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**Subject: Cloud Computing**

**Semester & Section : V-B**

**Lab :06**

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

- task1\_set\_root\_password.png

```
There are stopped jobs.  
zuha@zuha:~/Lab5$ sudo passwd root  
[sudo] password for zuha:  
New password:  
Retype new password:  
passwd: password updated successfully  
zuha@zuha:~/Lab5$
```

- task1\_su\_root.png

```
zuha@zuha:~/Lab5$ su -  
whoami  
id  
Password:  
su: Authentication failure  
zuha  
uid=1000(zuha) gid=1000(zuha) groups=1000(zuha),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),101(lxd)
```

- task1\_exit\_to\_user.png

```
uid=1000(zuha) gid=1000(zuha)  
zuha@zuha:~/Lab5$ exit  
whoami  
logout  
There are stopped jobs.  
zuha
```

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

- task2\_adduser\_tom.png

```

zuhu@zuhu:~/Lab5$ sudo adduser tom
[sudo] password for zuhu:
Sorry, try again.
[sudo] password for zuhu:
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 []: Zuhu_Irfan
    Room Number []: 1
    Work Phone []: 03435902786
    Home Phone []: 1212
    Other []: xyz
Is the information correct? [Y/n] y
info: Adding new user `tom' to supplemental / extra groups `users' ...
info: Adding user `tom' to group `users' ...
zuhu@zuhu:~/Lab5$ 

```

- task2\_verify\_passwd.png

```

zuhu@zuhu:~/Lab5$ 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/nologin
systemd-timesync:x:997:997:systemd Time Synchronization:/usr/sbin/nologin
dhcpcd:x:100:65534:DHCP Client Daemon,./usr/lib/dhcpcd:/bin/false
messagebus:x:101:102::/nonexistent:/usr/sbin/nologin
systemd-resolve:x:992:992:systemd Resolver:/usr/sbin/nologin
pollinate:x:102:1::/var/cache/pollinate:/bin/false
polkitd:x:991:991:User for polkitd:/usr/sbin/nologin
syslog:x:103:104::/nonexistent:/usr/sbin/nologin
uuid:x:104:105::/run/uuid:/usr/sbin/nologin
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
zuhu:x:1000:1000:zuhu:/home/zuhu:/bin/bash
rtkit:x:110:110:RealtimeKit,,,:/proc:/usr/sbin/nologin
cups-pk-helper:x:111:111:user for cups-pk-helper service,,,:/nonexistent:/usr/sbin/nologin
dnsmasq:x:999:65534:dnsmasq:/var/lib/misc:/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:1001:1001:Zuhu_Irfan,1,03435902786,1212,xyz:/home/tom:/bin/bash

```

- task2\_verify\_group.png

```
zuhu@zuhu:~/Lab5$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,zuhu
tty:x:5:
dialin: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:zuhu
floppy:x:25:
tape:x:26:
sudo:x:27:zuhu
audio:x:29:pulse
dip:x:30:zuhu
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
src:x:40:
shadow:x:42:
utmp:x:43:
video:x:44:
sasl:x:45:
plugdev:x:46:zuhu
staff:x:50:
games:x:60:
users:x:100:tom
nogroup:x:65534:
systemd-journal:x:999:
systemd-network:x:998:
systemd-timesync:x:997:
input:x:996:
sg:x:995:
kvm:x:994:
render:x:993:
lxd:x:101:zuhu
messagebus:x:102:
systemd-resolve:x:992:
_ssh:x:103:
polkitd:x:991:
crontab:x:998:
syslog:x:104:
suidd:x:105:
rdma:x:106:
tcpdump:x:107:
tss:x:108:
landscape:x:109:
fwupd-refresh:x:999:
zuhu:x:1000:
rtkit:x:110:
lpadmin:x:111:
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:
tom:x:1001:
zuhu:x:1002:zuhu
```

- task2\_verify\_shadow.png

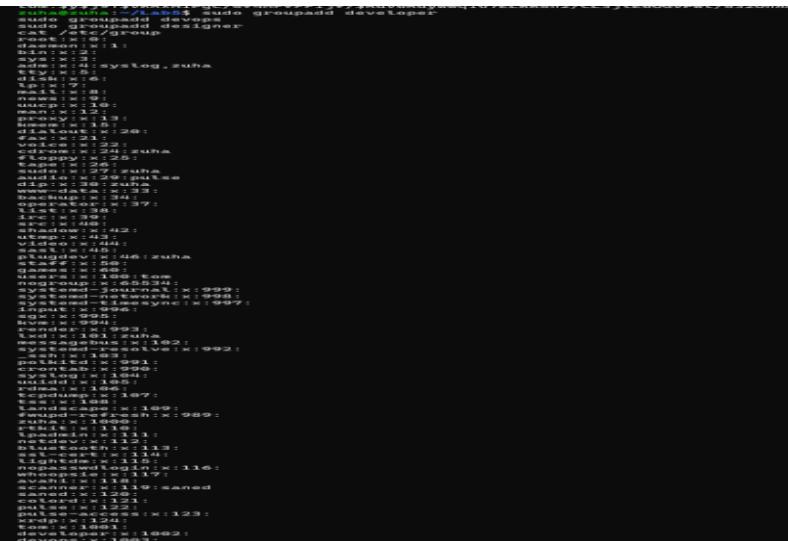
```

zuhu@zuhu:~/Lab5$ sudo cat /etc/shadow
root:$y$j9T$Z6rlDgmLjfcpA0q017Uc.0$30rZxy1hP/ML5cYzJ4lEzgF9uXK9hiMPe7B2DZ/JaG0:20396:0:99999:7:::
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:::
nobody:*:20305:0:99999:7:::
systemd-network:*:20305:::::
systemd-timesync!*:20305:::::
dhcpcd!:20305:::::
messagebus!:20305:::::
systemd-resolve!*:20305:::::
pollinate!:20305:::::
polkitd!*:20305:::::
syslog!:20305:::::
uidd!:20305:::::
tcpdump!:20305:::::
tss!:20305:::::
landscape!:20305:::::
fwupd-refresh!*:20305:::::
usbmux!:20385:::::
sshd!:20385:::::
zuhu:$6$LRVAoMkbV4TLcB0m$r3PZaLH78M.dgPfmL6r/2UA8fwQS8pRTA433Czpto1sWmwAO2dINDYS8xwZWPNLLeVUhFLy0h9x1c5Re6h3pg0:20385:0:99999:7:::
rtkit!:20385:::::
dnsmasq!:20385:::::
cups-pk-helper!:20385:::::
lightdm!:20385:::::
whoopsie!:20385:::::
avahi!:20385:::::
saned!:20385:::::
colord!:20385:::::
pulse!:20385:::::
cups-browsed!:20385:::::
xrdb!:20385:::::
tom:$y$j9T$KRxH1PgC/0f4MFFFFIjf/$Ruv6RuyWWqIo7ELkk8n2/CL3jLE60GvPwt/8320nAmB:20396:0:99999:7:::

