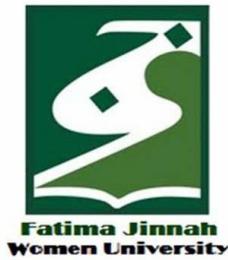


## **CLOUD COMPUTING**



**SUBMITTED TO**  
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**BSE V-A**

## Lab 5

### Lab Title

#### Java, apt vs apt-get, snap, GUI, Vim on Ubuntu Server

##### Task 1 - Discover missing command & install Java using apt suggestion

task1\_java\_suggestion.png

```
hamna_25@ubuntu:~/lab4/workspace$ java
Command 'java' not found, but can be installed with:
sudo apt install default-jre          # version 2:1.17-75, or
sudo apt install openjdk-17-jre-headless # version 17.0.16+8~us1-0ubuntu1~24.04.1
sudo apt install openjdk-21-jre-headless # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install openjdk-11-jre-headless # version 11.0.28+6-1ubuntu1~24.04.1
sudo apt install openjdk-25-jre-headless # version 25+36-1~24.04.2
sudo apt install openjdk-8-jre-headless # version 8u462+ga~us1-0ubuntu2~24.04.2
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1
sudo apt install openjdk-22-jre-headless # version 22~22ea-1
```

task1\_java\_install.png

```
Setting up openjdk-21-jre:amd64 (21.0.8+9~us1-0ubuntu1~24.04.1) ...
Setting up default-jre-headless (2:1.21-75+exp1) ...
Setting up default-jre (2:1.21-75+exp1) ...
Processing triggers for libgdk-pixbuf-2.0-0:amd64 (2.42.10+dfsg-3ubuntu3.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

task1\_java\_version.png

```
hamna_25@ubuntu:~/lab4/workspace$ java --version
openjdk 21.0.8 2025-07-15
OpenJDK Runtime Environment (build 21.0.8+9-Ubuntu-0ubuntu124.04.1)
OpenJDK 64-Bit Server VM (build 21.0.8+9-Ubuntu-0ubuntu124.04.1, mixed mode, sharing)
```

task1\_java\_remove.png

```
After this operation, 6,144 B disk space will be freed.
Do you want to continue? [Y/n] Y
(Reading database ... 101619 files and directories currently installed.)
Removing default-jre (2:1.21-75+exp1) ...
hamna_25@ubuntu:~/lab4/workspace$ _
```

task1\_java\_not\_found.png

```
hamna_25@ubuntu:~/lab4/workspace$ java
Command 'java' not found, but can be installed with:
sudo apt install default-jre          # version 2:1.17-75, or
sudo apt install openjdk-17-jre-headless # version 17.0.16+8~us1-0ubuntu1~24.04.1
sudo apt install openjdk-21-jre-headless # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install openjdk-11-jre-headless # version 11.0.28+6-1ubuntu1~24.04.1
sudo apt install openjdk-25-jre-headless # version 25+36-1~24.04.2
sudo apt install openjdk-8-jre-headless # version 8u462-ga~us1-0ubuntu2~24.04.2
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1
sudo apt install openjdk-22-jre-headless # version 22~22ea-1
```

task1\_hash\_clear.png

```
hamna_25@ubuntu:~/lab4/workspace$ hash -r
```

## Task 2 - Install & remove Java using apt-get (explicitly)

task2\_aptget\_install.png

```
Setting up openjdk-21-jre:amd64 (21.0.8+9~us1-0ubuntu1~24.04.1) ...
Setting up default-jre-headless (2:1.21-75+exp1) ...
Setting up default-jre (2:1.21-75+exp1) ...
Processing triggers for libgdk-pixbuf-2.0-0:amd64 (2.42.10+dfsg-3ubuntu3.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

task2\_java\_version\_after\_aptget.png

```
hamna_25@ubuntu: $ java --version
openjdk 21.0.8 2025-07-15
OpenJDK Runtime Environment (build 21.0.8+9-Ubuntu-0ubuntu124.04.1)
OpenJDK 64-Bit Server VM (build 21.0.8+9-Ubuntu-0ubuntu124.04.1, mixed mode, sharing)
```

task2\_aptget\_remove.png

```
hamna_25@ubuntu:~$ sudo apt-get remove default-jre -y
[sudo] password for hamna_25:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package 'default-jre' is not installed, so not removed
hamna_25@ubuntu:~$ sudo apt autoremove -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
adwaita-icon-theme alsa-topology-conf alsa-ucm-conf
at-spi2-common at-spi2-core ca-certificates-java
dconf-gsettings-backend dconf-service fontconfig
fonts-dejavu-extra gsettings-desktop-schemas
gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme
java-common libasound2-data libasound2t64 libatk-bridge2.0-0t64
libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0t64
libatspi2.0-0t64 libavahi-client3 libavahi-common-data
libavahi-common3 libcairo-gobject2 libcairo2 libcolord2
libcups2t64 libdatriel1 libdconf1 libdrm-amdgpu1 libdrm-intel1
libepoxy0 libgbm1 libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin
libgdk-pixbuf2.0-common libgiff libgl1 libgl1-mesa-dri libglvnd0
libglx-mesa0 libglx0 libgraphite2-3 libgtk-3-0t64 libgtk-3-bin
libgtk-3-common libharfbuzz0b libice6 liblcms2-2 liblvm20
```

task2\_hash\_after\_remove.png

```
hamna_25@ubuntu:~$ hash -r
hamna_25@ubuntu:~$ java
Command 'java' not found, but can be installed with:
sudo apt install default-jre          # version 2:1.17-75, or
sudo apt install openjdk-17-jre-headless # version 17.0.16+8~us1-0ubuntu1~24.04.1
sudo apt install openjdk-21-jre-headless # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install openjdk-11-jre-headless # version 11.0.28+6~ubuntul~24.04.1
sudo apt install openjdk-25-jre-headless # version 25+36-1~24.04.2
sudo apt install openjdk-8-jre-headless  # version 8u462-ga~us1-0ubuntu2~24.04.2
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1
sudo apt install openjdk-22-jre-headless # version 22~22ea-1
hamna_25@ubuntu:~$
```

### Task 3 - apt update vs apt upgrade - run & explain

task3\_apt\_update.png

```
hamna_25@ubuntu:~$ sudo apt update
Hit:1 http://mirror.pit.teraswitch.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:3 http://mirror.pit.teraswitch.com/ubuntu noble-updates InRelease [126 kB]
Get:4 http://mirror.pit.teraswitch.com/ubuntu noble-backports InRelease [126 kB]
Get:5 http://mirror.pit.teraswitch.com/ubuntu noble-updates/main amd64 Packages [1,573 kB]
Get:6 http://mirror.pit.teraswitch.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:7 http://mirror.pit.teraswitch.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:8 http://mirror.pit.teraswitch.com/ubuntu noble-updates/universe amd64 Packages [1,498 kB]
Get:9 http://mirror.pit.teraswitch.com/ubuntu noble-updates/universe amd64 Components [378 kB]
Get:10 http://mirror.pit.teraswitch.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:11 http://mirror.pit.teraswitch.com/ubuntu noble-backports/main amd64 Components [7,140 B]
Fetched 3,896 kB in 7s (546 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
31 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

task3\_apt\_upgrade.png

```
hamna_25@ubuntu:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  linux-headers-6.8.0-87 linux-headers-6.8.0-87-generic
  linux-image-6.8.0-87-generic
  linux-modules-6.8.0-87-generic
  linux-modules-extra-6.8.0-87-generic linux-tools-6.8.0-87
  linux-tools-6.8.0-87-generic
The following packages will be upgraded:
  cloud-init coreutils distro-info-data firmware-sof-signed
  fwupd landscape-common libfwupd2 libnss-systemd
  libpam-systemd libsystemd-shared libsystemd0 libudev1
  linux-generic linux-headers-generic linux-image-generic
  linux-libc-dev linux-tools-common powermgmt-base
  python3-software-properties snapd
  software-properties-common sosreport systemd systemd-dev
  systemd-hwe-hwdb systemd-resolved systemd-sysv
  systemd-timesyncd tcpdump ubuntu-drivers-common udev
31 upgraded, 7 newly installed, 0 to remove and 0 not upgraded.
Need to get 252 MB of archives.
```

task3\_explanation.png

```
hamna_25@ubuntu:~$ nano ~/apt_update_vs_upgrade.md
hamna_25@ubuntu:~$ cat ~/apt_update_vs_upgrade.md
The command 'apt update' refreshes the local package index, downloading the latest information about the available packages and their versions.
It does not install or modify any packages.
The command 'apt upgrade' uses that updated index to install newer versions of already-installed packages.
Without running 'apt update' first, 'apt upgrade' might miss new updates because it would use package lists.
```

#### Task 4 - Install Visual Studio Code via snap on CLI and verify (DO NOT remove Code)

task4\_snap\_install.png

```
hamna_25@ubuntu:~$ sudo snap install --classic code
[sudo] password for hamna_25:
2025-11-02T11:27:13Z INFO Waiting for automatic snapd restart...
code 7d842fb8 from Visual Studio Code (vscode) installed
```

task4\_snap\_list.png

```
hamna_25@ubuntu:~$ snap list code
Name  Version  Rev  Tracking      Publisher  Notes
code  7d842fb8  211  latest/stable  vscode     classic
```

task4\_code\_version\_or\_info.png

```
hamna_25@ubuntu:~$ code --version
1.105.1
7d842fb85a0275a4a8e4d7e040d2625abbf7f084
x64
```

task4\_snap\_bin\_location.png

```
hamna_25@ubuntu:~$ ls -l /snap/bin | grep code
lwxrwxrwx 1 root root 13 Nov  2 11:33 code -> /usr/bin/snap
lwxrwxrwx 1 root root 13 Nov  2 11:33 code.url-handler -> /usr/bin/snap
```

#### Task 5 - Install XFCE GUI + XRDP - minimal desktop and remote access (GUI) and launch VS Code

task5\_update.png

```
hamna_25@ubuntu: $ sudo apt update && sudo apt upgrade -y
[sudo] password for hamna_25:
Hit:1 http://mirror.pit.teraswitch.com/ubuntu noble InRelease
Hit:2 http://mirror.pit.teraswitch.com/ubuntu noble-updates InRelease
Hit:3 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:4 http://mirror.pit.teraswitch.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  linux-headers-6.8.0-84 linux-headers-6.8.0-84-generic linux-image-6.8.0-84-generic linux-modules-6.8.0-84-generic
  linux-tools-6.8.0-84 linux-tools-6.8.0-84-generic
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

## task5\_xfce\_install.png

```
hamna_25@ubuntu: $ sudo apt install xfce4 xfce4-goodies -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-6.8.0-84 linux-headers-6.8.0-84-generic linux-image-6.8.0-84-generic linux-modules-6.8.0-84-generic
  linux-tools-6.8.0-84 linux-tools-6.8.0-84-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  7zip accountsservice accountsservice-ubuntu-schemas acl activity-log-manager adwaita-icon-theme alsa-topology-conf
  alsa-ucm-conf apg aspell aspell-en at-spi2-common at-spi2-core avahi-daemon avahi-utils bamfdaemon bluez bluez-obexd
  bubblewrap bzip2 cheese-common colord colord-data cpp cpp-13 cpp-13-x86-64-linux-gnu cpp-x86-64-linux-gnu
  cracklib-runtime cups cups-browsed cups-client cups-common cups-core-drivers cups-daemon cups-filters
  cups-filters-core-drivers cups-ipp-utils cups-pk-helper cups-ppdc cups-server-common dconf-cli
  dconf-gsettings-backend dconf-service desktop-base desktop-file-utils dictionaries-common dns-root-data dnsmasq-base
  docbook-xml elementary-xfce-icon-theme emacsclient-common enchant-2 evolution-data-server evolution-data-server-common
  exo-utils fontconfig fonts-droid-fallback fonts-noto-mono fonts-quicksand fonts-ubuntu fonts-urw-base35 gcc-13-base
  gcr gcr4 geocode-glib-common ghostscript gir1.2-atk-1.0 gir1.2-dbusmenu-glib-0.4 gir1.2-freedesktop
  gir1.2-gdkpixbuf-2.0 gir1.2-gtk-3.0 gir1.2-harfbuzz-0.0 gir1.2-ibus-1.0 gir1.2-notify-0.7
  gir1.2-pango-1.0 gir1.2-polkit-1.0 gir1.2-secret-1 gkbd-capplet glib-networking glib-networking-common
  glib-networking-services gnome-bluetooth gnome-bluetooth-3-common gnome-bluetooth-sendto gnome-control-center-faces
  gnome-desktop3-data gnome-keyring gnome-keyring-pkcs11 gnome-menus gnome-power-manager gnome-screensaver
aspell-autobuildhash: processing: en [en_GB-is-wo_accents-only].
aspell-autobuildhash: processing: en [en_GB-ize-w_accents-only].
aspell-autobuildhash: processing: en [en_GB-ize-wo_accents-only].
aspell-autobuildhash: processing: en [en_GB-variant_0].
aspell-autobuildhash: processing: en [en_GB-variant_1].
aspell-autobuildhash: processing: en [en_US-w_accents-only].
aspell-autobuildhash: processing: en [en_US-wo_accents-only].
Processing triggers for libgdk-pixbuf2.0-0:amd64 (2.42.10+dfsg-3ubuntu3.2) ...
Processing triggers for sgml-base (1.31) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Processing triggers for dbus (1.14.10-4ubuntu4.1) ...
Processing triggers for ufw (0.36.2-6) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.
```

