FATIMA JINNAH WOMEN UNIVERSITY

Submitted To:

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Section:

5A

CLOUD COMPUTING

LAB 05

Task 01

```
ubuntu027@ubuntu:~$ sudo passwd root
[sudo] password for ubuntu027:
Sorry, try again.
[sudo] password for ubuntu027:
Sorry, try again.
[sudo] password for ubuntu027:
New password:
Retype new password:
passwd: password updated successfully
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ su -
Password:
root@ubuntu:~#
```

```
ubuntu027@ubuntu:~$ su -
Password:
root@ubuntu:~# whoami
root
root@ubuntu:~# id
uid=0(root) gid=0(root) groups=0(root)
root@ubuntu:~# exit
logout
ubuntu027@ubuntu:~$ whoami
ubuntu027
ubuntu027@ubuntu:~$
```

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

```
ubuntu027@ubuntu:~$ sudo adduser tom
Adding user `tom' ...
Adding new group `tom' (1001) ...
Adding new user `tom' (1001) with group `tom' ...
Creating home directory `/home/tom' ...
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]
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ cat /etc/passwd
```

```
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
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
systemd-network:x:101:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:102:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:104::/nonexistent:/usr/sbin/nologin
systemd-timesync:x:104:105:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
pollinate:x:105:1::/var/cache/pollinate:/bin/false
syslog:x:106:113::/home/syslog:/usr/sbin/nologin
uuidd:x:107:114::/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:115::/nonexistent:/usr/sbin/nologin
tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false
landscape:x:110:117::/var/lib/landscape:/usr/sbin/nologin
fwupd-refresh:x:111:118:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
usbmux:x:112:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
sshd:x:113:65534::/run/sshd:/usr/sbin/nologin
ubuntu027:x:1000:1000:irraj:/home/ubuntu027:/bin/bash
lxd:x:999:100::/var/snap/lxd/common/lxd:/bin/false
rtkit:x:114:119:RealtimeKit,,,:/proc:/usr/sbin/nologin
avahi:x:115:120:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
pulse:x:116:122:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
saned:x:117:125::/var/lib/saned:/usr/sbin/nologin
colord:x:118:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
xrdp:x:119:128::/run/xrdp:/usr/sbin/nologin
lightdm:x:120:129:Light Display Manager:/var/lib/lightdm:/bin/false
tom:x:1001:1001:,,,:/home/tom:/bin/bash
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ cat /etc/group_
```

```
 staff:x:50:
 games:x:60:
 users:x:100:
 nogroup:x:65534:
 systemd-journal:x:101:
 systemd-network:x:102:
 systemd-resolve:x:103:
 messagebus:x:104:
 systemd-timesync:x:105:
 input:x:106:
 sgx:x:107:
 kvm:x:108:
 render:x:109:
 lxd:x:110:ubuntu027
 _ssh:x:111:
 crontab:x:112:
 syslog:x:113:
 uuidd:x:114:
 tcpdump:x:115:
 tss:x:116:
 landscape:x:117:
 fwupd-refresh:x:118:
 ubuntu027:x:1000:
 rtkit:x:119:
 avahi:x:120:
 netdev:x:121:
 pulse:x:122:
 pulse-access:x:123:
 scanner:x:124:saned
 saned:x:125:
 colord:x:126:
 ssl-cert:x:127:
 xrdp:x:128:
 lightdm:x:129:
 nopasswdlogin:x:130:
 tom:x:1001:
 ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ sudo cat /etc/shadow_
```

```
lp:*:19977:0:99999:7:::
mail:*:19977:0:99999:7:::
news:*:19977:0:99999:7:::
uucp:*:19977:0:99999:7:::
proxy:*:19977:0:99999:7:::
www-data:*:19977:0:99999:7:::
backup:*:19977:0:99999:7:::
list:*:19977:0:99999:7:::
irc:*:19977:0:99999:7:::
gnats:*:19977:0:99999:7:::
nobody:*:19977:0:99999:7:::
_apt:*:19977:0:99999:7:::
systemd-network:*:19977:0:99999:7:::
systemd-resolve:*:19977:0:99999:7:::
messagebus:*:19977:0:99999:7:::
systemd-timesync:*:19977:0:99999:7:::
pollinate:*:19977:0:99999:7:::
syslog:*:19977:0:99999:7:::
uuidd:*:19977:0:99999:7:::
tcpdump:*:19977:0:99999:7:::
tss:*:19977:0:99999:7:::
landscape:*:19977:0:99999:7:::
fwupd-refresh:*:19977:0:99999:7:::
usbmux:*:20370:0:99999:7:::
sshd:*:20370:0:99999:7:::
ubuntu027:$6$TndPpOTVm6g.nWOq$LShUiEw/8kpCb27mjqcQEroQ45GsWYYZJ.ZRQWj5GUQX3sQyTDD2yd4GEIUqWKwudL13pZ
GMOHHDWJ.Oyi55UO:20370:0:99999:7:::
lxd:!:20370::::::
rtkit:*:20385:0:99999:7:::
avahi:*:20385:0:99999:7:::
pulse:*:20385:0:99999:7:::
saned:*:20385:0:99999:7:::
colord:*:20385:0:99999:7:::
xrdp:!:20385:0:99999:7:::
lightdm:*:20385:0:99999:7:::
tom:$y$j9T$cgeVclf078OWILDoXkNW4.$32cNDUkqpZnRkSfpoN1GwdinnZBNblklsssR5om7xq4:20399:0:99999:7:::
ubuntu027@ubuntu:~$
```

