

Test 2

Q1.

Ans:

Sticky bit : it controls the unwanted deletions of a file or directory . it is applied to give the other users permission

Eg : `chmod o+t /directory`

SUID (Set User ID): When set on a file, it allows the file to be executed with the permissions of the file owner instead of the user executing it. Example: `passwd` command.

SGID (Set Group ID): When set on a file, it allows the file to be executed with the permissions of the group. When set on a directory, new files inherit the directory's group. Sticky Bit: Applied to directories to prevent users from deleting files owned by others. Common in `/tmp`.

Commands:

`chmod u+s filename # Set SUID`

`chmod g+s filename # Set SGID`

`Chmod o+t directory # Set Sticky Bit`

`ls -l # Check permissions`

Q2.

Ans:

(A) The permission `-rwSr--r--` represented in octal expression will be? `-rwSr--r--` is `4644` in octal. S is applied using SUID bcoz it is applied on the owner and small s represents SUID is applied and capital S represents it is not applied .

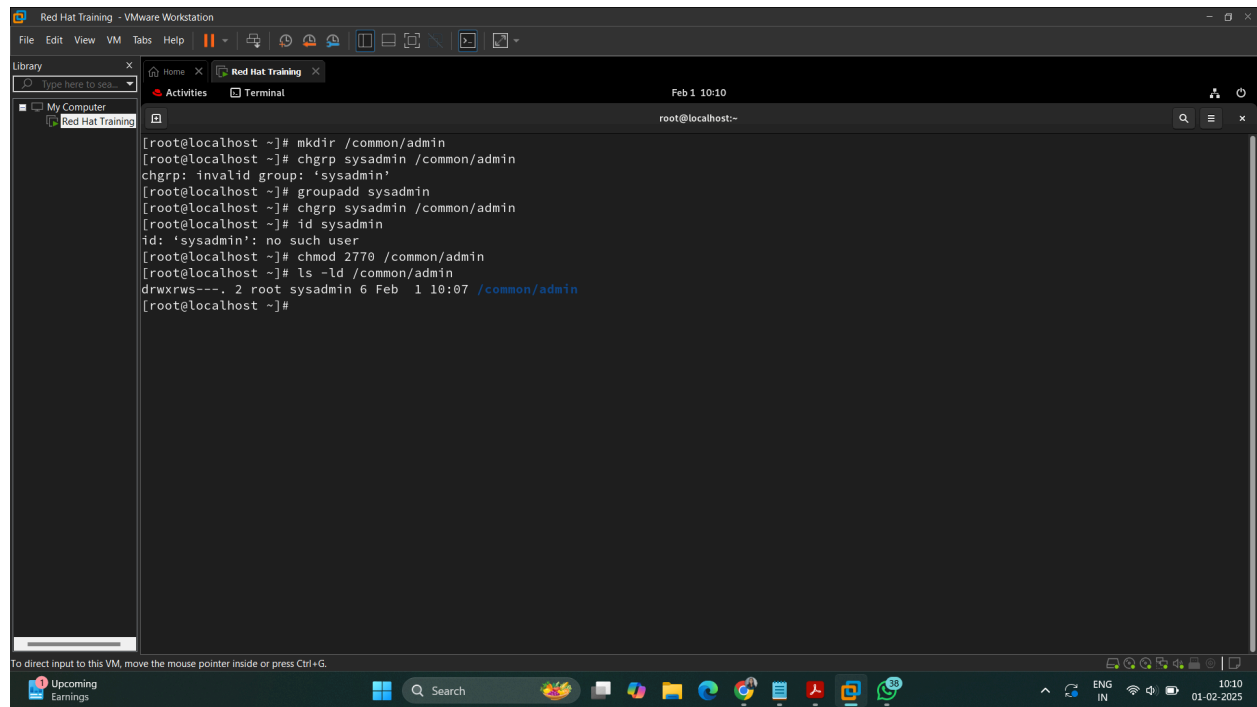
(B) Difference between 't' and 'T' in Sticky Bit?

- `t` means the directory has executable permission for others.
- `T` means no executable permission for others.

Q3.

ans:

