Systems Administration Exam - Linux Commands

Question 1: Create directory structure (6 Marks)

```bash
mkdir -p ~/Cover_Exam/RTH
```

Question 2: Add file with personal information (4 Marks)

```bash
echo "Name: [Your Name]" > ~/Cover_Exam/RTH/Practical.txt
echo "Registration Number: [Your Reg Number]" >> ~/Cover_Exam/RTH/Practical.txt
```

Question 3: Copy XPM files (4 Marks)

```bash
cp /usr/share/pixmaps/*.xpm ~/Cover_Exam/RTH/
```

Question 4: Change directory permissions (8 Marks)

```bash
chmod -R 744 ~/Cover_Exam/
```

Question 5: Change file permissions in RTH directory (8 Marks)

```bash
chmod 600 ~/Cover_Exam/RTH/*
```

Question 6: Create gzip backup (8 Marks)

```bash
cd ~/Cover_Exam/
tar -czf /var/tmp/RTH_backup.tar.gz RTH/
```

Question 7: Add three new users (9 Marks)

```bash
sudo useradd Medad
sudo useradd Makula
sudo useradd Mercy
```

Question 8: Create group with users (6 Marks)

```bash
sudo groupadd Final
sudo usermod -a -G Final Makula
sudo usermod -a -G Final Mercy
```

Question 9: Change ownership recursively (6 Marks)

```bash
sudo chown -R Medad:Final ~/Cover_Exam/
```

Question 10: Assign static IP address (5 Marks)

```bash
# Method 1: Using ip command (temporary)
sudo ip addr add 192.168.5.1/24 dev eth0

# Method 2: Using ifconfig (temporary)
sudo ifconfig eth0 192.168.5.1 netmask 255.255.255.0

# Method 3: Permanent configuration (edit network config file)
sudo nano /etc/netplan/01-netcfg.yaml
# or
sudo nano /etc/network/interfaces
```

Question 11: Find service using TCP port 2605 (6 Marks)

```bash
grep "2605/tcp" /etc/services | awk '{print $1}' > Activity.txt
```

Question 12: Find IMAP3 and IMAPS ports (6 Marks)

```bash
bash

grep -E "imap3|imaps" /etc/services | grep tcp | awk '{print $2}' | cut -d'/' -f1 >> ~/Cover_Exam/RTH/Practical.txt
```

Question 13: Change hostname (3 Marks)

```bash
bash

sudo hostnamectl set-hostname central_server
# or
sudo hostname central_server
echo "central_server" | sudo tee /etc/hostname
```

Question 14: System information commands (6 Marks total)

a. Last login occurred (2 Marks)

```bash
bash

last -1
# or
lastlog | head -2
```

b. When system was last rebooted (2 Marks)

```bash
bash

last reboot | head -1
# or
who -b
```

c. System uptime in hours (2 Marks)

```bash
bash

uptime
# or for just hours:
uptime | awk '{print $3,$4}' | sed 's/,//'
```

Question 15-18: Schedule tasks using crontab (15 Marks total)

Open crontab editor:

```bash
sudo crontab -e
```

Add the following entries to crontab:

Question 16: Restart daily at 3:00am (5 Marks)

```bash
0 3 * * * /sbin/shutdown -r now
```

Question 17: Delete mp4 files monthly (5 Marks)

```bash
0 0 1 * * find /home -name "*.mp4" -type f -delete
```

Question 18: Delete files in /var/tmp every 24 hours (5 Marks)

```bash
0 0 * * * rm -rf /var/tmp/*
```

Complete Crontab Entry:

```bash
# Daily restart at 3:00am
0 3 * * * /sbin/shutdown -r now

# Monthly cleanup of mp4 files
0 0 1 * * find /home -name "*.mp4" -type f -delete

# Daily cleanup of /var/tmp
0 0 * * * rm -rf /var/tmp/*
```

Additional Notes:

Permission Reference:

- **744**: Owner (rwx), Group (r--), Others (r--)

- **600**: Owner (rw-), Group (---), Others (---)

Crontab Time Format:

```
* * * * * command
| | | | |
| | | | └────── Day of week (0-7, Sunday = 0 or 7)
| | | └────── Month (1-12)
| | └────── Day of month (1-31)
| └────── Hour (0-23)
└────── Minute (0-59)
```

Verification Commands:

```bash
# Verify directory structure
ls -la ~/Cover_Exam/RTH/

# Check permissions
ls -ld ~/Cover_Exam/
ls -l ~/Cover_Exam/RTH/

# Check users and groups
cat /etc/passwd | grep -E "Medad|Makula|Mercy"
cat /etc/group | grep Final

# Check crontab
sudo crontab -l
```