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Reg.no: 2023-BSE-040

Subject: Cloud Computing

LAB # 06

Task 1: Switch to root with su - and back to a normal user

1.

```
maira040@ubuntu64:~$ sudo passwd root
[sudo] password for maira040:
New password:
Retype new password:
passwd: password updated successfully
maira040@ubuntu64:~$ _
```

2.

```
su: authentication failure
maira040@ubuntu64:~$ su -
Password:
root@ubuntu64:~# whoami
root
root@ubuntu64:~# id
uid=0(root) gid=0(root) groups=0(root)
root@ubuntu64:~#
```

3.

```
root@ubuntu64:~# exit
logout
maira040@ubuntu64:~$ whoami
maira040
maira040@ubuntu64:~$ _
```

Task 2: Create user tom and verify in passwd/group/shadow

1.

```
maira040@ubuntu64:~$ 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 []: tom
        Room Number []: 2
        Work Phone []: 0300
        Home Phone []: 0312
        Other []: 0000
Is the information correct? [Y/n] y
info: Adding new user `tom' to supplemental / extra groups `users' ...
info: Adding user `tom' to group `users' ...
```

2.

```
xrdp:x:119:124::/run/xrdp:/usr/sbin/nologin
tom:x:1001:1001:tom,2,0300,0312,0000:/home/tom:/bin/bash
maira040@ubuntu64:~$
```

3.

```
scanner:x:115:saned
saned:x:120:
colord:x:121:
pulse:x:122:
pulse-access:x:123:
xrdp:x:124:
docker:x:988:
tom:x:1001:
maira040@ubuntu64:~$
```

4.

```
caps_broused::Z0o03:::::
xrdp:!:20385::::::
tom:$y$j9T$y.WKG7IsHCNCjsWD1hpt21$ocV9groJY3dUu3t3AsiECNR6w14WNbQ4vewUlRMGck4:20394:0:99999
maira040@ubuntu64:~$
```

Task 3: Create groups; change tom's primary and secondary groups

1.

```
docker:x:988:
tom:x:1001:
developer:x:1002:
devops:x:1003:
designer:x:1004:
maira040@ubuntu64:~$ _
```

2.

```
maira040@ubuntu64:~$ sudo usermod -g designer tom
maira040@ubuntu64:~$ id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),100(users)
```

3.

```
maira040@ubuntu64:~$ sudo usermod -aG developer,devops  tom
maira040@ubuntu64:~$ id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),100(users),1002(developer),1003(devops)
maira040@ubuntu64:~$ groups tom
tom : designer users developer devops
maira040@ubuntu64:~$
```

4.

```
maira040@ubuntu64:~$ sudo usermod -G tom tom
maira040@ubuntu64:~$ id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),1001(tom)
maira040@ubuntu64:~$ groups tom
tom : designer tom
maira040@ubuntu64:~$
```

Task 4: Create/delete users (Jerry, Scooby) and groups (jolly, anime)

1.

```
maira040@ubuntu64:~$ sudo adduser jerry
info: Adding user `jerry' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `jerry' (1005) ...
info: Adding new user `jerry' (1005) with group `jerry (1005)' ...
info: Creating home directory `/home/jerry' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for jerry
Enter the new value, or press ENTER for the default
        Full Name []: jerry
        Room Number []: 3
        Work Phone []: 0000
        Home Phone []: 9999
        Other []: 87
Is the information correct? [Y/n] y
info: Adding new user `jerry' to supplemental / extra groups `users' ...
info: Adding user `jerry' to group `users' ...
maira040@ubuntu64:~$ sudo useradd Scooby
maira040@ubuntu64:~$
```

2.
```
maira040@ubuntu64:~$ su - Scooby
Password:
su: Authentication failure
maira040@ubuntu64:~$ _
```

3.
```
maira040@ubuntu64:~$ sudo passwd Scooby
New password:
Retype new password:
passwd: password updated successfully
maira040@ubuntu64:~$
```

4.
```
maira040@ubuntu64:~$ su - Scooby
Password:
su: warning: cannot change directory to /home/Scooby: No such file or directory
$
```

5.
```
jerry:x:1005:1005:jerry,3,0000,9999,87:/home/jerry:/bin/bash
Scooby:x:1006:1006::/home/Scooby:/bin/sh
maira040@ubuntu64:~$ ls -ld /home/Scooby
ls: cannot access '/home/Scooby': No such file or directory
maira040@ubuntu64:~$
```

