for handling device drivers and hardware interaction?
   A) System libraries
   B) Userspace applications
   C) Kernel space
   D) Kernel modules
   Answer: D) Kernel modules

5. What is the role of the init process in the Linux kernel architecture?
   A) Handling user interface components
   B) Initializing system hardware
   C) Managing memory allocation
   D) Bootstrapping the system and starting user-level processes
   Answer: D) Bootstrapping the system and starting user-level processes

1. What is the first program that runs during the boot process of a Linux system?
   A) init
   B) BIOS
   C) Grub
   D) Kernel
   Answer: B) BIOS

2. In the Linux boot process, which component is responsible for loading the kernel into memory from the disk?
   A) User
   B) BIOS
   C) Init
   D) Bootloader
   Answer: D) Bootloader

3. In the Linux boot process, what is the last step after all necessary components have been loaded and services started?
   A) Loading the graphical user interface (GUI)
   B) Displaying the login prompt
   C) Running the first user-level application
   D) Shutting down the system
   Answer: B) Displaying the login prompt

4. In the context of Linux booting, what does "GRUB" stand for?
A) Grand Unified Bootloader
B) General Resource Utilization Bootloader
C) Global Runtime Universal Bootloader
D) Graphical User Bootloader
Answer: A) Grand Unified Bootloader

5. During the Linux boot process, which component is responsible for loading the Linux kernel into memory?
A) BIOS
B) GRUB
C) Init

D) systemd
Answer: B) GRUB

1. Which Linux command is used to create a new directory?
   A) `dir`
   B) `make`
   C) `create`
   D) `mkdir`
   Answer: D) `mkdir`

2. What is the purpose of the `-p` option in the `mkdir` command?
   A) Print the directory's contents
   B) Remove the directory and its contents
   C) Create parent directories if they don't exist
   D) Provide permission for the directory
   Answer: C) Create parent directories if they don't exist

3. Which command is used to remove an empty directory in Linux?
   A) `delete`
   B) `rmdir`
   C) `remove`
   D) `rm`
   Answer: B) `rmdir`

4. What happens if you attempt to use `rmdir` to delete a directory that contains files or subdirectories?
   A) The directory is deleted along with its contents.
   B) The command generates an error and does not delete the directory.
   C) Only empty subdirectories are removed.
   D) The directory is moved to the Trash for later recovery.
   Answer: B) The command generates an error and does not delete the directory.

5. Which of the following commands can be used to remove a directory and its contents, including subdirectories?
   A) `rmdir -f`
   B) `rmdir -R`
   C) `rm -r`
   D) `delete -d`
   Answer: C) `rm -r`