

# **Fatima Jinnah Women University**

## **Subject: Cloud Computing**



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# Lab 6

## Task 1:

```
tehreem064@tehreem:~$ sudo passwd root
[sudo] password for tehreem064:
New password:
Retype new password:
passwd: password updated successfully
```

```
tehreem064@tehreem:~$ su -
Password:
root@tehreem:~# whoami
root
root@tehreem:~# id
uid=0(root) gid=0(root) groups=0(root)
```

```
root@tehreem:~# exit
logout
tehreem064@tehreem:~$ whoami
tehreem064
tehreem064@tehreem:~$
```

## Task 2:

```
tehreem064@tehreem:~$ sudo adduser tom
info: Adding user `tom' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `tom' (1001) ...
info: Adding new user `tom' (1001) with group `tom (1001)' ...
info: Creating home directory `/home/tom' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for tom
Enter the new value, or press ENTER for the default
      Full Name []:
      Room Number []:
      Work Phone []:
      Home Phone []:
      Other []:
Is the information correct? [Y/n] y
info: Adding new user `tom' to supplemental / extra groups `users'
...
info: Adding user `tom' to group `users' ...
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534::nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:998:998:systemd Network Management:/:/usr/sbin/no
login
systemd-timesync:x:997:997:systemd Time Synchronization:/:/usr/sbin
/nologin
```

```
tehreem064@tehreem:~$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,tehreem064
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:tehreem064
floppy:x:25:
tape:x:26:
sudo:x:27:tehreem064
audio:x:29:pulse
```

```
tehreem064@tehreem:~$ sudo cat /etc/shadow
root:$y$j9T$anRgNH8NNciVZ7vNQxQtpl$U/.y049SncOb/08c5ADDJFFiLlKvLE4I
vZKP807MY48:20399:0:99999:7:::
daemon:*:20305:0:99999:7:::
bin:*:20305:0:99999:7:::
sys:*:20305:0:99999:7:::
sync:*:20305:0:99999:7:::
games:*:20305:0:99999:7:::
man:*:20305:0:99999:7:::
lp:*:20305:0:99999:7:::
mail:*:20305:0:99999:7:::
news:*:20305:0:99999:7:::
uucp:*:20305:0:99999:7:::
proxy:*:20305:0:99999:7:::
www-data:*:20305:0:99999:7:::
backup:*:20305:0:99999:7:::
list:*:20305:0:99999:7:::
irc:*:20305:0:99999:7:::
_apt:*:20305:0:99999:7:::
```

### Task 3:

```
netdev:x:112:
bluetooth:x:113:
ssl-cert:x:114:
lightdm:x:115:
nopasswdlogin:x:116:
whoopsie:x:117:
avahi:x:118:
scanner:x:119:saned
saned:x:120:
colord:x:121:
pulse:x:122:
pulse-access:x:123:
xrdp:x:124:
docker:x:988:tehreem064
tom:x:1001:
developer:x:1002:
devops:x:1003:
designer:x:1004:
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo usermod -g designer tom
id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),100(users),1002(developer)
,1003(devops)
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo usermod -aG developer,devops tom
id tom
groups tom
uid=1001(tom) gid=1001(tom) groups=1001(tom),100(users),1002(developer),1003(dev
ops)
tom : tom users developer devops
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo usermod -G tom tom
id tom
groups tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),1001(tom)
tom : designer tom
tehreem064@tehreem:~$ █
```

## Task 4:

```
tehreem064@tehreem:~$ sudo adduser Jerry
sudo useradd Scooby
err: Please enter a username matching the regular expression
      configured via the NAME_REGEX configuration variable. Use the
      '--allow-bad-names' option to relax this check or reconfigure
      NAME_REGEX in configuration.
tehreem064@tehreem:~$ █
```

```
tehreem064@tehreem:~$ su - Scooby
Password:
$ █
```

```
$ sudo passwd Scooby
[sudo] password for Scooby:
New password:
Retype new password:
passwd: password updated successfully
$ █
```

```
$ exit
cat /etc/passwd
ls -ld /home/Scooby
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534:::nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:998:998:systemd Network Management:/:/usr/sbin/nologin
systemd-timesync:x:997:997:systemd Time Synchronization:/:/usr/sbin/nologin
dhpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhpcd:/bin/false
```

```
tehreem064@tehreem:~$ sudo mkdir -p /home/Scooby
sudo chown Scooby:Scooby /home/Scooby
sudo chmod 750 /home/Scooby
ls -ld /home/Scooby
drwxr-x--- 2 Scooby Scooby 4096 Nov  7 05:59 /home/Scooby
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ su - Scooby
pwd
ls -la
Password:
$
```

```
drwx----- 3 tehreem064 tehreem064 4096 Oct 30 15:14 .gnupg
-rw----- 1 tehreem064 tehreem064 0 Oct 30 15:14 .ICEauthority
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 17 18:36 java_app
drwxrwxr-x 3 tehreem064 tehreem064 4096 Oct 17 18:27 lab4
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 30 19:40 Lab5
-rw----- 1 tehreem064 tehreem064 20 Oct 23 18:58 .lessht
drwxrwxr-x 3 tehreem064 tehreem064 4096 Oct 17 16:35 .local
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Music
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Pictures
drwx----- 3 tehreem064 tehreem064 4096 Oct 30 15:22 .pki
-rw-r--r-- 1 tehreem064 tehreem064 807 Mar 31 2024 .profile
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Public
-rw-rw-r-- 1 tehreem064 tehreem064 467 Oct 17 19:19 Q2_report.md
drwx----- 4 tehreem064 tehreem064 4096 Oct 30 19:14 snap
drwx----- 2 tehreem064 tehreem064 4096 Oct 2 11:30 .ssh
-rw-r--r-- 1 tehreem064 tehreem064 0 Oct 3 03:57 .sudo_as_admin_successful
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Templates
drwxrwxr-t 2 tehreem064 tehreem064 4096 Oct 30 14:21 thinclient_drives
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Videos
-rw----- 1 tehreem064 tehreem064 5284 Oct 30 19:02 .viminfo
drwxrwxr-x 4 tehreem064 tehreem064 4096 Oct 30 15:22 .vscode
-rw----- 1 tehreem064 tehreem064 52 Oct 30 19:07 .Xauthority
-rw-r--r-- 1 tehreem064 tehreem064 19012 Oct 30 16:03 .xorgxrdp.10.log
-rw-r--r-- 1 tehreem064 tehreem064 19099 Oct 30 15:38 .xorgxrdp.10.log.old
-rwxrwxr-x 1 tehreem064 tehreem064 16 Oct 30 16:01 .xsession
-rw----- 1 tehreem064 tehreem064 8048 Oct 30 19:25 .xsession-errors
-rw----- 1 tehreem064 tehreem064 1479 Oct 30 18:11 .xsession-errors.old
tehreem064@tehreem:~$ cat /etc/passwd
```

```
tehreem064@tehreem:~$ sudo usermod -s /bin/bash Scooby
su - Scooby
[sudo] password for tehreem064:
Password:
Scooby@tehreem:~$
```

```
Scooby@tehreem:~$ sudo addgroup jolly
sudo groupadd anime
[sudo] password for Scooby:
info: Selecting GID from range 1000 to 59999 ...
info: Adding group `jolly' (GID 1006) ...
Scooby@tehreem:~$
```

```
Scooby@tehreem:~$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,tehreem064
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
```

```
tcpdump:x:105:107::/nonexistent:/usr/sbin/nologin
tss:x:106:108:TPM software stack,,,:/var/lib/tpm:/bin/false
landscape:x:107:109::/var/lib/landscape:/usr/sbin/nologin
fwupd-refresh:x:989:989:Firmware update daemon:/var/lib/fwupd:/usr/sbin/nologin
usbmux:x:108:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
sshd:x:109:65534::/run/sshd:/usr/sbin/nologin
tehreem064:x:1000:1000:tehreem:/home/tehreem064:/bin/bash
rtkit:x:110:110:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:999:65534:dnsmasq:/var/lib/misc:/usr/sbin/nologin
cups-pk-helper:x:111:111:user for cups-pk-helper service,,,:/nonexistent:/usr/sbin/nologin
lightdm:x:112:115:Light Display Manager:/var/lib/lightdm:/bin/false
whoopsie:x:113:117::/nonexistent:/bin/false
avahi:x:114:118:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
saned:x:115:120::/var/lib/saned:/usr/sbin/nologin
colord:x:116:121:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
pulse:x:117:122:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
cups-browsed:x:118:111::/nonexistent:/usr/sbin/nologin
xrdp:x:119:124::/run/xrdp:/usr/sbin/nologin
tom:x:1001:1004,,,:/home/tom:/bin/bash
Scooby:x:1002:1005::/home/Scooby:/bin/bash
Scooby@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo delgroup jolly
sudo groupdel anime
cat /etc/group

sudo deluser --remove-home Jerry
sudo userdel -r Scooby
cat /etc/passwd
[sudo] password for tehreem064:
Sorry, try again.
[sudo] password for tehreem064:
warn: The group `jolly' does not exist.
groupdel: group 'anime' does not exist
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,tehreem064
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
```