6.
```
maira040@ubuntu64:~$ sudo mkdir -p /home/Scooby
maira040@ubuntu64:~$ sudo chown Scooby:Scooby /home/Scooby
maira040@ubuntu64:~$ sudo chmod 750 /home/Scooby
maira040@ubuntu64:~$ ls -ld /home/Scooby
drwxr-x--- 2 Scooby Scooby 4096 Nov  2 06:59 /home/Scooby
maira040@ubuntu64:~$
```

7.
```
maira040@ubuntu64:~$ su - Scooby
Password:
$ pwd
/home/Scooby
$ ls -la
total 8
drwxr-x--- 2 Scooby Scooby 4096 Nov  2 06:59 .
drwxr-xr-x 6 root   root   4096 Nov  2 06:59 ..
$ _
```

8.
```
jerry:x:1005:1005:jerry,3,0000,9999,87:/h
Scooby:x:1006:1006::/home/Scooby:/bin/sh
maira040@ubuntu64:~$
```

9.
```
maira040@ubuntu64:~$ sudo usermod -s /bin/bash Scooby
maira040@ubuntu64:~$ su - Scooby
Password:
Scooby@ubuntu64:~$ _
```

10.

```
maira040@ubuntu64:~$ sudo addgroup jolly
info: Selecting GID from range 1000 to 59999 ...
info: Adding group `jolly' (GID 1007) ...
maira040@ubuntu64:~$ sudo groupadd anime
maira040@ubuntu64:~$
```

11.

```
jolly:x:1007:
anime:x:1008:
```

12. Delete groups:

```
devops:x:1003:
designer:x:1004:
jerry:x:1005:
Scooby:x:1006:
maira040@ubuntu64:~$ _
```

Delete Users:

```
colord:x:116:121:colord colour management daemon,,,:/var/lib/
pulse:x:117:122:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nol
cups-browsed:x:118:111::/nonexistent:/usr/sbin/nologin
xrdp:x:119:124::/run/xrdp:/usr/sbin/nologin
tom:x:1001:1004:tom,2,0300,0312,0000:/home/tom:/bin/bash
```

Task 5: Create user Student; create files; set owner/group; identify file types

1.

```
maira040@ubuntu64:~$ 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:
passwd: password updated successfully
Changing the user information for student
Enter the new value, or press ENTER for the default
        Full Name []: student
        Room Number []: 3
        Work Phone []: 00
        Home Phone []: 11
        Other []: 33
Is the information correct? [Y/n] y
info: Adding new user `student' to supplemental / extra groups `users' ...
info: Adding user `student' to group `users' ...
maira040@ubuntu64:~$
```

2.

```
maira040@ubuntu64:~$ su - student
Password:
student@ubuntu64:~$ touch file1
student@ubuntu64:~$ mkdir -p dir1
student@ubuntu64:~$ touch dir1/file1
student@ubuntu64:~$ ls -l
total 4
drwxrwxr-x 2 student student 4096 Nov  2 07:12 dir1
-rw-rw-r-- 1 student student    0 Nov  2 07:12 file1
student@ubuntu64:~$
```

3.

```
student@ubuntu64:~$ sudo chown tom file1
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu64:~$ sudo chgrp devops file1
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu64:~$ ls -l file1
-rw-rw-r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

4.

```
student@ubuntu64:~$ ls -l
total 4
drwxrwxr-x 2 student student 4096 Nov  2 07:12 dir1
-rw-rw-r-- 1 student student    0 Nov  2 07:12 file1
student@ubuntu64:~$ ls -l dir1
total 0
-rw-rw-r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$ ls -l /dev/null
crw-rw-rw- 1 root root 1, 3 Nov  2 06:35 /dev/null
student@ubuntu64:~$ file file1 dir1 /dev/null
file1:     empty
dir1:      directory
/dev/null: character special (1/3)
student@ubuntu64:~$ _
```

5.

```
maira040@ubuntu64:~$
```

Task 6: Change permissions using symbolic mode

1.

```
maira040@ubuntu64:~$ su - student
Password:
student@ubuntu64:~$ cd ~
student@ubuntu64:~$ ls -l file1
-rw-rw-r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

2.

```
student@ubuntu64:~$ chmod -rwx file1
student@ubuntu64:~$ ls -l file1
---------- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$ _
```

3.

```
student@ubuntu64:~$ chmod +r file1
student@ubuntu64:~$ ls -l file1
-r--r--r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

4.