## task5\_xrdp\_enable.png

```
hamna_25@ubuntu: $ sudo apt install xrdp -y
[sudo] password for hamna_25:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-6.8.0-84 linux-headers-6.8.0-84-generic linux-image-6.8.0-84-generic linux-modules-6.8.0-84-generic
  linux-tools-6.8.0-84 linux-tools-6.8.0-84-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libfuse2t64 libpipewire-0.3-modules-xrdp pipewire-module-xrdp xorgxrdp
Suggested packages:
  pipewire-bin guacamole
The following NEW packages will be installed:
  libfuse2t64 libpipewire-0.3-modules-xrdp pipewire-module-xrdp xorgxrdp xrdp
0 upgraded, 5 newly installed, 0 to remove and 0 not upgraded.
Need to get 715 kB of archives.
After this operation, 3,895 kB of additional disk space will be used.
Get:1 http://mirror.pit.teraswitch.com/ubuntu noble/universe amd64 libfuse2t64 amd64 2.9.9-8.1build1 [89.9 kB]
Get:2 http://mirror.pit.teraswitch.com/ubuntu noble/universe amd64 xrdp amd64 0.9.24-4 [536 kB]
Get:3 http://mirror.pit.teraswitch.com/ubuntu noble/universe amd64 libpipewire-0.3-modules-xrdp amd64 0.2-2 [20.6 kB]
Get:4 http://mirror.pit.teraswitch.com/ubuntu noble/universe amd64 pipewire-module-xrdp all 0.2-2 [3,800 B]
Get:5 http://mirror.pit.teraswitch.com/ubuntu noble/universe amd64 xorgxrdp amd64 1:0.9.19-1 [65.3 kB]
Fetched 715 kB in 4s (189 kB/s)
hamna_25@ubuntu: $ sudo systemctl enable --now xrdp
Synchronizing state of xrdp.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable xrdp
```

### task5\_xrdp\_status.png

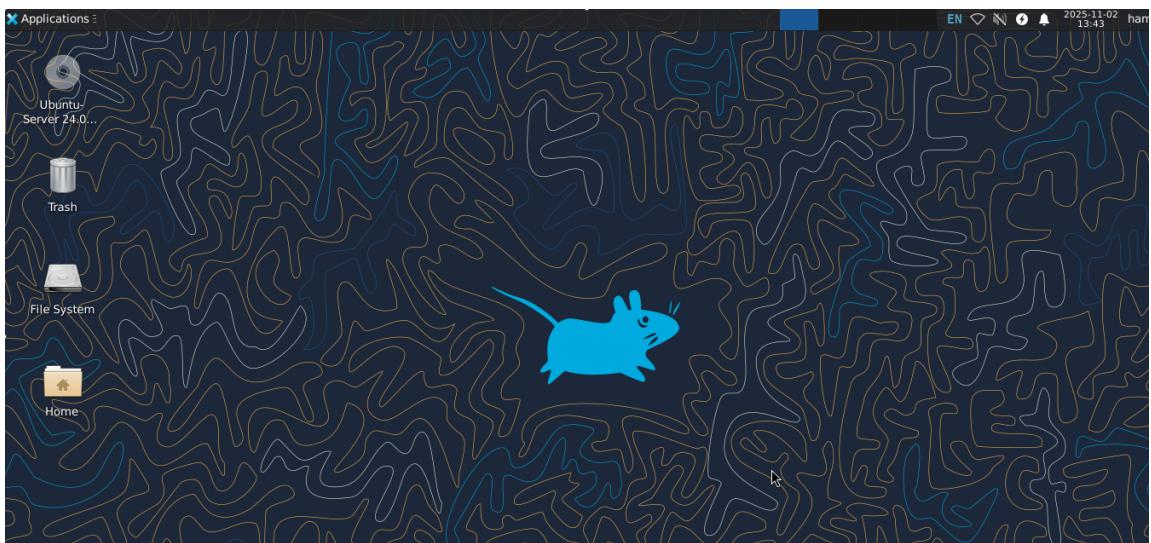
```
hamna_25@ubuntu:~$ sudo systemctl status xrdp
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Sun 2025-11-02 13:04:10 UTC; 6min ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
   Main PID: 13959 (xrdp)
lines 1-6...skipping...
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Sun 2025-11-02 13:04:10 UTC; 6min ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
   Main PID: 13959 (xrdp)
      Tasks: 1 (limit: 4545)
lines 1-7...skipping...
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Sun 2025-11-02 13:04:10 UTC; 6min ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
   Main PID: 13959 (xrdp)
      Tasks: 1 (limit: 4545)
lines 1-7...skipping...
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Sun 2025-11-02 13:04:10 UTC; 6min ago
     Docs: man:xrdp(8)
lines 1-22/22 (END)...skipping...
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Sun 2025-11-02 13:04:10 UTC; 6min ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
   Main PID: 13959 (xrdp)
      Tasks: 1 (limit: 4545)
     Memory: 864.0K (peak: 1.5M)
       CPU: 101ms
     CGroup: /system.slice/xrdp.service
             └─13959 /usr/sbin/xrdp

Nov 02 13:04:09 ubuntu systemd[1]: Starting xrdp.service - xrdp daemon...
Nov 02 13:04:09 ubuntu xrdp[13957]: [INFO ] address [0.0.0.0] port [3389] mode 1
Nov 02 13:04:09 ubuntu xrdp[13957]: [INFO ] listening to port 3389 on 0.0.0.0
Nov 02 13:04:09 ubuntu xrdp[13957]: [INFO ] xrdp_listen_pp done
```

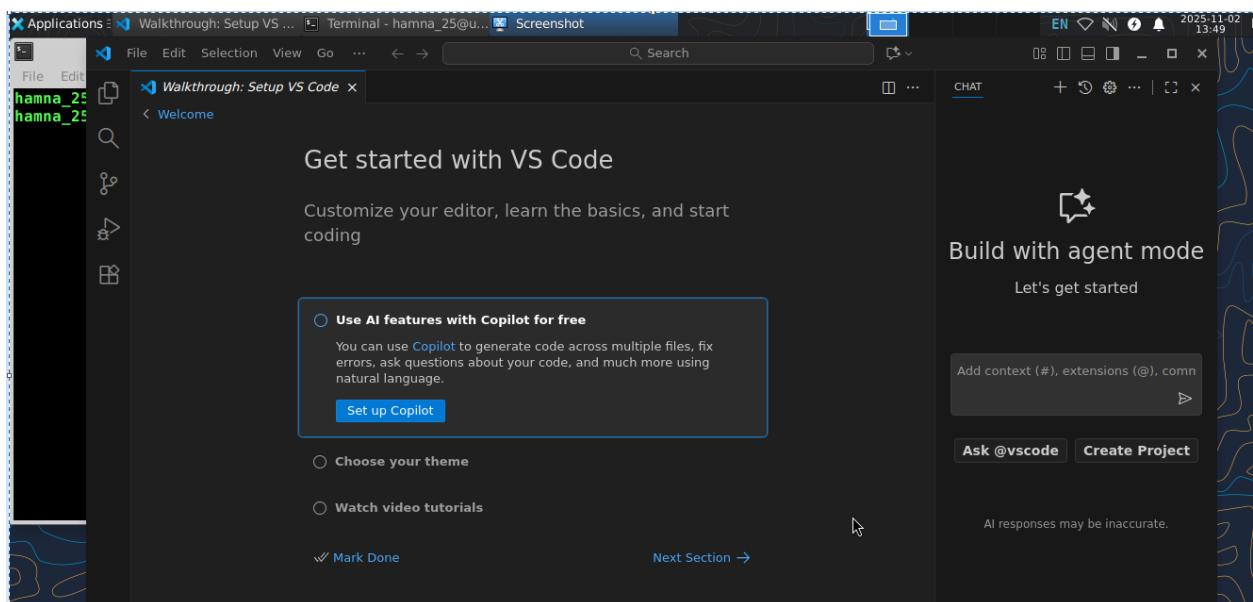
### task5\_xsession.png

```
hamna_25@ubuntu:~$ echo xfce4-session > ~/.xsession
hamna_25@ubuntu:~$
```

task5\_rdp\_connect.png



task5\_vscode\_launch.png



## Task 6 - Install lightdm-gtk-greeter and GUI verification - start GUI, open VS Code, take snapshot, then end (GUI)

task6\_lightdm\_install.png

```
hamna_25@ubuntu: $ sudo apt install lightdm lightdm-gtk-greeter -y
[sudo] password for hamna_25:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
lightdm is already the newest version (1.30.0-0ubuntu14).
lightdm set to manually installed.
The following packages were automatically installed and are no longer required:
  linux-headers-6.8.0-84 linux-headers-6.8.0-84-generic linux-image-6.8.0-84-generic linux-modules-6.8.0-84-generic
  linux-tools-6.8.0-84 linux-tools-6.8.0-84-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  gnome-accessibility-themes gnome-themes-extra gnome-themes-extra-data gtk2-engines-pixbuf
The following NEW packages will be installed:
  gnome-accessibility-themes gnome-themes-extra gnome-themes-extra-data gtk2-engines-pixbuf lightdm-gtk-greeter
0 upgraded, 5 newly installed, 0 to remove and 0 not upgraded.
Need to get 2,495 kB of archives.
After this operation, 7,003 kB of additional disk space will be used.
Get:1 http://mirror.pit.teraswitch.com/ubuntu noble/main amd64 gnome-accessibility-themes all 3.28-2ubuntu5 [2,296 kB]
Get:2 http://mirror.pit.teraswitch.com/ubuntu noble/main amd64 gnome-themes-extra-data all 3.28-2ubuntu5 [69.4 kB]
Get:3 http://mirror.pit.teraswitch.com/ubuntu noble-updates/main amd64 gtk2-engines-pixbuf amd64 2.24.33-4ubuntu1.1 [20.5 kB]
Get:4 http://mirror.pit.teraswitch.com/ubuntu noble/main amd64 gnome-themes-extra amd64 3.28-2ubuntu5 [15.2 kB]
Get:5 http://mirror.pit.teraswitch.com/ubuntu noble/universe amd64 lightdm-gtk-greeter amd64 2.0.9-0ubuntu3 [94.3 kB]
Fetched 2,495 kB in 5s (520 kB/s)
debconf: unable to initialize frontend: Dialog
debconf: (Dialog frontend requires a screen at least 13 lines tall and 31 columns wide.)
debconf: falling back to frontend: Readline
Selecting previously unselected package gnome-accessibility-themes.
(Reading database ... 207391 files and directories currently installed.)
Preparing to unpack .../gnome-accessibility-themes_3.28-2ubuntu5_all.deb ...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

task6\_lightdm\_config.png

```
hamna_25@ubuntu: $ sudo mkdir -p /etc/lightdm/lightdm.conf.d
hamna_25@ubuntu: $ echo -e "[Seat:*]\ngreeter-session=lightdm-gtk-greeter\nuser-session=xfce\nautologin-user-timeout=0"
| sudo tee /etc/lightdm/lightdm.conf.d/99-xfce.conf
[Seat:*]
greeter-session=lightdm-gtk-greeter
user-session=xfce
autologin-user-timeout=0
hamna_25@ubuntu: $
```

task6\_lightdm\_cleanup.png