```

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

- task3\_groupadd.png



- task3\_change\_primary\_group.png

```

designer:~.1004.
zuhu@zuhu:~/Lab5$ sudo usermod -g designer tom
id tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),100(users)

```

- task3\_add\_secondary\_groups.png

```
zuhu@zuhu:~/Lab5$ sudo usermod -aG developer,devops tom
id tom
groups tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),100(users),1002(developer),1003(devops)
tom : designer users developer devops
```

- task3\_reset\_secondary\_groups.png

```
zuhu@zuhu:~/Lab5$ sudo usermod -G tom tom
id tom
groups tom
uid=1001(tom) gid=1004(designer) groups=1004(designer),1001(tom)
tom : designer tom
```

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

- task4\_add\_users.png

```
NAME_REGEX in configuration.
zuhu@zuhu:~/Lab5$ sudo adduser jerry
info: Adding user `jerry' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `jerry' (1006) ...
info: Adding new user `jerry' (1006) with group `jerry (1006)' ...
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 []: 1
      Work Phone []: 12324
      Home Phone []: 133
      Other []: dwd
Is the information correct? [Y/n] Y
info: Adding new user `jerry' to supplemental / extra groups `users' ...
info: Adding user `jerry' to group `users' ...
zuhu@zuhu:~/Lab5$ sudo useradd scooby
```

- task4\_scooby\_su\_auth\_failure.png

```
zuhu@zuhu:~$ su - scooby
Password:
su: Authentication failure
```

- task4\_set\_password\_scooby.png

```
Su: Authentication failure
zuhu@zuhu:~$ sudo passwd scooby
New password:
Retype new password:
passwd: password updated successfully
```

- task4\_scooby\_su\_no\_home.png

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

- task4\_scooby\_no\_home.png

```
zuhu@zuha:~$ cat /etc/passwd
root:x:0:0:root:/bin/bash
daemon:x:1:1:daemon:/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/nologin
systemd-timesync:x:997:997:systemd Time Synchronization:/usr/sbin/nologin
dhcpcd:x:100:65534:DHCP Client Daemon,,,./usr/lib/dhcpcd:/bin/false
messagebus:x:101:102::/nonexistent:/usr/sbin/nologin
systemd-resolve:x:992:992:systemd Resolver:/usr/sbin/nologin
pollinate:x:102:1::/var/cache/pollinate:/bin/false
polkitd:x:991:991:User for polkitd:/usr/sbin/nologin
syslog:x:103:104::/nonexistent:/usr/sbin/nologin
uuidd:x:104:105::/run/uuid:/usr/sbin/nologin
tcpdump:x:105:107::/nonexistent:/usr/sbin/nologin
tss:x:106:108:TPM software stack,,,/var/lib/tppm:/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
zuhu:x:1000:1000:zuhu:/home/zuhu:/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:Zuhu_Irfan,1,03435962786,1212,xyz:/home/tom:/bin/bash
Scooby:x:1002:1005::/home/Scooby:/bin/sh
Jerry:x:1006:1006:Jerry,1,12324,133,dwd:/home/jerry:/bin/bash
scooby:x:1007:1007::/home/scooby:/bin/sh
```

```
zuhu@zuha:~$ ls -ld /home/scooby
ls: cannot access '/home/scooby': No such file or directory
```

- task4\_scooby\_create\_home.png

```
zuhu@zuha:~$ 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  4 09:33 /home/scooby
```

- task4\_scooby\_login\_success.png

```
-rw----- 1 zuha zuha 10180 Nov  4 07:07 .xsession-errors.old
zuhu@zuha:~$ su - scooby
pwd
ls -la
Password:
su: warning: cannot change directory to /home/scooby: Permission denied
$ exit
```