```
student@ubuntu64:~$ chmod u+x file1
student@ubuntu64:~$ ls -l file1
-r-xr--r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$ _
```

5.
```
student@ubuntu64:~$ chmod ug+w file1
student@ubuntu64:~$ ls -l file1
-rwxrw-r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

6.
```
student@ubuntu64:~$ chmod ugo-rwx file1
student@ubuntu64:~$ ls -l file1
---------- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

Task 7: Change permissions using "set" symbolic form (u= g= o=)

1.
```
              1 student  student  0 Nov   2 07:12 file1
student@ubuntu64:~$ su - student
Password:
student@ubuntu64:~$ cd ~
student@ubuntu64:~$ ls -l file1
---------- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

2.
```
              1 student  student  0 Nov   2 07:12 file1
student@ubuntu64:~$ chmod u=rwx,g=rwx,o=rwx file1
student@ubuntu64:~$ ls -l file1
-rwxrwxrwx 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

3.
```
student@ubuntu64:~$ chmod g=rw,o=rw file1
student@ubuntu64:~$ ls -l file1
-rwxrw-rw- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$ _
```

4.
```
student@ubuntu64:~$ chmod u=,g=,o= file1
student@ubuntu64:~$ ls -l file1
---------- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

Task 8: Change permissions using numeric (octal) mode

1.
```
              1 student  student  0 Nov   2 07:12 file1
student@ubuntu64:~$ su - student
Password:
student@ubuntu64:~$ cd ~
student@ubuntu64:~$ ls -l file1
---------- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

2.
```
student@ubuntu64:~$ chmod 777 file1
student@ubuntu64:~$ ls -l file1
-rwxrwxrwx 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

3.
```
student@ubuntu64:~$ chmod 700 file1
student@ubuntu64:~$ ls -l file1
-rwx------ 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

4.
```
student@ubuntu64:~$ chmod 744 file1
student@ubuntu64:~$ ls -l file1
-rwxr--r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

5.
```
student@ubuntu64:~$ chmod 640 file1
student@ubuntu64:~$ ls -l file1
-rw-r----- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

6.
```
student@ubuntu64:~$ chmod 664 file1
student@ubuntu64:~$ ls -l file1
-rw-rw-r-- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

7.
```
student@ubuntu64:~$ chmod 775 file1
student@ubuntu64:~$ ls -l file1
-rwxrwxr-x 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

8.
```
student@ubuntu64:~$ chmod 750 file1
student@ubuntu64:~$ ls -l file1
-rwxr-x--- 1 student student 0 Nov  2 07:12 file1
student@ubuntu64:~$
```

Task 9: Practice pipes, pagers, grep, and redirects with /var/log/syslog

1.