```
hamna_25@ubuntu: $ sudo rm -f /var/lib/lightdm/.Xauthority
hamna_25@ubuntu: $ sudo rm -f ~/.Xauthority
hamna_25@ubuntu: $ sudo rm -rf ~/.cache/sessions
hamna_25@ubuntu: $ sudo chown -R $USER:$USER /home/$USER
chown: cannot access '/home/hamna_25/thinclient_drives': Permission denied
hamna_25@ubuntu: $ ls -ld /home/$USER
drwxr-x--- 24 hamna_25 hamna_25 4096 Nov  2 14:32 /home/hamna_25
```

task6\_lightdm\_restart.png

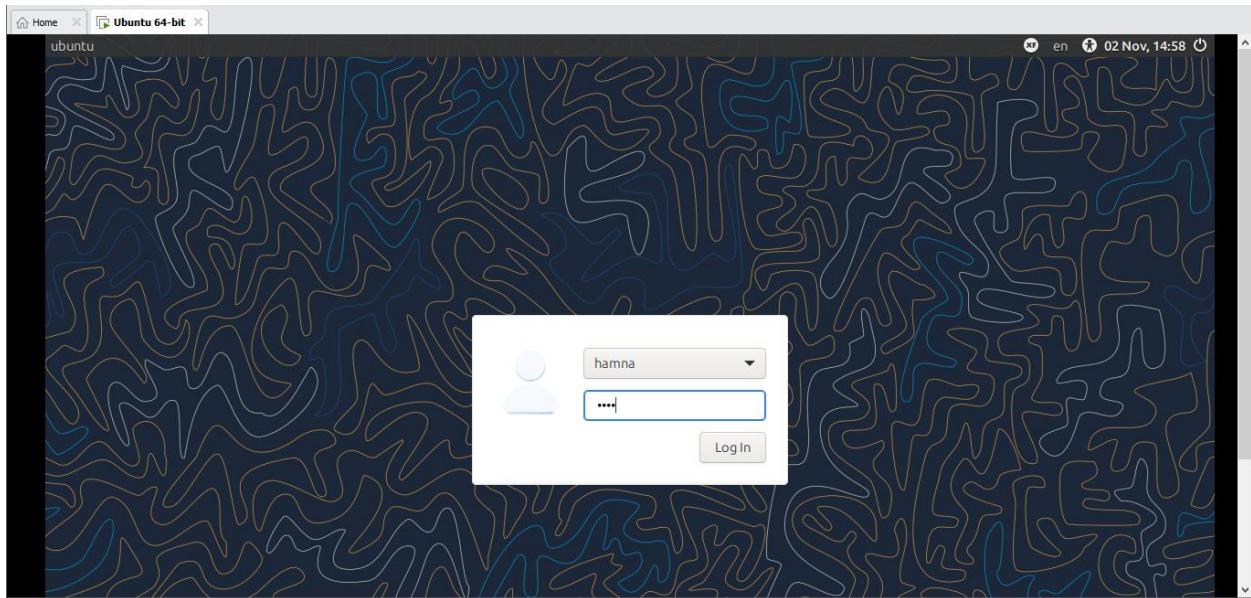
```
hamna_25@ubuntu:~$ sudo systemctl restart lightdm
hamna_25@ubuntu:~$
```

task6\_gui\_enable\_boot.png

```
hamna_25@ubuntu: $ sudo systemctl enable lightdm
Synchronizing state of lightdm.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable lightdm
The unit files have no installation config (WantedBy=, RequiredBy=, UpheldBy=,
Also=, or Alias= settings in the [Install] section, and DefaultInstance= for
template units). This means they are not meant to be enabled or disabled using systemctl.

Possible reasons for having these kinds of units are:
• A unit may be statically enabled by being symlinked from another unit's
.wants/, .requires/, or .upholds/ directory.
• A unit's purpose may be to act as a helper for some other unit which has
a requirement dependency on it.
• A unit may be started when needed via activation (socket, path, timer,
D-Bus, udev, scripted systemctl call, ...).
• In case of template units, the unit is meant to be enabled with some
instance name specified.
hamna_25@ubuntu: $ sudo systemctl set-default graphical.target
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
hamna_25@ubuntu: $
```

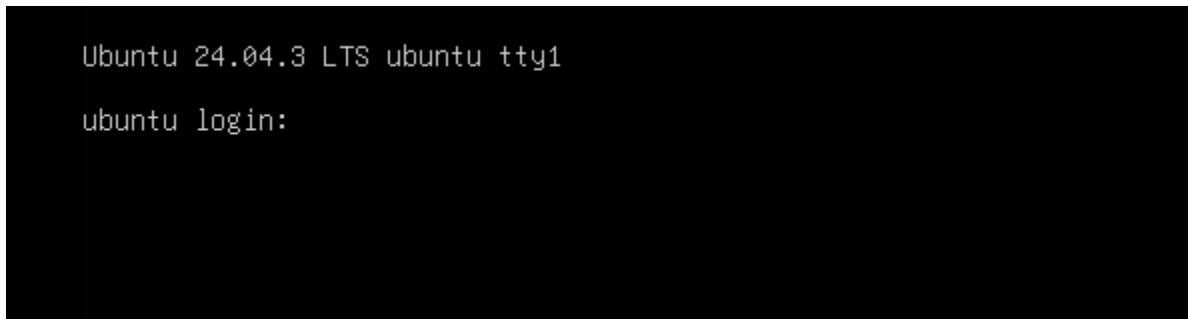
task6\_after\_reboot\_gui.png



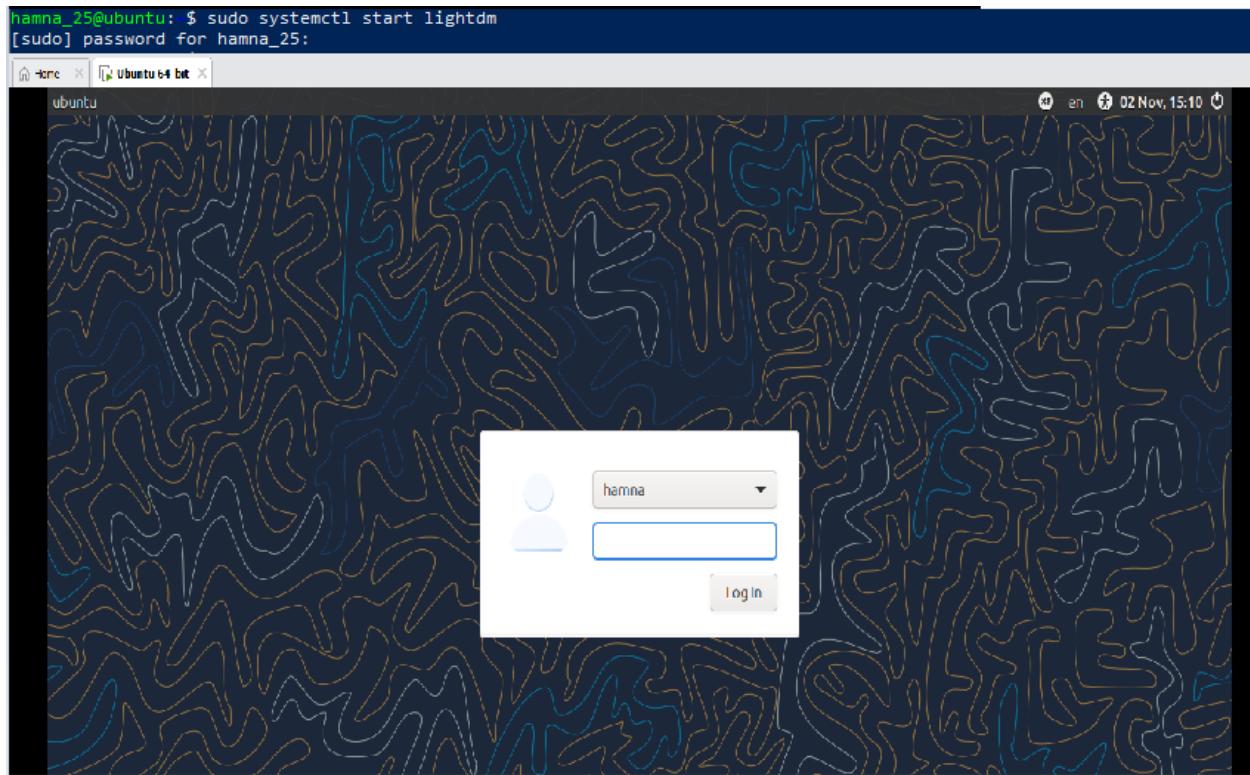
task6\_gui\_disable\_boot.png

```
hamna_25@ubuntu: $ sudo systemctl set-default multi-user.target
[sudo] password for hamna_25:
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/multi-user.target.
hamna_25@ubuntu: $ sudo systemctl disable lightdm
Synchronizing state of lightdm.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install disable lightdm
Removed "/etc/systemd/system/display-manager.service".
hamna_25@ubuntu: $
```

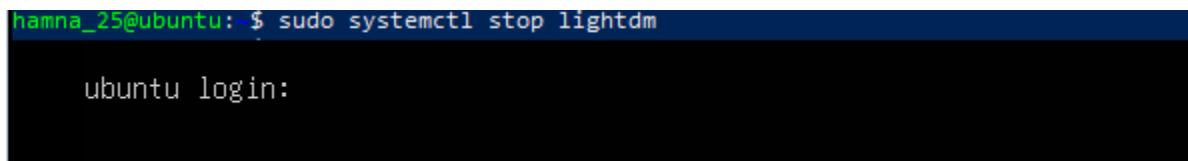
task6\_after\_reboot\_cli.png



task6\_gui\_start.png



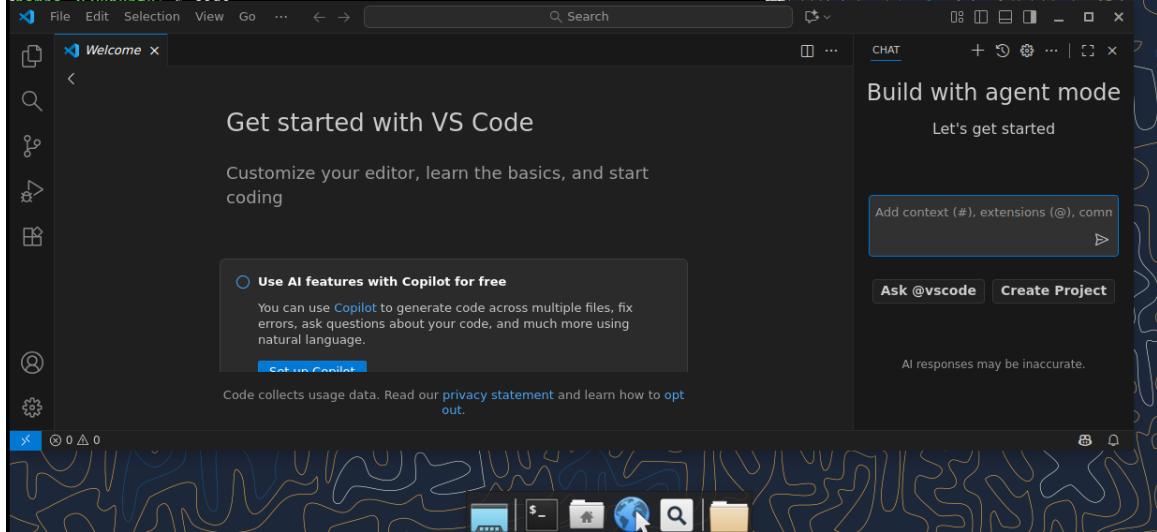
task6\_gui\_stop.png



task6\_gui\_start\_command.png

```
hamna_25@ubuntu: $ sudo systemctl start lightdm  
[sudo] password for hamna_25:
```

task6\_vscode\_launch.png



## Task 7 - Install Google Chrome by adding its apt source & key (Chrome)

task7\_install\_chrome\_error.png

```
hamna_25@ubuntu: ~$ sudo apt install google-chrome-stable -y  
[sudo] password for hamna_25:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
E: Unable to locate package google-chrome-stable  
hamna_25@ubuntu: ~$
```

task7\_ls/etc/apt.png

```
hamna_25@ubuntu:~$ ls -la /etc/apt  
total 48  
drwxr-xr-x  9 root root  4096 Sep 28 17:46 .  
drwxr-xr-x 142 root root 12288 Nov  2 13:39 ..  
drwxr-xr-x  2 root root  4096 Nov  1 18:42 apt.conf.d  
drwxr-xr-x  2 root root  4096 Mar 31 2024 auth.conf.d  
drwxr-xr-x  2 root root  4096 Mar 31 2024 keyrings  
drwxr-xr-x  2 root root  4096 Aug  5 17:14 preferences.d  
drwxr-xr-x  2 root root  4096 Aug  5 17:14 preferences.d.save  
-rw-r--r--  1 root root    70 Sep 28 18:58 sources.list  
drwxr-xr-x  2 root root  4096 Sep 28 18:58 sources.list.d  
drwxr-xr-x  2 root root  4096 Aug  5 17:01 trusted.gpg.d  
hamna_25@ubuntu:~$
```

task7\_cat\_sources\_list.png