- task4\_verify\_users.png

```
cat /etc/pa/home/zuhा
total 184
drwxr-x--- 20 zuha zuha 4096 Nov  4 09:26 .
drwxr-xr-x  7 root root 4096 Nov  4 09:35 ..
-rw-rw-r--  1 zuha zuha 109 Oct 24 05:56 answer.md
-rw-rw-r--  1 zuha zuha 152 Oct 24 07:50 apt_update_vs_upgrade.md
-rw-----  1 zuha zuha 4364 Nov  4 09:26 .bash_history
-rw-r--r--  1 zuha zuha 220 Mar 31 2024 .bash_logout
-rw-r--r--  1 zuha zuha 3771 Mar 31 2024 .bashrc
drwx----- 9 zuha zuha 4096 Nov  4 07:55 .cache
drwx----- 8 zuha zuha 4096 Oct 27 05:39 .config
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Desktop
-rw-r--r--  1 zuha zuha 23 Oct 27 05:37 .dmrc
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Documents
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Downloads
drwx----- 3 zuha zuha 4096 Oct 27 05:37 .gnupg
-rw-----  1 zuha zuha 0 Oct 27 05:37 .ICEauthority
drwxrwxr-x  3 zuha zuha 4096 Oct 24 06:03 lab4
drwxrwxr-x  2 zuha zuha 4096 Nov  4 08:42 Lab5
drwxrwxr-x  3 zuha zuha 4096 Oct 24 05:55 .local
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Music
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Pictures
-rw-r--r--  1 zuha zuha 807 Mar 31 2024 .profile
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Public
drwx----- 3 zuha zuha 4096 Oct 24 07:59 snap
drwx----- 2 zuha zuha 4096 Oct 24 05:42 .ssh
-rw-r--r--  1 zuha zuha 0 Oct 24 10:09 .sudo_as_admin_successful
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Templates
drwxrwxr-t  2 zuha zuha 4096 Oct 27 07:17 thinclient_drives
drwxr-xr-x  2 zuha zuha 4096 Oct 27 05:37 Videos
-rw-----  1 zuha zuha 6199 Nov  4 09:26 .viminfo
drwxrwxr-x  2 zuha zuha 4096 Oct 24 08:23 .vscode
-rw-----  1 zuha zuha 49 Nov  4 07:55 .Xauthority
-rw-r--r--  1 zuha zuha 18768 Nov  4 07:07 .xorgxrdp.10.log
-rw-r--r--  1 zuha zuha 18665 Oct 27 07:32 .xorgxrdp.10.log.old
-rw-rw-r--  1 zuha zuha 14 Oct 27 07:07 .xsession
-rw-----  1 zuha zuha 1367 Nov  4 07:55 .xsession-errors
-rw-----  1 zuha zuha 10180 Nov  4 07:07 .xsession-errors.old
```

- task4\_shell\_switching.png

```
zunagzuna:~$ [ODY]
zuhा@zuhा:~$ sudo usermod -s /bin/bash scooby
su - scooby
Password:
su: warning: cannot change directory to /home/scooby: Permission denied
-bash: /home/scooby/.bash_profile: Permission denied
scooby@zuhा:/home/zuhा$ exit
logout
-bash: /home/scooby/.bash_logout: Permission denied
```

- task4\_add\_groups.png

```
[ODY] Authentication failure
zuhा@zuhा:~$ sudo addgroup jolly
sudo groupadd anime
info: Selecting GID from range 1000 to 59999 ...
info: Adding group 'jolly' (GID 1008) ...
```

- task4\_verify\_groups.png

```
task4@task4-OptiPlex-5090: ~$ cd /etc/group
task4@task4-OptiPlex-5090: ~/etc/group$ cat /etc/group
root:x:0:root
daemon:x:1:daemon
bin:x:2:bin
sys:x:3:synthetic,root
messagebus:x:4:root
klog:x:5:klog
nobody:x:99:nobody
audio:x:100:audio
cdrom:x:101:cdrom
floppy:x:102:floppy
tape:x:103:tape
scanner:x:104:scanner
pulse:x:105:pulse
dip:x:106:dip
scanneradmin:x:107:scanner
scanneroperator:x:108:scanner
scanneroperator:x:109:scanner
scanneroperator:x:110:scanner
scanneroperator:x:111:scanner
scanneroperator:x:112:scanner
scanneroperator:x:113:scanner
scanneroperator:x:114:scanner
scanneroperator:x:115:scanner
scanneroperator:x:116:scanner
scanneroperator:x:117:scanner
scanneroperator:x:118:scanner
scanneroperator:x:119:scanner
scanneroperator:x:120:scanner
scanneroperator:x:121:scanner
scanneroperator:x:122:scanner
scanneroperator:x:123:scanner
scanneroperator:x:124:scanner
scanneroperator:x:125:scanner
scanneroperator:x:126:scanner
scanneroperator:x:127:scanner
scanneroperator:x:128:scanner
scanneroperator:x:129:scanner
scanneroperator:x:130:scanner
scanneroperator:x:131:scanner
scanneroperator:x:132:scanner
scanneroperator:x:133:scanner
scanneroperator:x:134:scanner
scanneroperator:x:135:scanner
scanneroperator:x:136:scanner
scanneroperator:x:137:scanner
scanneroperator:x:138:scanner
scanneroperator:x:139:scanner
scanneroperator:x:140:scanner
scanneroperator:x:141:scanner
scanneroperator:x:142:scanner
scanneroperator:x:143:scanner
scanneroperator:x:144:scanner
scanneroperator:x:145:scanner
scanneroperator:x:146:scanner
scanneroperator:x:147:scanner
scanneroperator:x:148:scanner
scanneroperator:x:149:scanner
scanneroperator:x:150:scanner
scanneroperator:x:151:scanner
scanneroperator:x:152:scanner
scanneroperator:x:153:scanner
scanneroperator:x:154:scanner
scanneroperator:x:155:scanner
scanneroperator:x:156:scanner
scanneroperator:x:157:scanner
scanneroperator:x:158:scanner
scanneroperator:x:159:scanner
scanneroperator:x:160:scanner
scanneroperator:x:161:scanner
scanneroperator:x:162:scanner
scanneroperator:x:163:scanner
scanneroperator:x:164:scanner
scanneroperator:x:165:scanner
scanneroperator:x:166:scanner
scanneroperator:x:167:scanner
scanneroperator:x:168:scanner
scanneroperator:x:169:scanner
scanneroperator:x:170:scanner
scanneroperator:x:171:scanner
scanneroperator:x:172:scanner
scanneroperator:x:173:scanner
scanneroperator:x:174:scanner
scanneroperator:x:175:scanner
scanneroperator:x:176:scanner
scanneroperator:x:177:scanner
scanneroperator:x:178:scanner
scanneroperator:x:179:scanner
scanneroperator:x:180:scanner
scanneroperator:x:181:scanner
scanneroperator:x:182:scanner
scanneroperator:x:183:scanner
scanneroperator:x:184:scanner
scanneroperator:x:185:scanner
scanneroperator:x:186:scanner
scanneroperator:x:187:scanner
scanneroperator:x:188:scanner
scanneroperator:x:189:scanner
scanneroperator:x:190:scanner
scanneroperator:x:191:scanner
scanneroperator:x:192:scanner
scanneroperator:x:193:scanner
scanneroperator:x:194:scanner
scanneroperator:x:195:scanner
scanneroperator:x:196:scanner
scanneroperator:x:197:scanner
scanneroperator:x:198:scanner
scanneroperator:x:199:scanner
scanneroperator:x:200:scanner
```