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

```
ubuntu027@ubuntu:~$ cat /etc/group_
```

```
 messagebus:x:104:
 systemd-timesync:x:105:
 input:x:106:
 sgx:x:107:
 kvm:x:108:
 render:x:109:
 lxd:x:110:ubuntu027
 _ssh:x:111:
 crontab:x:112:
 syslog:x:113:
 uuidd:x:114:
 tcpdump:x:115:
 tss:x:116:
 landscape:x:117:
 fwupd-refresh:x:118:
 ubuntu027:x:1000:
 rtkit:x:119:
 avahi:x:120:
 netdev:x:121:
 pulse:x:122:
 pulse-access:x:123:
 scanner:x:124:saned
 saned:x:125:
 colord:x:126:
 ssl-cert:x:127:
 xrdp:x:128:
 lightdm:x:129:
 nopasswdlogin:x:130:
 tom:x:1001:
 developer:x:1002:
 devops:x:1003:
 designer:x:1004:
```

```
ubuntu027@ubuntu:~$ sudo groupadd developer
ubuntu027@ubuntu:~$ sudo groupadd devops
ubuntu027@ubuntu:~$ sudo groupadd designer
```

```
ubuntu027@ubuntu:~$ sudo usermod -g designer tom
ubuntu027@ubuntu:~$ id
uid=1000(ubuntu027) gid=1000(ubuntu027) groups=1000(ubuntu027),4(adm),24(cdrom),27(sudo),30(dip),46(
plugdev),110(lxd)
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo usermod -g designer tom
ubuntu027@ubuntu:~$ id
uid=1000(ubuntu027) gid=1000(ubuntu027) groups=1000(ubuntu027),4(adm),24(cdrom),27(sudo),30(dip),46(
plugdev),110(lxd)
ubuntu027@ubuntu:~$ sudo usermod -aG developer,devops tom
ubuntu027@ubuntu:~$ id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),1002(developer),1003(devops)
ubuntu027@ubuntu:~$ groups tom
tom : designer developer devops
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo usermod -G tom tom
ubuntu027@ubuntu:~$ id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),1001(tom)
ubuntu027@ubuntu:~$ groups tom
tom : designer tom
ubuntu027@ubuntu:~$ _
```