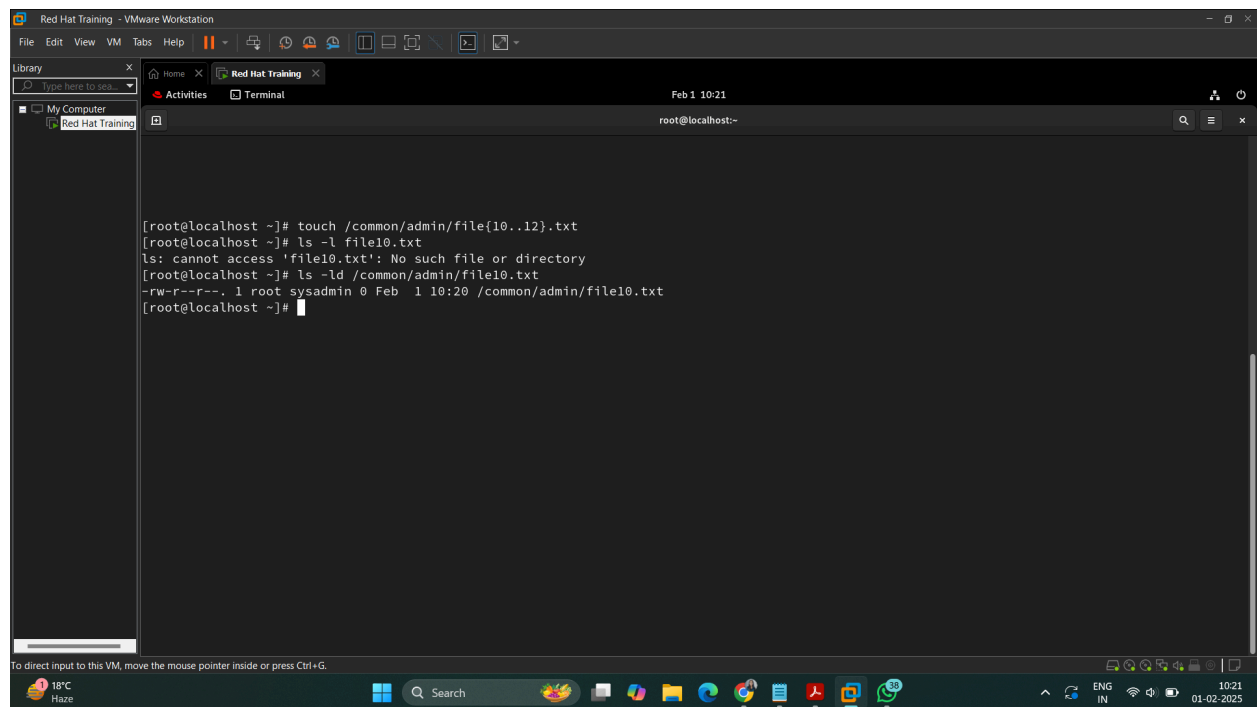
Q3.Ans:



The screenshot shows a terminal window within a VMware Workstation environment. The terminal is running as root on a localhost. The following commands and their outputs are shown:

```
[root@localhost ~]# mkdir /common/admin
[root@localhost ~]# chgrp sysadmin /common/admin
chgrp: invalid group: 'sysadmin'
[root@localhost ~]# groupadd sysadmin
[root@localhost ~]# chgrp sysadmin /common/admin
[root@localhost ~]# id sysadmin
id: 'sysadmin': no such user
[root@localhost ~]# chmod 2770 /common/admin
[root@localhost ~]# ls -ld /common/admin
drwxrws---. 2 root sysadmin 6 Feb  1 10:07 /common/admin
[root@localhost ~]#
```

The terminal window is titled "Red Hat Training" and shows the date "Feb 1 10:10". The VMware Workstation interface is visible in the background, including the Library pane on the left and the top menu bar.



The screenshot shows a terminal window within a VMware Workstation environment. The terminal is running as root on a localhost. The following commands and their outputs are shown:

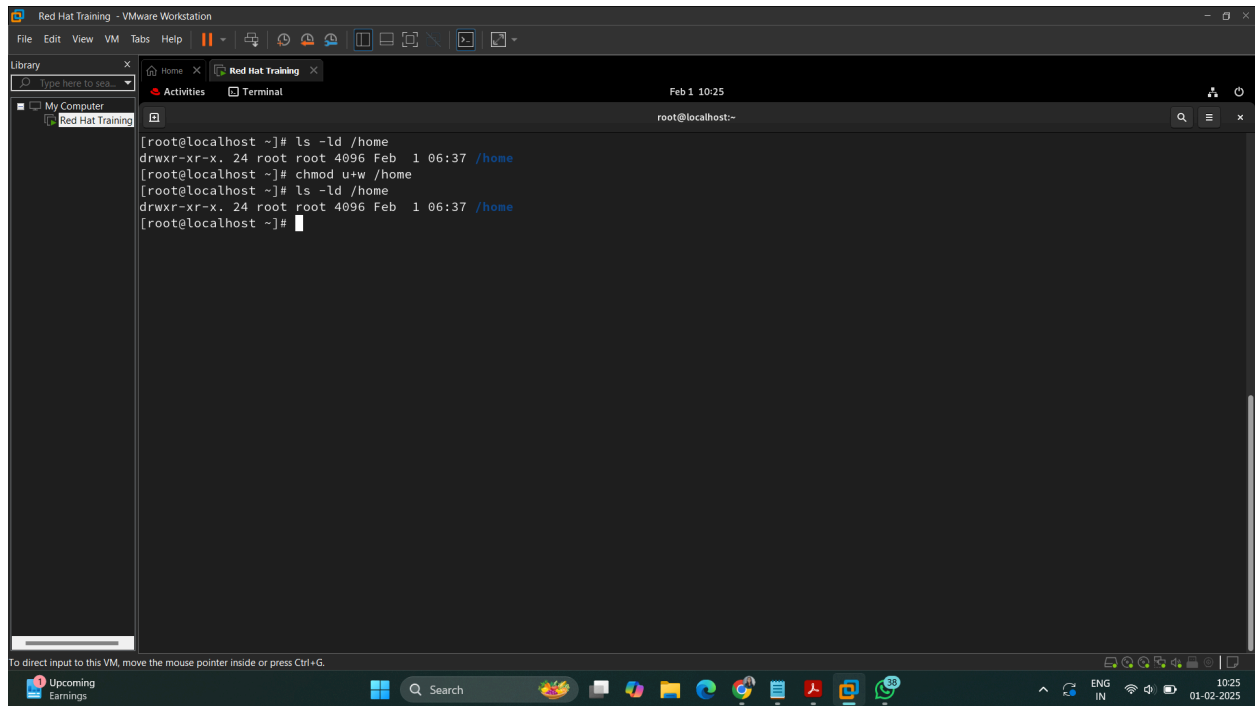
```
[root@localhost ~]# touch /common/admin/file{10..12}.txt
[root@localhost ~]# ls -l file10.txt
ls: cannot access 'file10.txt': No such file or directory
[root@localhost ~]# ls -ld /common/admin/file10.txt
-rw-r--r--. 1 root sysadmin 0 Feb  1 10:20 /common/admin/file10.txt
[root@localhost ~]#
```

