

1. Which command displays both file permissions and hidden files in a directory in long listing format?

- A. `ls -l`
- B. `ls -a`
- C. `ls -la`
- D. `ls -h`

ANSWER: C

Explanation:

`-l` displays details (permissions, owner, group, size), and `-a` includes hidden files (starting with `.`). Combined as `ls -la`, it shows **all files with full details**.

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2. What does the following command do?

```
find /var/log -type f -mtime +7 -exec rm {} \;
```

- A. Deletes empty directories in `/var/log` older than 7 days.
- B. Finds and deletes files in `/var/log` modified more than 7 days ago.
- C. Displays log files larger than 7 MB.
- D. Compresses logs older than 7 days.

ANSWER: B

Explanation:

`find` searches for files ( `-type f` ) older than 7 days ( `-mtime +7` ) and executes `rm` on them ( `-exec rm {} \;` ). This removes **old log files** safely.

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3. Which command would you use to count the number of running processes for a specific user named john?

- A. `ps -u john | wc -l`
- B. `top | grep john`
- C. `pgrep john | wc`
- D. `ps aux | grep john`

ANSWER: A

Explanation:

`ps -u john` lists all processes owned by `john`.

`wc -l` counts the output lines — hence it counts **how many processes john is running**.

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4. What is the effect of the following command?

```
chmod 2755 mydir
```

- A. Makes the directory readable and executable by all users.
- B. Gives owner all permissions and sets SGID bit.
- C. Makes directory immutable.
- D. Removes write permission for group.

ANSWER: B

Explanation:

The `2` before `755` sets the **SGID (Set Group ID)** bit.

All new files in `mydir` will inherit the group ownership of the directory — useful for shared project folders.

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## 5. In Linux, which command displays real-time I/O statistics for all storage devices?

- A. `df -h`
- B. `du -sh`
- C. `iostat -xz 1`
- D. `lsblk -f`

**ANSWER: C**

**Explanation:**

`iostat` (from `sysstat` package) displays disk and CPU I/O.  
`-xz 1` shows extended stats, skips idle devices, and refreshes every 1 second.

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## 6. You run the command:

```
tar -czvf backup.tar.gz /home/user
```

What does each flag mean?

- A. Create, zip, verbose, file
- B. Compress, zip, verify, folder
- C. Create, compress (gzip), verbose, output to file
- D. Copy, zero, verbose, file

**ANSWER: C**

**Explanation:**

- `-c` : create archive
- `-z` : compress using gzip
- `-v` : verbose (show progress)
- `-f` : output to file name specified

This command creates a **compressed backup** of `/home/user`.

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## 7. Which of the following commands correctly displays the top 10 CPU-consuming processes?

- A. `ps -ef | sort -r`
- B. `ps aux --sort=-%cpu | head -10`
- C. `top -10`
- D. `cat /proc/cpuinfo | head`

**ANSWER: B**

**Explanation:**

`ps aux` lists all processes.  
`--sort=-%cpu` sorts by descending CPU usage.  
`head -10` limits to top 10 results.

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## 8. What will be the output of the command below if file1.txt does not exist?

```
cat file1.txt >> output.txt
```

- A. Displays an error and terminates.
- B. Creates file1.txt automatically.
- C. Appends "file1.txt not found" to output.txt.
- D. Displays error but still creates/updates output.txt.

**ANSWER: D**

**Explanation:**

`cat` will print an error message ( `No such file or directory` ) to `stderr`, but the `>>` operator ensures `output.txt` is **created or modified**, even if the source file fails.

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## 9. The command

```
rsync -avz /data/ user@192.168.1.5:/backup/
```

is used for:

- A. Mounting a remote directory.
- B. Synchronizing data directories with compression.
- C. Backing up only changed files with checksum verification.
- D. Cloning system partitions.

**ANSWER: B**

**Explanation:**

`rsync` synchronizes directories efficiently.

`-a` preserves attributes, `-v` verbose, `-z` compresses data.

It transfers **only updated files**, making it ideal for backups.

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## 10. Which statement about the `umask` command is true?

- A. It sets the maximum permission allowed for any user.
- B. It defines the default permission mask for new files and directories.
- C. It locks the user account after failed login attempts.
- D. It assigns ownership of files to a specific group.

**ANSWER: B**

**Explanation:**

`umask` subtracts permission bits from the default ( `666` for files, `777` for directories ).

For example, `umask 022` → files: `644`, directories: `755`.

It controls **default permission creation** behavior.