```
2025-11-02T06:35:08.346859+00:00 ubuntu64 systemd-udevd[487]: Using default interface naming
2025-11-02T06:35:08.346863+00:00 ubuntu64 lvm[447]:    1 logical volume(s) in volume group "ub
2025-11-02T06:35:08.346867+00:00 ubuntu64 systemd[1]: Started systemd-udevd.service - Rule-ba
2025-11-02T06:35:08.346874+00:00 ubuntu64 multipathd[483]: multipathd v0.9.4: start up
2025-11-02T06:35:08.346879+00:00 ubuntu64 systemd[1]: Starting systemd-journal-flush.service
2025-11-02T06:35:08.346883+00:00 ubuntu64 multipathd[483]: reconfigure: setting up paths and
2025-11-02T06:35:08.346887+00:00 ubuntu64 multipathd[483]: sda: failed to get udev uid: No da
2025-11-02T06:35:08.346890+00:00 ubuntu64 systemd[1]: Started multipathd.service - Device-Map
2025-11-02T06:35:08.346894+00:00 ubuntu64 systemd[1]: Reached target local-fs-pre.target - Pr
2025-11-02T06:35:08.346901+00:00 ubuntu64 systemd[1]: Mounting snap-code-211.mount - Mount un
2025-11-02T06:35:08.346906+00:00 ubuntu64 systemd[1]: Mounting snap-core20-2669.mount - Mount
2025-11-02T06:35:08.346910+00:00 ubuntu64 systemd[1]: Mounting snap-snapd-25577.mount - Mount
2025-11-02T06:35:08.346914+00:00 ubuntu64 systemd[1]: Mounted snap-code-211.mount - Mount uni
2025-11-02T06:35:08.346919+00:00 ubuntu64 systemd[1]: Mounted snap-core20-2669.mount - Mount
2025-11-02T06:35:08.346922+00:00 ubuntu64 systemd[1]: Mounted snap-snapd-25577.mount - Mount
2025-11-02T06:35:08.346928+00:00 ubuntu64 systemd[1]: Reached target snapd.mounts.target - Mo
2025-11-02T06:35:08.346932+00:00 ubuntu64 systemd[1]: Finished systemd-journal-flush.service
2025-11-02T06:35:08.346936+00:00 ubuntu64 systemd[1]: Finished systemd-udev-trigger.service -
2025-11-02T06:35:08.346940+00:00 ubuntu64 systemd[1]: plymouth-start.service - Show Plymouth
ionKernelCommandLine=splash).
2025-11-02T06:35:08.346944+00:00 ubuntu64 systemd[1]: Started systemd-ask-password-console.pa
2025-11-02T06:35:08.346951+00:00 ubuntu64 systemd[1]: systemd-ask-password-plymouth.path - Fo
ause of an unmet condition check (ConditionPathExists=/run/plymouth/pid).
2025-11-02T06:35:08.346955+00:00 ubuntu64 systemd[1]: Reached target cryptsetup.target - Loca
2025-11-02T06:35:08.346959+00:00 ubuntu64 multipath: sda: failed to get sysfs uid: No such fi
2025-11-02T06:35:08.346963+00:00 ubuntu64 multipath: sda: failed to get sgio uid: No such fil
2025-11-02T06:35:08.346969+00:00 ubuntu64 mtp-probe: checking bus 1, device 2: "/sys/devices/
2025-11-02T06:35:08.346973+00:00 ubuntu64 mtp-probe: bus: 1, device: 2 was not an MTP device
2025-11-02T06:35:08.346984+00:00 ubuntu64 multipathd[483]: sda: failed to get udev uid: No da
2025-11-02T06:35:08.346988+00:00 ubuntu64 multipathd[483]: sda: failed to get path uid
2025-11-02T06:35:08.346992+00:00 ubuntu64 multipathd[483]: uevent trigger error
2025-11-02T06:35:08.346996+00:00 ubuntu64 systemd[1]: Found device dev-disk-by\x2duuid-560347
```

2.

```
2025-11-02T06:35:08.347000+00:00 ubuntu64 systemd[1]: Starting systemd-fsck
System Check on /dev/disk/by-uuid/560347dc-afb3-4e3d-8c6f-73c120fcf5b7...
2025-11-02T06:35:08.347004+00:00 ubuntu64 systemd[1]: Started systemd-fsckd
2025-11-02T06:35:08.347010+00:00 ubuntu64 systemd-fsck[610]: /dev/sda2: rec
2025-11-02T06:35:08.347014+00:00 ubuntu64 systemd-fsck[610]: /dev/sda2: cle
2025-11-02T06:35:08.347020+00:00 ubuntu64 systemd[1]: Finished systemd-fsck
System Check on /dev/disk/by-uuid/560347dc-afb3-4e3d-8c6f-73c120fcf5b7.
2025-11-02T06:35:08.347024+00:00 ubuntu64 systemd[1]: Mounting boot.mount -
2025-11-02T06:35:08.347027+00:00 ubuntu64 lvm[604]: PV /dev/sda3 online, VG
2025-11-02T06:35:08.347031+00:00 ubuntu64 lvm[604]: VG ubuntu-vg finished
2025-11-02T06:35:08.347038+00:00 ubuntu64 systemd[1]: Mounted boot.mount -
--More--
```

3.

```
maira040@ubuntu64:~$ sudo grep -E 'fail|error' /var/log/syslog | head
2025-11-02T06:35:08.346887+00:00 ubuntu64 multipathd[483]: sda: failed to get udev uid: No da
2025-11-02T06:35:08.346959+00:00 ubuntu64 multipath: sda: failed to get sysfs uid: No such fi
2025-11-02T06:35:08.346963+00:00 ubuntu64 multipath: sda: failed to get sgio uid: No such fil
2025-11-02T06:35:08.346984+00:00 ubuntu64 multipathd[483]: sda: failed to get udev uid: No da
2025-11-02T06:35:08.346988+00:00 ubuntu64 multipathd[483]: sda: failed to get path uid
2025-11-02T06:35:08.346992+00:00 ubuntu64 multipathd[483]: uevent trigger error
2025-11-02T06:35:08.347340+00:00 ubuntu64 systemd[1]: apport-autoreport.path - Process error
d because of an unmet condition check (ConditionPathExists=/var/lib/apport/autoreport).
2025-11-02T06:35:08.347358+00:00 ubuntu64 systemd[1]: apport-autoreport.timer - Process error
ped because of an unmet condition check (ConditionPathExists=/var/lib/apport/autoreport).
2025-11-02T06:35:08.347657+00:00 ubuntu64 systemd[1]: Starting grub-initrd-fallback.service -
2025-11-02T06:35:08.347861+00:00 ubuntu64 systemd[1]: Finished grub-initrd-fallback.service -
maira040@ubuntu64:~$ _
```

4.