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

```
ubuntu027@ubuntu:~$ sudo adduser jerry
Adding user `jerry' ...
Adding new group `jerry' (1005) ...
Adding new user `jerry' (1002) with group `jerry' ...
Creating home directory `/home/jerry' ...
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 []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo useradd scooby
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo useradd scooby
ubuntu027@ubuntu:~$ su - scooby
Password:
su: Authentication failure
ubuntu027@ubuntu:~$ su passwd scooby
su: user passwd does not exist or the user entry does not contain all the required fields
ubuntu027@ubuntu:~$ sudo passwd scooby
New password:
Retype new password:
passwd: password updated successfully
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ su - scooby
Password:
su: warning: cannot change directory to /home/scooby: No such file or directory
$ exit
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ cat /etc/passwd
```

```
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
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
systemd-network:x:101:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:102:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:104::/nonexistent:/usr/sbin/nologin
systemd-timesync:x:104:105:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
pollinate:x:105:1::/var/cache/pollinate:/bin/false
syslog:x:106:113::/home/syslog:/usr/sbin/nologin
uuidd:x:107:114::/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:115::/nonexistent:/usr/sbin/nologin
tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false
landscape:x:110:117::/var/lib/landscape:/usr/sbin/nologin
fwupd-refresh:x:111:118:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
usbmux:x:112:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
sshd:x:113:65534::/run/sshd:/usr/sbin/nologin
ubuntu027:x:1000:1000:irraj:/home/ubuntu027:/bin/bash
lxd:x:999:100::/var/snap/lxd/common/lxd:/bin/false
rtkit:x:114:119:RealtimeKit,,,:/proc:/usr/sbin/nologin
avahi:x:115:120:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
pulse:x:116:122:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
saned:x:117:125::/var/lib/saned:/usr/sbin/nologin
colord:x:118:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
xrdp:x:119:128::/run/xrdp:/usr/sbin/nologin
lightdm:x:120:129:Light Display Manager:/var/lib/lightdm:/bin/false
tom:x:1001:1004:,,,:/home/tom:/bin/bash
jerry:x:1002:1005:,,,:/home/jerry:/bin/bash
scooby:x:1003:1006::/home/scooby:/bin/sh
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ ls -ls /home/scooby
ls: cannot access '/home/scooby': No such file or directory
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo mkdir -p /home/scooby
ubuntu027@ubuntu:~$ sudo chown scooby:scooby /home/scooby
ubuntu027@ubuntu:~$ sudo chmod 750 /home/scooby
ubuntu027@ubuntu:~$ ls -ld /home/scooby
drwxr-x--- 2 scooby scooby 4096 Nov  7 04:50 /home/scooby
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ su - scooby
Password:
$ pwd
/home/scooby
$ ls -l
total 0
$ ls -ls
total 0
$ _
```

```
ubuntu027@ubuntu:~$ cat /etc/passwd
```

```
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
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
systemd-network:x:101:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:102:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:104::/nonexistent:/usr/sbin/nologin
systemd-timesync:x:104:105:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
pollinate:x:105:1::/var/cache/pollinate:/bin/false
syslog:x:106:113::/home/syslog:/usr/sbin/nologin
uuidd:x:107:114::/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:115::/nonexistent:/usr/sbin/nologin
tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false
landscape:x:110:117::/var/lib/landscape:/usr/sbin/nologin
fwupd-refresh:x:111:118:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
usbmux:x:112:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
sshd:x:113:65534::/run/sshd:/usr/sbin/nologin
ubuntu027:x:1000:1000:irraj:/home/ubuntu027:/bin/bash
lxd:x:999:100::/var/snap/lxd/common/lxd:/bin/false
rtkit:x:114:119:RealtimeKit,,,:/proc:/usr/sbin/nologin
avahi:x:115:120:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
pulse:x:116:122:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
saned:x:117:125::/var/lib/saned:/usr/sbin/nologin
colord:x:118:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
xrdp:x:119:128::/run/xrdp:/usr/sbin/nologin
lightdm:x:120:129:Light Display Manager:/var/lib/lightdm:/bin/false
tom:x:1001:1004:,,,:/home/tom:/bin/bash
jerry:x:1002:1005:,,,:/home/jerry:/bin/bash
scooby:x:1003:1006::/home/scooby:/bin/sh
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo usermod -s /bin/bash/scooby_
```

```
tom:x:1001:1004:,,,:/home/tom:/bin/bash
jerry:x:1002:1005:,,,:/home/jerry:/bin/bash
scooby:x:1003:1006::/home/scooby:/bin/sh
ubuntu027@ubuntu:~$ sudo usermod -s /bin/bash/scooby
Usage: usermod [options] LOGIN

Options:
  -b, --badnames               allow bad names
  -c, --comment COMMENT        new value of the GECOS field
  -d, --home HOME_DIR          new home directory for the user account
  -e, --expiredate EXPIRE_DATE set account expiration date to EXPIRE_DATE
  -f, --inactive INACTIVE      set password inactive after expiration
                               to INACTIVE
  -g, --gid GROUP              force use GROUP as new primary group
  -G, --groups GROUPS          new list of supplementary GROUPS
  -a, --append                append the user to the supplemental GROUPS
                               mentioned by the -G option without removing
                               the user from other groups
  -h, --help                  display this help message and exit
  -l, --login NEW_LOGIN        new value of the login name
  -L, --lock                  lock the user account
  -m, --move-home             move contents of the home directory to the
                               new location (use only with -d)
  -o, --non-unique            allow using duplicate (non-unique) UID
  -p, --password PASSWORD      use encrypted password for the new password
  -R, --root CHROOT_DIR        directory to chroot into
  -P, --prefix PREFIX_DIR      prefix directory where are located the /etc/* files
  -s, --shell SHELL            new login shell for the user account
  -u, --uid UID               new UID for the user account
  -U, --unlock                unlock the user account
  -v, --add-subuids FIRST-LAST add range of subordinate uids
  -V, --del-subuids FIRST-LAST remove range of subordinate uids
  -w, --add-subgids FIRST-LAST add range of subordinate gids
  -W, --del-subgids FIRST-LAST remove range of subordinate gids
  -Z, --selinux-user SEUSER    new SELinux user mapping for the user account

ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ su - scooby
Password:
$
```

```
$ sudo addgroup jolly
[sudo] password for scooby:
scooby is not in the sudoers file.  This incident will be reported.
$
```

```
ubuntu027@ubuntu:~$ sudo addgroup jolly
Adding group `jolly' (GID 1007) ...
Done.
ubuntu027@ubuntu:~$ sudo groupadd anime
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ cat /etc/group
```

```
 messagebus:x:104:
 systemd-timesync:x:105:
 input:x:106:
 sgx:x:107:
 kvm:x:108:
 render:x:109:
 lxd:x:110:ubuntu027
 _ssh:x:111:
 crontab:x:112:
 syslog:x:113:
 uuidd:x:114:
 tcpdump:x:115:
 tss:x:116:
 landscape:x:117:
 fwupd-refresh:x:118:
 ubuntu027:x:1000:
 rtkit:x:119:
 avahi:x:120:
 netdev:x:121:
 pulse:x:122:
 pulse-access:x:123:
 scanner:x:124:saned
 saned:x:125:
 colord:x:126:
 ssl-cert:x:127:
 xrdp:x:128:
 lightdm:x:129:
 nopasswdlogin:x:130:
 tom:x:1001:tom
 developer:x:1002:
 devops:x:1003:
 designer:x:1004:
 jerry:x:1005:
 scooby:x:1006:
 jolly:x:1007:
 anime:x:1008:
 ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ sudo delgroup jolly
Removing group `jolly' ...
Done.
ubuntu027@ubuntu:~$ sudo groupdel anime
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ cat /etc/group
```

```
systemd-network:x:102:
systemd-resolve:x:103:
messagebus:x:104:
systemd-timesync:x:105:
input:x:106:
sgx:x:107:
kvm:x:108:
render:x:109:
lxd:x:110:ubuntu027
_ssh:x:111:
crontab:x:112:
syslog:x:113:
uuidd:x:114:
tcpdump:x:115:
tss:x:116:
landscape:x:117:
fwupd-refresh:x:118:
ubuntu027:x:1000:
rtkit:x:119:
avahi:x:120:
netdev:x:121:
pulse:x:122:
pulse-access:x:123:
scanner:x:124:saned
saned:x:125:
colord:x:126:
ssl-cert:x:127:
xrdp:x:128:
lightdm:x:129:
nopasswdlogin:x:130:
tom:x:1001:tom
developer:x:1002:
devops:x:1003:
designer:x:1004:
jerry:x:1005:
scooby:x:1006:
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo deluser --remove-home jerry
Looking for files to backup/remove ...
Removing files ...
Removing user `jerry' ...
Warning: group `jerry' has no more members.
Done.
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ sudo userdel -r scooby
userdel: scooby mail spool (/var/mail/scooby) not found
ubuntu027@ubuntu:~$ _
```

```
userdel: scooby mail spool (/var/mail/scooby) not found
ubuntu027@ubuntu:~$ cat /etc/passwd
```

```
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
Ubuntu Server  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
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534::/nonexistent:/usr/sbin/nologin
systemd-network:x:101:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:102:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:104::/nonexistent:/usr/sbin/nologin
systemd-timesync:x:104:105:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
pollinate:x:105:1:::/var/cache/pollinate:/bin/false
syslog:x:106:113::/home/syslog:/usr/sbin/nologin
uuidd:x:107:114::/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:115::/nonexistent:/usr/sbin/nologin
tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false
landscape:x:110:117::/var/lib/landscape:/usr/sbin/nologin
fwupd-refresh:x:111:118:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
usbmux:x:112:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
sshd:x:113:65534::/run/sshd:/usr/sbin/nologin
ubuntu027:x:1000:1000:irraj:/home/ubuntu027:/bin/bash
lxd:x:999:100::/var/snap/lxd/common/lxd:/bin/false
rtkit:x:114:119:RealtimeKit,,,:/proc:/usr/sbin/nologin
avahi:x:115:120:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
pulse:x:116:122:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
saned:x:117:125::/var/lib/saned:/usr/sbin/nologin
colord:x:118:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
xrdp:x:119:128::/run/xrdp:/usr/sbin/nologin
lightdm:x:120:129:Light Display Manager:/var/lib/lightdm:/bin/false
tom:x:1001:1004:,,,:/home/tom:/bin/bash
ubuntu027@ubuntu:~$
```