The terminal window is titled "Red Hat Training" and shows the date "Feb 1 10:21". The VMware Workstation interface is visible in the background, including the Library pane on the left and the top menu bar.

Q4.

Ans:

- The issue is due to insufficient write permissions on the parent directory.
- The user must have write and execute permissions on the directory.



```
[root@localhost ~]# ls -ld /home
drwxr-xr-x. 24 root root 4096 Feb  1 06:37 /home
[root@localhost ~]# chmod u+w /home
[root@localhost ~]# ls -ld /home
drwxr-xr-x. 24 root root 4096 Feb  1 06:37 /home
[root@localhost ~]#
```

Q5.

Ans:

- Default ACL: Sets permissions for future files in a directory.
- Recursive ACL: Applies permissions to all existing files.

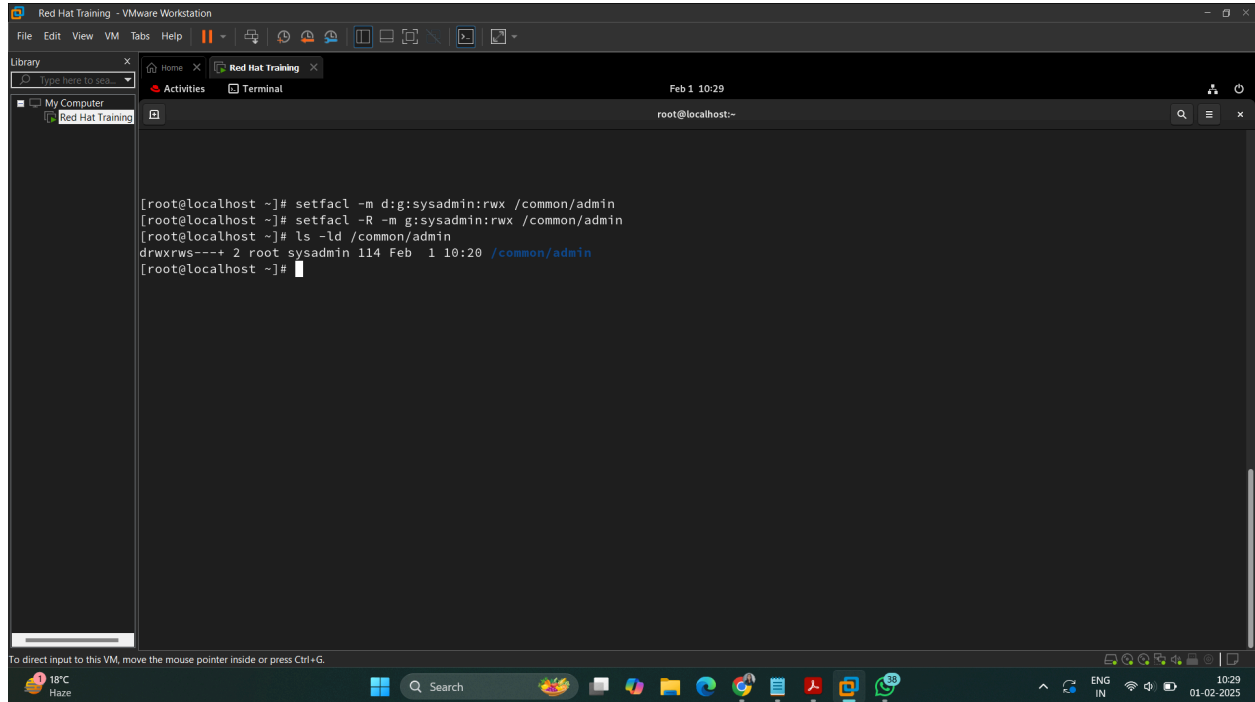
-R is for recursively

-m is for modify

And both the commands are

setfacl -m d:g:sysadmin:rwX /common/admin # Default ACL

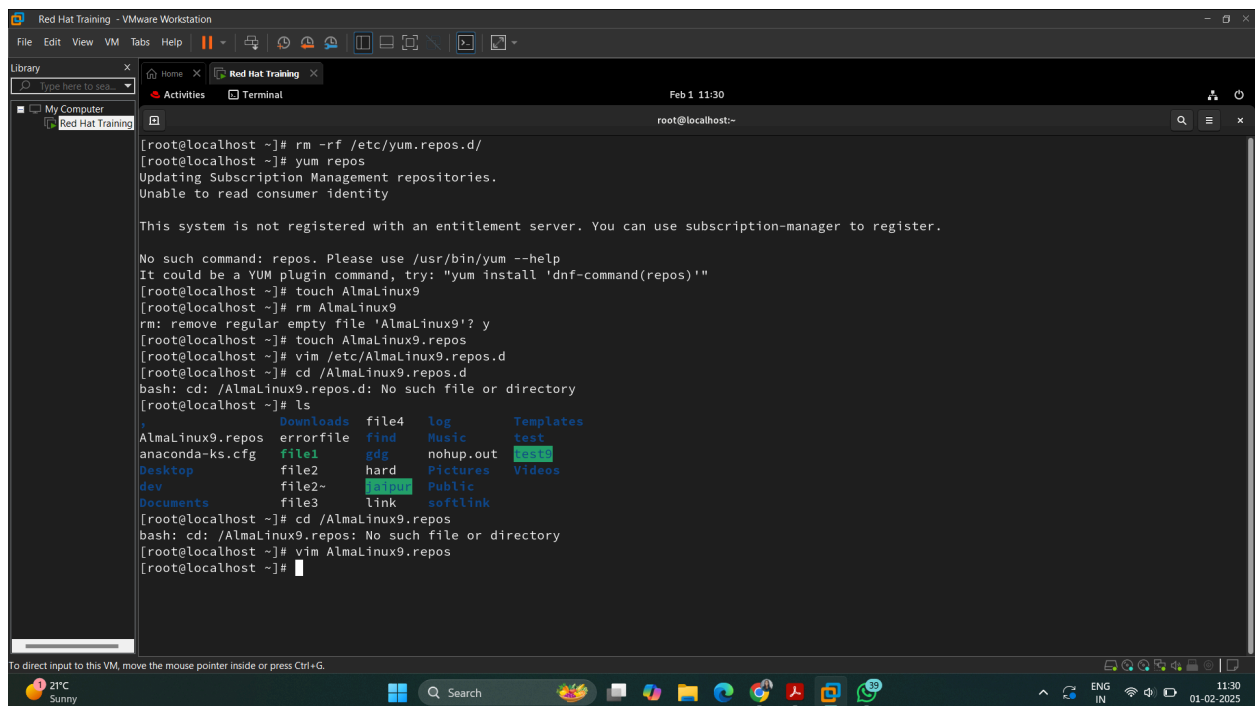
setfacl -R -m g:sysadmin:rwx /common/admin # Recursive ACL



```
Red Hat Training - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to search
My Computer
Red Hat Training
Feb 1 10:29
root@localhost:~
[root@localhost ~]# setfacl -m d:g:sysadmin:rwx /common/admin
[root@localhost ~]# setfacl -R -m g:sysadmin:rwx /common/admin