```
maira040@ubuntu64:~$ sudo grep -i systemd /var/log/syslog > ~/syslog_systemd.txt
maira040@ubuntu64:~$
```

```
2025-11-02T06:35:09.903135+00:00 ubuntu64 systemd[1]: Started NetworkManager.service - Net
2025-11-02T06:35:09.903510+00:00 ubuntu64 systemd[1]: Reached target network.target - Netw
2025-11-02T06:35:09.903634+00:00 ubuntu64 NetworkManager[879]: <info>  [1762065309.9032] m
2025-11-02T06:35:09.926144+00:00 ubuntu64 systemd[1]: Starting NetworkManager-wait-online.
2025-11-02T06:35:10.040227+00:00 ubuntu64 systemd[1]: Finished NetworkManager-wait-online.
2025-11-02T06:35:10.058494+00:00 ubuntu64 systemd[1]: Reached target network-online.target
2025-11-02T06:35:12.452927+00:00 ubuntu64 NetworkManager[879]: <info>  [1762065312.4522] m
Devices/3)
2025-11-02T06:35:12.533373+00:00 ubuntu64 systemd-networkd[630]: docker0: Link UP
2025-11-02T06:35:18.030074+00:00 ubuntu64 systemd[1]: NetworkManager-dispatcher.service: D
2025-11-02T06:35:22.367019+00:00 ubuntu64 systemd[1859]: Listening on dirmngr.socket - Gnu
2025-11-02T06:50:05.710147+00:00 ubuntu64 systemd-timesyncd[647]: Network configuration ch
2025-11-02T07:05:06.716290+00:00 ubuntu64 systemd-timesyncd[647]: Network configuration ch
2025-11-02T07:20:06.335589+00:00 ubuntu64 systemd-timesyncd[647]: Network configuration ch
2025-11-02T07:35:06.828207+00:00 ubuntu64 systemd-timesyncd[647]: Network configuration ch
maira040@ubuntu64:~$ _
```

Task 10: Script setup.sh – variables, command substitution, file/dir checks, permissions (use vim)

1.

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

```
student@ubuntu64:~$ ./setup.sh
student@ubuntu64:~$
```

2.

```
#!/bin/bash
var1="Hello from Lab 6"
echo "var1: $var1"
```

```
student@ubuntu64:~$ ./setup.sh
var1: Hello from Lab 6
student@ubuntu64:~$
```

3.

```
echo "var1: $var1"
allFiles="$(ls -l)"
echo "allFiles (ls -l):"
echo '$allFiles"
~
```

```
student@ubuntu64:~$ ./setup.sh
var1: Hello from Lab 6
allFiles (ls -l):
total 8
drwxrwxr-x 2 student student 4096 Nov  2 07:12 dir1
-rwxr-x--- 1 student student    0 Nov  2 07:12 file1
-rwxrwxr-x 1 student student  117 Nov  2 07:59 setup.sh
student@ubuntu64:~$
```

4.

```
if [ -d "dir1" ]; then
        echo "Directory dir1 exists."
else
        echo "Directory dir1 does not exist. Creating..."
        mkdir -p "dir1"
        echo "Directory dir1 created."
fi
```

```
student@ubuntu64:~$ ./setup.sh
Directory dir1 exists.
student@ubuntu64:~$
```

5.

```
if [ -f "dir1/file2" ]; then
        echo "file2 already exists."
else
        echo "file2 does not exist. Creating..."
        touch "dir1/file2"
        chmod a-rwx "dir1/file2"
        echo "file2 created."
fi
```

```
student@ubuntu64:~$ ./setup.sh
file2 does not exist. Creating...
file2 created.
student@ubuntu64:~$
```

6.