## Task 5:

```
tehreem064@tehreem:~$ sudo adduser student
info: Adding user `student' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `student' (1005) ...
info: Adding new user `student' (1005) with group `student (1005)' ...
info: Creating home directory `/home/student' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Authentication token manipulation error
passwd: password unchanged
Try again? [y/N]
Changing the user information for student
Enter the new value, or press ENTER for the default
      Full Name []:
      Room Number []:
      Work Phone []:
      Home Phone []:
      Other []:
Is the information correct? [Y/n]
info: Adding new user `student' to supplemental / extra groups `users' ...
info: Adding user `student' to group `users' ...
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ su - student
touch file1
mkdir -p dirl
touch dirl/file2
ls -l
Password:
student@tehreem:~$ 
```

```
student@tehreem:~$ sudo chown tom file1
ls -l file1
[sudo] password for student:
student is not in the sudoers file.
-rw-rw-r-- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$ sudo chgrp devops file1
ls -l file1
[sudo] password for student:
student is not in the sudoers file.
-rw-rw-r-- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$ 
```

```
student@tehreem:~$ ls -l
ls -l dirl
ls -l /dev/null
file file1 dirl /dev/null
total 4
drwxrwxr-x 2 student student 4096 Nov 16 18:58 dirl
-rw-rw-r-- 1 student student 0 Nov 16 18:58 file1
total 0
-rw-rw-r-- 1 student student 0 Nov 16 18:58 file2
crw-rw-rw- 1 root root 1, 3 Nov 16 18:49 /dev/null
file1:      empty
dirl:        directory
/dev/null:   character special (1/3)
student@tehreem:~$ 
```

```
student@tehreem:~$ exit
logout
total 76
-rw-rw-r-- 1 tehreem064 tehreem064 210 Oct 17 16:41 answers.md
-rw-rw-r-- 1 tehreem064 tehreem064 291 Oct 30 14:01 apt_update_vs_upgrade.md
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Desktop
drwxrwxr-x 2 tehreem064 tehreem064 4096 Nov 16 18:53 dirl
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Documents
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Downloads
drwxrwxr-x 5 tehreem064 tehreem064 4096 Oct 17 19:29 evidence_backup
-rw-rw-r-- 1 tehreem064 tehreem064 0 Nov 16 19:00 file1
drwxrwxr-x 5 tehreem064 tehreem064 4096 Oct 17 19:23 forensic_workspace
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 17 18:36 java_app
drwxrwxr-x 3 tehreem064 tehreem064 4096 Oct 17 18:27 lab4
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 30 19:40 Lab5
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Music
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Pictures
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Public
-rw-rw-r-- 1 tehreem064 tehreem064 467 Oct 17 19:19 Q2_report.md
drwx----- 4 tehreem064 tehreem064 4096 Oct 30 19:14 snap
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Templates
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 30 14:21 thinclient_drives
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Videos
tehreem064@tehreem:~$ 
```

## Task 6:

```
student@tehreem:~$ cd ~  
ls -l file1  
-rw-rw-r-- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod -rwx file1  
ls -l file1  
----- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod +r file1  
ls -l file1  
-r--r--r-- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod u+x file1  
ls -l file1  
-r-xr--r-- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod ug+w file1  
ls -l file1  
-rwxrw-r-- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod ugo-rwx file1  
ls -l file1  
----- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

## Task 7:

```
student@tehreem:~$ cd ~  
ls -l file1  
----- 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod u=rwx,g=rwx,o=rwx file1  
ls -l file1  
-rwxrwxrwx 1 student student 0 Nov 16 18:58 file1  
student@tehreem:~$
```

```
student@tehreem:~$ chmod g=rw,o=rw file1
ls -l file1
-rwxrw-rw- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod u=,g=,o= file1
ls -l file1
----- 1 student student 0 Nov 16 18:58 file1
```

## Task 8:

```
student@tehreem:~$ cd ~
ls -l file1
----- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 777 file1
ls -l file1
-rwxrwxrwx 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 700 file1
ls -l file1
-rwx----- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 744 file1
ls -l file1
-rwxr--r-- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 640 file1
ls -l file1
-rw-r----- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 664 file1
ls -l file1
-rw-rw-r-- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 775 file1
ls -l file1
-rwxrwxr-x 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

```
student@tehreem:~$ chmod 750 file1
ls -l file1
-rwxr-x--- 1 student student 0 Nov 16 18:58 file1
student@tehreem:~$
```