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

```
ubuntu027@ubuntu:~$ sudo adduser student
Adding user `student' ...
Adding new group `student' (1005) ...
Adding new user `student' (1002) with group `student' ...
Creating home directory `/home/student' ...
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 []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ su - student
Password:
student@ubuntu:~$ _
```

```
student@ubuntu:~$ touch file1
student@ubuntu:~$ mkdir -p dir1
student@ubuntu:~$ touch dir1/file2
student@ubuntu:~$ ls -l
total 4
drwxrwxr-x 2 student student 4096 Nov  7 05:09 dir1
-rw-rw-r-- 1 student student    0 Nov  7 05:08 file1
student@ubuntu:~$ _
```

```
student@ubuntu:~$ sudo chown tom file1
[sudo] password for student:
student is not in the sudoers file.  This incident will be reported.
student@ubuntu:~$ _
```

```
student@ubuntu:~$ ls -l file1
-rw-rw-r-- 1 tom student 0 Nov  7 05:08 file1
student@ubuntu:~$ _
```

```
student@ubuntu:~$ sudo chgrp devops file1
[sudo] password for student:
student is not in the sudoers file.  This incident will be reported.
student@ubuntu:~$ ls -l file1
-rw-rw-r-- 1 tom student 0 Nov  7 05:08 file1
student@ubuntu:~$ _
```

```
student@ubuntu:~$ ls -l
total 4
drwxrwxr-x 2 student student 4096 Nov  7 05:09 dir1
-rw-rw-r-- 1 tom     student    0 Nov  7 05:08 file1
student@ubuntu:~$ ls -l dir1
total 0
-rw-rw-r-- 1 student student 0 Nov  7 05:09 file2
student@ubuntu:~$ ls -l dev/null
ls: cannot access 'dev/null': No such file or directory
student@ubuntu:~$ ls -l /dev/null
crw-rw-rw- 1 root root 1, 3 Nov  7 03:46 /dev/null
student@ubuntu:~$ _
```

```
student@ubuntu:~$ file file1 dir1 /dev/null
file1:     empty
dir1:      directory
/dev/null: character special (1/3)
student@ubuntu:~$
```

```
ubuntu027@ubuntu:~$
```

Task 6 – Change permissions using symbolic mode

1. **Ensure Student and file present:**

```
hania@ubuntu:~$ su - student
Password:
student@ubuntu:~$
```

```
student@ubuntu:~$ cd ~
student@ubuntu:~$ ls -l file1
-rw-rw-r-- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

2. Remove all permissions:

```
student@ubuntu:~$ chmod -rwx file1
student@ubuntu:~$ ls -l file1
---------- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

3. Add read to all:

```
student@ubuntu:~$ chmod +r file1
student@ubuntu:~$ ls -l file1
-r--r--r-- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

4. Add execute to user:

```
student@ubuntu:~$ chmod u+x file1
student@ubuntu:~$ ls -l file1
-r-xr--r-- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

5. Add write to user and group:

```
student@ubuntu:~$ chmod ug+w file1
student@ubuntu:~$ ls -l file1
-rwxrw-r-- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

6. Remove all permissions (explicit):

```
student@ubuntu:~$ chmod ugo-rwx file1
student@ubuntu:~$ ls -l file1
---------- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

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

```
student@ubuntu:~$ su - student
Password:
student@ubuntu:~$ cd ~
student@ubuntu:~$ ls -l file1
---------- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

1. Set all to rwx:

```
student@ubuntu:~$ chmod u=rwx,g=rwx,o=rwx file1
student@ubuntu:~$ ls -l file1
-rwxrwxrwx 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

2. Remove execute from group and others:

```
student@ubuntu:~$ chmod g=rw,o=rw file1
student@ubuntu:~$ ls -l file1
-rwxrw-rw- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

3. Remove all permissions:

```
student@ubuntu:~$ chmod u=,g=,o= file1
student@ubuntu:~$ ls -l file1
---------- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

Task 8 – Change permissions using numeric (octal) mode

```
student@ubuntu:~$ su - student
Password:
student@ubuntu:~$ cd ~
student@ubuntu:~$ ls -l file1
---------- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

1.

```
                1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ chmod 777 file1
student@ubuntu:~$ ls -l file1
-rwxrwxrwx 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

2.

```
student@ubuntu:~$ chmod 700 file1
student@ubuntu:~$ ls -l file1
-rwx------ 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

3.