```
f="dir1/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 permission for $f:"
ls -l "$f"
```

```
student@ubuntu64:~$ ./setup.sh
Final permission for dir1/file2:
-rwx------ 1 student student 0 Nov  2 08:57 dir1/file2
student@ubuntu64:~$
```

Task 11: Script setup.sh – argument comparisons (eq, ne, gt, lt, ge, le) and string checks.

1.

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

```
student@ubuntu64:~$ ./setup.sh 10 student
```

2.

```bash
#!/bin/bash
num=$1
str=$2
if [ "$num" -eq 10 ]; then
        echo "$num is equal to 10 (-eq)."
   else
        echo "$num is Not equal to 10 (-eq)."
fi
```

```
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
student@ubuntu64:~$ ./setup.sh 7 student
7 is Not equal to 10 (-eq).
student@ubuntu64:~$
```

3.

```bash
num=$1
str=$2
if [ "$num" -eq 10 ]; then
        echo "$num is equal to 10 (-eq)."
   else
        echo "$num is Not equal to 10 (-eq)."
fi

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

```
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
student@ubuntu64:~$ ./setup.sh 7 student
7 is Not equal to 10 (-eq).
7 is not equal to 10 (-ne).
student@ubuntu64:~$ _
```

4.

```bash
#!/bin/bash
num=$1
str=$2
if [ "$num" -eq 10 ]; then
        echo "$num is equal to 10 (-eq)."
   else
        echo "$num is Not equal to 10 (-eq)."
fi

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

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

```
student@ubuntu64:~$ ./setup.sh 12 student
12 is Not equal to 10 (-eq).
12 is not equal to 10 (-ne).
12 is greater than 10 (-gt).
student@ubuntu64:~$ ./setup.sh 9 student
9 is Not equal to 10 (-eq).
9 is not equal to 10 (-ne).
9 is not greater than 10 (-gt).
student@ubuntu64:~$
```

5.

```bash
#!/bin/bash
num=$1
str=$2
if [ "$num" -eq 10 ]; then
        echo "$num is equal to 10 (-eq)."
   else
        echo "$num is Not equal to 10 (-eq)."
fi

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

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

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

```
student@ubuntu64:~$ ./setup.sh 5 student
5 is Not equal to 10 (-eq).
5 is not equal to 10 (-ne).
5 is not greater than 10 (-gt).
5 is less than 10 (-lt).
student@ubuntu64:~$ ./setup.sh 11 student
11 is Not equal to 10 (-eq).
11 is not equal to 10 (-ne).
11 is greater than 10 (-gt).
11 is NOT less than 10 (-lt).
student@ubuntu64:~$
```

6.

```bash
#!/bin/bash
num=$1
str=$2
if [ "$num" -eq 10 ]; then
        echo "$num is equal to 10 (-eq)."
  else
        echo "$num is Not equal to 10 (-eq)."
fi

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

if [ "$num" -gt 10 ]; then

        echo "$num is greater than 10 (-gt)."
else
        echo "$num is not greater than 10 (-gt)."
fi

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

if [ "$num" -ge 10 ]; then

        echo "$num is greater than equal to 10 (-ge)."
else
        echo "$num is not greater than equal to 10 (-ge)."
fi
```

```
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
student@ubuntu64:~$ ./setup.sh 8 student
8 is Not equal to 10 (-eq).
8 is not equal to 10 (-ne).
8 is not greater than 10 (-gt).
8 is less than 10 (-lt).
8 is not greater than equal to 10 (-ge).
student@ubuntu64:~$ _
```

7.

```bash
        echo "$num is not greater than equal to 10 (-ge)."
fi
if [ "$num" -le 10 ]; then

        echo "$num is less than equal to 10 (-le)."
else
        echo "$num is not less than equal to 10 (-le)."
fi
```

```
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
student@ubuntu64:~$ ./setup.sh 12 student
12 is Not equal to 10 (-eq).
12 is not equal to 10 (-ne).
12 is greater than 10 (-gt).
12 is NOT less than 10 (-lt).
12 is greater than equal to 10 (-ge).
12 is not less than equal to 10 (-le).
student@ubuntu64:~$
```

8.

```bash
        echo "$num is not less than equal to 10 (-le)."
fi
if [ "$str" = "student" ]; then

        echo "Second argument equals 'Student' (=)."
else
        echo "Second argument does NOT equal 'Student' (=)."
fi
```

```
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
Second argument equals 'Student' (=).
student@ubuntu64:~$ ./setup.sh 10 Test
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
Second argument does NOT equal 'Student' (=).
```