```
hamna_25@ubuntu:~$ cat /etc/apt/sources.list
# Ubuntu sources have moved to /etc/apt/sources.list.d/ubuntu.sources
hamna_25@ubuntu:~$
```

task7\_ls\_sources\_list\_d.png

```
hamna_25@ubuntu:~$ ls -la /etc/apt/sources.list.d/
total 16
drwxr-xr-x 2 root root 4096 Sep 28 18:58 .
drwxr-xr-x 9 root root 4096 Sep 28 17:46 ..
-rw-r--r-- 1 root root 389 Sep 28 17:46 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug 5 17:02 ubuntu.sources.curtin.orig
hamna_25@ubuntu:~$
```

task7\_cat\_ubuntu\_sources.png

```
hamna_25@ubuntu:~$ cat /etc/apt/sources.list.d/ubuntu.sources
Types: deb
URIs: http://mirror.pit.teraswitch.com/ubuntu
Suites: noble noble-updates noble-backports
Components: main restricted universe multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg

Types: deb
URIs: http://security.ubuntu.com/ubuntu/
Suites: noble-security
Components: main restricted universe multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg
hamna_25@ubuntu:~$
```

task7\_edit\_ubuntu\_sources.png

```
hamna_25@ubuntu:~$ sudo nano /etc/apt/sources.list.d/ubuntu.sources
hamna_25@ubuntu:~$ echo -e "\nTypes: deb\nURIs: http://dl.google.com/linux/chrome/deb/\nSuites: stable\nComponents: main\nArchitectures: amd64\nSigned-By: /etc/apt/keyrings/google.gpg" | sudo tee -a /etc/apt/sources.list.d/ubuntu.sources > /dev/null
hamna_25@ubuntu:~$
```

task7\_add\_key.png

```
hamna_25@ubuntu:~$ sudo mkdir -p /etc/apt/keyrings
hamna_25@ubuntu:~$ curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/keyring/google.gpg
hamna_25@ubuntu:~$
```

task7\_apt\_update.png

```
hamna_25@ubuntu:~$ sudo apt update
Get:1 http://dl.google.com/linux/chrome/deb stable InRelease [1,825 B]
Hit:2 http://mirror.pit.teraswitch.com/ubuntu noble InRelease
Get:3 http://mirror.pit.teraswitch.com/ubuntu noble-updates InRelease [126 kB]
Get:4 http://dl.google.com/linux/chrome/deb stable/main amd64 Packages [1,211 B]
Get:5 http://mirror.pit.teraswitch.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://mirror.pit.teraswitch.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:7 http://mirror.pit.teraswitch.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:8 http://mirror.pit.teraswitch.com/ubuntu noble-updates/universe amd64 Components [378 kB]
Get:9 http://mirror.pit.teraswitch.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:10 http://mirror.pit.teraswitch.com/ubuntu noble-backports/main amd64 Components [7,136 B]
Get:11 http://mirror.pit.teraswitch.com/ubuntu noble-backports/restricted amd64 Components [212 B]
Get:12 http://mirror.pit.teraswitch.com/ubuntu noble-backports/universe amd64 Components [11.0 kB]
```

## task7\_install\_chrome.png

```
hamna_25@ubuntu:~$ sudo apt install google-chrome-stable -y
[sudo] password for hamna_25:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-6.8.0-84 linux-headers-6.8.0-84-generic linux-image-6.8.0-84-generic linux-modules-6.8.0-84-generic
  linux-tools-6.8.0-84 linux-tools-6.8.0-84-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  fonts-liberation fonts-liberation-sans-narrow
The following NEW packages will be installed:
  fonts-liberation fonts-liberation-sans-narrow google-chrome-stable
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 119 MB of archives.
After this operation, 395 MB of additional disk space will be used.
Get:1 http://dl.google.com/linux/chrome/deb stable/main amd64 google-chrome-stable amd64 142.0.7444.59-1 [118 MB]
Get:2 http://mirror.pit.teraswitch.com/ubuntu noble/main amd64 fonts-liberation all 1:2.1.5-3 [1,603 kB]
Get:3 http://mirror.pit.teraswitch.com/ubuntu noble/main amd64 fonts-liberation-sans-narrow all 1:1.07.6-4 [197 kB]
Fetched 119 MB in 1min 34s (1,275 kB/s)
Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
hamna_25@ubuntu:~$
```

## task7\_alternate\_remove.png

Here, in the file, links other than the official ubuntu link of <http://archive.ubuntu.com/ubuntu/> was deleted.

```
Types: deb
URIs: http://archive.ubuntu.com/ubuntu/
Suites: noble-security
Components: main restricted universe multiverse
hamna_25@ubuntu:~$ sudo apt update
Get:1 http://archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease
Get:3 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Packages [1,270 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-security/main Translation-en [211 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9,008 B]
Get:7 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2,080 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-security/restricted Translation-en [470 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:10 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [500 B]
Get:11 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Packages [906 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble-security/universe Translation-en [203 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [19.4 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [27.4 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-security/multiverse Translation-en [5,708 B]
Get:17 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Get:18 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [384 B]
Fetched 5,402 kB in 7s (743 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
```

## task7\_alternate\_edit.png

Here, the link was edited from <http://security.ubuntu.com/ubuntu/> to <http://archive.ubuntu.com/ubuntu/>

```
Types: deb
URIs: http://archive.ubuntu.com/ubuntu/
Suites: noble-security
Components: main restricted universe multiverse
nanna_25@ubuntu: $ sudo apt update
Get:1 http://archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease
Get:3 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Packages [1,270 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-security/main Translation-en [211 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9,008 B]
Get:7 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2,080 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-security/restricted Translation-en [470 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:10 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [500 B]
Get:11 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Packages [906 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble-security/universe Translation-en [203 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [19.4 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [27.4 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-security/multiverse Translation-en [5,708 B]
Get:17 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Get:18 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [384 B]
Fetched 5,402 kB in 7s (743 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
```

### task7\_remove\_key.png

```
hamna_25@ubuntu: $ sudo apt-key list
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
/etc/apt/trusted.gpg.d/google-chrome.gpg
-----
pub    rsa4096 2016-04-12 [SC]
      EB4C 1BFD 4F04 2F6D DDCC  EC91 7721 F63B D38B 4796
uid          [ unknown] Google Inc. (Linux Packages Signing Authority) <linux-packages-keymaster@google.com>
sub    rsa4096 2023-02-15 [S] [expires: 2026-02-14]
sub    rsa4096 2024-01-30 [S] [expires: 2027-01-29]
sub    rsa4096 2025-01-07 [S] [expires: 2028-01-07]

/etc/apt/trusted.gpg.d/ubuntu-keyring-2012-cdimage.gpg
-----
pub    rsa4096 2012-05-11 [SC]
      8439 38DF 228D 22F7 B374  2BC0 D94A A3F0 EFE2 1092
uid          [ unknown] Ubuntu CD Image Automatic Signing Key (2012) <cdimage@ubuntu.com>

/etc/apt/trusted.gpg.d/ubuntu-keyring-2018-archive.gpg
-----
pub    rsa4096 2018-09-17 [SC]
      F6EC B376 2474 EDA9 D21B  7022 8719 20D1 991B C93C
uid          [ unknown] Ubuntu Archive Automatic Signing Key (2018) <ftpmaster@ubuntu.com>

hamna_25@ubuntu: $ sudo apt-key del D38B 4796
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
hamna_25@ubuntu: $ sudo apt-key list
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
/etc/apt/trusted.gpg.d/ubuntu-keyring-2012-cdimage.gpg
-----
pub    rsa4096 2012-05-11 [SC]
      8439 38DF 228D 22F7 B374  2BC0 D94A A3F0 EFE2 1092
uid          [ unknown] Ubuntu CD Image Automatic Signing Key (2012) <cdimage@ubuntu.com>

/etc/apt/trusted.gpg.d/ubuntu-keyring-2018-archive.gpg
-----
pub    rsa4096 2018-09-17 [SC]
      F6EC B376 2474 EDA9 D21B  7022 8719 20D1 991B C93C
uid          [ unknown] Ubuntu Archive Automatic Signing Key (2018) <ftpmaster@ubuntu.com>
```

### task7\_create\_google\_chrome\_list.png

```
hamna_25@ubuntu: $ echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/google.gpg] http://dl.google.com/linux/chrome/deb/
stable main" | sudo tee /etc/apt/sources.list.d/google-chrome.list > /dev/null
hamna_25@ubuntu: $
```

### task7\_list\_sources\_after\_create.png

```
hamna_25@ubuntu:~$ ls -la /etc/apt/sources.list.d/
total 20
drwxr-xr-x 2 root root 4096 Nov  2 20:00 .
drwxr-xr-x 9 root root 4096 Nov  2 19:45 ..
-rw-r--r-- 1 root root 107 Nov  2 20:08 google-chrome.list
-rw-r--r-- 1 root root 123 Nov  2 20:00 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug  5 17:02 ubuntu.sources.curtin.orig
hamna_25@ubuntu:~$
```

### task7\_add\_key\_alt.png

```
hamna_25@ubuntu: $ sudo mkdir -p /etc/apt/keyrings
hamna_25@ubuntu: $ curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/keyring
s/google.gpg
File '/etc/apt/keyrings/google.gpg' exists. Overwrite? (y/N) y
```

### task7\_apt\_update\_alt.png

```
hamna_25@ubuntu: $ sudo apt update
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
hamna_25@ubuntu: $
```

### task7\_install\_chrome\_alt.png

```
hamna_25@ubuntu: $ sudo apt install google-chrome-stable -y
[sudo] password for hamna_25:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
google-chrome-stable is already the newest version (142.0.7444.59-1).
The following packages were automatically installed and are no longer required:
  linux-headers-6.8.0-84 linux-headers-6.8.0-84-generic linux-image-6.8.0-84-generic linux-modules-6.8.0-84-generic
  linux-tools-6.8.0-84 linux-tools-6.8.0-84-generic
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
hamna_25@ubuntu: $
```

## Task 8 - Install applications via PPA (Audacity & OBS) and launch

### task8\_add\_ppa\_audacity.png (running within XFCE terminal)

```
hamna_25@ubuntu:~$ sudo add-apt-repository ppa:ubuntuhandbook1/audacity -y
Repository: 'Types: deb
URIs: https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu/
Suites: noble
Components: main
'
Description:
Unofficial build of Audacity audio editor

For help, please use Audacity forum: http://forum.audacityteam.org/

If the packages here are helpful, you may buy me a coffee:

      https://ko-fi.com/ubuntuhandbook1
More info: https://launchpad.net/~ubuntuhandbook1/+archive/ubuntu/audacity
Adding repository...
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Get:2 http://archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease [18.1 kB]
Get:4 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble/main amd64 Packages [1,064 B]
Get:5 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble/main Translation-en [492 B]
Get:6 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Components [21.6 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:8 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Fetched 220 kB in 3s (83.3 kB/s)
Reading package lists... Done
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
hamna_25@ubuntu:~$
```

task8\_apt\_update\_audacity.png

```
hamna_25@ubuntu:~$ sudo apt update
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
```

task8\_install\_audacity.png

```
hamna_25@ubuntu:~$ snap install audacity
snap "audacity" is already installed, see 'snap help refresh'
```

task8\_audacity\_launch.png (GUI launch screenshot if possible)

or task8\_audacity\_version.png (CLI verification)

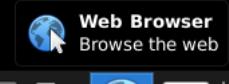


task8\_add\_ppa\_obs.png (output of add-apt-repository)