- task4\_delete\_groups.png

```
zhuhaizhuha:~$ sudo delgroup jolly
[sudo] password for zhuhaizhuha:
cat /etc/group
delio: Removing group "jolly" ---
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:synology,zhuhaizhuha
try:x:5:
diald:x:6:
tpp:x:7:
mail:x:8:
news:x:9:
usenet:x:10:
nntp:x:11:
proxy:x:12:
kmod:x:13:
kerneld:x:14:
dialout:x:15:
fax:x:16:
video:x:17:
cdrom:x:18::zhuhaizhuha
floppy:x:19:
tape:x:20:
audio:x:21::zhuhaizhuha
audio:x:22::pulseaudio
clip:x:23::zhuhaizhuha
www-data:x:24:
backups:x:25:
operator:x:26:
libutx:x:27:
drive:x:28:
sync:x:29:
shutdown:x:30:
utmp:x:31:
wtmp:x:32:
utmpacct:x:33:
spool:x:34:
plugsched:x:35::zhuhaizhuha
ata7:F:x:36:
game:x:37:
user:x:38:
jerry:x:39:
menggroup:x:40:5555555555:
sysboard:jerry:x:41:
sysboard-mengboard:x:42:
sysboard-timexsynch:x:43:
display:x:44:
sgpt:x:45:
kern:x:46:
root:x:47:
root:x:48:
root:x:49:
root:x:50::zhuhaizhuha
root:x:51::zhuhaizhuha
root:x:52::zhuhaizhuha
root:x:53::zhuhaizhuha
root:x:54::zhuhaizhuha
root:x:55::zhuhaizhuha
root:x:56::zhuhaizhuha
root:x:57::zhuhaizhuha
root:x:58::zhuhaizhuha
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root:x:70::zhuhaizhuha
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root:x:74::zhuhaizhuha
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root:x:78::zhuhaizhuha
root:x:79::zhuhaizhuha
root:x:80::zhuhaizhuha
root:x:81::zhuhaizhuha
root:x:82::zhuhaizhuha
root:x:83::zhuhaizhuha
root:x:84::zhuhaizhuha
root:x:85::zhuhaizhuha
root:x:86::zhuhaizhuha
root:x:87::zhuhaizhuha
root:x:88::zhuhaizhuha
root:x:89::zhuhaizhuha
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root:x:91::zhuhaizhuha
root:x:92::zhuhaizhuha
root:x:93::zhuhaizhuha
root:x:94::zhuhaizhuha
root:x:95::zhuhaizhuha
root:x:96::zhuhaizhuha
root:x:97::zhuhaizhuha
root:x:98::zhuhaizhuha
root:x:99::zhuhaizhuha
```

- task4\_delete\_users.png

```

Scooby:~:1007:
zuh@zuh:~$ sudo deluser --remove-home Jerry
sudo userdel -r Scooby
cat /etc/passwd
fatal: The user 'Jerry' does not exist.
userdel: Scooby mail spool (/var/mail/Scooby) not found
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin/nologin
bin:x:2:2: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/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:system Network Management:/:/usr/sbin/nologin
systemd-timesync:x:997:997:system Time Synchronization:/:/usr/sbin/nologin
dhcpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhcpcd:/bin/false
messagebus:x:101:102::/nonexistent:/usr/sbin/nologin
systemd-resolve:x:992:992:system Resolver:/:/usr/sbin/nologin
polkit:x:102:1:/var/cache/polkit:/bin/false
polkitd:x:991:991:User for polkitd:/:/usr/sbin/nologin
syslog:x:103:104::/nonexistent:/usr/sbin/nologin
uidd:x:104:105::/run/uidd:/usr/sbin/nologin
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
zuh:x:1000:1000:zuh:/home/zuh:/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:Zuha_Irfan,1,03435902786,1212,xyz:/home/tom:/bin/bash
jerry:x:1006:1006:Jerry,1,12324,133,dwd:/home/jerry:/bin/bash
scooby:x:1007:1007::/home/scooby:/bin/bash

```

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

- task5\_create\_student.png

```

NAME_REGEX IN configuration.
zuh@zuh:~$ 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 []: Zuha_Irfan
      Room Number []: 1
      Work Phone []: 1
      Home Phone []: 12
      Other []: sdsd
Is the information correct? [Y/n] Y
info: Adding new user 'student' to supplemental / extra groups 'users' ...
info: Adding user 'student' to group 'users' ...

```

- task5\_create\_files.png

```
zuhu@zuhu:~$ su - student
touch file1
mkdir -p dir1
touch dir1/file2
ls -l
Password:
```

- task5\_chown\_file1.png

```
Password:
student@zuhu:~$ sudo chown tom file1
ls -l file1
[sudo] password for student:
student is not in the sudoers file.
ls: cannot access 'file1': No such file or directory
student@zuhu:~$ sudo chown Tom file1
```

- task5\_chgrp\_file1.png

```
ls: cannot access 'file1': No such file or directory
student@zuhu:~$ sudo chgrp devops file1
ls -l file1
[sudo] password for student:
student is not in the sudoers file.
ls: cannot access 'file1': No such file or directory
```

- task5\_file\_types.png

```
student@zuhu:~$ ls -l
ls -l dir1
ls -l /dev/null
file file1 dir1 /dev/null
total 0
ls: cannot access 'dir1': No such file or directory
crw-rw-rw- 1 root root 1, 3 Nov  4 07:12 /dev/null
file1:    cannot open 'file1' (No such file or directory)
dir1:    cannot open 'dir1' (No such file or directory)
/dev/null: character special (1/3)
```