## Task 9:

```
tehreem064@tehreem:~$ sudo cat /var/log/syslog | less
2025-11-16T18:49:20.400821+00:00 tehreem rsyslogd: [origin software="rsyslogd" swVersion="8.2312.0" x-pid="952" x-info="https://www.rsyslog.com"] rsyslogd was HUPed
2025-11-16T18:49:20.638884+00:00 tehreem systemd[1]: logrotate.service: Deactivated successfully.
2025-11-16T18:49:20.639819+00:00 tehreem systemd[1]: Finished logrotate.service - Rotate log files.
2025-11-16T18:49:20.645970+00:00 tehreem (udev-worker)[1386]: id: Truncating stdout of 'dmi_memory_id' up to 16384 byte.
2025-11-16T18:49:20.666684+00:00 tehreem systemd[1]: logrotate.service: Consumed 1.029s CPU time, 4.2M memory peak, 0B memory swap peak.
2025-11-16T18:49:22.041913+00:00 tehreem systemd[1]: tmp-snap.rootfs_qo6HNE.mount: Deactivated successfully.
2025-11-16T18:49:22.073241+00:00 tehreem systemd[1]: Reached target sound.target - Sound Card.
2025-11-16T18:49:22.087513+00:00 tehreem systemd[1]: Finished apport.service - automatic crash report generation.
2025-11-16T18:49:22.158118+00:00 tehreem systemd[1]: Cannot find unit for notify message of PID 1449, ignoring.
2025-11-16T18:49:22.473203+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22Z" level=warning msg="containerd config version '1' has been deprecated and will be converted on each startup in containerd v2.0, use `containerd config migrate` after upgrading to containerd 2.0 to avoid conversion on startup"
2025-11-16T18:49:22.489503+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.486969666Z" level=info msg="starting containerd" revision=b98a3aace656320842a23f4a392a33f46af97866 version=v1.7.28
2025-11-16T18:49:22.746101+00:00 tehreem multipath: sda: failed to get sysfs uid: No such file or directory
2025-11-16T18:49:22.746421+00:00 tehreem multipath: sda: failed to get sgio uid: No such file or directory
2025-11-16T18:49:22.812783+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.812591823Z" level=info msg="loading plugin \"io.containerd.snapshotter.v1.aufs\..." type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.910963+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.886132037Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.aufs\..." error="aufs is not supported (modprobe aufs failed: exit status 1 \\"modprobe: FATAL: Module aufs not found in directory /lib/modules/6.8.0-87-generic\\n\\"): skip plugin" type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.911387+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
```

```
2025-11-16T18:49:20.400821+00:00 tehreem rsyslogd: [origin software="rsyslogd" swVersion="8.2312.0" x-pid="952" x-info="https://www.rsyslog.com"] rsyslogd was HUPed
2025-11-16T18:49:20.638884+00:00 tehreem systemd[1]: logrotate.service: Deactivated successfully.
2025-11-16T18:49:20.639819+00:00 tehreem systemd[1]: Finished logrotate.service - Rotate log files.
2025-11-16T18:49:20.645970+00:00 tehreem (udev-worker)[1386]: id: Truncating stdout of 'dmi_memory_id' up to 16384 byte.
2025-11-16T18:49:20.666684+00:00 tehreem systemd[1]: logrotate.service: Consumed 1.029s CPU time, 4.2M memory peak, 0B memory swap peak.
2025-11-16T18:49:22.041913+00:00 tehreem systemd[1]: tmp-snap.rootfs_qo6HNE.mount: Deactivated successfully.
2025-11-16T18:49:22.073241+00:00 tehreem systemd[1]: Reached target sound.target - Sound Card.
2025-11-16T18:49:22.087513+00:00 tehreem systemd[1]: Finished apport.service - automatic crash report generation.
2025-11-16T18:49:22.158118+00:00 tehreem systemd[1]: Cannot find unit for notify message of PID 1449, ignoring.
2025-11-16T18:49:22.473203+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22Z" level=warning msg="containerd config version `1` has been deprecated and will be converted on each startup in containerd v2.0, use `containerd config migrate` after upgrading to containerd 2.0 to avoid conversion on startup"
2025-11-16T18:49:22.489503+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.486969666Z" level=info msg="starting containerd" revision=b98a3aace656320842a23f4a392a33f46af97866 version=v1.7.28
2025-11-16T18:49:22.746101+00:00 tehreem multipath: sda: failed to get sysfs uid: No such file or directory
2025-11-16T18:49:22.746421+00:00 tehreem multipath: sda: failed to get sgio uid: No such file or directory
2025-11-16T18:49:22.812783+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.812591823Z" level=info msg="loading plugin \"io.containerd.snapshotter.v1.aufs\"..." type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.910963+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.886132037Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.aufs\"..." error="aufs is not supported (modprobe aufs failed: exit status 1 \"modprobe: FATAL: Module aufs not found in directory /lib/modules/6.8.0-87-generic\\n\"): skip plugin" type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.911387+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.886291895Z" level=info msg="loading plugin \"io.containerd.event.v1.exchange\"..." type=io.containerd.event.v1
2025-11-16T18:49:22.911572+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.886335743Z" level=info msg="loading plugin \"io.containerd.internal.v1.opt\"...
--More--
```

```
tehreem064@tehreem:~$ sudo grep -E 'fail|error' /var/log/syslog | head
2025-11-16T18:49:22.746101+00:00 tehreem multipath: sda: failed to get sysfs uid:
No such file or directory
2025-11-16T18:49:22.746421+00:00 tehreem multipath: sda: failed to get sgio uid: N
o such file or directory
2025-11-16T18:49:22.910963+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.886132037Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.vl.
aufs\"..." error="aufs is not supported (modprobe aufs failed: exit status 1 \"mod
probe: FATAL: Module aufs not found in directory /lib/modules/6.8.0-87-generic\\n\
\"): skip plugin" type=io.containerd.snapshotter.vl
2025-11-16T18:49:22.912086+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.889486264Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.vl.
blockfile\"..." error="no scratch file generator: skip plugin" type=io.containerd.
snapshotter.vl
2025-11-16T18:49:22.912579+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.890769163Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.vl.
btrfs\"..." error="path /var/lib/containerd/io.containerd.snapshotter.vl.btrfs (ex
t4) must be a btrfs filesystem to be used with the btrfs snapshotter: skip plugin"
type=io.containerd.snapshotter.vl
2025-11-16T18:49:22.913209+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.891167593Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.vl.
devmapper\"..." error="devmapper not configured: skip plugin" type=io.containerd.s
napshotter.vl
2025-11-16T18:49:22.914125+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.907010554Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.vl.
zfs\"..." error="path /var/lib/containerd/io.containerd.snapshotter.vl.zfs must be
a zfs filesystem to be used with the zfs snapshotter: skip plugin" type=io.contai
nerd.snapshotter.vl
2025-11-16T18:49:22.972787+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.952107068Z" level=info msg="skip loading plugin \"io.containerd.tracing.process
or.vl.otlp\"..." error="skip plugin: tracing endpoint not configured" type=io.cont
ainerd.tracing.processor.vl
2025-11-16T18:49:22.973140+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.952205455Z" level=info msg="skip loading plugin \"io.containerd.internal.vl tra
cing\"..." error="skip plugin: tracing endpoint not configured" type=io.containerd.
internal.vl
2025-11-16T18:49:22.978527+00:00 tehreem multipathd[485]: sda: failed to get udev
uid: No data available
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo grep -i systemd /var/log/syslog > ~/syslog_systemd.txt
tehreem064@tehreem:~$ sudo grep -i network /var/log/syslog >> ~/syslog_systemd.txt

cat ~/syslog_systemd.txt
2025-11-16T18:49:20.638884+00:00 tehreem systemd[1]: logrotate.service: Deactivated successfully.
2025-11-16T18:49:20.639819+00:00 tehreem systemd[1]: Finished logrotate.service - Rotate log files.
2025-11-16T18:49:20.666684+00:00 tehreem systemd[1]: logrotate.service: Consumed 1.029s CPU time, 4.2M memory peak, 0B memory swap peak.
2025-11-16T18:49:22.041913+00:00 tehreem systemd[1]: tmp-snap.rootfs_qo6HNE.mount: Deactivated successfully.
2025-11-16T18:49:22.073241+00:00 tehreem systemd[1]: Reached target sound.target - Sound Card.
2025-11-16T18:49:22.087513+00:00 tehreem systemd[1]: Finished apport.service - automatic crash report generation.
2025-11-16T18:49:22.158118+00:00 tehreem systemd[1]: Cannot find unit for notify message of PID 1449, ignoring.
2025-11-16T18:49:22.994469+00:00 tehreem systemd[1]: Started containerd.service - containerd container runtime.
2025-11-16T18:49:23.032308+00:00 tehreem systemd[1]: Starting docker.service - Docker Application Container Engine...
2025-11-16T18:49:23.695317+00:00 tehreem systemd[1]: tmp-syscheck\x2dmountpoint\x2d3778084645.mount: Deactivated successfully.
2025-11-16T18:49:24.355985+00:00 tehreem systemd[1]: Started snapd.service - Snap Daemon.
2025-11-16T18:49:24.396295+00:00 tehreem systemd[1]: Finished snapd.seeded.service - Wait until snapd is fully seeded.
2025-11-16T18:49:24.403809+00:00 tehreem systemd[1]: snapd.autoimport.service - Auto import assertions from block devices was skipped because no trigger condition checks were met.
2025-11-16T18:49:24.406855+00:00 tehreem dbus-daemon[860]: [system] Activating via systemd: service name='org.freedesktop.timedate1' unit='dbus-org.freedesktop.timedate1.service' requested by ':1.19' (uid=0 pid=869 comm="/snap/snapd/current/usr/lib/snapd/snapd" label="unconfined")
2025-11-16T18:49:24.445314+00:00 tehreem systemd[1]: Starting systemd-timedated.service - Time & Date Service...
2025-11-16T18:49:24.870769+00:00 tehreem systemd[1]: Started systemd-timedated.service - Time & Date Service.
2025-11-16T18:49:26.641869+00:00 tehreem dockerd[1531]: time="2025-11-16T18:49:26.640935840Z" level=info msg="detected 127.0.0.53 nameserver, assuming systemd-resol
```