```
hamna_25@ubuntu:~$ sudo add-apt-repository ppa:obsproject/obs-studio -y
[sudo] password for hamna_25:
Repository: 'Types: deb
URIs: https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu/
Suites: noble
Components: main
'
Description:
Latest stable release of OBS Studio
More info: https://launchpad.net/~obsproject/+archive/ubuntu/obs-studio
Adding repository.
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble-security InRelease
Get:3 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu noble InRelease [17.8 kB]
Hit:4 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Get:5 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu noble/main amd64 Packages [1,172 B]
Get:6 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu noble/main Translation-en [160 B]
Fetched 19.1 kB in 4s (5,281 B/s)
Reading package lists... Done
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
hamna_25@ubuntu:~$ S
```

task8\_apt\_update\_obs.png (apt update after adding PPA)

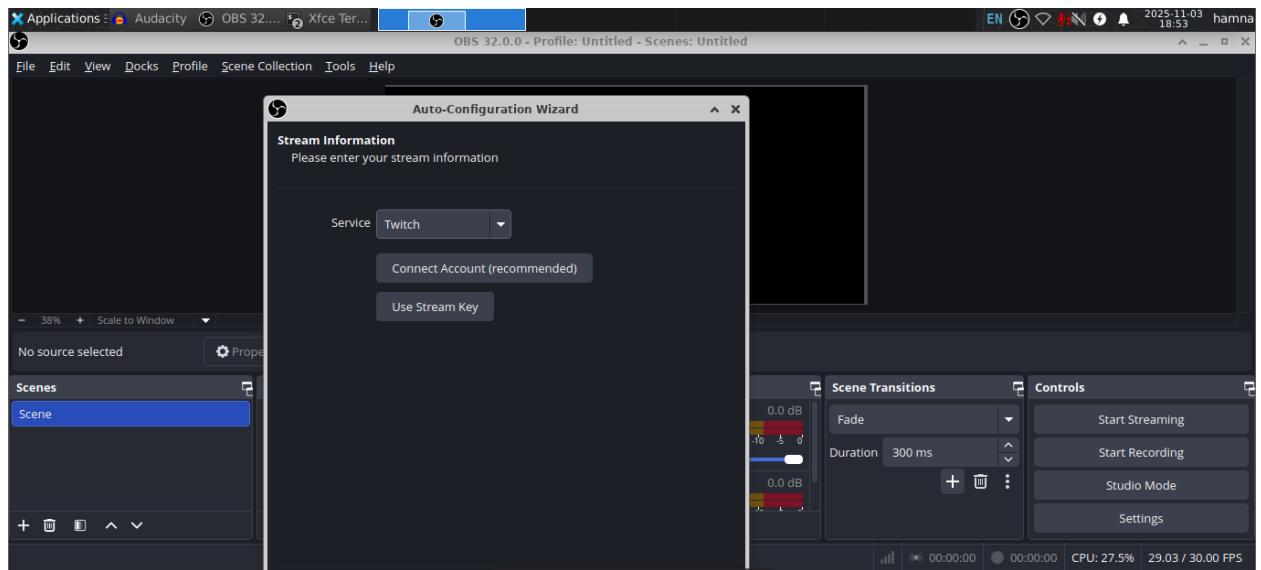
```
hamna_25@ubuntu:~$ sudo apt update
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble-security InRelease
Hit:3 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu noble InRelease
Hit:4 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
hamna_25@ubuntu:~$
```



task8\_install\_obs.png (apt install output)

```
hamna_25@ubuntu:~$ sudo snap install obs-studio
Download snap "obs-studio" (1314) from channel "stable"
obs-studio 32.0.0 from Snapcrafters• installed
hamna_25@ubuntu:~$
```

task8\_obs\_launch.png (GUI launch screenshot if possible) or task8\_obs\_version.png (CLI verification)



### Task 9 - Create a Kubernetes sample YAML using vim

task9\_vim\_check.png

```
hamna_25@ubuntu:~$ vim  
hamna_25@ubuntu:~$ █
```

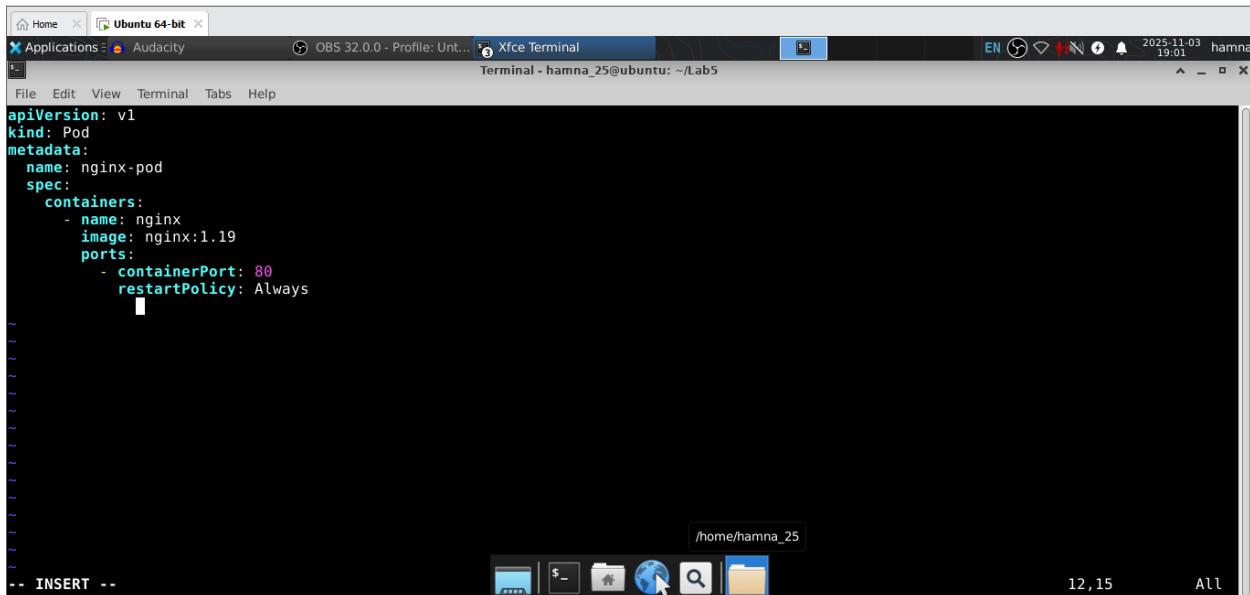
task9\_vim\_install.png (only if you installed it).

*Mine is already installed*

task9\_mkdir\_cd.png

```
hamna_25@ubuntu:~$ mkdir -p ~/Lab5  
hamna_25@ubuntu:~$ cd ~/Lab5  
hamna_25@ubuntu:~/Lab5$ pwd  
/home/hamna_25/Lab5  
hamna_25@ubuntu:~/Lab5$ █
```

task9\_vim\_edit.png



task9\_k8s\_saved.png

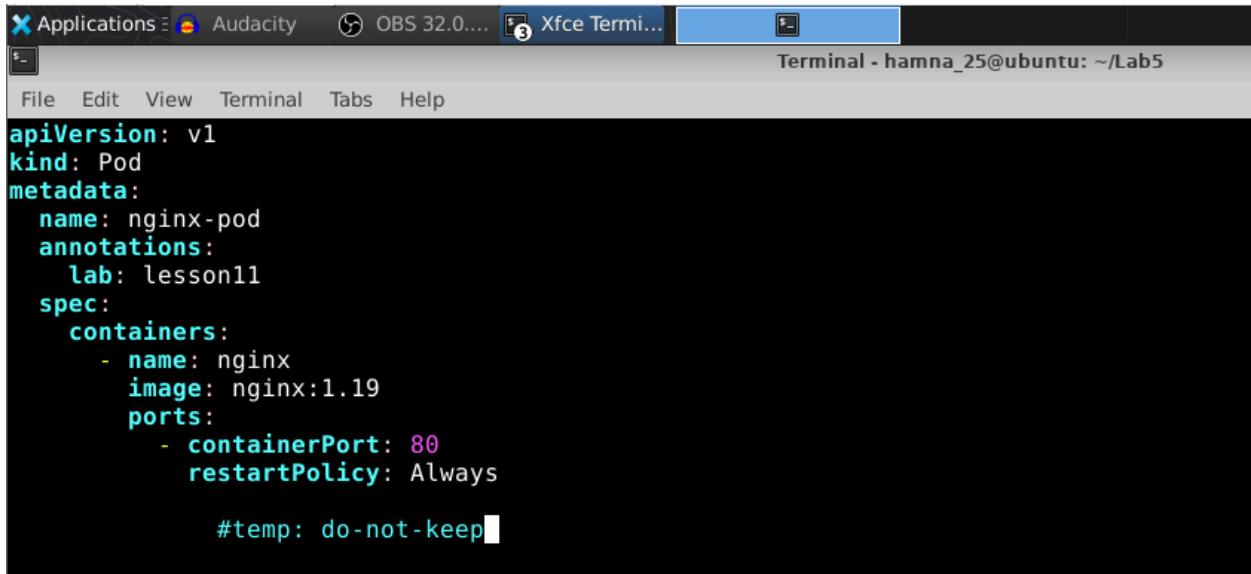
```
hamna_25@ubuntu:~/Lab5$ ls -la
total 12
drwxrwxr-x  2 hamna_25 hamna_25 4096 Nov  3 19:02 .
drwxr-x--- 25 hamna_25 hamna_25 4096 Nov  3 19:02 ..
-rw-rw-r--  1 hamna_25 hamna_25   203 Nov  3 19:02 k8s-sample.yaml
hamna_25@ubuntu:~/Lab5$
```

#### Task 10 - Edit the Kubernetes YAML - add annotation, verify, then discard temporary change

task10\_verify\_annotation.png

```
hamna_25@ubuntu:~/Lab5$ cat k8s-sample.yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

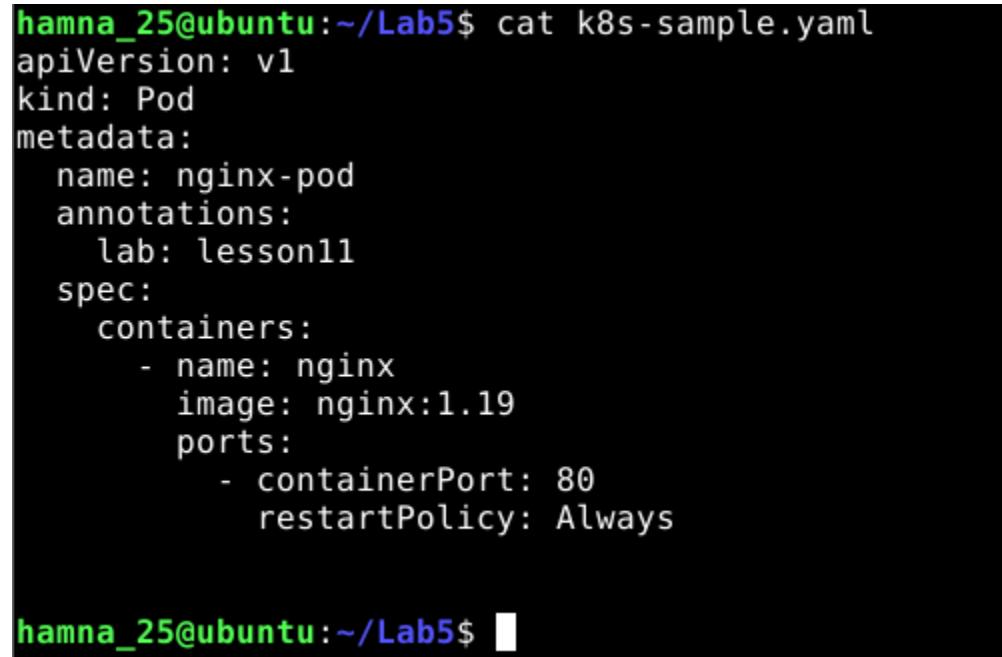
task10\_verify\_entering\_temp\_data.png



A screenshot of a terminal window titled "Terminal - hamna\_25@ubuntu: ~/Lab5". The window shows a YAML configuration file for a Kubernetes Pod named "nginx-pod". The file includes annotations for "lab: lesson11" and a temporary comment "#temp: do-not-keep" in the spec section. The terminal prompt is visible at the bottom.

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
      restartPolicy: Always
      #temp: do-not-keep
```

task10\_verify\_no\_temp\_comment.png



A screenshot of a terminal window titled "hamna\_25@ubuntu:~/Lab5\$". The window shows a YAML configuration file for a Kubernetes Pod named "nginx-pod". The file includes annotations for "lab: lesson11" and does not contain the temporary comment "#temp: do-not-keep" from the previous screenshot. The terminal prompt is visible at the bottom.

