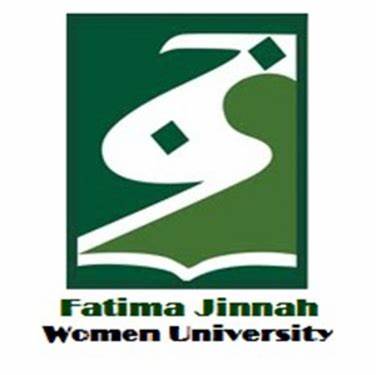
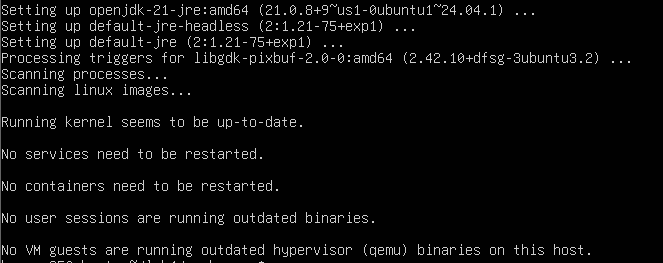
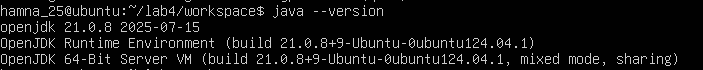
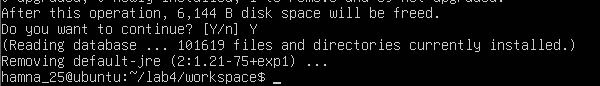
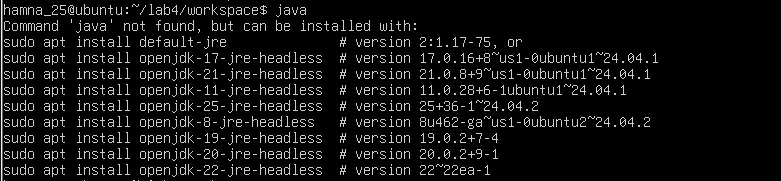