9.

```bash
fi
if [ "$str" != "student" ]; then

        echo "Second argument is not equals to 'Student' (!=)."
else
        echo "Second argument equals 'Student' (!=)."
fi
```

```
student@ubuntu64:~$ ./setup.sh 10 Test
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
Second argument does NOT equal 'Student' (=).
Second argument is not equals to 'Student' (!=).
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
Second argument equals 'Student' (=).
Second argument equals 'Student' (!=).
student@ubuntu64:~$
```

10.

```
if [ -z  "$str" ]; then

        echo "Second argument is empty (zero lenght)."
else

        echo "Second argument is not empty."
fi
```

```
student@ubuntu64:~$ ./setup.sh 10
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
Second argument does NOT equal 'Student' (=).
Second argument is not equals to 'Student' (!=).
Second argument is empty (zero lenght).
student@ubuntu64:~$ ./setup.sh 10 student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
10 is not greater than 10 (-gt).
10 is NOT less than 10 (-lt).
10 is greater than equal to 10 (-ge).
10 is less than equal to 10 (-le).
Second argument equals 'Student' (=).
Second argument equals 'Student' (!=).
Second argument is not empty.
student@ubuntu64:~$
```

Task 12: Script setup.sh – print all arguments with a for loop

1.
```
#!/bin/bash
# Script to demonstrate printing all user-entered argument using $*
```

```
student@ubuntu64:~$ ./setup.sh
student@ubuntu64:~$
```

2.
```
#!/bin/bash
# Script to demonstrate printing all user-entered argument using $*
echo "Printing all arguments using \$*:"
for arg in $*; do
        echo "Argument: $arg"
done
~
```

```
student@ubuntu64:~$ ./setup.sh one "two words" three
Printing all arguments using $*:
Argument: one
Argument: two
Argument: words
Argument: three
student@ubuntu64:~$
```

Task 13: Script setup.sh – while loop summation and functions

1.
```
#!/bin/bash
~

~
~
```

```
student@ubuntu64:~$ ./setup.sh
student@ubuntu64:~$
```

2.
```
#!/bin/bash
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"
~
```

```
maira040@ubuntu64:~$ chmod +x setup.sh
maira040@ubuntu64:~$ ./setup.sh
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
maira040@ubuntu64:~$
```

3.
```
#!/bin/bash
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"
}
echo "Now calling sum_two function:"
sum_two
```

```
maira040@ubuntu64:~$ ./setup.sh
Now calling sum_two function:
Enter a number (or 'q' to quit): 3
Total Score: 3
Enter a number (or 'q' to quit): 4
Total Score: 7
Enter a number (or 'q' to quit): q
 Function Final total: 7
maira040@ubuntu64:~$
```
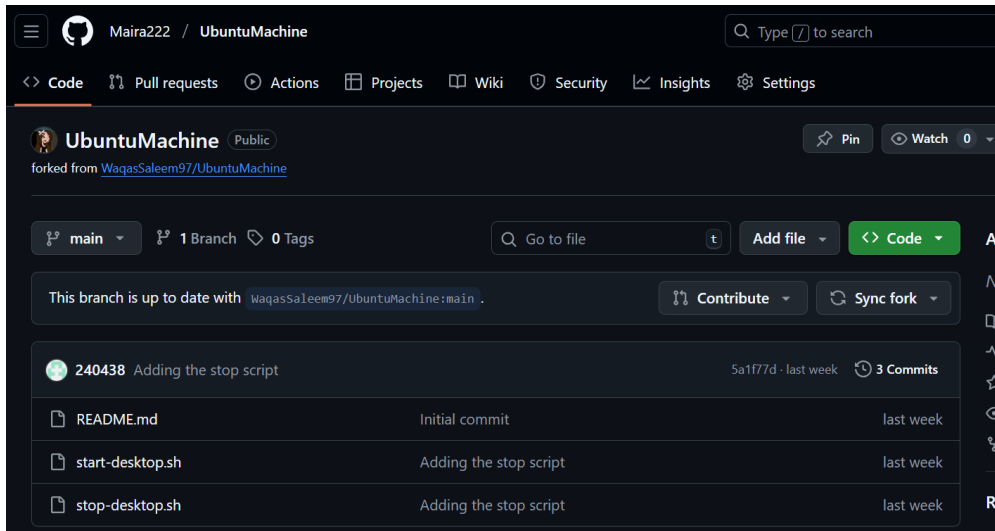
4.

```bash
#!/bin/bash
sum_args() {
a=$1
b=$2
return $((a + b))
}
echo "Now demonstrating sum_args function:"
sum_args 3 4
result=$?
echo "sum_args(3,4) returned: $result"
```
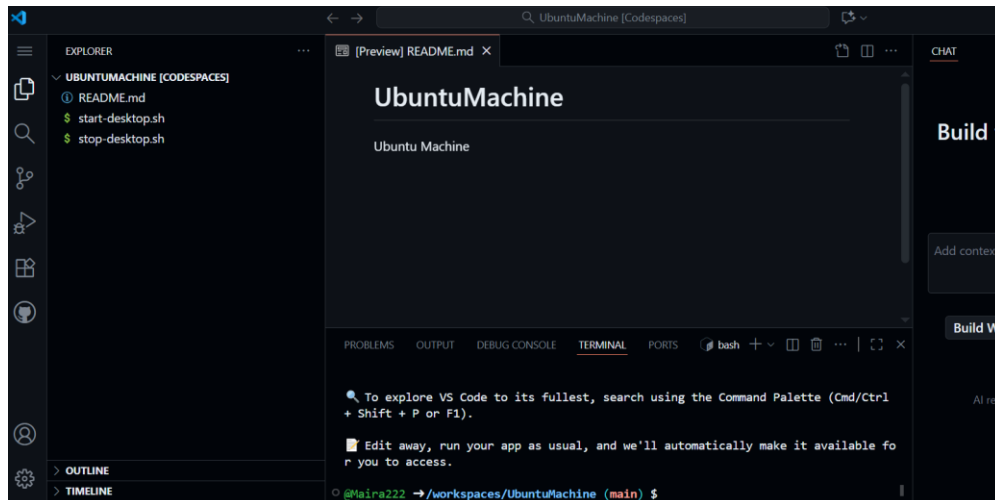
```
"setup.sh" 10L, 161B written
maira040@ubuntu64:~$ ./setup.sh
Now demonstrating sum_args function
sum_args(3,4) returned: 7
maira040@ubuntu64:~$
```