- task5\_exit\_student.png

```
/dev/null. character special (1,5)
student@zuha:~$ exit
logout
total 60
-rw-rw-r-- 1 zuha zuha 109 Oct 24 05:56 answer.md
-rw-rw-r-- 1 zuha zuha 152 Oct 24 07:50 apt_update_vs_upgrade.md
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Desktop
drwxrwxr-x 2 zuha zuha 4096 Nov  4 09:47 dir1
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Documents
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Downloads
-rw-rw-r-- 1 zuha zuha 0 Nov  4 09:47 file1
drwxrwxr-x 3 zuha zuha 4096 Oct 24 06:03 lab4
drwxrwxr-x 2 zuha zuha 4096 Nov  4 08:42 Lab5
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Music
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Pictures
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Public
drwx----- 3 zuha zuha 4096 Oct 24 07:59 snap
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Templates
drwxrwxr-t 2 zuha zuha 4096 Oct 27 07:17 thinclient_drives
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Videos
```

## Task 6 – Change permissions using symbolic mode

- task6\_su\_student.png

```
zuha@zuha:~$ su - student
cd ~
ls -l file1
Password:
```

- task6\_chmod\_remove\_rwx.png

```
student@zuha:~$ chmod -rwx file1
ls -l file1
chmod: cannot access 'file1': No such file or directory
ls: cannot access 'file1': No such file or directory
```

- task6\_chmod\_add\_r.png

```
ls: cannot access 'file1': No such file or directory
student@zuha:~$ chmod +r file1
ls -l file1
chmod: cannot access 'file1': No such file or directory
ls: cannot access 'file1': No such file or directory
```

- task6\_chmod\_u\_plus\_x.png

```
student@zuha:~$ chmod u+x file1
ls -l file1
chmod: cannot access 'file1': No such file or directory
ls: cannot access 'file1': No such file or directory
student@zuha:~$ |
```

- task6\_chmod\_ug\_plus\_w.png

```
zuha@zuha:~$ chmod ug+w file1
zuha@zuha:~$ ls -l file1
-rw-rw-r-- 1 zuha zuha 0 Nov  4 09:47 file1
```

- task6\_chmod\_ugo\_minus\_rwx.png

```
zuha@zuha:~$ chmod ugo-rwx file1
zuha@zuha:~$ ls -l file1
----- 1 zuha zuha 0 Nov  4 09:47 file1
```

### Task 7 – Change permissions using “set” symbolic form (u= g= o=)

- task7\_student\_context.png

```
zuha@zuha:~$ su - student
Password:
student@zuha:~$ cd ~
student@zuha:~$ ls -l file1
ls: cannot access 'file1': No such file or directory
```

- task7\_chmod\_set\_all\_rwx.png

```
zuha@zuha:~$ chmod u=rwx,g=rwx,o=rwx file1
ls -l file1
-rwxrwxrwx 1 zuha zuha 0 Nov  4 09:47 file1
```

- task7\_remove\_exec\_go.png

```
zuha@zuha:~$ chmod g=rw,o=rw file1
ls -l file1
-rwxrw-rw- 1 zuha zuha 0 Nov  4 09:47 file1
```

- task7\_remove\_all\_perms.png

```
zuha@zuha:~$ chmod u=,g=,o= file1
ls -l file1
----- 1 zuha zuha 0 Nov  4 09:47 file1
```

## Task 8 – Change permissions using numeric (octal) mode

```
student@zuha:~$ su - student  
cd ~  
ls -l file1  
Password:
```

- task8\_chmod\_777.png

```
zuha@zuha:~$ chmod 777 file1  
ls -l file1  
-rwxrwxrwx 1 zuha zuha 0 Nov  4 09:47 file1
```

- task8\_chmod\_700.png

```
zuha@zuha:~$ chmod 700 file1  
ls -l file1  
-rwx----- 1 zuha zuha 0 Nov  4 09:47 file1
```

- task8\_chmod\_744.png

```
zuha@zuha:~$ chmod 744 file1  
ls -l file1  
-rwxr--r-- 1 zuha zuha 0 Nov  4 09:47 file1
```

- task8\_chmod\_640.png

```
zuha@zuha:~$ chmod 640 file1  
ls -l file1  
-rw-r----- 1 zuha zuha 0 Nov  4 09:47 file1
```

- task8\_chmod\_664.png

```
zuha@zuha:~$ chmod 664 file1  
ls -l file1  
-rw-rw-r-- 1 zuha zuha 0 Nov  4 09:47 file1
```

- task8\_chmod\_775.png

```
zuha@zuha:~$ chmod 775 file1
ls -l file1
-rwxrwxr-x 1 zuha zuha 0 Nov  4 09:47 file1
```

- task8\_chmod\_750.png

```
zuha@zuha:~$ chmod 750 file1
ls -l file1
-rw xr-x--- 1 zuha zuha 0 Nov  4 09:47 file1
```

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

- task9\_grep\_less.png

```
[sudo] password for student:
student is not in the sudoers file.
(END)
```

- task9\_grep\_more.png

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

- task9\_grep\_head.png

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

- task9\_redirect\_overwrite.png

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

- task9\_redirect\_append.png

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

- task9\_journalctl\_alternative.png

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

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

- task10\_b1\_vim.png

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

- task10\_b1\_run.png

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

- task10\_b2\_vim.png

```
#Define and show var1
var1="Hello from Lab 06"
echo "var1:$var1"
```

- task10\_b2\_run.png

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

- task10\_b3\_vim.png

```
# Save ls -l to variable and display
allFiles="$(ls -l)"
echo "allFiles (ls -l):"
echo "$allFiles"
```