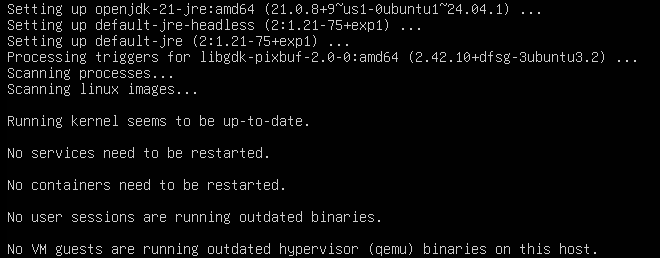
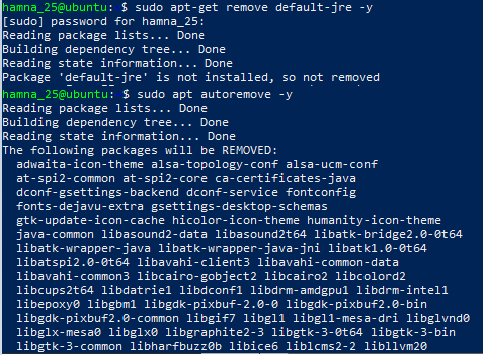
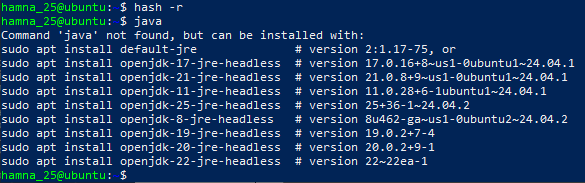
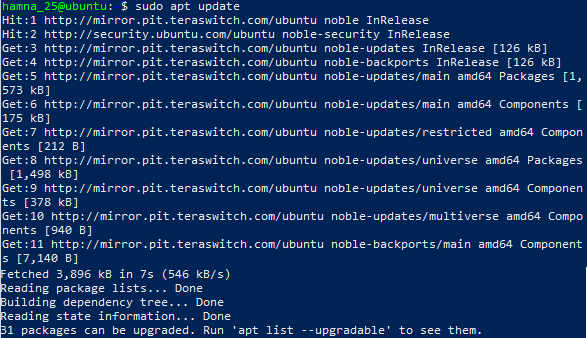
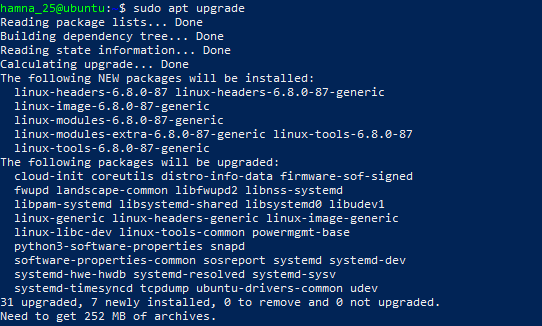
