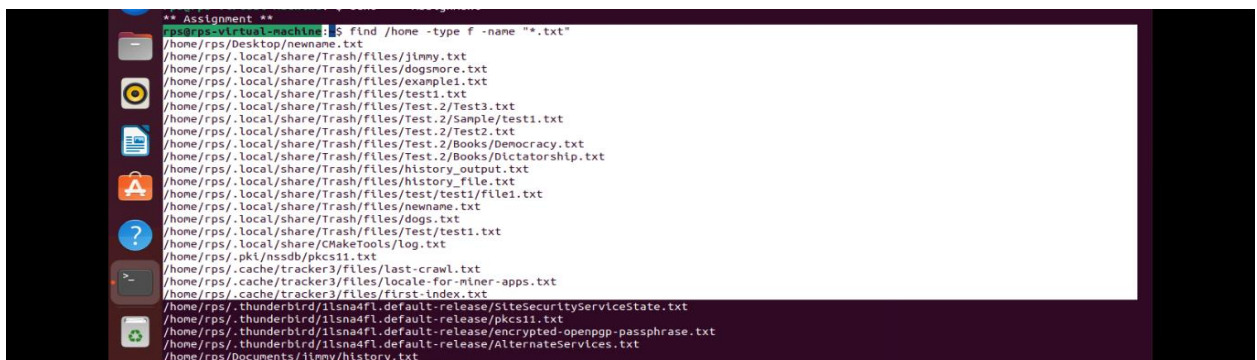


# Day -2 LSP Assignment (TASK-2)

## A. Assignment on Shell scripting.

### 1. File Search:

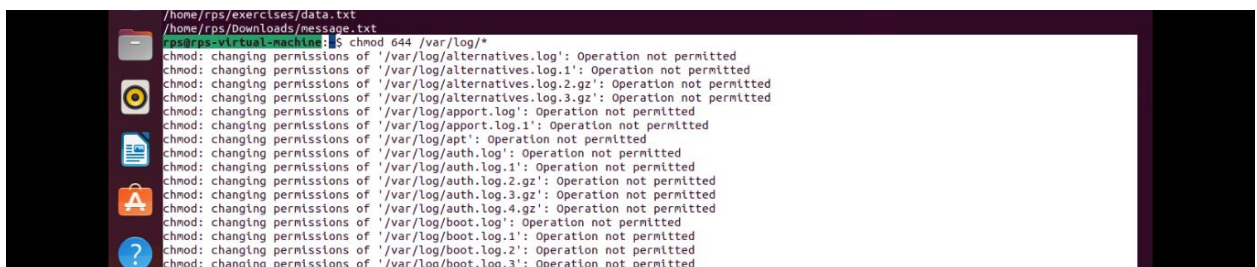
Write a command to find all files with the extension .txt in the /home directory and its subdirectories.



```
** Assignment **
rps@rps-virtual-machine:~$ find /home -type f -name "*.txt"
/home/rps/Desktop/newname.txt
/home/rps/.local/share/Trash/files/jimmy.txt
/home/rps/.local/share/Trash/files/dogsnoze.txt
/home/rps/.local/share/Trash/files/example1.txt
/home/rps/.local/share/Trash/files/test1.txt
/home/rps/.local/share/Trash/files/Test.2/Test3.txt
/home/rps/.local/share/Trash/files/Test.2/Sample/test1.txt
/home/rps/.local/share/Trash/files/Test.2/Test2.txt
/home/rps/.local/share/Trash/files/Test.2/Books/Denocracy.txt
/home/rps/.local/share/Trash/files/Test.2/Books/Dictatorship.txt
/home/rps/.local/share/Trash/files/history_output.txt
/home/rps/.local/share/Trash/files/history_file.txt
/home/rps/.local/share/Trash/files/test/test1/file1.txt
/home/rps/.local/share/Trash/files/newname.txt
/home/rps/.local/share/Trash/files/dogs.txt
/home/rps/.local/share/Trash/files/Test/test1.txt
/home/rps/.local/share/Trash/files/log.txt
/home/rps/.pki/nssdb/pkcs11.txt
/home/rps/.cache/tracker3/files/last-crawl.txt
/home/rps/.cache/tracker3/files/locale-for-miner-apps.txt
/home/rps/.cache/tracker3/files/first-index.txt
/home/rps/.thunderbird/11sna4fl.default-release/SecurityServiceState.txt
/home/rps/.thunderbird/11sna4fl.default-release/pkcs11.txt
/home/rps/.thunderbird/11sna4fl.default-release/encrypted-openpgp-passphrase.txt
/home/rps/.thunderbird/11sna4fl.default-release/AlternateServices.txt
/home/rps/Documents/jimmy/history.txt
```