```
student@ubuntu:~$ chmod 744 file1
student@ubuntu:~$ ls -l file1
-rwxr--r-- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

4.

```
student@ubuntu:~$ chmod 640 file1
student@ubuntu:~$ ls -l file1
-rw-r----- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

5.

```
student@ubuntu:~$ chmod 664 file1
student@ubuntu:~$ ls -l file1
-rw-rw-r-- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$
```

6.

```
student@ubuntu:~$ chmod 775 file1
student@ubuntu:~$ ls -l file1
-rwxrwxr-x 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

7.

```
student@ubuntu:~$ chmod 750 file1
student@ubuntu:~$ ls -l file1
-rwxr-x--- 1 student student 0 Nov  3 10:17 file1
student@ubuntu:~$ _
```

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

1.

```
student@ubuntu:~$ sudo cat /var/log/syslog/ | less
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$
```

2.

```
student@ubuntu:~$ sudo cat /var/log/syslog/ | more
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$
```

3.

```
student@ubuntu:~$ sudo grep -E 'fail|error' /var/log/syslog | head
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$
```

4.

redirect

```
student@ubuntu:~$ sudo grep -i systemd /var/log/syslog  > ~/syslog_systemd.txt
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$
```

Append

```
student@ubuntu:~$ sudo grep -i networked /var/log/syslog  >> ~/syslog_systemd.txt
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$ _
```

```
student@ubuntu:~$ cat ~/syslog_systemd.txt
student@ubuntu:~$
```

Alternative (journalctl) if needed:

```
student@ubuntu:~$ sudo journalctl | less
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$ _
```

```
student@ubuntu:~$ sudo journalctl -u systemd  | grep -i error >~/journal_errors.txt
[sudo] password for student:
student is not in the sudoers file.
student@ubuntu:~$ _
```

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

`ubuntu027@ubuntu: ~`

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

`ubuntu027@ubuntu: ~`

```bash
#!/bin/bash
# Define and show var1
var1="Hello from Lab 6"
echo "var1: $var1"
# Save ls -l to variable and display
allFiles="$(ls -l)"
echo "allFiles (ls -l):"
echo "$allFiles"
~
~
~
~
~
~
~
~
~
```

```
ubuntu027@ubuntu:~$ chmod u+x ./setup.sh
ubuntu027@ubuntu:~$ ./setup.sh
var1: Hello from Lab 6
allFiles (ls -l):
total 60
-rw-rw-r-- 1 ubuntu027 ubuntu027  427 Oct 23 09:04 answer.md
-rw-rw-r-- 1 ubuntu027 ubuntu027   66 Oct 23 16:06 apt_update_vs_upgrade.md
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Desktop
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Documents
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Downloads
drwxrwxr-x 3 ubuntu027 ubuntu027 4096 Oct 23 09:08 lab4
drwxrwxr-x 2 ubuntu027 ubuntu027 4096 Oct 24 08:05 Lab5
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Music
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Pictures
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Public
-rwxrw-r-- 1 ubuntu027 ubuntu027  117 Nov  7 06:42 setup.sh
drwx------ 3 ubuntu027 ubuntu027 4096 Oct 24 04:53 snap
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Templates
drwxrwxr-t 2 ubuntu027 ubuntu027 4096 Oct 24 07:43 thinclient_drives
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Videos
ubuntu027@ubuntu:~$ _
```

```bash
nd show var1
var1="Hello from Lab 6"
echo "var1: $var1"
# Save ls -l to variable and display
allFiles="$(ls -l)"
echo "allFiles (ls -l):"
echo "$allFiles"
# Directory check
if [ -d "dir1" ]; then
  echo "Directory dir1 exists."
else
  echo "Directory dir1 does not exist. Creating..."
  mkdir -p "dir1"
  echo "Directory dir1 created."
fi
```

```
ubuntu027@ubuntu:~$ ./setup.sh
./setup.sh: line 1: nd: command not found
var1: Hello from Lab 6
allFiles (ls -l):
total 60
-rw-rw-r-- 1 ubuntu027 ubuntu027  427 Oct 23 09:04 answer.md
-rw-rw-r-- 1 ubuntu027 ubuntu027   66 Oct 23 16:06 apt_update_vs_upgrade.md
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Desktop
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Documents
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Downloads
drwxrwxr-x 3 ubuntu027 ubuntu027 4096 Oct 23 09:08 lab4
drwxrwxr-x 2 ubuntu027 ubuntu027 4096 Oct 24 08:05 Lab5
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Music
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Pictures
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Public
-rwxrw-r-- 1 ubuntu027 ubuntu027  340 Nov  7 06:45 setup.sh
drwx------ 3 ubuntu027 ubuntu027 4096 Oct 24 04:53 snap
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Templates
drwxrwxr-t 2 ubuntu027 ubuntu027 4096 Oct 24 07:43 thinclient_drives
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Videos
./setup.sh: line 16: syntax error: unexpected end of file
ubuntu027@ubuntu:~$
```