- task10\_b3\_run.png

```
zuha@zuha:~$ ./setup.sh
var1: Hello from Lab 6
allFiles (ls -l):
total 68
-rw-rw-r-- 1 zuha zuha 109 Oct 24 05:56 answer.md
-rw-rw-r-- 1 zuha zuha 152 Oct 24 07:50 apt_update_vs_upgrade.md
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Desktop
drwxrwxr-x 2 zuha zuha 4096 Nov  4 09:47 dir1
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Documents
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Downloads
-rw-r-x--- 1 zuha zuha 0 Nov  4 09:47 file1
drwxrwxr-x 3 zuha zuha 4096 Oct 24 06:03 lab4
drwxrwxr-x 2 zuha zuha 4096 Nov  4 08:42 Lab5
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Music
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Pictures
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Public
-rw-rwxr-x 1 zuha zuha 176 Nov  7 04:22 setup.sh
drwx----- 3 zuha zuha 4096 Oct 24 07:59 snap
-rw-rw-r-- 1 zuha zuha 27 Nov  6 10:45 sssetup.sh
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Templates
drwxrwxr-t 2 zuha zuha 4096 Oct 27 07:17 thinclient_drives
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Videos
```

- task10\_b4\_vim.png

```
# 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
```

- task10\_b4\_run.png

```
zuha@zuha:~$ ./setup.sh
vari: Hello from Lab 6
allFiles (ls -l):
total 68
-rw-rw-r-- 1 zuha zuha 109 Oct 24 05:56 answer.md
-rw-rw-r-- 1 zuha zuha 152 Oct 24 07:50 apt_update_vs_upgrade.md
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Desktop
drwxrwxr-x 2 zuha zuha 4096 Nov  4 09:47 dir1
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Documents
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Downloads
-rwxr-x--- 1 zuha zuha    0 Nov  4 09:47 file1
drwxrwxr-x 3 zuha zuha 4096 Oct 24 06:03 lab4
drwxrwxr-x 2 zuha zuha 4096 Nov  4 08:42 Lab5
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Music
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Pictures
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Public
-rwxrwxr-x 1 zuha zuha 377 Nov  7 04:24 setup.sh
drwx----- 3 zuha zuha 4096 Oct 24 07:59 snap
-rw-rw-r-- 1 zuha zuha 27 Nov  6 10:45 sssetup.sh
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Templates
drwxrwxr-t 2 zuha zuha 4096 Oct 27 07:17 thinclient_drives
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Videos
Directory dir1 exists.
else
    echo Directory dir1 does not exist. Creating...
    mkdir -p dir1
Directory dir1 created.
```

- task10\_b5\_vim.png

```
# 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
```

- task10\_b5\_run.png

```

zuha@zuha:~$ ./setup.sh
var1: Hello from Lab 6
allFiles (ls -l):
total 68
-rw-rw-r-- 1 zuha zuha 109 Oct 24 05:56 answer.md
-rw-rw-r-- 1 zuha zuha 152 Oct 24 07:50 apt_update_vs_upgrade.md
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Desktop
drwxrwxr-x 2 zuha zuha 4096 Nov  4 09:47 dir1
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Documents
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Downloads
-rwxr-x--- 1 zuha zuha    0 Nov  4 09:47 file1
drwxrwxr-x 3 zuha zuha 4096 Oct 24 06:03 lab4
drwxrwxr-x 2 zuha zuha 4096 Nov  4 08:42 Lab5
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Music
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Pictures
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Public
-rwxrwxr-x 1 zuha zuha 588 Nov  7 04:30 setup.sh
drwx----- 3 zuha zuha 4096 Oct 24 07:59 snap
-rw-rw-r-- 1 zuha zuha 27 Nov  6 10:45 sssetup.sh
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Templates
drwxrwxr-t 2 zuha zuha 4096 Oct 27 07:17 thinclient_drives
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Videos
Directory dir1 exists.
else
    echo Directory dir1 does not exist. Creating...
    mkdir -p dir1
Directory dir1 created.
file2 already exists.
zuha@zuha:~$
```

- task10\_b6\_vim.png

```

# 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"
```

- task10\_b6\_run.png

```

zuha@zuha:~$ ./setup.sh
var1: Hello from Lab 6
allFiles (ls -l):
total 68
-rw-rw-r-- 1 zuha zuha 109 Oct 24 05:56 answer.md
-rw-rw-r-- 1 zuha zuha 152 Oct 24 07:50 apt_update_vs_upgrade.md
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Desktop
drwxrwxr-x 2 zuha zuha 4096 Nov  4 09:47 dir1
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Documents
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Downloads
-rwxr-x--- 1 zuha zuha 0 Nov  4 09:47 file1
drwxrwxr-x 3 zuha zuha 4096 Oct 24 06:03 lab4
drwxrwxr-x 2 zuha zuha 4096 Nov  4 08:42 Lab5
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Music
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Pictures
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Public
-rwxrwxr-x 1 zuha zuha 1033 Nov  7 04:31 setup.sh
drwx----- 3 zuha zuha 4096 Oct 24 07:59 snap
-rw-rw-r-- 1 zuha zuha 27 Nov  6 10:45 sssetup.sh
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Templates
drwxrwxr-t 2 zuha zuha 4096 Oct 27 07:17 thinclient_drives
drwxr-xr-x 2 zuha zuha 4096 Oct 27 05:37 Videos
Directory dir1 exists.
else
    echo Directory dir1 does not exist. Creating...
    mkdir -p dir1
Directory dir1 created.
file2 already exists.
Final permissions for dir1/file2:
-rwxrw-r-- 1 zuha zuha 0 Nov  4 09:47 dir1/file2

```

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

- task11\_b0\_vim.png

```

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

- task11\_b0\_run.png

```

zuhadezuma: ~$ ./setup.sh
zuhadezuma: ~$ chmod +x setup.sh
zuhadezuma: ~$ ./setup.sh 10 Student
```

- task11\_b1\_vim.png

```
#!/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
```

- task11\_b1\_run.png

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

- task11\_b2\_vim.png