## Task 10:

```
tehreem064@tehreem:~$ vim setup.sh
#!/bin/bash
~
```

```
tehreem064@tehreem:~$ ./setup.sh
tehreem064@tehreem:~$
```

```
#!/bin/bash
#
varl="Hello from Lab 6"
echo "varl: $varl"
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh
varl: Hello from Lab 6
tehreem064@tehreem:~$
```

```
#!/bin/bash
#
varl="Hello from Lab 6"
echo "varl: $varl"
allFiles="$(ls -1)"
echo "allFiles (ls -1):"
echo "$allFiles"
```

```
tehreem064@tehreem:~$ ./setup.sh
varl: Hello from Lab 6
allFiles (ls -1):
total 100
-rw-rw-r-- 1 tehreem064 tehreem064    210 Oct 17 16:41 answers.md
-rw-rw-r-- 1 tehreem064 tehreem064    291 Oct 30 14:01 apt_update_vs_upgrade.md
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Desktop
drwxrwxr-x 2 tehreem064 tehreem064   4096 Nov 16 18:53 dirl
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Documents
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Downloads
drwxrwxr-x 5 tehreem064 tehreem064   4096 Oct 17 19:29 evidence_backup
-rw-rw-r-- 1 tehreem064 tehreem064      0 Nov 16 19:00 file1
drwxrwxr-x 5 tehreem064 tehreem064   4096 Oct 17 19:23 forensic_workspace
drwxrwxr-x 2 tehreem064 tehreem064   4096 Oct 17 18:36 java_app
drwxrwxr-x 3 tehreem064 tehreem064   4096 Oct 17 18:27 lab4
drwxrwxr-x 2 tehreem064 tehreem064   4096 Oct 30 19:40 Lab5
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Music
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Pictures
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Public
-rw-rw-r-- 1 tehreem064 tehreem064    467 Oct 17 19:19 Q2_report.md
-rwxrwxrwx 1 tehreem064 tehreem064   119 Nov 16 19:26 setup.sh
drwx----- 4 tehreem064 tehreem064   4096 Oct 30 19:14 snap
-rw-rw-r-- 1 tehreem064 tehreem064 17094 Nov 16 19:19 syslog_systemd.txt
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Templates
drwxrwxr-t 2 tehreem064 tehreem064   4096 Oct 30 14:21 thinclient_drives
drwxr-xr-x 2 tehreem064 tehreem064   4096 Oct 30 15:14 Videos
tehreem064@tehreem:~$
```

```

#!/bin/bash
#
var1="Hello from Lab 6"
echo "var1: $var1"
allFiles=$(ls -l)
echo "allFiles (ls -l):"
echo "$allFiles

if [ -d "dirl" ]; then
    echo "Directory dirl exists."
else
    echo "Directory dirl does not exist. Creating..."
    mkdir -p "dirl"
    echo "Directory dirl created."
fi
~
```

```

tehreem064@tehreem:~/Documents$ ./setup.sh
var1: Hello from Lab 6
allFiles (ls -l):
total 100
-rw-rw-r-- 1 tehreem064 tehreem064 210 Oct 17 16:41 answers.md
-rw-rw-r-- 1 tehreem064 tehreem064 291 Oct 30 14:01 apt_update_vs_upgrade.md
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Desktop
drwxrwxr-x 2 tehreem064 tehreem064 4096 Nov 16 18:53 dirl
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Documents
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Downloads
drwxrwxr-x 5 tehreem064 tehreem064 4096 Oct 17 19:29 evidence_backup
-rw-rw-r-- 1 tehreem064 tehreem064 0 Nov 16 19:00 file1
drwxrwxr-x 5 tehreem064 tehreem064 4096 Oct 17 19:23 forensic_workspace
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 17 18:36 java_app
drwxrwxr-x 3 tehreem064 tehreem064 4096 Oct 17 18:27 lab4
drwxrwxr-x 2 tehreem064 tehreem064 4096 Oct 30 19:40 Lab5
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Music
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Pictures
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Public
-rw-rw-r-- 1 tehreem064 tehreem064 467 Oct 17 19:19 Q2_report.md
-rwxrwxrwx 1 tehreem064 tehreem064 287 Nov 16 19:28 setup.sh
drwx----- 4 tehreem064 tehreem064 4096 Oct 30 19:14 snap
-rw-rw-r-- 1 tehreem064 tehreem064 17094 Nov 16 19:19 syslog_systemd.txt
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Templates
drwxrwxr-t 2 tehreem064 tehreem064 4096 Oct 30 14:21 thinclient_drives
drwxr-xr-x 2 tehreem064 tehreem064 4096 Oct 30 15:14 Videos

if [ -d dirl ]; then
    echo Directory dirl exists.
else
    echo Directory dirl does not exist. Creating...
    mkdir -p dirl
    echo Directory dirl created.
fi
tehreem064@tehreem:~/Documents$
```

```

#!/bin/bash
#
#var1="Hello from Lab 6"
#echo "var1: $var1"
#allFiles=$(ls -l)
#echo "allFiles (ls -l):"
#echo "$allFiles

#if [ -d "dirl" ]; then
#    echo "Directory dirl exists."
#else
#    echo "Directory dirl does not exist. Creating..."
#    mkdir -p "dirl"
#    echo "Directory dirl created."
#fi"
#
# Permission checks for dirl/file2 (user permissions)
f="dirl/file2"
if [ ! -r "$f" ]; then
    echo "Read permission missing; granting to user..."
    chmod u+r "$f"
fi

if [ ! -w "$f" ]; then
    echo "Write permission missing; granting to user..."
    chmod u+w "$f"
fi

if [ ! -x "$f" ]; then
    echo "Execute permission missing; granting to user..."
    chmod u+x "$f"
fi

echo "Final permissions for $f:"
ls -l "$f"

```

```

tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh
Execute permission missing; granting to user...
Final permissions for dirl/file2:
-rwxrw-r-- 1 tehreem064 tehreem064 0 Nov 16 19:00 dirl/file2
tehreem064@tehreem:~$ 