```
hamna_25@ubuntu:~/Lab5$ cat k8s-sample.yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
      restartPolicy: Always
```

hamna\_25@ubuntu:~/Lab5\$

## Task 11 - Vim editing practice - delete, undo, numeric deletes, navigation

task11\_dd\_delete\_and\_undo.png

*Both images are shown together (before and after)*

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      ports:
        - containerPort: 80
          restartPolicy: Always
```

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

task11\_delete3\_and\_undo.png

Both images are shown together (before and after)

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      restartPolicy: Always

apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

task11\_line1.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

task11\_navigation.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
  restartPolicy: Always
```

### Task 12 - Vim search, add matches, substitute, undo

task12\_search\_nginx.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

```
~  
~  
/nginx
```

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

```
~  
~  
/nginx
```

task12\_n\_and\_N\_navigation.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
~
```

/nginx

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
~
```

?nginx

task12\_added\_occurrences.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
    #nginx comment 1
    #nginx comment 2
  annotations:
    lab: lesson11
  spec:
    containers:
      - name: nginx
        image: nginx:1.19
        ports:
          - containerPort: 80
            restartPolicy: Always
```

task12\_cycle\_matches.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
    #nginx comment 1
    #nginx comment 2
  annotations:
    lab: lesson11
  spec:
    containers:
      - name: nginx
        image: nginx:1.19
        ports:
          - containerPort: 80
            restartPolicy: Always
```

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
    #nginx comment 1
    #nginx comment 2
  annotations:
    lab: lesson11
  spec:
    containers:
      - name: nginx
        image: nginx:1.19
        ports:
          - containerPort: 80
            restartPolicy: Always
```

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
    #nginx comment 1
    #nginx comment 2
  annotations:
    lab: lesson11
  spec:
    containers:
      - name: nginx
        image: nginx:1.19
        ports:
          - containerPort: 80
            restartPolicy: Always
```

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
    #nginx comment 1
    #nginx comment 2
  annotations:
    lab: lesson11
  spec:
    containers:
      - name: nginx
        image: nginx:1.19
        ports:
          - containerPort: 80
            restartPolicy: Always
```

task12\_substitute\_result.png

```
apiVersion: v1
kind: Pod
metadata:
  name: webapp-pod
    #webapp comment 1
    #webapp comment 2
  annotations:
    lab: lesson11
spec:
  containers:
    - name: webapp
      image: webapp:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always

~
~
~
~
~

5 substitutions on 5 lines
```

task12\_undo\_and\_quit.png

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
    #nginx comment 1
    #nginx comment 2
  annotations:
    lab: lesson11
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
          restartPolicy: Always
```

## Exam Evaluation Question

- **Install Docker Desktop on your VMWare Workstation Ubuntu Server. No commands or solutions are provided in this lab — treat this as an evaluation/exam question.**

## SOLUTION

First, updating system,

```
hamna_25@ubuntu:~/Lab5$ sudo apt update && sudo apt upgrade -y
[sudo] password for hamna_25:
Get:1 http://archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:2 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:3 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Get:4 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9,012 B]
Get:6 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:7 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Fetched 209 kB in 4s (49.8 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
N: Missing Signed-By in the sources.list(5) entry for 'http://archive.ubuntu.com/ubuntu'
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
Get more security updates through Ubuntu Pro with 'esm-apps' enabled:
  libzvbi-common libavcodec60 libzvbi0t64 libavutil58 libswresample4
Learn more about Ubuntu Pro at https://ubuntu.com/pro
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
hamna_25@ubuntu:~/Lab5$
```

Installing prerequisites,

```
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
hamna_25@ubuntu:~/Lab5$ sudo apt install ca-certificates curl gnupg lsb-release -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20240203).
ca-certificates set to manually installed.
curl is already the newest version (8.5.0-2ubuntu10.6).
curl set to manually installed.
gnupg is already the newest version (2.4.4-2ubuntu17.3).
gnupg set to manually installed.
lsb-release is already the newest version (12.0-2).
lsb-release set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
hamna_25@ubuntu:~/Lab5$
```

Adding Docker's official GPG key,

```
hamna_25@ubuntu:~/Lab5$ sudo mkdir -p /etc/apt/keyrings
hamna_25@ubuntu:~/Lab5$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg
hamna_25@ubuntu:~/Lab5$
```

Adding the Docker repository,

```
hanna_25@ubuntu:~/Lab5$ echo \
> "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.gpg] \
> https://download.docker.com/linux/ubuntu \
> $(lsb_release -cs) stable" | \
> sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
hanna_25@ubuntu:~/Lab5$
```

Updating apt again,

```
hanna_25@ubuntu:~/Lab5$ sudo apt update
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Get:2 https://download.docker.com/linux/ubuntu noble InRelease [48.5 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:4 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Err:2 https://download.docker.com/linux/ubuntu noble InRelease
      The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 7EA0A9C3F273FC08
Get:5 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Packages [1,298 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-security/main Translation-en [213 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2,131 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-security/restricted Translation-en [483 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 Packages [906 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble-security/universe Translation-en [203 kB]
Reading package lists... Done
```

Installing Docker Desktop,

```
hanna_25@ubuntu:~/Lab5$ sudo nano /etc/apt/sources.list.d/docker.list
hanna_25@ubuntu:~/Lab5$ ls /etc/apt/keyrings/docker.gpg
/etc/apt/keyrings/docker.gpg
hanna_25@ubuntu:~/Lab5$ sudo apt clean
hanna_25@ubuntu:~/Lab5$ sudo apt update --allow-unauthenticated
Get:1 https://download.docker.com/linux/ubuntu noble InRelease [48.5 kB]
Hit:2 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-security InRelease
Get:4 https://download.docker.com/linux/ubuntu/noble/stable amd64 Packages [33.5 kB]
Hit:5 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Fetched 82.0 kB in 2s (48.6 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
```

```

hamna_25@ubuntu:~/Lab5$ sudo apt install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  docker-ce-rootless-extras
Suggested packages:
  cgroupfs-mount | cgroup-lite docker-model-plugin
Recommended packages:
  pigz slirp4netns
The following NEW packages will be installed:
  containerd.io docker-buildx-plugin docker-ce docker-ce-rootless-extras docker-compose-plugin
0 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.
Need to get 105 MB of archives.
After this operation, 436 MB of additional disk space will be used.
Get:1 https://download.docker.com/linux/ubuntu noble/stable amd64 containerd.io amd64 1.7.28-1~ubuntu.24.04-noble [31.9 MB]
Get:2 https://download.docker.com/linux/ubuntu noble/stable amd64 docker-ce-cli amd64 5:28.5.1-1~ubuntu.24.04-noble [16.5 MB]
Setting up docker-ce-cli (5:28.5.1-1~ubuntu.24.04-noble) ...
Setting up docker-ce-rootless-extras (5:28.5.1-1~ubuntu.24.04-noble) ...
Setting up docker-ce (5:28.5.1-1~ubuntu.24.04-noble) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /usr/lib/systemd/system/docker.socket.
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

```

Verify if installed or not,

```

hamna_25@ubuntu:~/Lab5$ docker --version
Docker version 28.5.1, build e180ab8
hamna_25@ubuntu:~/Lab5$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
  Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
  Active: active (running) since Mon 2025-11-03 20:28:26 UTC; 2min 4s ago
    TriggeredBy: ● docker.socket
      Docs: https://docs.docker.com
lines 1-5... skipping...
● docker.service - Docker Application Container Engine
  Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
  Active: active (running) since Mon 2025-11-03 20:28:26 UTC; 2min 4s ago
    TriggeredBy: ● docker.socket
      Docs: https://docs.docker.com
      Main PID: 18439 (dockerd)
        Tasks: 9
       Memory: 21.5M (peak: 21.8M)
         CPU: 1.031s
        CGroup: /system.slice/docker.service
          └─18439 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
Nov 03 20:28:24 ubuntu dockerd[18439]: time="2025-11-03T20:28:24.331298435Z" level=info msg="detected 127.0.0.53 nameserver, assuming it's a local network"
Nov 03 20:28:24 ubuntu dockerd[18439]: time="2025-11-03T20:28:24.514201742Z" level=info msg="Creating a containerd client" address=/run/containerd/containerd.sock
Nov 03 20:28:24 ubuntu dockerd[18439]: time="2025-11-03T20:28:24.661535439Z" level=info msg="Loading containers: start."
Nov 03 20:28:26 ubuntu dockerd[18439]: time="2025-11-03T20:28:26.112967483Z" level=info msg="Loading containers: done."
Nov 03 20:28:26 ubuntu dockerd[18439]: time="2025-11-03T20:28:26.175068657Z" level=info msg="Docker daemon" commit=f8215cc containerdcommit=00000000000000000000000000000000
Nov 03 20:28:26 ubuntu dockerd[18439]: time="2025-11-03T20:28:26.175280626Z" level=info msg="Initializing buildkit"
Nov 03 20:28:26 ubuntu dockerd[18439]: time="2025-11-03T20:28:26.268507540Z" level=info msg="Completed buildkit initialization"
Nov 03 20:28:26 ubuntu dockerd[18439]: time="2025-11-03T20:28:26.275022905Z" level=info msg="Daemon has completed initialization"
Nov 03 20:28:26 ubuntu dockerd[18439]: time="2025-11-03T20:28:26.275380067Z" level=info msg="API listen on /run/docker.sock"
Nov 03 20:28:26 ubuntu systemd[1]: Started docker.service - Docker Application Container Engine.

```

- Verify Docker Desktop is installed by launching the Docker Desktop application and confirming it runs.

Verified that Docker Engine was running with:

docker version

```
hamna_25@ubuntu:~$ docker version
Client: Docker Engine - Community
  Version:           28.5.2
  API version:      1.51
  Go version:       go1.25.3
  Git commit:       ecc6942
  Built:            Wed Nov  5 14:43:10 2025
  OS/Arch:          linux/amd64
  Context:          default

Server: Docker Engine - Community
  Engine:
    Version:          28.5.2
    API version:     1.51 (minimum version 1.24)
    Go version:      go1.25.3
    Git commit:      89c5e8f
    Built:           Wed Nov  5 14:43:10 2025
    OS/Arch:         linux/amd64
    Experimental:   false
  containerd:
    Version:          v1.7.28
    GitCommit:        b98a3aace656320842a23f4a392a33f46af97866
  runc:
    Version:          1.3.3
    GitCommit:        v1.3.3-0-gd842d771
  docker-init:
    Version:          0.19.0
    GitCommit:        de40ad0
hamna_25@ubuntu:~$
```

docker info

```
hamna_25@ubuntu:~$ docker info
Client: Docker Engine - Community
  Version:           28.5.2
  Context:          default
  Debug Mode:       false
  Plugins:
    ai: Docker AI Agent - Ask Gordon (Docker Inc.)
      Version: v1.9.11
      Path:   /home/hamna_25/.docker/cli-plugins/docker-ai
    buildx: Docker Buildx (Docker Inc.)
      Version: v0.29.1-desktop.1
      Path:   /home/hamna_25/.docker/cli-plugins/docker-buildx
    compose: Docker Compose (Docker Inc.)
      Version: v2.40.2-desktop.1
      Path:   /home/hamna_25/.docker/cli-plugins/docker-compose
    debug: Get a shell into any image or container (Docker Inc.)
      Version: 0.0.45
      Path:   /home/hamna_25/.docker/cli-plugins/docker-debug
    desktop: Docker Desktop commands (Docker Inc.)
      Version: v0.2.0
      Path:   /home/hamna_25/.docker/cli-plugins/docker-desktop
    extension: Manages Docker extensions (Docker Inc.)
      Version: v0.2.31
      Path:   /home/hamna_25/.docker/cli-plugins/docker-extension
    init: Creates Docker-related starter files for your project (Docker Inc.)
      Version: v1.4.0
      Path:   /home/hamna_25/.docker/cli-plugins/docker-init
    mcp: Docker MCP Plugin (Docker Inc.)
      Version: v0.24.0
      Path:   /home/hamna_25/.docker/cli-plugins/docker-mcp
    offload: Docker Offload (Docker Inc.)
      Version: v0.5.1
      Path:   /home/hamna_25/.docker/cli-plugins/docker-offload
    sandbox: Docker Sandbox (Docker Inc.)
      Version: v0.3.1
      Path:   /home/hamna_25/.docker/cli-plugins/docker-sandbox
    sbom: View the packaged-based Software Bill Of Materials (SBOM) for an image (Anchore Inc.)
      Version: 0.6.0
      Path:   /home/hamna_25/.docker/cli-plugins/docker-sbom
    scout: Docker Scout (Docker Inc.)
      Version: v1.18.3
      Path:   /home/hamna_25/.docker/cli-plugins/docker-scout

Server:
  Containers: 1
  Running: 0
  Paused: 0
  Stopped: 1
  Images: 1
  Server Version: 28.5.2
```

## Installing GUI (XFCE) Environment

Run this in your Ubuntu VM terminal: sudo apt update

```
hamna_25@ubuntu:~$ sudo apt update
[sudo] password for hamna_25:
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:5 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble-security InRelease
Hit:7 https://download.docker.com/linux/ubuntu noble InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
```

sudo apt install xfce4 xfce4-goodies -y

```
hamna_25@ubuntu:~$ sudo apt install xfce4 xfce4-goodies -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
xfce4 is already the newest version (4.18).
xfce4-goodies is already the newest version (4.18.2build1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
hamna_25@ubuntu:~$
```

This installs the XFCE desktop and some useful components (lightweight, works well in VMware). It may take a few minutes.

Verify or (Re)Enable XRDП for Remote GUI Access

Now let's ensure you can actually open and *see* the XFCE desktop GUI through VMware (or RDP if needed). Run this command next: sudo systemctl enable --now xrdp