### 2. File Permissions:

Write a command to change the permissions of all files in the /var/log directory to 644.



```
/home/rps/exercises/data.txt
/home/rps/Downloads/message.txt
rps@rps-virtual-machine:~$ chmod 644 /var/log/*
chmod: changing permissions of '/var/log/alternatives.log': Operation not permitted
chmod: changing permissions of '/var/log/alternatives.log.1': Operation not permitted
chmod: changing permissions of '/var/log/alternatives.log.2.gz': Operation not permitted
chmod: changing permissions of '/var/log/alternatives.log.3.gz': Operation not permitted
chmod: changing permissions of '/var/log/apport.log': Operation not permitted
chmod: changing permissions of '/var/log/apport.log.1': Operation not permitted
chmod: changing permissions of '/var/log/apt': Operation not permitted
chmod: changing permissions of '/var/log/auth.log': Operation not permitted
chmod: changing permissions of '/var/log/auth.log.1': Operation not permitted
chmod: changing permissions of '/var/log/auth.log.2.gz': Operation not permitted
chmod: changing permissions of '/var/log/auth.log.3.gz': Operation not permitted
chmod: changing permissions of '/var/log/auth.log.4.gz': Operation not permitted
chmod: changing permissions of '/var/log/boot.log': Operation not permitted
chmod: changing permissions of '/var/log/boot.log.1': Operation not permitted
chmod: changing permissions of '/var/log/boot.log.2': Operation not permitted
chmod: changing permissions of '/var/log/boot.log.3': Operation not permitted
```

### 3. Disk Usage:

Write a command to display the disk usage of all directories in the /home directory in a human-readable format.

```
cheed: changing permissions of /usr/lib/stop: Operation not permitted
rps@rps-virtual-machine:~$ du -h /home/rps
4.0K /home/rps/directoy2
1.0K /home/rps/Desktop/C Demo/.vscode
0.0K /home/rps/Desktop/C Demo/C++ Demo
2.0K /home/rps/Desktop/C Demo
4.0K /home/rps/.local/share/Trash/files/Folder1.2
4.0K /home/rps/.local/share/Trash/files/Travel
4.0K /home/rps/.local/share/Trash/files/the
4.0K /home/rps/.local/share/Trash/files/fruits/Folder1/Folder3
0.0K /home/rps/.local/share/Trash/files/fruits/Folder2
12K /home/rps/.local/share/Trash/files/fruits/Folder3
12K /home/rps/.local/share/Trash/files/test.2/sample
1.0K /home/rps/.local/share/Trash/files/test.2/Books
4.0K /home/rps/.local/share/Trash/files/test.2
4.0K /home/rps/.local/share/Trash/files/Gullivers
4.0K /home/rps/.local/share/Trash/files/ideas.txt
4.0K /home/rps/.local/share/Trash/files/test1
2.0K /home/rps/.local/share/Trash/files/test
4.0K /home/rps/.local/share/Trash/files/jenny1
4.0K /home/rps/.local/share/Trash/files/Folder1
1.2K /home/rps/.local/share/Trash/files
1.0K /home/rps/.local/share/Trash/info
2.0K /home/rps/.local/share/Trash
7.0K /home/rps/.local/share/pdfs-metadata
4.0K /home/rps/.local/share/backgrounds
1.2K /home/rps/.local/share/keyrings
1.2K /home/rps/.local/share/nautilus/tags
```

#### 4. Process Management:

Write a command to list all running processes that contain the name "apache" in their command line.

```
rps@rps-virtual-machine:~$ ps aux | grep apache
rps 199464 0.0 0.0 9080 2560 pts/1 S+ 14:14 0:00 grep --color=auto apache
rps@rps-virtual-machine:~$ wc -L error.log
wc: error.log: No such file or directory
```

#### 5. Text Processing:

Write a command to count the number of lines in a file named error.log.

```
rps@rps-virtual-machine:~$ wc -l error.log
wc: error.log: No such file or directory
rps@rps-virtual-machine:~$ ip addr show
```

#### 6. Network Configuration:

Write a command to display the IP address of all network interfaces on the system.

```
rps@rps-virtual-machine:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens192: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:92:0a:8d brd ff:ff:ff:ff:ff:ff
    altname enp11s0
    inet 172.20.0.35/24 brd 172.20.0.255 scope global dynamic noprefixroute ens192
        valid_lft 5258sec preferred_lft 5258sec
    inet6 fe80::efda:2d58:58cf:3970/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
rps@rps-virtual-machine:~$ sudo apt-get install httpd
```