```

## Task 11:

```

#!/bin/bash
num=$1
str=$2

echo "$num and $str"
~ 

```

```
tehreem064@tehreem:~$ chmod +x a.sh
tehreem064@tehreem:~$ ./a.sh 10 Student
tehreem064@tehreem:~$ vim a.sh
tehreem064@tehreem:~$ ./a.sh 10 Student
10 and Student
tehreem064@tehreem:~$
```

```
#!/bin/bash

$num=$1
$str=$2

#echo "$num and $str"

if [ "$num" -eq 10 ]; then
    echo "$num is equal to 10 (-eq)."
else
    echo "$num is NOT equal to 10 (-eq)."
fi
~
```

```
tehreem064@tehreem:~$ vim a.sh
tehreem064@tehreem:~$ ./a.sh 10 student
10 is equal to 10 (-eq).
tehreem064@tehreem:~$ ./a.sh 7 student
7 is NOT equal to 10 (-eq).
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
$str=$2

#echo "$num and $str"

if [ "$num" -ne 10 ]; then
    echo "$num is not equal to 10 (-ne)."
else
    echo "$num is equal to 10 (-ne false)."
fi
~
```

```
tehreem064@tehreem:~$ mv a.sh setup.sh
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 7 Student
7 is not equal to 10 (-ne).
tehreem064@tehreem:~$ ./setup.sh 10 Student
10 is equal to 10 (-ne false).
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ "$num" -gt 10 ]; then
    echo "$num is greater than 10 (-gt)."
else
    echo "$num is NOT greater than 10 (-gt)."
fi
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 12 Student
12 is greater than 10 (-gt).
tehreem064@tehreem:~$ ./setup.sh 9 Student
9 is NOT greater than 10 (-gt).
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ "$num" -lt 10 ]; then
    echo "$num is less than 10 (-lt)."
else
    echo "$num is NOT less than 10 (-lt)."
fi
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 5 Student
5 is less than 10 (-lt).
tehreem064@tehreem:~$ ./setup.sh 11 Student
11 is NOT less than 10 (-lt).
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ "$num" -ge 10 ]; then
    echo "$num is greater than or equal to 10 (-ge)."
else
    echo "$num is NOT greater than or equal to 10 (-ge)."
fi
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 11 Student
11 is greater than or equal to 10 (-ge).
tehreem064@tehreem:~$ ./setup.sh 10 Student
10 is greater than or equal to 10 (-ge).
tehreem064@tehreem:~$ ./setup.sh 8 Student
8 is NOT greater than or equal to 10 (-ge).
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ "$num" -le 10 ]; then
    echo "$num is less than or equal to 10 (-le)."
else
    echo "$num is NOT less than or equal to 10 (-le)."
fi
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 10 Student
10 is less than or equal to 10 (-le).
tehreem064@tehreem:~$ ./setup.sh 12 Student
12 is NOT less than or equal to 10 (-le).
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ "$str" = "Student" ]; then
    echo "Second argument equals 'Student' ( = )."
else
    echo "Second argument does NOT equal 'Student' ( = )."
fi
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 10 Student
Second argument equals 'Student' ( = )..
tehreem064@tehreem:~$ ./setup.sh 10 Test
Second argument does NOT equal 'Student' ( = )..
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ "$str" != "Student" ]; then
    echo "Second argument is not equal to 'Student' ( != ).."
else
    echo "Second argument equals 'Student' ( != false)."
fi
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 10 Test
Second argument is not equal to 'Student' ( != )..
tehreem064@tehreem:~$ ./setup.sh 10 Student
Second argument equals 'Student' ( != false)..
tehreem064@tehreem:~$
```

```
#!/bin/bash

num=$1
str=$2

#echo "$num and $str"

if [ -z "$str" ]; then
    echo "Second argument is empty (zero-length)."
else
    echo "Second argument is not empty."
fi
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 10
Second argument is empty (zero-length).
tehreem064@tehreem:~$ ./setup.sh 10 Student
Second argument is not empty.
tehreem064@tehreem:~$
```

## Task 12:

```
#!/bin/bash
# Script to demonstrate printing all user-entered arguments using $*
#
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh
tehreem064@tehreem:~$
```

```
#!/bin/bash
# Script to demonstrate printing all user-entered arguments using $*
# Print all arguments using $*
echo "Printing all arguments using \$*:"
for arg in $*; do
    echo "Argument: $arg"
done
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh
Printing all arguments using $*:
tehreem064@tehreem:~$ chmod +x setup.sh
./setup.sh one "two words" three
Printing all arguments using $*:
Argument: one
Argument: two
Argument: words
Argument: three
tehreem064@tehreem:~$
```

## Task 13:

```
#!/bin/bash
~
~
~
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh
tehreem064@tehreem:~$
```

```
#!/bin/bash
#
#
# While-loop summation (interactive)
sum=0
while true; do
    read -p "Enter a number (or 'q' to quit): " input
    if [ "$input" = "q" ]; then
        break
    fi

    sum=$((sum + input))
    echo "Total Score: $sum"
done
echo "Final total: $sum"
~
```

```
tehreem064@tehreem:~$ ./setup.sh 5
Enter a number (or 'q' to quit): 5
Total Score: 5
Enter a number (or 'q' to quit): 7
Total Score: 12
Enter a number (or 'q' to quit): q
Final total: 12
tehreem064@tehreem:~$
```

```

#!/bin/bash
#
## Function to accumulate scores interactively
sum_two() {
    sum=0
    while true; do
        read -p "Enter a number (or 'q' to quit): " input
        if [ "$input" = "q" ]; then
            break
        fi

        sum=$((sum + input))
        echo "Total Score: $sum"
    done
    echo "Function final total: $sum"
}

# Demonstrate the function
echo "Now calling sum_two function:"
sum_two
~
```

```

tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 5
Now calling sum_two function:
Enter a number (or 'q' to quit): r
Total Score: 0
Enter a number (or 'q' to quit): 3
Total Score: 3
Enter a number (or 'q' to quit): 5
Total Score: 8
Enter a number (or 'q' to quit): 7
Total Score: 15
Enter a number (or 'q' to quit): q
Function final total: 15
tehreem064@tehreem:~$
```

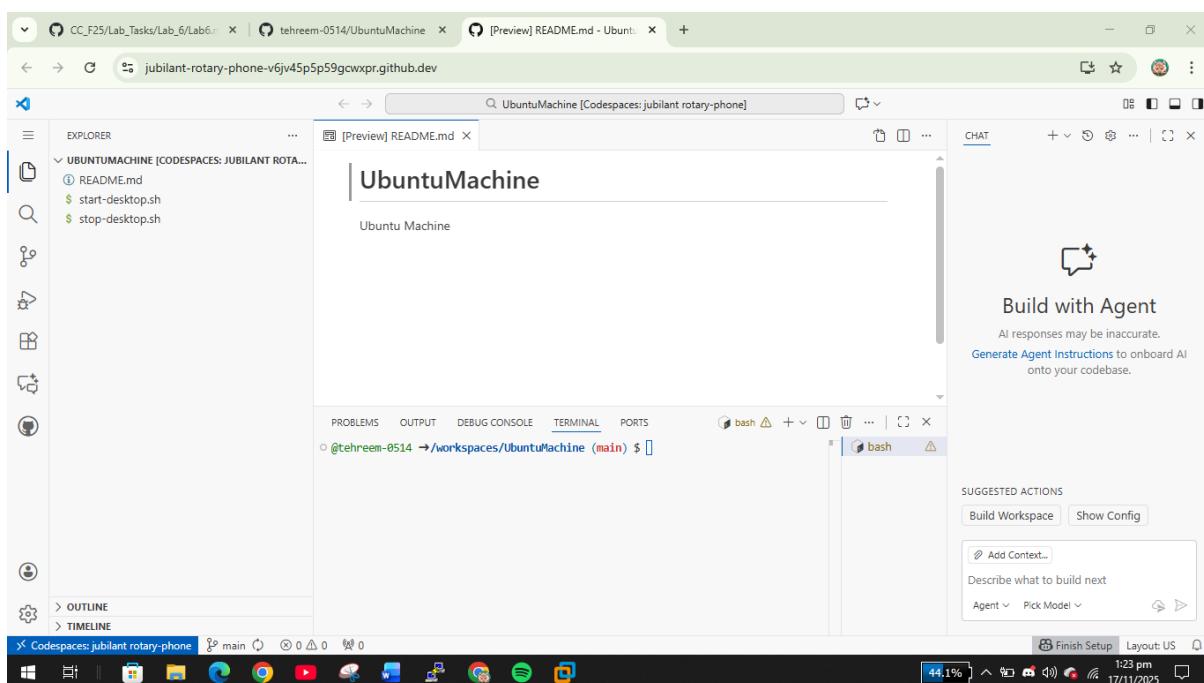
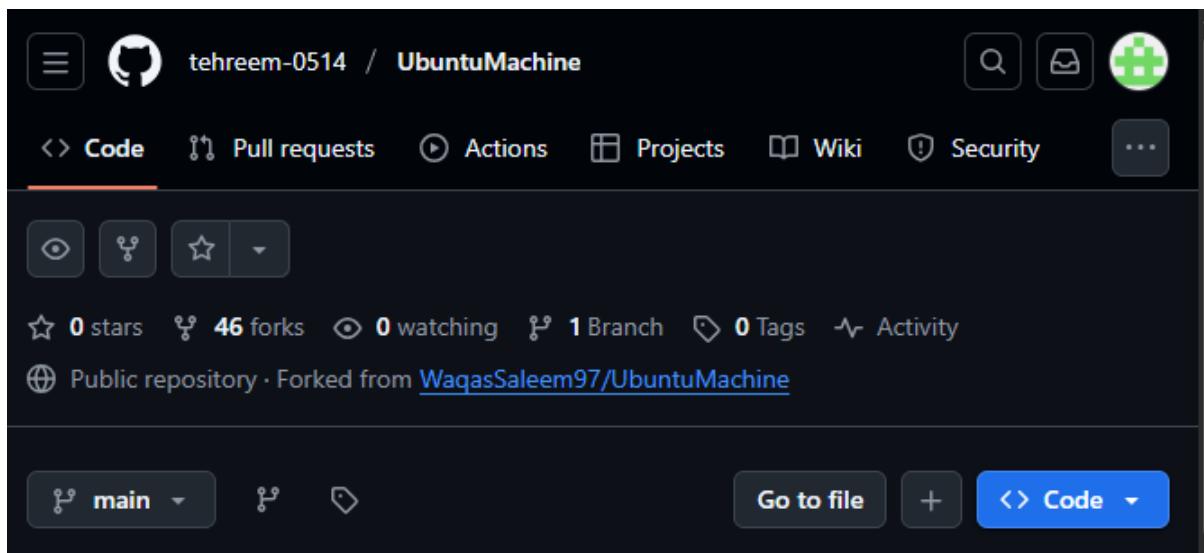
```

#!/bin/bash
#
#
## Function that sums two arguments and returns the result
sum_args() {
    a=$1
    b=$2
    return $((a + b))
}

# Demonstrate sum_args function
echo "Now demonstrating sum_args function:"
sum_args 3 4
result=$?
echo "sum_args(3,4) returned: $result"
~
```

```
tehreem064@tehreem:~$ vim setup.sh
tehreem064@tehreem:~$ ./setup.sh 5
Now demonstrating sum_args function:
sum_args(3,4) returned: 7
tehreem064@tehreem:~$
```

