

# Linux Administration & Shell Scripting

## Practical Examination Answer Key

Department of Computer Science

### Part A: Command Execution

1. Navigate to `/var/log`, list all `.log` files sorted by modification time (newest first)

```
cd /var/log
ls -lt *.log
```

2. Create directory `~/exam_backup`, then copy all `.conf` files from `/etc` into it

```
mkdir -p ~/exam_backup
cp /etc/*.conf ~/exam_backup/
```

3. Find and terminate all processes owned by user `testuser`

```
ps -u testuser
sudo pkill -u testuser
```

4. Mount USB device `/dev/sdc1` to `/mnt/exam` drive, then unmount it safely

```
sudo mount /dev/sdc1 /mnt/exam
sudo umount /mnt/exam
```

5. Compress `~/exam_backup` into `backup.tar.gz` and verify contents

```
tar -czvf backup.tar.gz ~/exam_backup
tar -tzvf backup.tar.gz
```

### Task 6

```
#!/bin/bash
mkdir script_output
touch script_output/file1.txt script_output/file2.txt script_output/file3.txt
sudo chown root script_output
pwd
ls -l script_output
```

## Task 7

```
#!/bin/bash
dir="archive_$(date +%Y_%m%d)"
mkdir "$dir"
touch "$dir/timestamp.txt"
echo "$(date)" > "$dir/timestamp.txt"
chmod 600 "$dir/timestamp.txt"
du -sh .
```

## Task 8

```
#!/bin/bash
touch report_a.log report_b.log
mkdir processed_logs
mv report_a.log report_b.log processed_logs/
touch done.txt
id -u
rmdir processed_logs
```

## Task 9

```
#!/bin/bash
mkdir temp_space
touch temp_space/data.tmp
cp temp_space/data.tmp ./backup.tmp
sudo chgrp staff backup.tmp
free -h
```

## Task 10

```
#!/bin/bash
cd ~
mkdir test_files
touch test_files/info.txt
chmod 700 test_files
man mkdir
```

## Task 11

```
#!/bin/bash
touch "important_notes.txt"
echo "Lab Exam on $(date)" >> important_notes.txt
sudo chown student1 important_notes.txt
echo $$
rm important_notes.txt
```

## Task 12

```
#!/bin/bash
mkdir report_generation
touch report_generation/status.log
mv report_generation final_reports
ps aux
date +"%T"
```

### Task 13

```
#!/bin/bash
touch data_file.csv
chmod 644 data_file.csv
mkdir archive
cp data_file.csv archive/
df -h /
```

### Task 14

```
#!/bin/bash
cd /tmp
file="temp_file_$(date +%S).txt"
touch "$file"
sudo chgrp users "$file"
cd -
pwd
```

### Task 15

```
#!/bin/bash
dir="backup_$(date +%H%M)"
mkdir "$dir"
touch "$dir/log.txt"
echo "Backup initiated" > "$dir/log.txt"
chmod 700 "$dir"
top -bn1 | head -n 5
```