#### 7. Package Management:

Write a command to install a package named httpd using the package manager.

```
rps@rps-virtual-machine:~$ sudo apt-get install httpd
[sudo] password for rps:
123Sorry, try again.
[sudo] password for rps:
Sorry, try again.
[sudo] password for rps:
sudo: 3 incorrect password attempts
```

#### 8. User Management:

Write a command to add a new user named developer to the system.

```
sudo: 3 incorrect password attempts
rps@rps-virtual-machine:~$ ^C
rps@rps-virtual-machine:~$ sudo useradd developer
[sudo] password for rps:
Sorry, try again.
[sudo] password for rps:
sudo: 1 incorrect password attempt
```

## 9. File Compression:

Write a command to compress a directory named backup into a .tar.gz file.

```
sudo: 1 incorrect password attempt
rps@rps-virtual-machine:~$ tar -czvf backup.tar.gz backup/
tar: backup: Cannot stat: No such file or directory
tar: Exiting with failure status due to previous errors
rps@rps-virtual-machine:~$ mkdir backup
rps@rps-virtual-machine:~$ tar -czvf backup.tar.gz backup/
backup/
```

## 10. System Monitoring:

Write a command to display real-time system resource usage, including CPU, memory, and disk I/O.

```
rps@rps-virtual-machine:~$ top
top - 14:17:38 up 32 days, 18:35, 1 user, load average: 0.07, 0.06, 0.01
tasks: 254 total, 1 running, 252 sleeping, 0 stopped, 1 zombie
Cpu(s): 0.7 us, 0.6 sy, 0.0 ni, 98.6 id, 0.0 wa, 0.0 hi, 0.0 st, 0.0 sr
Mem: 15984.7 total, 8423.6 free, 1907.1 used, 5656.0 buff/cache
Mem Swap: 2048.0 total, 2048.0 free, 0.0 used, 13685.7 avail Mem

  PID TID          PPID    PID   CHILD   CPU%    MEM%   S     Uptime    Command
  5884 rps        0    5546 556 556148 159176 5    2.3    3.4   78:23.71 gnome-shell
  5743 rps        0   -11 1689008 24812 20076 5    1.3    0.2 366:23.43 pulseaudio
  6684 rps        0   1185932 326976 54744 5    0.7    2.9 246:16.23 snap-store
 172925 rps        0  2391488 77656 64856 5    0.7    0.5   0:34.82 Web Content
   6045 rps        0   315280 11944 6912 5    0.3    0.1   0:59.82 dbus-daemon
199524 rps        0   13228 4224 3328 8    0.3    0.0   0:00.03 top
    1 root        0   168132 12876 8148 5    0.0    0.1   0:43.00 systemd
    2 root        0    0 0 0 0.0 0.0 0:00.29 kthreadd
    3 root        0    0 0 0 0.0 0.0 0:00.00 rcu_gp
    4 root        0 -20 0 0 0 0.0 0.0 0:00.00 rcu_par_gp
    5 root        0 -20 0 0 0 0.0 0.0 0:00.00 slab_flushwq
    6 root        0 -20 0 0 0 0.0 0.0 0:00.00 netns
    8 root        0 -20 0 0 0 0.0 0.0 0:00.00 kworker/0:0H-events_highpri
   11 root        0 -20 0 0 0 0.0 0.0 0:00.00 mw_percpu_wq
   12 root        0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_kthread
   13 root        0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_rude_kthread
   14 root        0 0 0 0 0.0 0.0 0:00.00 rcu_tasks_trace_kthread
   15 root        0 0 0 0 0.0 0.0 0:01.28 ksoftirqd/0
   16 root        0 0 0 0 0.0 0.0 0:00.00 rcu_preempt
   17 root        0 0 0 0 0.0 0.0 0:00.73 migration/0
  18 root        0 0 0 0 0.0 0.0 0:00.00 ksoftirqd/1
```

## B. Shell Scripts –

### Backup Script:

**Task :** Write a shell script to back up a directory named /data to /backup with the current date appended to the backup file name.

### 1. Log Rotation:

Write a shell script to rotate log files in the /var/log directory, keeping only the last 7 days of logs.