## Task 14:



```

● @tehreem-0514 → /workspaces/UbuntuMachine (main) $ ls -l start-desktop.sh stop-desktop.sh
-rwxrwxrwx 1 codespace root 1333 Nov 17 08:23 start-desktop.sh
-rwxrwxrwx 1 codespace root 428 Nov 17 08:23 stop-desktop.sh
● @tehreem-0514 → /workspaces/UbuntuMachine (main) $ chmod +x start-desktop.sh stop-desktop.sh
○ @tehreem-0514 → /workspaces/UbuntuMachine (main) $ 

```

```

● @tehreem-0514 → /workspaces/UbuntuMachine (main) $ chmod +x start-desktop.sh
○ @tehreem-0514 → /workspaces/UbuntuMachine (main) $ ./start-desktop.sh
[*] Updating system and installing dependencies...
Get:1 https://dl.yarnpkg.com/debian stable InRelease
Get:2 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble InRelease [3660 B]
Get:3 https://repo.anaconda.com/pkgs/misc/debrepo/conda stable InRelease [3961 B]
Get:4 https://dl.yarnpkg.com/debian stable/main all Packages [11.8 kB]
Get:5 https://dl.yarnpkg.com/debian stable/main amd64 Packages [11.8 kB]
Get:6 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble/main amd64 Packages [67.8 kB]
Get:7 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble/main all Packages [643 B]
Get:8 https://repo.anaconda.com/pkgs/misc/debrepo/conda stable/main amd64 Packages [4557 B]
Get:9 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:12 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1172 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]

```

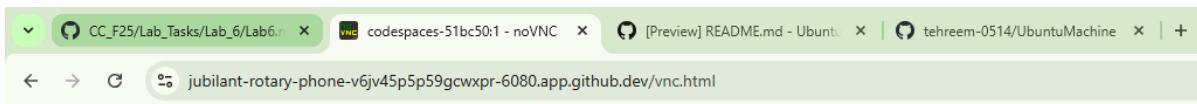
[Preview] README.md ×

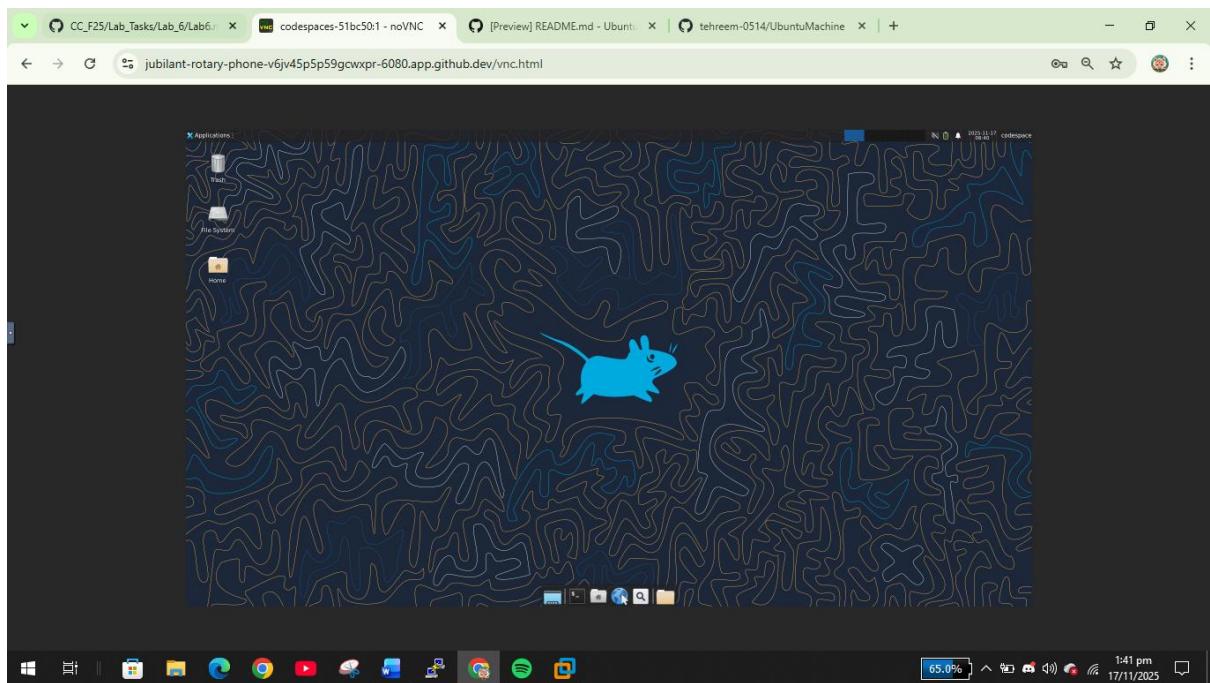
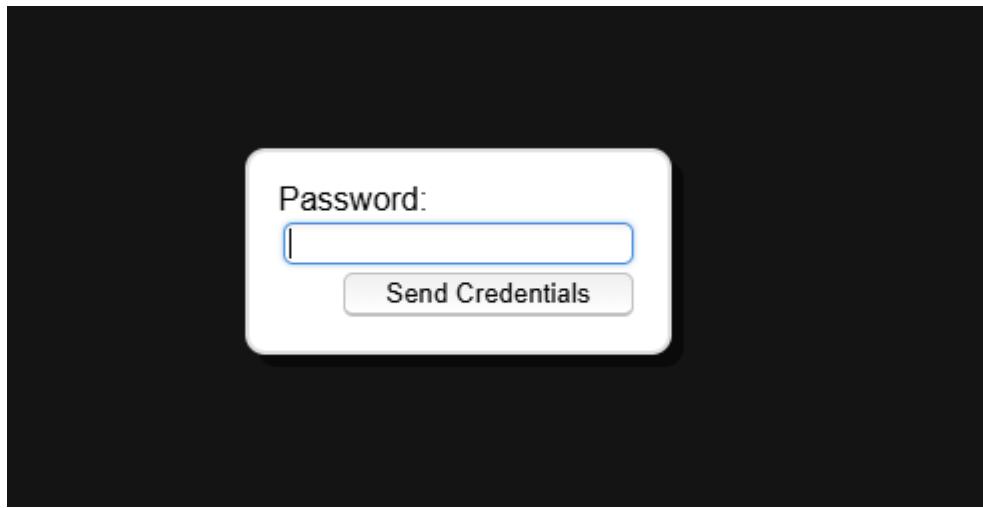
**UbuntuMachine**