```
#!/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
```

- task11\_b2\_run.png

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

- task11\_b3\_vim.png

```
#!/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
~
```

- task11\_b3\_run.png

```
setup.sh 18L, 388B written
zuha@zuha:~$ ./setup.sh 12 Student
12 is NOT equal to 10 (-eq).
12 is not equal to 10 (-ne).
12 is greater than 10 (-gt).
zuha@zuha:~$ ./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).
```

- task11\_b4\_vim.png

```

#!/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
~
```

- task11\_b4\_run.png

```

setup.sh 23L, 507B written
zuha@zuha:~$ ./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).
zuha@zuha:~$ ./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).
zuha@zuha:~$
```

- task11\_b5\_vim.png

```

#!/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

```

- task11\_b5\_run.png

```

root@zuha:~$ ./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).
root@zuha:~$ ./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).

```

- task11\_b6\_vim.png

```

#!/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

```

- task11\_b6\_run.png

```

zuha@zuha:~$ ./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).
zuha@zuha:~$ ./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).
zuha@zuha:~$
```

- task11\_b7\_vim.png

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

- task11\_b7\_run.png

```
setup.sh 351B written
zuha@zuha:~$ ./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' ( = ).
zuha@zuha:~$ ./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 or equal to 10 (-ge).
10 is less than or equal to 10 (-le).
Second argument does NOT equal 'Student' ( = ).
```

- task11\_b8\_vim.png

```

#!/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 "$num is NOT less than or equal to 10 (-le)."
fi
if [ "$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

```

- task11\_b8\_run.png

```
setup.sh ~$L, 1112B written
zuha@zuha:~$ ./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 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' ( != ).

zuha@zuha:~$ ./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).
```

- task11\_b9\_vim.png

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

- task11\_b9\_run.png

```
zuha@zuha:~$ ./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).

zuha@zuha:~$ ./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.
```

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

- task12\_b1\_vim.png

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

- task12\_b1\_run.png

```
setup.sh ~, 0KB written
zuha@zuha:~$ ./setup.sh
zuha@zuha:~$
```

- task12\_b2\_vim.png

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

- task12\_b2\_run.png

```
setup.sh ~, 0KB written
zuha@zuha:~$ chmod +x setup.sh
zuha@zuha:~$ ./setup.sh one "two words" three
Printing all arguments using $*:
Argument: one
Argument: two
Argument: words
Argument: three
zuha@zuha:~$
```

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

- task13\_b1\_vim.png

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

- task13\_b1\_run.png

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

- task13\_b2\_vim.png

```
#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"
~
```

- task13\_b2\_run.png

```
zuhah@zuhah:~$ ./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
```

- task13\_b3\_vim.png

```
#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
```

- task13\_b3\_run.png

```
zuhah@zuhah:~$ ./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
```

- task13\_b4\_vim.png