[root@localhost ~]# ls -ld /common/admin
drwxrws---+ 2 root sysadmin 114 Feb  1 10:20 /common/admin
[root@localhost ~]#
```

Q6.

Ans:



```
Red Hat Training - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to search
My Computer
Red Hat Training
Feb 1 11:30
root@localhost:~
[root@localhost ~]# rm -rf /etc/yum.repos.d/
[root@localhost ~]# yum repos
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

No such command: repos. Please use /usr/bin/yum --help
It could be a YUM plugin command, try: "yum install 'dnf-command(repos)'"
[root@localhost ~]# touch AlmaLinux9
[root@localhost ~]# rm AlmaLinux9
rm: remove regular empty file 'AlmaLinux9'? y
[root@localhost ~]# touch AlmaLinux9.repos
[root@localhost ~]# vim /etc/AlmaLinux9.repos.d
[root@localhost ~]# cd /AlmaLinux9.repos.d
bash: cd: /AlmaLinux9.repos.d: No such file or directory
[root@localhost ~]# ls
AlmaLinux9.repos  Downloads  file4  log  Templates
errorfile  find  Music  test
anaconda-ks.cfg  file1  gdg  nohup.out  tests
Desktop  file2  hard  Pictures  Videos
dev  file2~  httpd  Public
Documents  file3  link  softlink
[root@localhost ~]# cd /AlmaLinux9.repos
bash: cd: /AlmaLinux9.repos: No such file or directory
[root@localhost ~]# vim AlmaLinux9.repos
[root@localhost ~]#
```

Q7.