---

Ubuntu Machine

PROBLEMS	OUTPUT	DEBUG CONSOLE	TERMINAL	POR
				3
Port	Forwarded Add...	Running Process	Visibility	Origin
5900	https://jubilant-r...	x11vnc -display :1 -rfbauth /ho...	🔒 Private	Auto Forwarded
5901	https://jubilant-r...	x11vnc -display :1 -rfbauth /ho...	🔒 Private	Auto Forwarded
6080	https://jubilant-r...	/usr/bin/python3 /usr/bin/web...	🔒 Private	Auto Forwarded
<a href="#">Add Port</a>				





The screenshot shows a terminal window within a code editor interface. The tab bar at the top includes PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected), and PORTS. The terminal content displays a stack trace from a Python script named 'stop-desktop.sh'. The trace shows the script terminating several servers and then exiting. The last few lines of the trace are:

```
Terminating child 22576
Process Process-17:
Traceback (most recent call last):
  File "/usr/lib/python3.12/multiprocessing/process.py", line 314, in _bootstrap
    self.run()
  File "/usr/lib/python3.12/multiprocessing/process.py", line 108, in run
    self._target(*self._args, **self._kwargs)
  File "/usr/lib/python3/dist-packages/websockify/websockifyserver.py", line 662, in top_new_client
    client = self.do_handshake(startsock, address)
              ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/usr/lib/python3/dist-packages/websockify/websockifyserver.py", line 590, in do_handshake
    self.RequestHandlerClass(retsock, address, self)
  File "/usr/lib/python3/dist-packages/websockify/websockifyserver.py", line 87, in __init__
```

## Exam Evaluations Questions:

### Q1:

```
tehreem064@tehreem:~$ sudo groupadd g1
sudo groupadd g2
sudo groupadd g3
```

```
tehreem064@tehreem:~$ sudo usermod -g g3 examuser
tehreem064@tehreem:~$ sudo usermod -aG g1,g2 examuser
```

```
tehreem064@tehreem:~$ id examuser
uid=1006(examuser) gid=1008(g3) groups=1008(g3),1006(g1),1007(g2)
tehreem064@tehreem:~$ grep -E "g1|g2|g3" /etc/group
g1:x:1006:examuser
g2:x:1007:examuser
g3:x:1008:
tehreem064@tehreem:~$
```

### Q2:

```
tehreem064@tehreem:~$ mkdir workspace
cd workspace
touch secret.txt
tehreem064@tehreem:~/workspace$ sudo chown examuser secret.txt
sudo chgrp g1 secret.txt
tehreem064@tehreem:~/workspace$
```

```
tehreem064@tehreem:~/workspace$ ls -l secret.txt
-rw-rw-r-- 1 examuser gl 0 Nov 17 08:47 secret.txt
tehreem064@tehreem:~/workspace$ chmod go-rwx secret.txt
chmod: changing permissions of 'secret.txt': Operation not permitted
tehreem064@tehreem:~/workspace$ ls -l secret.txt
-rw-rw-r-- 1 examuser gl 0 Nov 17 08:47 secret.txt
tehreem064@tehreem:~/workspace$ 
```

```
tehreem064@tehreem:~/workspace$ chmod 600 secret.txt
chmod: changing permissions of 'secret.txt': Operation not permitted
tehreem064@tehreem:~/workspace$ ls -l secret.txt
-rw-rw-r-- 1 examuser gl 0 Nov 17 08:47 secret.txt
tehreem064@tehreem:~/workspace$ 
```

### Q3:

```
tehreem064@tehreem:~/workspace$ grep -i "error\|fail" /var/log/syslog | head -20
2025-11-16T18:49:22.746101+00:00 tehreem multipath: sda: failed to get sysfs uid:
No such file or directory
2025-11-16T18:49:22.746421+00:00 tehreem multipath: sda: failed to get sgio uid: N
o such file or directory
2025-11-16T18:49:22.910963+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.886132037Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.
aufs\"..." error="aufs is not supported (modprobe aufs failed: exit status 1 \"mod
probe: FATAL: Module aufs not found in directory /lib/modules/6.8.0-87-generic\\n\
\"): skip plugin" type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.912086+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.889486264Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.
blockfile\"..." error="no scratch file generator: skip plugin" type=io.containerd.
snapshotter.v1
2025-11-16T18:49:22.912579+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.890769163Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.
btrfs\"..." error="path /var/lib/containerd/io.containerd.snapshotter.v1.btrfs (ex
t4) must be a btrfs filesystem to be used with the btrfs snapshotter: skip plugin"
type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.913209+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.891167593Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.
devmapper\"..." error="devmapper not configured: skip plugin" type=io.containerd.s
napshotter.v1
2025-11-16T18:49:22.914125+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
22.907010554Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.zfs must be
a zfs filesystem to be used with the zfs snapshotter: skip plugin" type=io.container
```

```
tehreem064@tehreem:~/workspace$ mkdir -p ~/logs
tehreem064@tehreem:~/workspace$ grep -i "error\|fail" /var/log/syslog > ~/logs/err
ors.txt
tehreem064@tehreem:~/workspace$ 
```

```
tehreem064@tehreem:~/workspace$ mkdir -p ~/logs
tehreem064@tehreem:~/workspace$ grep -i "error\|fail" /var/log/syslog > ~/logs/errors.txt
tehreem064@tehreem:~/workspace$ grep -i "warning\|critical" /var/log/syslog >> ~/logs/errors.txt
tehreem064@tehreem:~/workspace$ less ~/logs/errors.txt
2025-11-16T18:49:22.746101+00:00 tehreem multipath: sda: failed to get sysfs uid: No such file or directory
2025-11-16T18:49:22.746421+00:00 tehreem multipath: sda: failed to get sgio uid: No such file or directory
2025-11-16T18:49:22.910963+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.886132037Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.aufs\"..." error="aufs is not supported (modprobe aufs failed: exit status 1 \\"modprobe: FATAL: Module aufs not found in directory /lib/modules/6.8.0-87-generic\\n\\"): skip plugin" type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.912086+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.889486264Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.blockfile\"..." error="no scratch file generator: skip plugin" type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.912579+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:22.890769163Z" level=info msg="skip loading plugin \"io.containerd.snapshotter.v1.btrfs\"..." error="path /var/lib/containerd/io.containerd.snapshotter.v1.btrfs (ext4) must be a btrfs filesystem to be used with the btrfs snapshotter: skip plugin" type=io.containerd.snapshotter.v1
2025-11-16T18:49:22.913209+00:00 tehreem containerd[1329]: time="2025-11-16T18:49:
```