```
#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"
~
```

- task13\_b4\_run.png

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

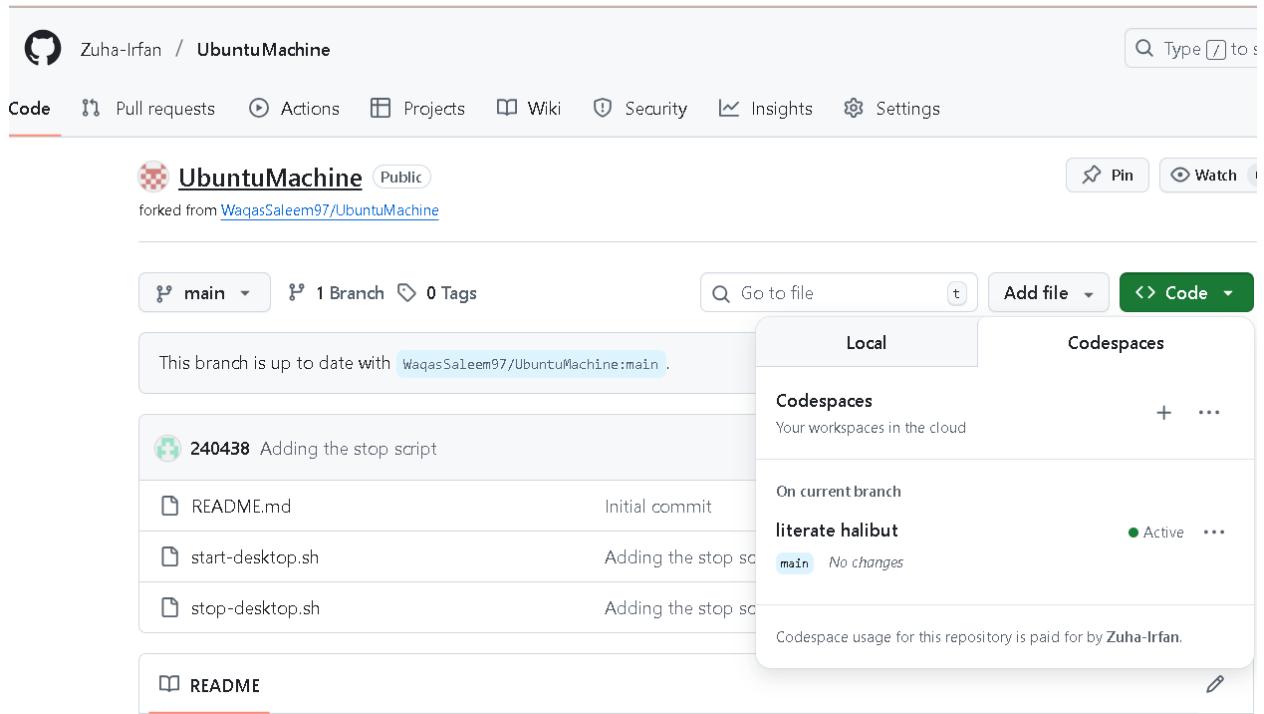
## Task 14 – Codespaces GUI — fork repo, run start-desktop.sh, open VNC, stop GUI

- task14\_fork.png



Zuha-Irfan/UbuntuMachine

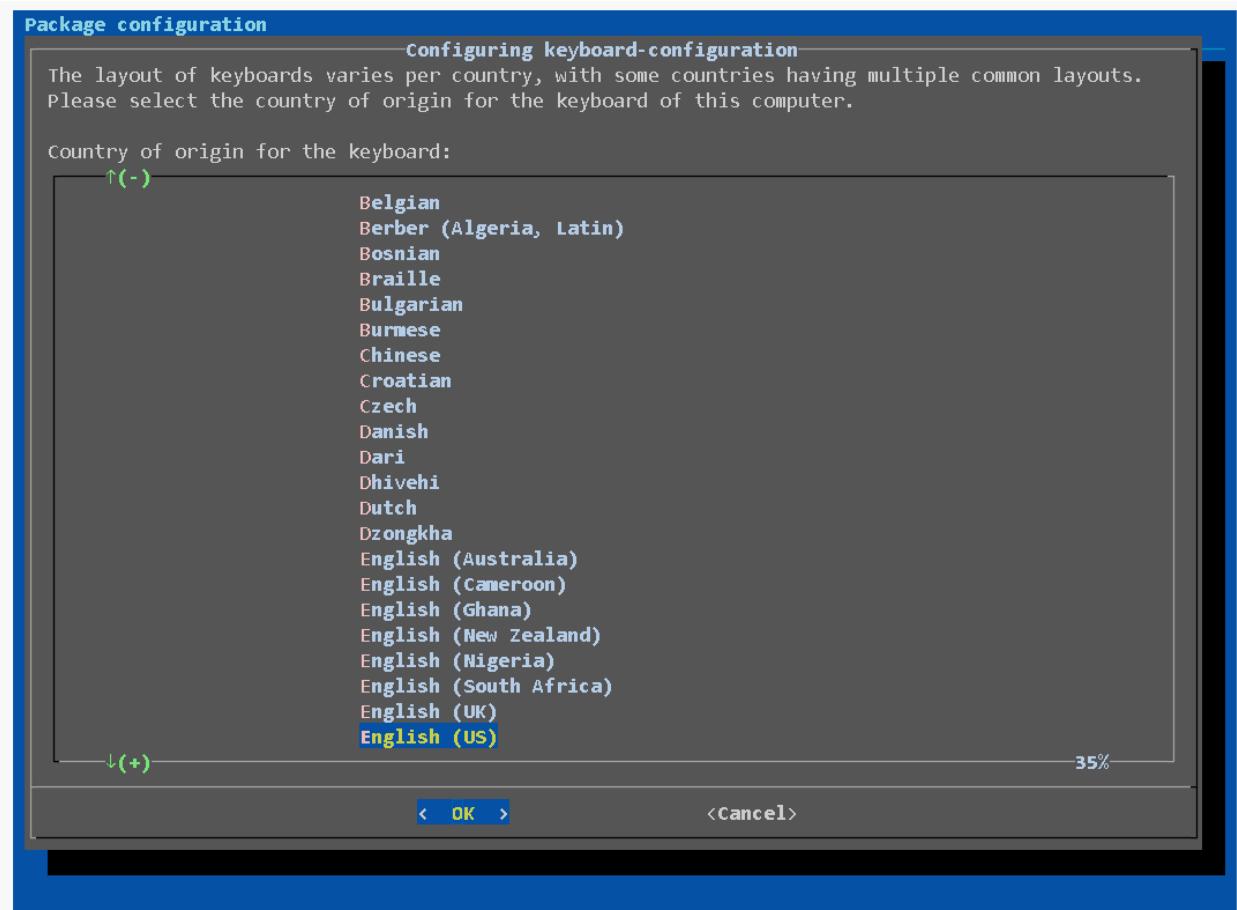
- task14\_codespace\_launch.png



- task14\_start\_script\_ls.png

```
@Zuha-Irfan → /workspaces/UbuntuMachine (main) $ ls -l start-desktop.sh stop-desktop.sh
-rwxrwxrwx 1 codespace root 1333 Nov  7 05:30 start-desktop.sh
-rwxrwxrwx 1 codespace root  428 Nov  7 05:30 stop-desktop.sh
@Zuha-Irfan → /workspaces/UbuntuMachine (main) $ chmod +x start-desktop.sh stop-desktop.sh
@Zuha-Irfan → /workspaces/UbuntuMachine (main) $ ls -l
total 12
-rw-rw-rw- 1 codespace root   31 Nov  7 05:30 README.md
-rwxrwxrwx 1 codespace root 1333 Nov  7 05:30 start-desktop.sh
-rwxrwxrwx 1 codespace root  428 Nov  7 05:30 stop-desktop.sh
```

- task14\_start\_run.png



- task14\_ports\_view.png

Port	Forwarded Address	Running Process	Visibility	Origin
5900	https://crispy-guac...	x11vnc -display :1 -rfbauth /home/codesp...	🔒 Private	Auto Forwarded
5901	https://crispy-guac...	x11vnc -display :1 -rfbauth /home/codesp...	🔒 Private	Auto Forwarded
6080	https://crispy-guac...	/usr/bin/python3 /usr/bin/websockify --w...	⌚ Public	Auto Forwarded
Add Port				

- task14\_vnc\_url.png

---

# Directory listing for /

---

- [app/](#)
  - [core/](#)
  - [include/](#)
  - [utils/](#)
  - [vendor/](#)
  - [vnc.html](#)
  - [vnc\\_auto.html@](#)
  - [vnc\\_lite.html](#)
- 



- task14\_vnc\_password\_prompt.png
- task14\_vnc\_desktop.png



- task14\_vnc\_connect.png

```
@Zuha-Irfan → /workspaces/UbuntuMachine (main) $ ./stop-desktop.sh
[*] Stopping noVNC server...
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
```

- task14\_stop\_run.png