ubuntu027@ubuntu: ~

```bash
nd show var1
var1="Hello from Lab 6"
echo "var1: $var1"
# Save ls -l to variable and display
allFiles="$(ls -l)"
echo "allFiles (ls -l):"
echo "$allFiles"
# Directory check
if [ -d "dir1" ]; then
  echo "Directory dir1 exists."
else
  echo "Directory dir1 does not exist. Creating..."
  mkdir -p "dir1"
  echo "Directory dir1 created."
fi
# File check
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
```

```
ubuntu027@ubuntu:~$ ./setup.sh
./setup.sh: line 1: nd: command not found
var1: Hello from Lab 6
allFiles (ls -l):
total 64
-rw-rw-r-- 1 ubuntu027 ubuntu027  427 Oct 23 09:04 answer.md
-rw-rw-r-- 1 ubuntu027 ubuntu027   66 Oct 23 16:06 apt_update_vs_upgrade.md
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Desktop
drwxrwxr-x 2 ubuntu027 ubuntu027 4096 Nov  7 06:50 dir1
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Documents
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Downloads
drwxrwxr-x 3 ubuntu027 ubuntu027 4096 Oct 23 09:08 lab4
drwxrwxr-x 2 ubuntu027 ubuntu027 4096 Oct 24 08:05 Lab5
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Music
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Pictures
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Public
-rwxrw-r-- 1 ubuntu027 ubuntu027  555 Nov  7 06:46 setup.sh
drwx------ 3 ubuntu027 ubuntu027 4096 Oct 24 04:53 snap
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Templates
drwxrwxr-t 2 ubuntu027 ubuntu027 4096 Oct 24 07:43 thinclient_drives
drwxr-xr-x 2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Videos
Directory dir1 exists.
file2 already exists.
ubuntu027@ubuntu:~$ 
```

ubuntu027@ubuntu: ~

```bash
# Permission checks for dir1/file2 (user permissions)
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 permissions for $f:"
ls -l "$f"
~
~
~
~
```

```
ubuntu027@ubuntu:~$ ./setup.sh
Read permission missing; granting to user...
Write permission missing; granting to user...
Execute permission missing; granting to user...
Final permissions for dir1/file2:
-rwx------ 1 ubuntu027 ubuntu027 0 Nov  7 06:50 dir1/file2
ubuntu027@ubuntu:~$
```

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

ubuntu027@ubuntu: ~

```
#!/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

~
```

```
ubuntu027@ubuntu:~$ ./setup.sh
./setup.sh: line 4: [: : integer expression expected
 is NOT equal to 10 (-eq).
```

```
 is NOT equal to 10 (-eq).
ubuntu027@ubuntu:~$ ./setup.sh 10 Student
10 is equal to 10 (-eq).
ubuntu027@ubuntu:~$ ./setup.sh 7 Student
7 is NOT equal to 10 (-eq).
```

```
#!/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
```

```
is equal to 10 (-ne false).
ubuntu027@ubuntu:~$ ./setup.sh 7 Student
7 is NOT equal to 10 (-eq).
7 is not equal to 10 (-ne).
ubuntu027@ubuntu:~$ ./setup.sh 10 Student
10 is equal to 10 (-eq).
10 is equal to 10 (-ne false).
ubuntu027@ubuntu:~$ _
```

ubuntu027@ubuntu: ~

```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
```

```
ubuntu027@ubuntu:~$ ./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).
ubuntu027@ubuntu:~$ ./setup.sh 12 Student
12 is NOT equal to 10 (-eq).
12 is not equal to 10 (-ne).
12 is greater than 10 (-gt).
ubuntu027@ubuntu:~$
```

```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
~
```

```
ubuntu027@ubuntu:~$ vim setup.sh
ubuntu027@ubuntu:~$ ./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).
ubuntu027@ubuntu:~$ ./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).
ubuntu027@ubuntu:~$
```

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

```
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
ubuntu027@ubuntu:~$
```

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

```
 is not greater than or equal to 10 (-ge).
ubuntu027@ubuntu:~$ vim setup.sh
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
10 is less than or equal to 10 (-le).
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
12 is NOT less than or equal to 10 (-le).
ubuntu027@ubuntu:~$
```

```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 "$num is greater than or equal to 10 (-ge)."
else
        echo "$num is NOT greater than or equal to 10 (-ge)."
         fi
if [ "$num" -le 10 ]; then
  echo "$num is less than or equal to 10 (-le)."
else
        echo "$num is NOT less than or equal to 10 (-le)."
fi
if [ "$str" = "Student" ]; then
        echo "Second argument equals 'Student' ( = )."
  else
            echo "Second argument does NOT equal 'Student' ( = )."
fi
~
~
```

```
Second argument equals 'Student' ( = ).
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
10 is less than or equal to 10 (-le).
Second argument equals 'Student' ( = ).
ubuntu027@ubuntu:~$
```

```bash
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 or equal to 10 (-ge)."
else
      echo "$num is NOT greater than or equal to 10 (-ge)."
        fi
if [ "$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
if [ "$str" = "Student" ]; then
        echo "Second argument equals 'Student' ( = )."
  else
        echo "Second argument does NOT equal 'Student' ( = )."
fi
if [ "$str" != "Student" ]; then
        echo "Second argument is not equal to 'Student' ( != )."
  else
        echo "Second argument equals 'Student' ( != false)."
fi
if [ -z "$str" ]; then
        echo "Second argument is empty (zero-length)."
  else
        echo "Second argument is not empty."
fi
-- INSERT --
```

```
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
10 is less than or equal to 10 (-le).
Second argument does NOT equal 'Student' ( = ).
Second argument is not equal to 'Student' ( != ).
Second argument is empty (zero-length).
ubuntu027@ubuntu:~$ ./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 or equal to 10 (-ge).
10 is less than or equal to 10 (-le).
Second argument equals 'Student' ( = ).
Second argument equals 'Student' ( != false).
Second argument is not empty.
ubuntu027@ubuntu:~$
```