Ans: (A) List all installed RPM packages:

`rpm -qa`

(B) Get details about an installed package:

`rpm -qi package-name`

(C) List configuration files of `coreutils`:

`rpm -qc coreutils`

```
[root@localhost ~]# rpm -qa wget
[root@localhost ~]# rpm -q wget
wget-1.21.1-7.el9.x86_64
[root@localhost ~]# rpm -qa wget
wget-1.21.1-7.el9.x86_64
[root@localhost ~]#
```

Q8.

Ans: (A) Install bind & bind-utils using yum:

`yum install -y bind bind-utils`

(B) Start & Enable named.service:

`systemctl start named`

`systemctl enable named`

Q9.

Ans: `rpm`: Installs `.rpm` packages but does not resolve dependencies.

To install a package in rpm we write `rpm -i`

- `yum`: Older package manager, and resolve dependencies replaced by `dnf`. To install a package in yum we need to write `yum -install`
- `dnf`: Newer package manager, resolves dependencies better it is more faster and secure than yum . dnf is same sa yum but more faster

Q10.

Ans:

(A) Difference between `systemctl stop` and `systemctl disable`:

- **stop**: Stops service temporarily.
- **disable**: Prevents service from starting at boot.

(B) Restart sshd and verify status:

```
systemctl restart sshd
```

```
systemctl status sshd
```

The screenshot shows a Linux desktop environment with a terminal window open. The terminal title bar indicates the user is root@localhost and the command being executed is systemctl status sshd. The output displays the status of the OpenSSH server daemon.

```
root@localhost:~# systemctl status sshd
```

● sshd.service - OpenSSH server daemon
Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
Active: active (running) since Sat 2025-02-01 10:41:28 IST; 34s ago
Docs: man:sshd(8)
man:sshd_config(5)
Main PID: 3259 (sshd)
Tasks: 1 (limit: 10679)
Memory: 1.4M
CPU: 27ms
CGroup: /system.slice/sshd.service
└─3259 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

The terminal also shows system logs indicating the successful start of the SSH service:

```
Feb 01 10:41:28 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...  
Feb 01 10:41:28 localhost.localdomain sshd[3259]: Server listening on 0.0.0.0 port 22.  
Feb 01 10:41:28 localhost.localdomain sshd[3259]: Server listening on :: port 22.  
Feb 01 10:41:28 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
```

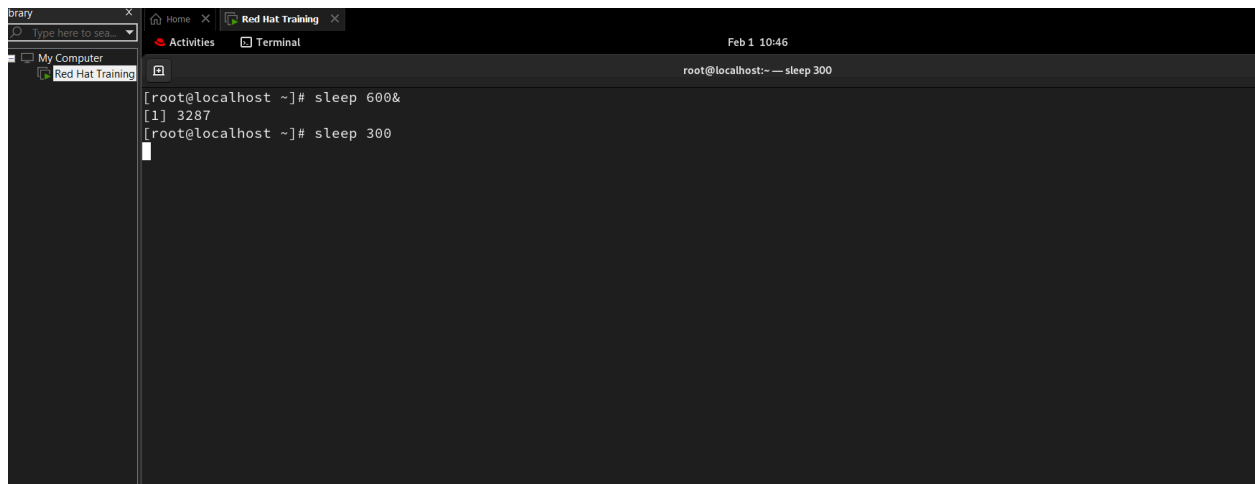
The bottom of the terminal window shows the prompt and file navigation information: lines 1-16/16 (END).

Q11.

Ans:

. What are jobs (Processes)?

- Jobs are tasks running in the background or foreground.
- If we want to run the job in background then add `&(symbol)` at the end of the process.
- `fg`, `bg`, and `jobs` commands manage them.