```
hamna_25@ubuntu:~$ sudo systemctl enable --now xrdp
Synchronizing state of xrdp.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable xrdp
hamna_25@ubuntu:~$
```

Then check XRDП status: sudo systemctl status xrdp

```
hamna_25@ubuntu:~$ sudo systemctl status xrdp
[sudo] password for hamna_25:
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-11-06 19:00:20 UTC; 1min 44s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
     Process: 1467 ExecStartPre=/bin/sh /usr/share/xrdp/socksetup (code=exited, status=0/SUCCESS)
     Process: 1482 ExecStart=/usr/sbin/xrdp $XRDP_OPTIONS (code=exited, status=0/SUCCESS)
      lines 1-7... skipping...
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-11-06 19:00:20 UTC; 1min 44s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
     Process: 1467 ExecStartPre=/bin/sh /usr/share/xrdp/socksetup (code=exited, status=0/SUCCESS)
     Process: 1482 ExecStart=/usr/sbin/xrdp $XRDP_OPTIONS (code=exited, status=0/SUCCESS)
      Main PID: 1493 (xrdp)
      lines 1-8... skipping...
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-11-06 19:00:20 UTC; 1min 44s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
```

Switch to GUI mode

Run this command in your terminal: sudo systemctl set-default graphical.target

sudo systemctl isolate graphical.target

```
hamna_25@ubuntu:~$ sudo systemctl set-default graphical.target
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
hamna_25@ubuntu:~$ sudo systemctl isolate graphical.target
hamna_25@ubuntu:~$
```

Then, wait a few seconds — your screen should change to a **login window** (the XFCE GUI login). If it doesn't, you can reboot manually: sudo reboot

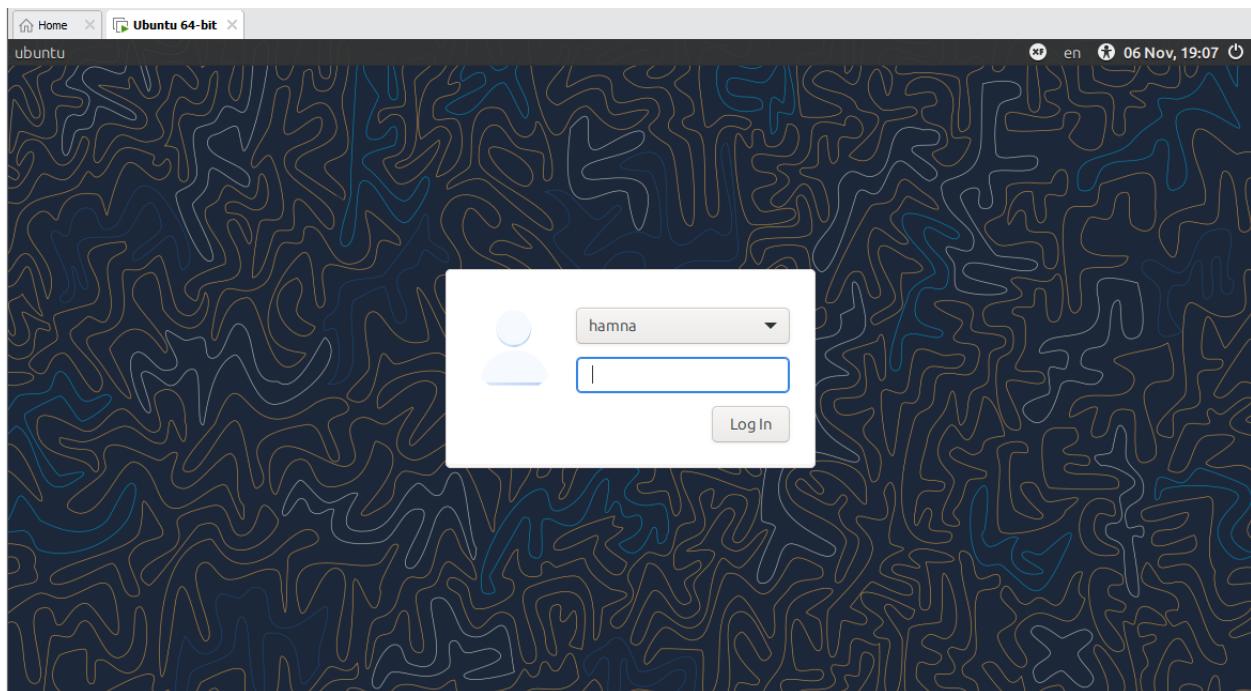
```
hamna_25@ubuntu:~$ sudo reboot
Broadcast message from root@ubuntu on pts/1 (Thu 2025-11-06 19:05:33 UTC):
The system will reboot now!
```

**Started the GUI session manually when in CLI mode:**

sudo systemctl start lightdm

After this:

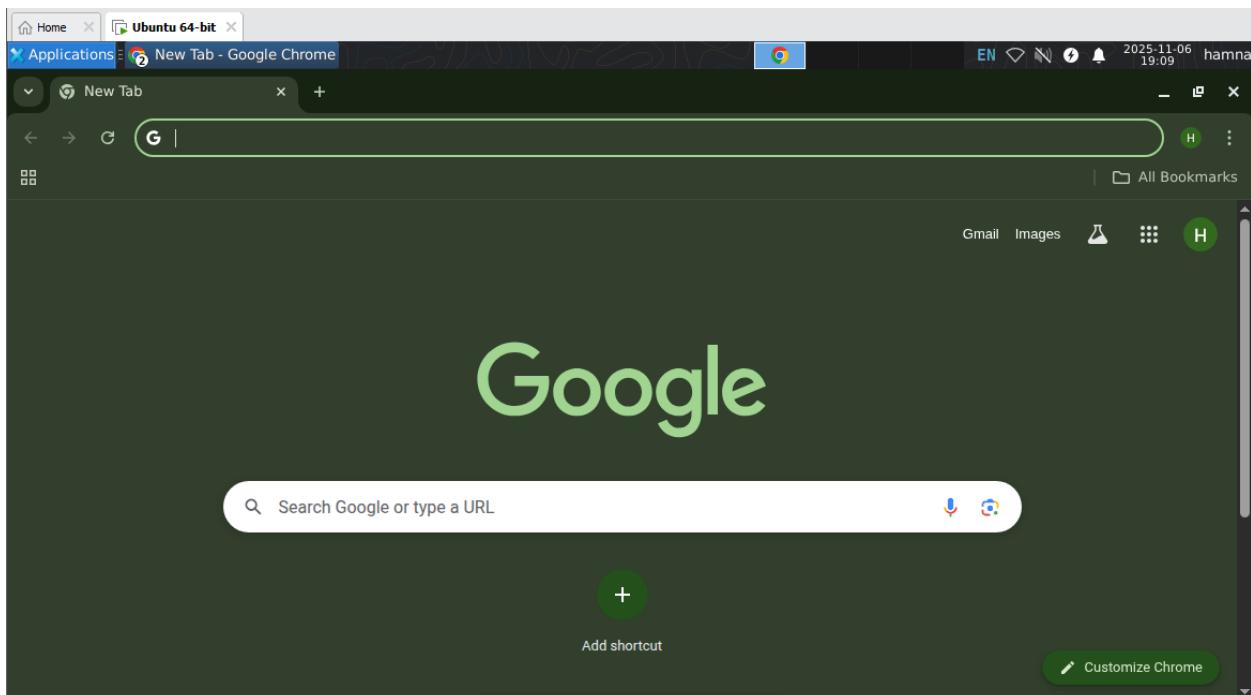
In VMware, your VM will show a **login screen** (username/password prompt).



First login.

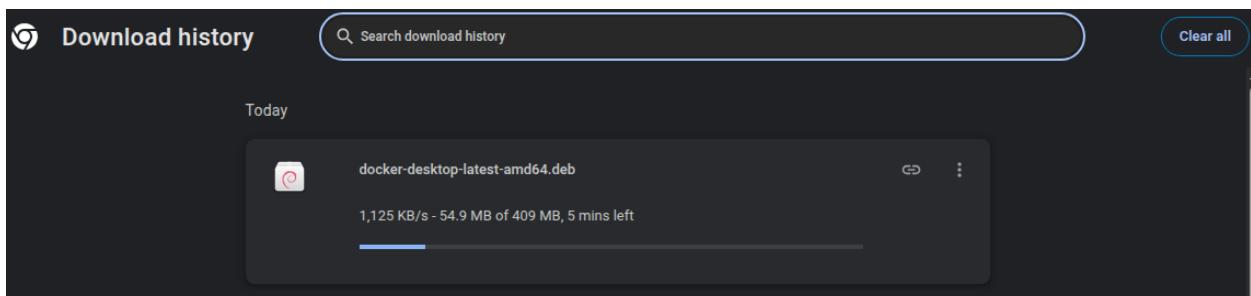
**Download the Docker Desktop .deb package**

Now that you're inside XFCE: Click the **blue globe icon** (that's your web browser).



In the browser, go to given link and this automatically download the file:

<https://desktop.docker.com/linux/main/amd64/docker-desktop-amd64.deb>



## Install Docker Desktop

Run the following commands one by one **in your terminal** (you should still be in your home directory ~):

cd ~/Downloads

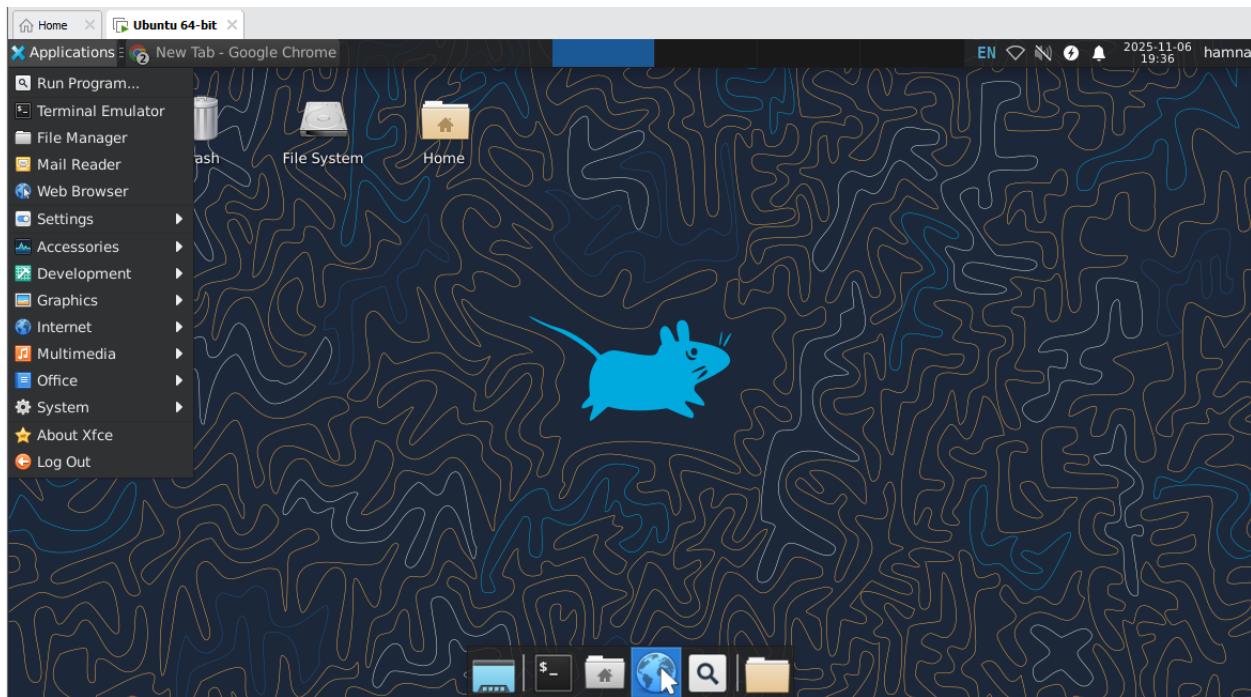
```
hamna_25@ubuntu:~/Downloads$ cd ~/Downloads
hamna_25@ubuntu:~/Downloads$ ls
docker-desktop-latest-amd64.deb
hamna_25@ubuntu:~/Downloads$
```

Then install it using:

```
sudo apt install ./docker-desktop-amd64.deb -y
```

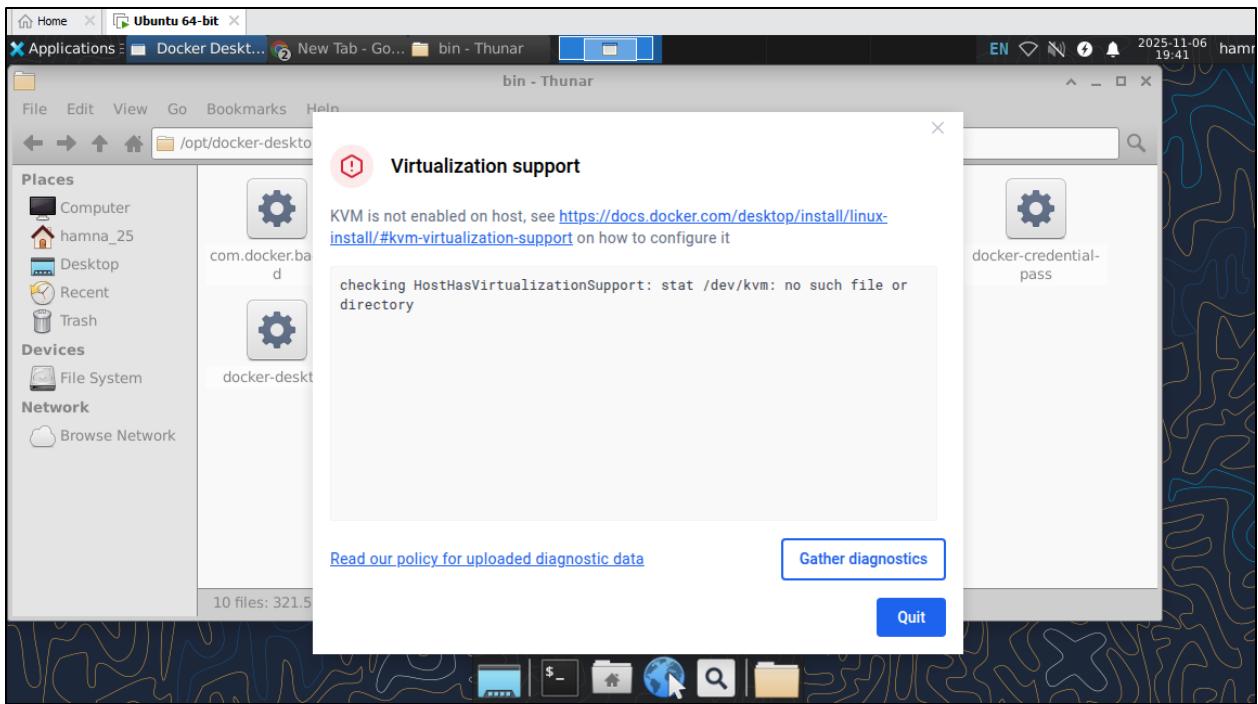
```
hamna_25@ubuntu:~/Downloads$ sudo apt install ./docker-desktop-latest-amd64.deb -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'docker-desktop' instead of './docker-desktop-latest-amd64.deb'
The following packages will be upgraded:
  docker-desktop
1 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/429 MB of archives.
After this operation, 0 B of additional disk space will be used.
Get:1 /home/hamna_25/Downloads/docker-desktop-latest-amd64.deb docker-desktop amd64 4.50.0-209931 [429 MB]
(Reading database ... 181204 files and directories currently installed.)
Preparing to unpack .../docker-desktop-latest-amd64.deb ...
Unpacking docker-desktop (4.50.0-209931) over (4.49.0-208700) ...
Setting up docker-desktop (4.50.0-209931) ...
Enabling use of privileged ports by Docker Desktop
kubernetes.docker.internal already in /etc/hosts
Reloading systemd daemon for logged in users
Done reloading systemd daemon for logged in users
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for gnome-menus (3.36.0-1.1ubuntu3) ...
Processing triggers for bamfdaemon (0.5.6+22.04.20220217-0ubuntu5) ...
```

In your **Ubuntu GUI** (XFCE desktop), click the **Applications menu** (usually at the top-left or bottom-left corner).



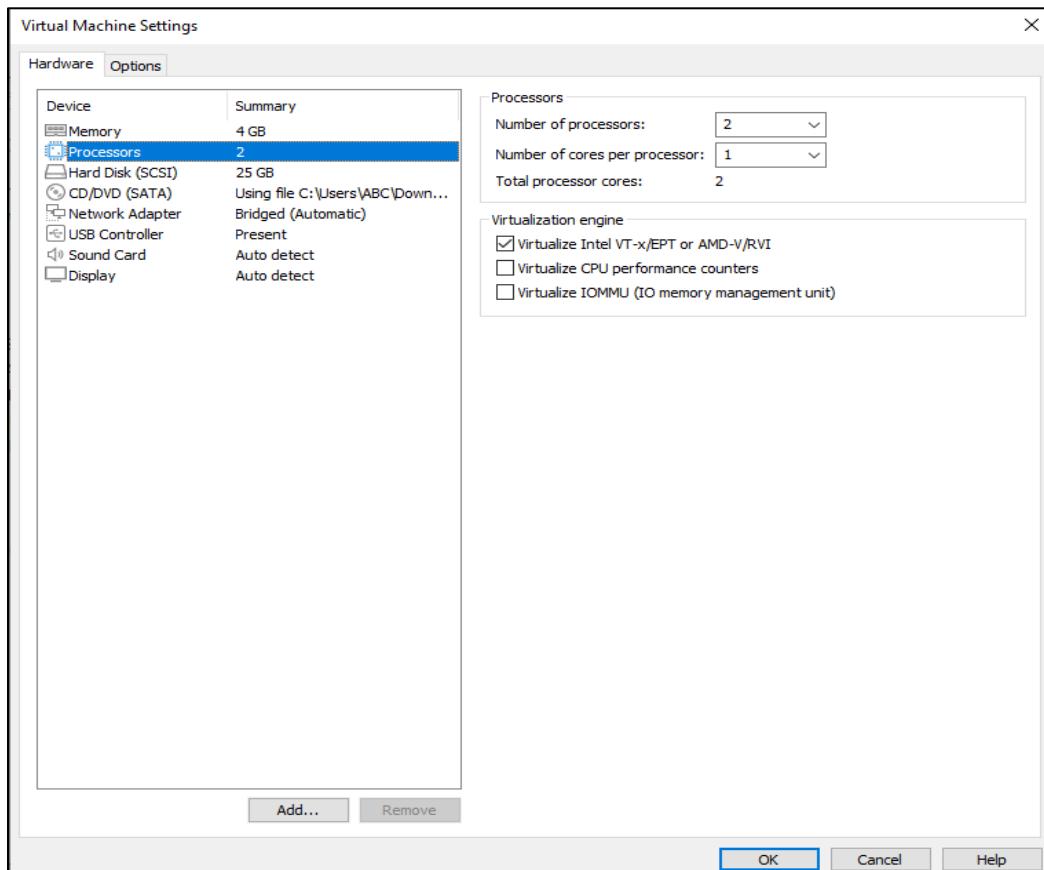
Type **Docker Desktop** in the search bar.

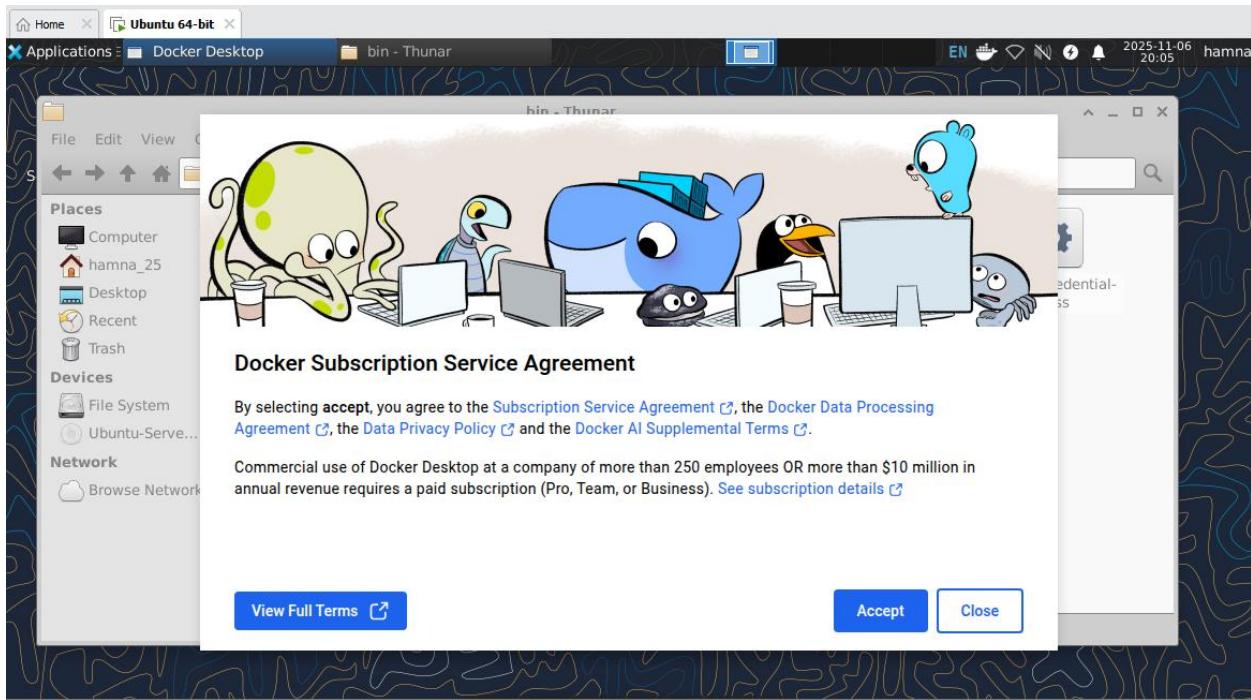
Click on **Docker Desktop** to launch it.



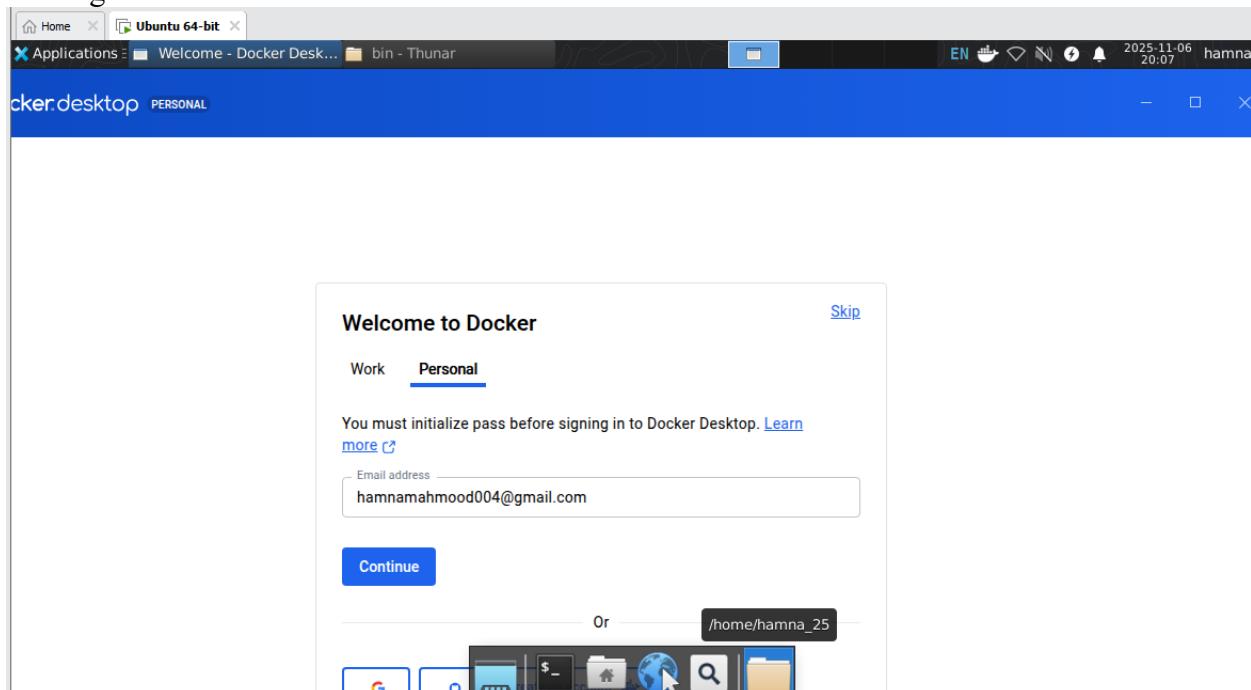
Virtualization Error.

### Solution:





Then wait a bit while Docker Desktop starts up (it might take 30–60 seconds). Once you see the Docker whale 🐋 icon or the main Docker Desktop window, that means it's running.



- Capture a screenshot of Docker Desktop running (or other clear evidence that Docker Desktop is installed and started) and save it as: exam\_evaluation\_docker\_desktop.png