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

ubuntu027@ubuntu: ~

```bash
#!/bin/bash
# Print all arguments using $*
echo "Printing all arguments using \$*:"
for arg in $*; do
        echo "Argument: $arg"
  done

~
~
```

```
ubuntu027@ubuntu:~$ chmod +x setup.sh
ubuntu027@ubuntu:~$ ./setup.sh one "two words" three
Printing all arguments using $*:
Argument: one
Argument: two
Argument: words
Argument: three
```

```bash
#!/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"

~
```

```
ubuntu027@ubuntu:~$ vim setup.sh
ubuntu027@ubuntu:~$ ./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
ubuntu027@ubuntu:~$
```

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

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

~
```

```
ubuntu027@ubuntu:~$ vim setup.sh
ubuntu027@ubuntu:~$ ./setup.sh
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
Final total: 7
Now calling sum_two function:
Enter a number (or 'q' to quit):
```

```
        done
        echo "Final total: $sum"
        # Function to accumulate scores interactively
        sum_two() {
                sum=0
                while true; do
                        read -p "Enter a number (or 'q' to quit): " input
                        if [ "$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
        # 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"
T --                                                                    43,54-117
```

```
ubuntu027@ubuntu:~$ chmod +x setup.sh
ubuntu027@ubuntu:~$ ./setup.sh
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
Final total: 7
Now calling sum_two function:
Enter a number (or 'q' to quit): q
Function final total: 0
Now demonstrating sum_args function:
sum_args(3,4) returned: 7
ubuntu027@ubuntu:~$
```

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

Create a new fork

A *fork* is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project. View existing forks.

Required fields are marked with an asterisk (*).

Owner *

[🐙 23-22411-027-max ▾] / **Repository name ***

[UbuntuMachine]

✓ **UbuntuMachine is available.**

By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.
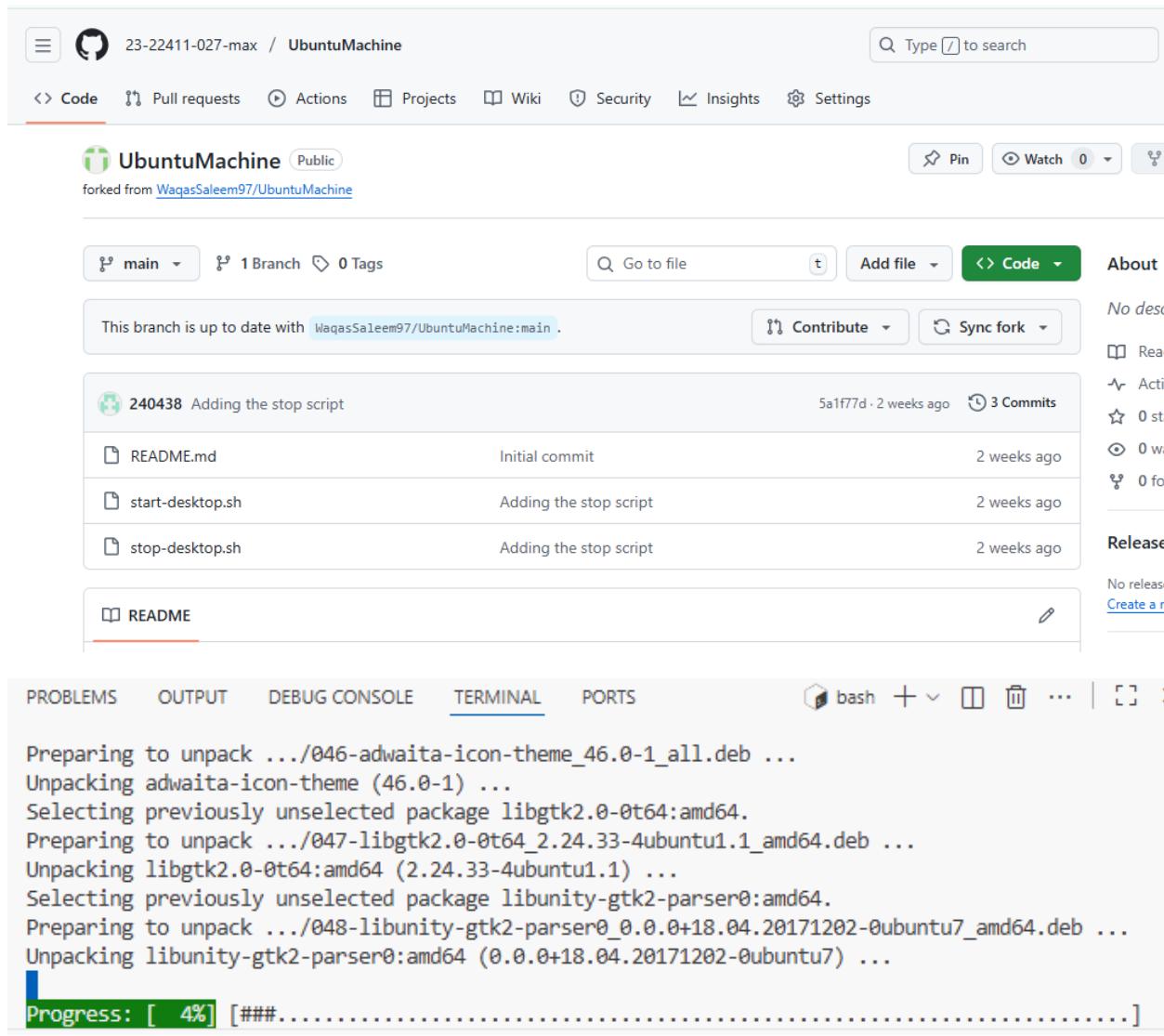
Description

[   ]

0 / 350 characters

☑ Copy the `main` branch only

Contribute back to WaqasSaleem97/UbuntuMachine by adding your own branch. Learn more.

ⓘ You are creating a fork in your personal account.

☰ 🐙 23-22411-027-max / **UbuntuMachine**   [🔍 Type / to search   ]

<> Code   ⑂ Pull requests   ⊙ Actions   ▦ Projects   ▢ Wiki   🛡 Security   📈 Insights   ⚙ Settings

🐙 **UbuntuMachine** Public   [📌 Pin] [👁 Watch 0 ▾] ⑂

forked from WaqasSaleem97/UbuntuMachine

[⑂ main ▾]   [⑂ 1 Branch] [◇ 0 Tags]   [🔍 Go to file   t] [Add file ▾] [<> Code ▾]   **About**

No desc

This branch is up to date with WaqasSaleem97/UbuntuMachine:main .   [⑂ Contribute ▾] [🔄 Sync fork ▾]   📖 Rea

⌁ Acti

🐙 **240438** Adding the stop script   5a1f77d · 2 weeks ago   🕑 3 Commits   ☆ 0 sta

👁 0 wa

📄 README.md   Initial commit   2 weeks ago   ⑂ 0 fo

📄 start-desktop.sh   Adding the stop script   2 weeks ago

📄 stop-desktop.sh   Adding the stop script   2 weeks ago   **Release**

No release

📖 **README**   ✏   Create a n

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   🟦 bash + ▾   ▢   🗑   ⋯   ⌗ ⊏⊐