**Q4:**

```
tehreem064@tehreem:~/workspace$ nano setup.sh
tehreem064@tehreem:~/workspace$ chmod +x setup.sh
tehreem064@tehreem:~/workspace$ ./setup.sh
Hello from var1
tehreem064@tehreem:~/workspace$
```

```
tehreem064@tehreem:~/workspace$ nano setup.sh
tehreem064@tehreem:~/workspace$ ./setup.sh
Hello from var1
All files in this directory:
total 4
-rw-rw-r-- 1 examuser    gl          0 Nov 17 08:47 secret.txt
-rwxrwxr-x 1 tehreem064 tehreem064 128 Nov 17 09:02 setup.sh
tehreem064@tehreem:~/workspace$
```

```
tehreem064@tehreem:~/workspace$ nano setup.sh
tehreem064@tehreem:~/workspace$ ./setup.sh
Hello from varl
All files in this directory:
total 4
-rw-rw-r-- 1 examuser    gl          0 Nov 17 08:47 secret.txt
-rwxrwxr-x 1 tehreem064 tehreem064 404 Nov 17 09:02 setup.sh
Final permissions:
drwxrwxr-x 2 tehreem064 tehreem064 4096 Nov 17 09:02 dirl
-rw-rw-r-- 1 tehreem064 tehreem064 0 Nov 17 09:02 dirl/file2
tehreem064@tehreem:~/workspace$
```

## Q5:

```
tehreem064@tehreem:~/workspace$ nano setup.sh
tehreem064@tehreem:~/workspace$ ./setup.sh 10 hello
Number entered: 10
String entered: hello
--- EQ Test (-eq) ---
10 is equal to 10 (TRUE)
tehreem064@tehreem:~/workspace$ ./setup.sh 5 hello
Number entered: 5
String entered: hello
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
tehreem064@tehreem:~/workspace$
```

```
tehreem064@tehreem:~/workspace$ nano setup.sh
tehreem064@tehreem:~/workspace$ ./setup.sh 10 hello
Number entered: 10
String entered: hello
--- EQ Test (-eq) ---
10 is equal to 10 (TRUE)
tehreem064@tehreem:~/workspace$ ./setup.sh 5 hello
Number entered: 5
String entered: hello
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
tehreem064@tehreem:~/workspace$ nano script.sh
tehreem064@tehreem:~/workspace$ nano setup.sh
tehreem064@tehreem:~/workspace$ ./setup.sh 12 hi
Number entered: 12
String entered: hi
--- EQ Test (-eq) ---
12 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
12 is NOT equal to 10 (TRUE)
-gt test:
12 is greater than 10 (TRUE)
-lt test:
12 is NOT less than 10 (FALSE)
-ge test:
12 is greater/equal to 10 (TRUE)
-le test:
12 is greater than 10 (FALSE)
tehreem064@tehreem:~/workspace$ ./setup.sh 8 hi
Number entered: 8
String entered: hi
--- EQ Test (-eq) ---
8 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
8 is NOT equal to 10 (TRUE)
-gt test:
8 is NOT greater than 10 (FALSE)
-lt test:
8 is less than 10 (TRUE)
-ge test:
8 is less than 10 (FALSE)
```

```
5 is less than 10 (TRUE)
-ge test:
5 is less than 10 (FALSE)
-le test:
5 is less/equal to 10 (TRUE)
--- String Tests ---
Equality (=) test:
String is 'hello' (TRUE)
Inequality (!=) test:
String IS 'hello' (FALSE)
Zero-length (-z) test:
String is NOT empty (FALSE)
tehreem064@tehreem:~/workspace$
```

```
tehreem064@tehreem:~/workspace$ ./setup.sh 5 world
Number entered: 5
String entered: world
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
5 is NOT equal to 10 (TRUE)
-gt test:
5 is NOT greater than 10 (FALSE)
-lt test:
5 is less than 10 (TRUE)
-ge test:
5 is less than 10 (FALSE)
-le test:
5 is less/equal to 10 (TRUE)
--- String Tests ---
Equality (=) test:
String is NOT 'hello' (FALSE)
Inequality (!=) test:
String is NOT 'hello' (TRUE)
Zero-length (-z) test:
String is NOT empty (FALSE)
tehreem064@tehreem:~/workspace$ ./setup.sh 5 world
Number entered: 5
String entered: world
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
5 is NOT equal to 10 (TRUE)
-gt test:
5 is NOT greater than 10 (FALSE)
-lt test:
5 is less than 10 (TRUE)
-ge test:
5 is less than 10 (FALSE)
-le test:
5 is less/equal to 10 (TRUE)
--- String Tests ---
Equality (=) test:
String is NOT 'hello' (FALSE)
Inequality (!=) test:
```

```
tehreem064@tehreem:~/workspace$ ./setup.sh 5 hello
Number entered: 5
String entered: hello
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
5 is NOT equal to 10 (TRUE)
-gt test:
5 is NOT greater than 10 (FALSE)
-lt test:
5 is less than 10 (TRUE)
-ge test:
5 is less than 10 (FALSE)
-le test:
5 is less/equal to 10 (TRUE)
--- String Tests ---
Equality (=) test:
String is 'hello' (TRUE)
Inequality (!=) test:
String IS 'hello' (FALSE)
Zero-length (-z) test:
String is NOT empty (FALSE)
tehreem064@tehreem:~/workspace$ ./setup.sh 5 ""
Number entered: 5
String entered:
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
5 is NOT equal to 10 (TRUE)
-gt test:
5 is NOT greater than 10 (FALSE)
-lt test:
5 is less than 10 (TRUE)
-ge test:
5 is less than 10 (FALSE)
-le test:
5 is less/equal to 10 (TRUE)
--- String Tests ---
Equality (=) test:
String is NOT 'hello' (FALSE)
Inequality (!=) test:
```

```
--- String Tests ---
Equality (=) test:
String is NOT 'hello' (FALSE)
Inequality (!=) test:
String is NOT 'hello' (TRUE)
Zero-length (-z) test:
String is EMPTY (TRUE)
tehreem064@tehreem:~/workspace$ 
tehreem064@tehreem:~/workspace$ ./setup.sh 5 hi
Number entered: 5
String entered: hi
--- EQ Test (-eq) ---
5 is NOT equal to 10 (FALSE)
--- Numeric Tests ---
-ne test:
5 is NOT equal to 10 (TRUE)
-gt test:
5 is NOT greater than 10 (FALSE)
-lt test:
5 is less than 10 (TRUE)
-ge test:
5 is less than 10 (FALSE)
-le test:
5 is less/equal to 10 (TRUE)
--- String Tests ---
Equality (=) test:
String is NOT 'hello' (FALSE)
Inequality (!=) test:
String is NOT 'hello' (TRUE)
Zero-length (-z) test:
String is NOT empty (FALSE)
tehreem064@tehreem:~/workspace$ 
```

## Q6:

```
GNU nano 7.2                                     setup.sh
#!/bin/bash

echo "Printing all arguments:"
for arg in "$@"
do
    echo "$arg"
done
```

```
tehreem064@tehreem:~/workspace$ ./setup.sh apple "my book" banana "hello world" 'this is quoted' 123
Printing all arguments:
apple
my book
banana
hello world
this is quoted
123
tehreem064@tehreem:~/workspace$ 
```

## Q7:

```
tehreem064@tehreem:~/workspace$ nano sum.sh
tehreem064@tehreem:~/workspace$ chmod +x sum.sh
tehreem064@tehreem:~/workspace$ ./sum.sh
Enter numbers to add. Type 'q' to quit.
Enter number (or q): 1
Running total: 1
Enter number (or q): 2
Running total: 3
Enter number (or q): 3
Running total: 6
Enter number (or q): 4
Running total: 10
Enter number (or q): 5
Running total: 15
Enter number (or q): q
Final total: 15
tehreem064@tehreem:~/workspace$
```

```
tehreem064@tehreem:~/workspace$ nano sum.sh
tehreem064@tehreem:~/workspace$ ./sum.sh
Enter numbers to add. Type 'q' to quit.
Enter number (or q): 1
Running total: 1
Enter number (or q): 2
Running total: 3
Enter number (or q): 3
Running total: 6
Enter number (or q): q
Final total: 6

Demonstrating the function:
Sum of 12 and 8 is: 20
```