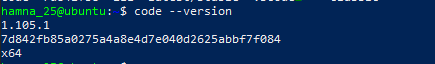
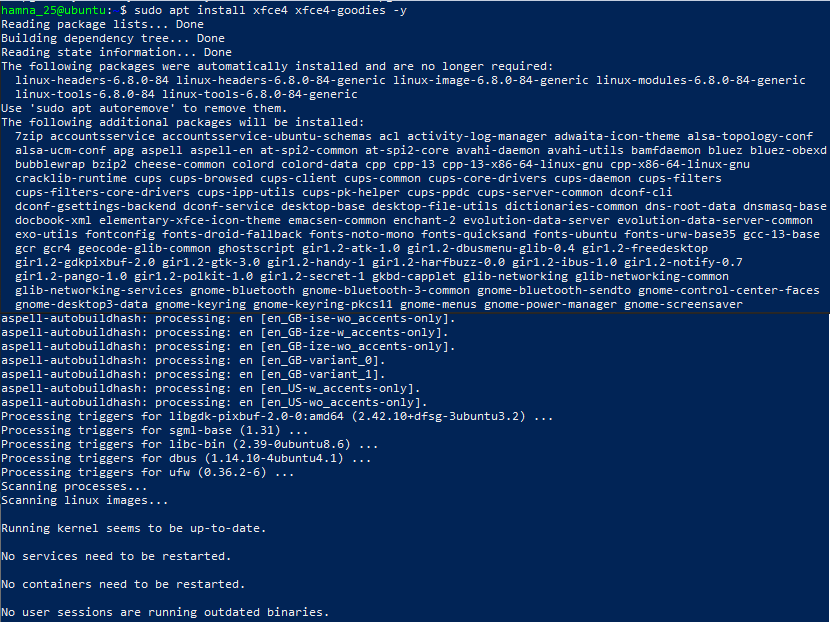
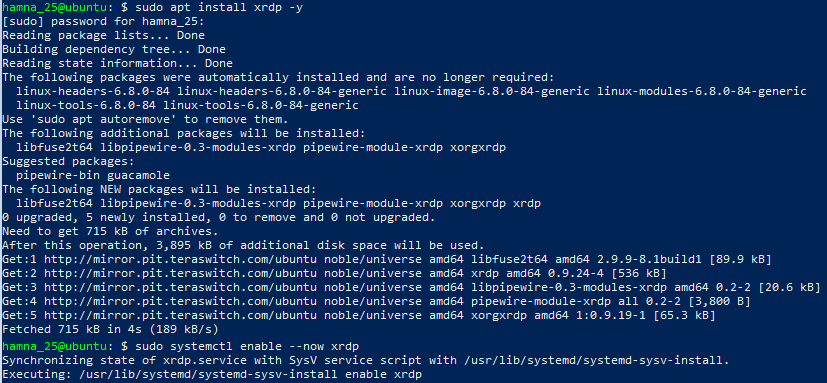
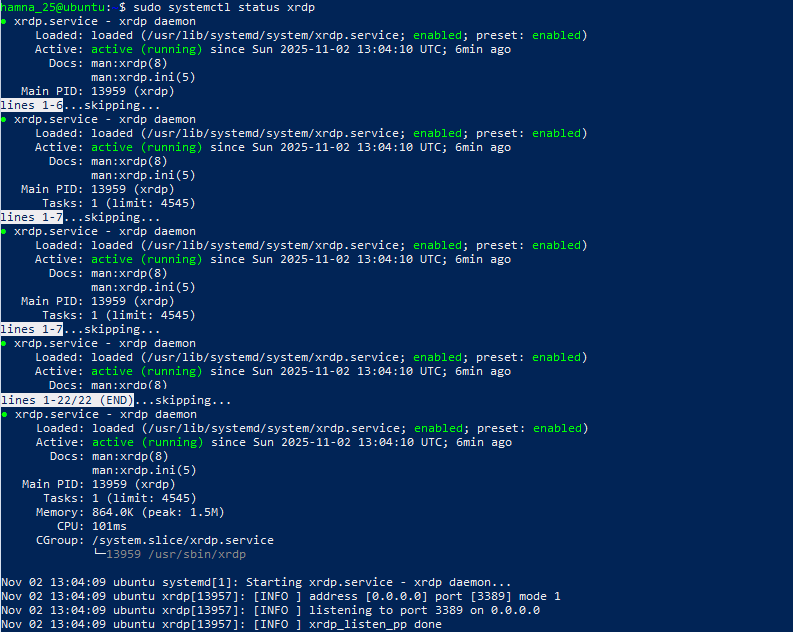
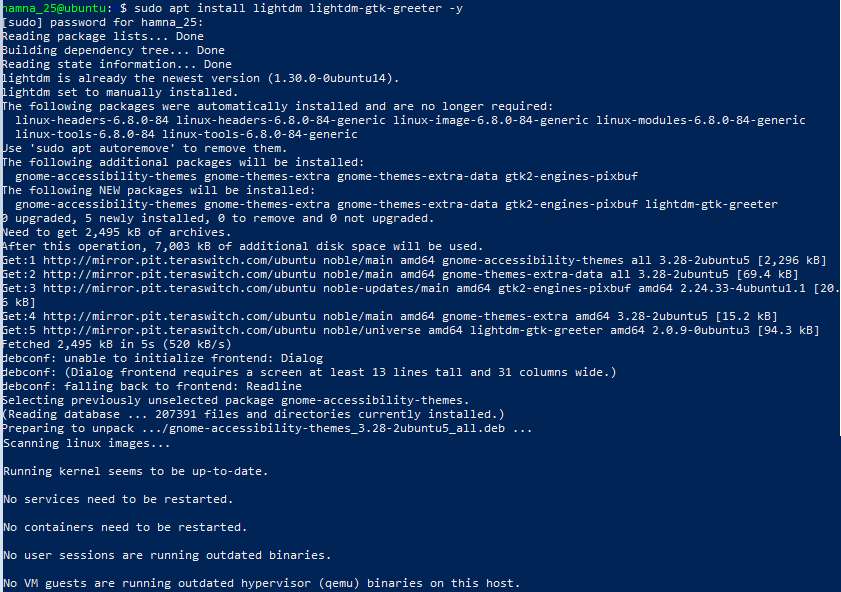
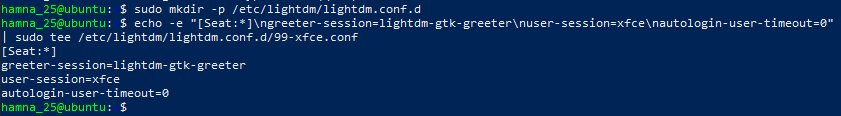