```
Preparing to unpack .../046-adwaita-icon-theme_46.0-1_all.deb ...
Unpacking adwaita-icon-theme (46.0-1) ...
Selecting previously unselected package libgtk2.0-0t64:amd64.
Preparing to unpack .../047-libgtk2.0-0t64_2.24.33-4ubuntu1.1_amd64.deb ...
Unpacking libgtk2.0-0t64:amd64 (2.24.33-4ubuntu1.1) ...
Selecting previously unselected package libunity-gtk2-parser0:amd64.
Preparing to unpack .../048-libunity-gtk2-parser0_0.0.0+18.04.20171202-0ubuntu7_amd64.deb ...
Unpacking libunity-gtk2-parser0:amd64 (0.0.0+18.04.20171202-0ubuntu7) ...

Progress: [  4%] [###.....................................................]
```

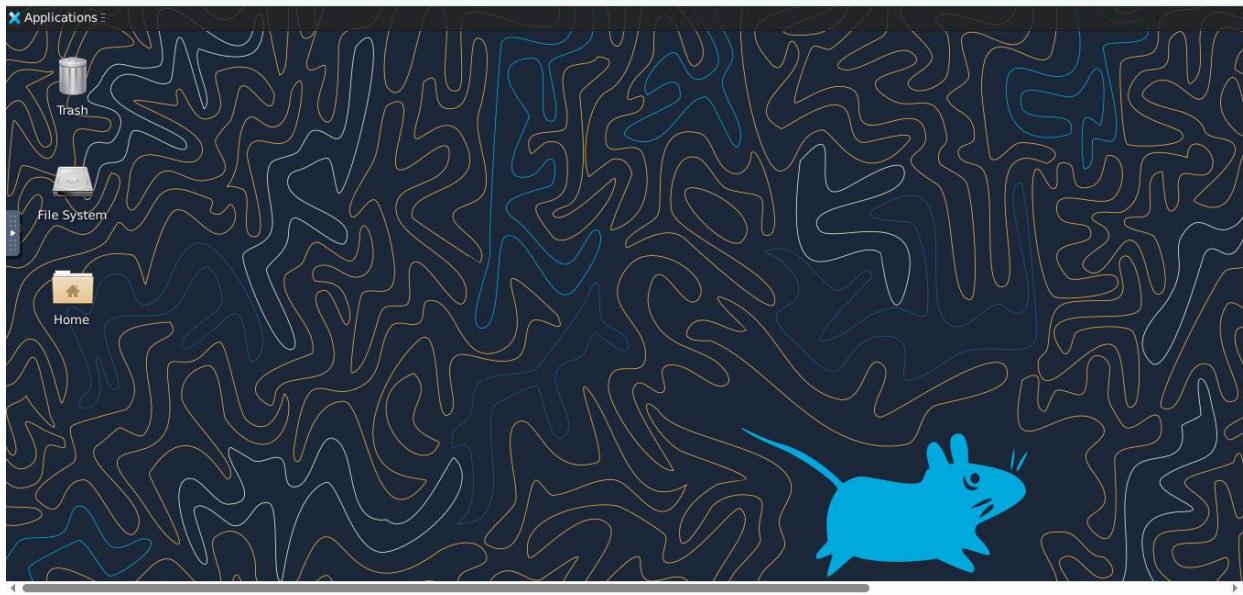| Port	Forwarded Add...	Running Process	Visibility	Origin
● 5900	https://ubiquitou...	x11vnc -display :1 -rfbauth /ho...	🔒 Private	Auto Forwarded
● 5901	https://ubiquitou...	x11vnc -display :1 -rfbauth /ho...	🔒 Private	Auto Forwarded
● 6080	https://ubiquitou...	/usr/bin/python3 /usr/bin/web...	🔒 Private	Auto Forwarded

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS ③

Add Port

Directory listing for /

- app/
- core/
- include/
- utils/
- vendor/
- vnc.html
- vnc_auto.html@
- vnc_lite.html

```
@23-22411-027-max →/workspaces/UbuntuMachine (main) $ ./stop-desktop.sh
noVNC server not running.
[*] Stopping x11vnc server...
x11vnc server not running.
[*] Stopping XFCE desktop session...
XFCE4 session not running.
[*] Stopping virtual X server (Xvfb)...
Xvfb not running.
[√] All services stopped.
@23-22411-027-max →/workspaces/UbuntuMachine (main) $
```