Task 14: Codespaces GUI — fork repo, run start-desktop.sh, open VNC, stop GUI

1.

2.

3.

```
@Maira222 →/workspaces/UbuntuMachine (main) $ ls -l start-desktop.sh stop-deskto
p.sh
-rwxrwxrwx 1 codespace root 1333 Nov  2 10:22 start-desktop.sh
-rwxrwxrwx 1 codespace root  428 Nov  2 10:22 stop-desktop.sh
@Maira222 →/workspaces/UbuntuMachine (main) $ chmod +x start-desktop.sh stop-des
ktop.sh
@Maira222 →/workspaces/UbuntuMachine (main) $
```

4.

```
Setting up libzvbi0t64:amd64 (0.2.42-2) ...
Setting up gir1.2-gdkpixbuf-2.0:amd64 (2.42.10+dfsg-3ubuntu3.2) ...
Setting up libblockdev-crypto3:amd64 (3.1.1-1ubuntu0.1) ...
Setting up ibverbs-providers:amd64 (50.0-2ubuntu0.2) ...
Setting up dictionaries-common (1.29.7) ...
Setting up alsa-ucm-conf (1.2.10-1ubuntu5.7) ...
Setting up libhttp-cookies-perl (6.11-1) ...
Setting up libpoppler134:amd64 (24.02.0-1ubuntu9.7) ...
Setting up python3-babel (2.10.3-3build1) ...
update-alternatives: using /usr/bin/pybabel-python3 to provide /usr/bin/pybabel
pybabel) in auto mode
Setting up python3-rich (13.7.1-1) ...
Setting up libblockdev-swap3:amd64 (3.1.1-1ubuntu0.1) ...
Setting up gir1.2-atk-1.0:amd64 (2.52.0-1build1) ...
Setting up whoopsie (0.2.77build3) ...
Created symlink /etc/systemd/system/multi-user.target.wants/whoopsie.path → /us
lib/systemd/system/whoopsie.path.
invoke-rc.d: could not determine current runlevel
```

5.

	5900	https://ubiquitou...	x11vnc -display :...	🔒 Private	Auto Forwarded
	5901	https://ubiquitou...	x11vnc -display :...	🔒 Private	Auto Forwarded
	6080	https://ubiquitou...	/usr/bin/python3...	👁 Public	Auto Forwarded

Add Port

6.

← → C 🔒 silver-space-garbanzo-v6jvjw9764r9c4qv-6080.app.github.dev

Password:

●●●●●●●●

Send Credentials

noVNC

🔗 Connect