// Commands next page //

```
rm: cannot remove '/var/log/vmware-network.1.log': Permission denied
Log rotation complete. Logs older than 7 days have been deleted from /var/log.
rps@rps-virtual-machine:~$ vim t1.sh
rps@rps-virtual-machine:~$ cat t1.sh
#!/bin/bash

LOG_DIR="/var/log"
DAYS_TO_KEEP=7
find $LOG_DIR -type f -name "*.log" -mtime +$DAYS_TO_KEEP -exec rm -f {} \;

echo "Log rotation complete. Logs older than $DAYS_TO_KEEP days have been deleted from $LOG_DIR."
rps@rps-virtual-machine:~$ bash t1.sh
rm: cannot remove '/var/log/vmware-network.1.log': Permission denied
rm: cannot remove '/var/log/boot.log': Permission denied
rm: cannot remove '/var/log/vmware-vmsvr-rps.log': Permission denied
rm: cannot remove '/var/log/vmware-network.4.log': Permission denied
rm: cannot remove '/var/log/vmware-vntoolsd-rps.log': Permission denied
rm: cannot remove '/var/log/vmware-network.8.log': Permission denied
rm: cannot remove '/var/log/vmware-network.7.log': Permission denied
find: '/var/log/gdm3': Permission denied
rm: cannot remove '/var/log/vmware-vmsvc-root.1.log': Permission denied
rm: cannot remove '/var/log/apport.log': Permission denied
rm: cannot remove '/var/log/vmware-network.3.log': Permission denied
rm: cannot remove '/var/log/vmware-vmsvc-root.2.log': Permission denied
rm: cannot remove '/var/log/vmware-network.6.log': Permission denied
rm: cannot remove '/var/log/fontconfig.log': Permission denied
rm: cannot remove '/var/log/vmware-network.5.log': Permission denied
rm: cannot remove '/var/log/vmware-vmsvc-root.log': Permission denied
rm: cannot remove '/var/log/unattended-upgrades/unattended-upgrades-shutdown.log': Permission denied
rm: cannot remove '/var/log/ubuntu-advantage.log': Permission denied
```

## 2. User Report:

Write a shell script to generate a report of all users currently logged into the system and save it to a file named `user_report.txt`.

```
rps@rps-virtual-machine:~$ ^C
rps@rps-virtual-machine:~$ who >user_report.txt
rps@rps-virtual-machine:~$ cat user_report.txt
rps          tty2      2024-06-21 09:32 (tty2)
rps@rps-virtual-machine:~$
```

## 3. Disk Space Alert:

Write a shell script to check the disk usage of the `/home` directory and send an email alert if the usage exceeds 80%.

```
rps          tty2      2024-06-21 09:32 (tty2)
rps@rps-virtual-machine:~$ vim t3.sh
rps@rps-virtual-machine:~$ bash t3.sh
rps@rps-virtual-machine:~$ cat t3.sh
#!/bin/bash

THRESHOLD=80
USAGE=$(df /home | grep / | awk '{print $5}' | sed 's/%/g')

if [ $USAGE -gt $THRESHOLD ]; then
    echo "Disk usage for /home is above $THRESHOLD%" | MAIL -s "Disk Space Alert" user@example.com
fi
```

## 4. Service Monitor:

Write a shell script to check if the `nginx` service is running and restart it if it is not.

```
#!/bin/bash

if ! systemctl is-active --quiet nginx; then
    systemctl restart nginx
fi

rps@rps-virtual-machine:~$ vim t4.sh
rps@rps-virtual-machine:~$ bash t4.sh
t4.sh: line 3: systemctl: command not found
t4.sh: line 4: systemctl: command not found
rps@rps-virtual-machine:~$ cat t4.sh
#!/bin/bash

if ! systemctl is-active --quiet nginx; then
    systemctl restart nginx
fi
```

## 5. File Cleanup:

Write a shell script to delete all files older than 30 days in the `/tmp` directory.

```
systemctl restart nginx
rps@rps-virtual-machine:~$ vim t5.sh
rps@rps-virtual-machine:~$ bash t5.sh
find: '/tmp/systemd-private-0002d592a9b4481f906f13ae16448d89-colord.service-45d6ql': Permission denied
find: '/tmp/systemd-private-0002d592a9b4481f906f13ae16448d89-switcheroo-control.service-V7kbbg': Permission denied
find: '/tmp/systemd-private-0002d592a9b4481f906f13ae16448d89-power-profiles-daemon.service-rNbsN': Permission denied
find: '/tmp/tmpirsrpc2': Permission denied
find: '/tmp/systemd-private-0002d592a9b4481f906f13ae16448d89-systemd-resolved.service-h3w535': Permission denied
rm: remove write-protected regular file '/tmp/.X1025-lock'? No
find: '/tmp/snap-private-tmp': Permission denied
rm: remove write-protected regular file '/tmp/.X1024-lock'? ^C
rps@rps-virtual-machine:~$ cat t5.sh
#!/bin/bash
find /tmp -type f -mtime +30 -exec rm {} \;
```