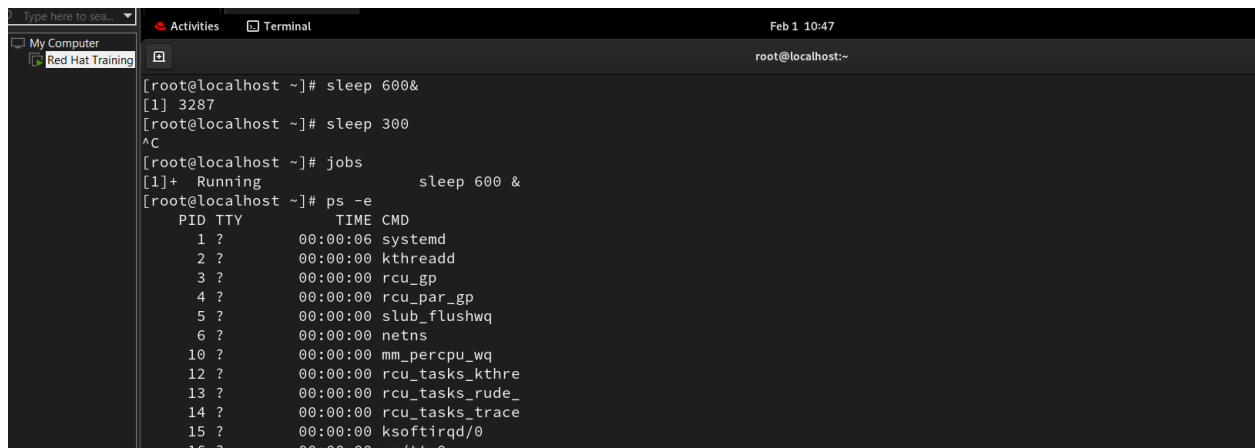


```

[1] 3287
[root@localhost ~]# sleep 300

```

The screenshot shows a terminal window with a dark background. The prompt is `root@localhost ~`. The user has entered `sleep 600&` and `sleep 300`. The terminal shows the process ID `[1] 3287` for the first command.



```

[1]+  Running                  sleep 600 &
[root@localhost ~]# ps -e
  PID TTY          TIME CMD
    1 ?            00:00:06 systemd
    2 ?            00:00:00 kthreadd
    3 ?            00:00:00 rcu_gp
    4 ?            00:00:00 rcu_par_gp
    5 ?            00:00:00 slub_flushwq
    6 ?            00:00:00 netns
   10 ?            00:00:00 mm_percpu_wq
   12 ?            00:00:00 rcu_tasks_kthre
   13 ?            00:00:00 rcu_tasks_rude_
   14 ?            00:00:00 rcu_tasks_trace
   15 ?            00:00:00 ksoftirqd/0
   16 ?            00:00:00 pr/ttw0

```

The screenshot shows the terminal after pressing `Ctrl+C`. It displays the `jobs` command output, showing a running background process `sleep 600 &`. Then, the `ps -e` command is run, displaying a list of system processes with their PIDs, TTYs, times, and commands.

Eg : `sleep 600&` is running in background

`Sleep 300` was running in foreground

`Jobs` : this gives the details of the process which are running right now

Q12.

Ans:

(A) Difference between `ps -aux` and `top`:

- `ps -aux`: Displays a static snapshot of processes.
- `top`: Continuously updates running processes. Its gets updated in every second

```
File Edit View VM Tabs Help
Library
x
Type here to search
My Computer
Red Hat Training
Feb 1 10:50
root@localhost:~# ps -aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.1  0.9 172580 16592 ?        Ss   09:23   0:06 /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
root         2  0.0  0.0      0     0 ?        S    09:23   0:00 [kthreadd]
root         3  0.0  0.0      0     0 ?        I<   09:23   0:00 [rcu_gp]
root         4  0.0  0.0      0     0 ?        I<   09:23   0:00 [rcu_par_gp]
root         5  0.0  0.0      0     0 ?        I<   09:23   0:00 [slub_flushwq]
root         6  0.0  0.0      0     0 ?        I<   09:23   0:00 [netns]
root        10  0.0  0.0      0     0 ?        I<   09:23   0:00 [mm_percpu_wq]
root        12  0.0  0.0      0     0 ?        I    09:23   0:00 [rcu_tasks_kthre]
root        13  0.0  0.0      0     0 ?        I    09:23   0:00 [rcu_tasks_rude_]
root        14  0.0  0.0      0     0 ?        I    09:23   0:00 [rcu_tasks_trace]
root        15  0.0  0.0      0     0 ?        S    09:23   0:00 [ksoftirqd/0]
root        16  0.0  0.0      0     0 ?        S    09:23   0:00 [pr/tty0]
root        17  0.0  0.0      0     0 ?        I    09:23   0:00 [rcu_preempt]
root        18  0.0  0.0      0     0 ?        S    09:23   0:00 [migration/0]
root        19  0.0  0.0      0     0 ?        S    09:23   0:00 [idle_inject/0]
root        21  0.0  0.0      0     0 ?        S    09:23   0:00 [cpuhp/0]
root        22  0.0  0.0      0     0 ?        S    09:23   0:00 [cpuhp/1]
root        23  0.0  0.0      0     0 ?        S    09:23   0:00 [idle_inject/1]
root        24  0.0  0.0      0     0 ?        S    09:23   0:04 [migration/1]
root        25  0.0  0.0      0     0 ?        S    09:23   0:00 [ksoftirqd/1]
root        30  0.0  0.0      0     0 ?        S    09:23   0:00 [kdevtmpfs]
root        31  0.0  0.0      0     0 ?        I<   09:23   0:00 [inet_frag_wq]
root        32  0.0  0.0      0     0 ?        S    09:23   0:00 [kauditd]
root        35  0.0  0.0      0     0 ?        S    09:23   0:00 [khungtaskd]
root        36  0.0  0.0      0     0 ?        S    09:23   0:00 [oom_reaper]
root        37  0.0  0.0      0     0 ?        I<   09:23   0:00 [writeback]
root        38  0.0  0.0      0     0 ?        S    09:23   0:02 [kcompactd0]
```

```
Library
x
Type here to search
My Computer
Red Hat Training
Feb 1 10:50
root@localhost:~# top
top - 10:50:49 up 1:27, 2 users, load average: 0.03, 0.16, 0.14
Tasks: 292 total, 1 running, 291 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.8 us, 1.2 sy, 0.0 ni, 94.9 id, 0.2 wa, 0.8 hi, 0.2 st, 0.0 st
MiB Mem : 1731.6 total, 71.4 free, 1323.1 used, 508.6 buff/cache
MiB Swap: 2048.0 total, 2023.5 free, 24.5 used, 408.6 avail Mem

   PID USER      PR  NI   VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
  2150 root        20   0 3846728 203560 111804 S   4.6   11.5   0:52.35 gnome-shell
  2660 root        20   0 775344   57504 41860 S   1.3    3.2   0:11.10 gnome-terminal-
 3319 root        20   0 226032   4336   3448 R   0.7    0.2   0:00.06 top
   892 root        20   0 538012  12540  6912 S   0.3    0.7   0:23.04 vmtoolsd
  2393 root        20   0 540936  45436 32652 S   0.3    2.6   0:23.03 vmtoolsd
  2566 root        20   0 595760  33816 19476 S   0.3    1.9   0:04.68 ibus-extension-
 3256 root        20   0      0      0     0 I   0.3    0.0   0:01.72 kworker/0:2-events
    1 root        20   0 172580  16592 10624 S   0.0    0.9   0:06.94 systemd
    2 root        20   0      0      0     0 S   0.0    0.0   0:00.11 kthreadd
    3 root        20  -20      0      0     0 I   0.0    0.0   0:00.00 rcu_gp
    4 root        20  -20      0      0     0 I   0.0    0.0   0:00.00 rcu_par_gp
    5 root        20  -20      0      0     0 I   0.0    0.0   0:00.00 slub_flushwq
    6 root        20  -20      0      0     0 I   0.0    0.0   0:00.00 netns
   10 root        20  -20      0      0     0 I   0.0    0.0   0:00.00 mm_percpu_wq
   12 root        20   0      0      0     0 I   0.0    0.0   0:00.00 rcu_tasks_kthre
   13 root        20   0      0      0     0 I   0.0    0.0   0:00.00 rcu_tasks_rude_
   14 root        20   0      0      0     0 I   0.0    0.0   0:00.00 rcu_tasks_trace
   15 root        20   0      0      0     0 S   0.0    0.0   0:00.31 ksoftirqd/0
   16 root        20   0      0      0     0 S   0.0    0.0   0:00.13 pr/tty0
   17 root        20   0      0      0     0 I   0.0    0.0   0:00.85 rcu_preempt
   18 root        20   0      0      0     0 S   0.0    0.0   0:00.02 migration/0
   19 root        20  -51      0      0     0 S   0.0    0.0   0:00.00 idle_inject/0
   21 root        20   0      0      0     0 S   0.0    0.0   0:00.00 cpuhp/0
   22 root        20   0      0      0     0 S   0.0    0.0   0:00.00 cpuhp/1
```

(B) Filter processes by memory usage:

Ps -e | grep sleep

Pstree

Top

Pgrep -u username -l

Q13.

ans:

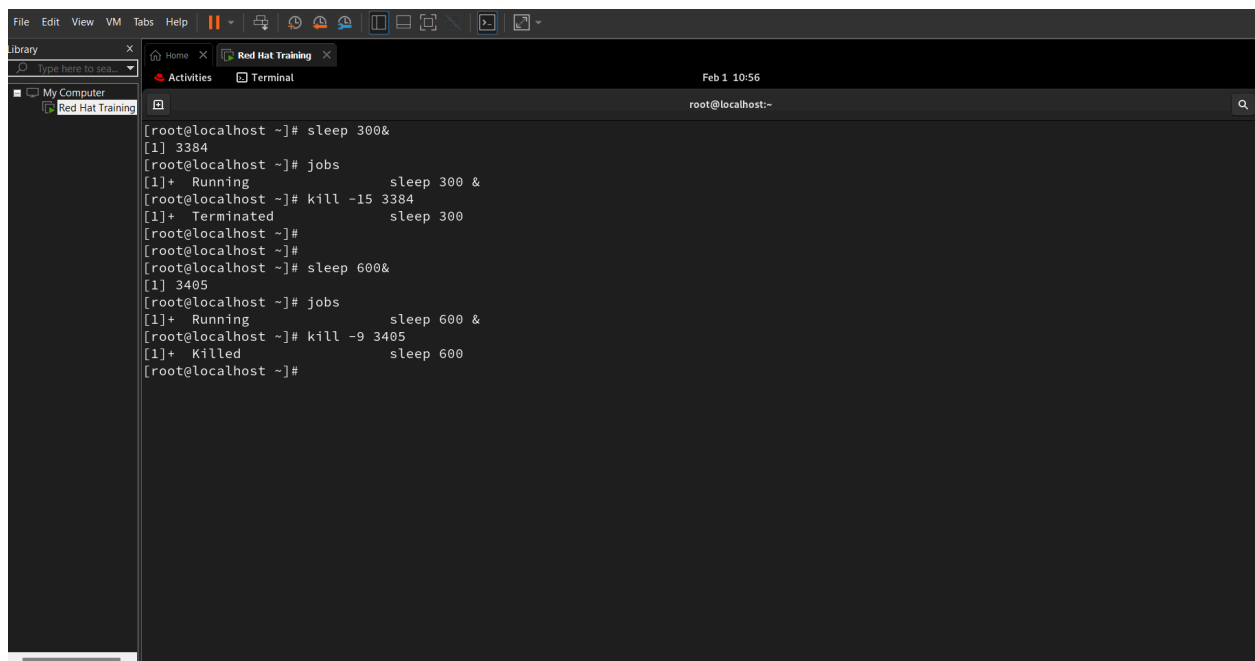
(A) Default signal to terminate a process:

- **KILL -15**

(B) Forcefully terminate a process:

- **KILL -9**

kill -9 PID



The screenshot shows a terminal window titled "Red Hat Training" with a search bar on the left. The terminal output is as follows:

```
[root@localhost ~]# sleep 300&
[1] 3384
[root@localhost ~]# jobs
[1]+  Running                  sleep 300 &
[root@localhost ~]# kill -15 3384
[1]+  Terminated              sleep 300
[root@localhost ~]#
[root@localhost ~]# sleep 600&
[1] 3405
[root@localhost ~]# jobs
[1]+  Running                  sleep 600 &
[root@localhost ~]# kill -9 3405
[1]+  Killed                   sleep 600
[root@localhost ~]#
```

Q14.

Ans:

. (A) Shortcut keys to interrupt a process:

- **Ctrl + C:** Interrupt
- **Ctrl + Z:** Suspend

```
[1]+  Killed                  sleep 600
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# sleep 600
^C
[root@localhost ~]# sleep 500
^Z
[1]+  Stopped                  sleep 500
[root@localhost ~]#
```

(B) Display logged-in users:

Who

```
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# who
root    seat0    2025-02-01 09:22 (login screen)
root    tty2      2025-02-01 09:22 (tty2)
[root@localhost ~]# su - kavya
[kavya@localhost ~]$ who
root    seat0    2025-02-01 09:22 (login screen)
root    tty2      2025-02-01 09:22 (tty2)
[kavya@localhost ~]$
```

15.

Ans: (A) What is a zombie process?

- A process that has completed execution but remains in the process table.

(B) Kill all processes by a user:

kill -u username

```
Library
Type here to search
My Computer
Red Hat Training

Home X Red Hat Training
Activities Terminal Feb 1 11:03
kavya@localhost~

[root@localhost ~]# su - kavya
[kavya@localhost ~]$ sleep 500&
[1] 3551
[kavya@localhost ~]$ jobs
[1]+  Running                  sleep 500 &
[kavya@localhost ~]$ pkill -u kavya sleep
[1]+  Terminated              sleep 500
[kavya@localhost ~]$ ps -e | grep sleep
```

(C) Kill all processes running in a terminal:

kill -t pld

```
[kavya@localhost ~]$ kill 3436
-bash: kill: (3436) - Operation not permitted
[kavya@localhost ~]$ exit
logout
[root@localhost ~]# ps -e | grep sleep
3436 pts/0    00:00:00 sleep
[root@localhost ~]# pkill -t 3436
[root@localhost ~]# ps -e | grep sleep
3436 pts/0    00:00:00 sleep
[root@localhost ~]#
```