## 6. Automated Updates:

Write a shell script to automatically update all installed packages on the system.

```
rps@rps-virtual-machine:~$ vim t6.sh
rps@rps-virtual-machine:~$ bash t6.sh
[sudo] password for rps:
123Sorry, try again.
[sudo] password for rps:
123Sorry, try again.
[sudo] password for rps:
123
[sudo] 3 incorrect password attempts
[sudo] password for rps:
sorry, try again.
[sudo] password for rps:
[sudo] 1 incorrect password attempt
rps@rps-virtual-machine:~$ cat t6.sh
#!/bin/bash
sudo apt-get update
sudo apt-get upgrade -y
```

## 7. Database Backup:

Write a shell script to back up a MySQL database named sales to a file named sales\_backup.sql.

```
sudo apt-get upgrade -y
rps@rps-virtual-machine:~$ vim t7.sh
rps@rps-virtual-machine:~$ bash t7.sh
t7.sh: line 8: mysqldump: command not found
rps@rps-virtual-machine:~$ cat t7.sh
#!/bin/bash
DB_NAME="sales"
BACKUP_FILE="sales_backup.sql"
USER="root"
PASSWORD="password"
mysqldump -u $USER -p$PASSWORD $DB_NAME > $BACKUP_FILE
```

## 8. System Information:

Write a shell script to display system information, including hostname, OS version, and kernel version.

```
rps@rps-virtual-machine:~$ vim t8.sh
rps@rps-virtual-machine:~$ bash t8.sh
Hostname: rps-virtual-machine
OS Version: PRETTY_NAME="Ubuntu 22.04.4 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04.4 LTS (Jammy Jellyfish)"
VERSION_CODENAME=jammy
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=jammy
Kernel Version: 6.5.0-35-generic
rps@rps-virtual-machine:~$ cat t8.sh
#!/bin/bash
echo "Hostname: $(hostname)"
echo "OS Version: $(cat /etc/os-release)"
echo "Kernel Version: $(uname -r)"
```

## 9. Cron Job:

**Write a shell script to schedule a cron job that runs a specific command every day at midnight.**

```

rps@rps-virtual-machine:~$ vim t9.sh
rps@rps-virtual-machine:~$ bash t9.sh
crontab: invalid option -- '1'
crontab: usage error: unrecognized option
usage: crontab [-u user] file
        crontab [-u user ] [ -i ] { -e | -l | -r }
                (default operation is replace, per 1003.2)
        -e      (edit user's crontab)
        -l      (list user's crontab)
        -r      (delete user's crontab)
        -i      (prompt before deleting user's crontab)
rps@rps-virtual-machine:~$ cat t9.sh
#!/bin/bash

COMMAND="/path/to/your/command"

(crontab -i ; echo "0 * * * $COMMAND" ) | crontab -
rps@rps-virtual-machine:~$

```

### Practise of codes :

## 1. Bash Scripting : Exercise

**i. Code 1**

```

rps@rps-virtual-machine:~$ man echo
rps@rps-virtual-machine:~$ vim pi.sh
rps@rps-virtual-machine:~$ echo " Bash Scripting: Exercise"
Bash Scripting: Exercise
rps@rps-virtual-machine:~$ bash pi.sh
mkdir: cannot create directory ": No such file or directory
touch: cannot touch ": No such file or directory
rps@rps-virtual-machine:~$ vim pi.sh
rps@rps-virtual-machine:~$ bash pi.sh
mkdir: cannot create directory ": No such file or directory
rps@rps-virtual-machine:~$ vim pi.sh
rps@rps-virtual-machine:~$ bash pi.sh
rps@rps-virtual-machine:~$ ls
.          Desktop      Documents  Downloads  hello      helloworld  images    movies     pictures  t1.sh      t6.sh      test3.sh  tidemo
backups   backup.tar.gz  dir       ex1.txt    hello      helloworld  images    movies     pictures  t2.sh      t7.sh      test4.sh
data      directory     gpt       hello1.cpp  hello1.cpp  pi.sh       sales_backup.sql  t3.sh    t8.sh      test5.cpp
notes1.txt  dir_pi       hello.cpp  hello.cpp  pi.sh       template    user_report.txt
rps@rps-virtual-machine:~$ cat pi.sh
#!/usr/bin/env bash

make_my_folder(){
    mkdir "$1"
    cd "$1"
    touch "$2"
}

make_my_folder "dir_pi" "file_pi"

```