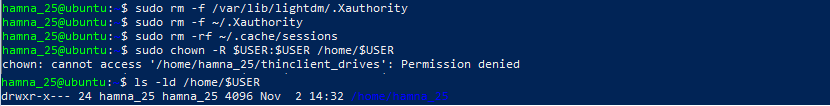
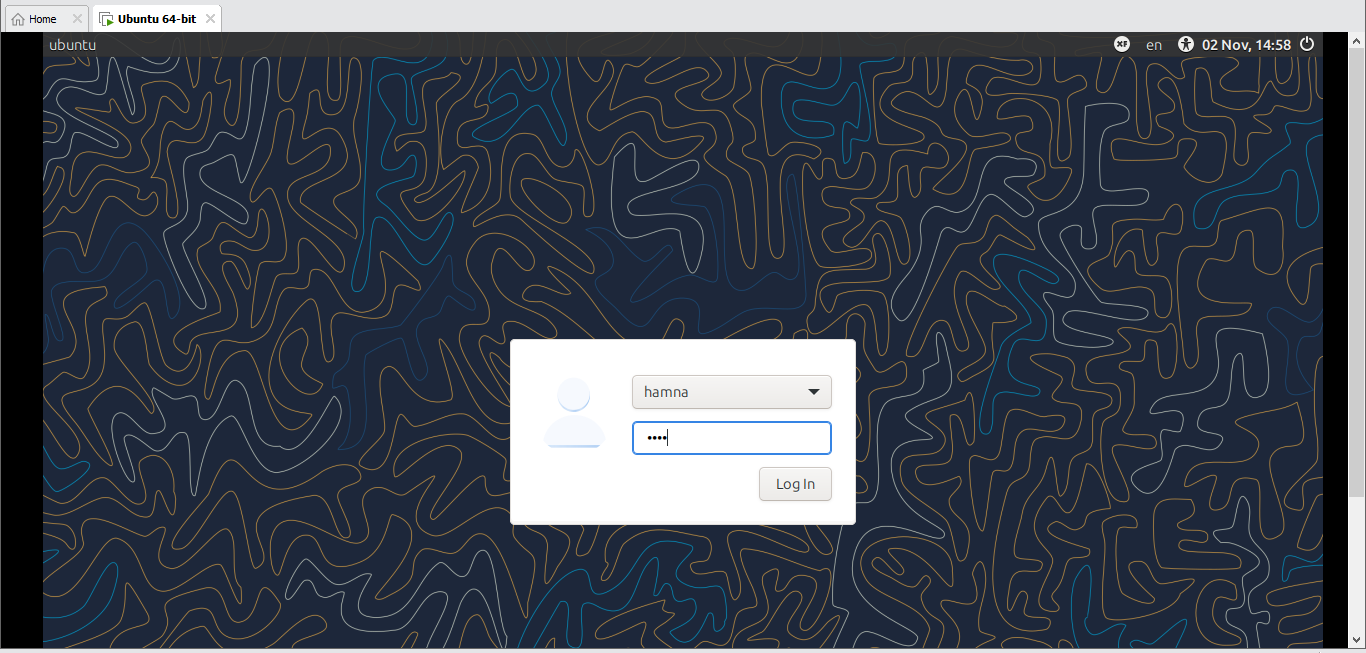
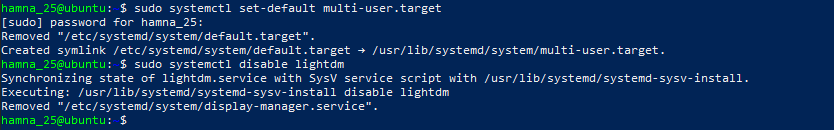
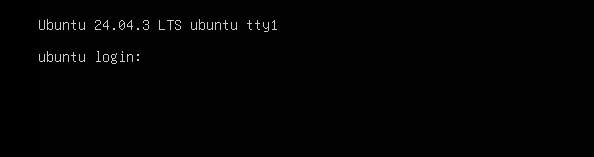
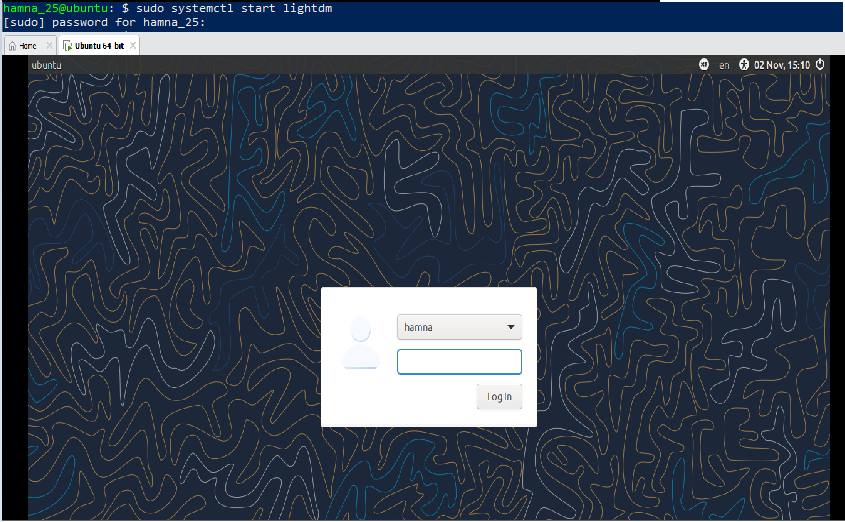
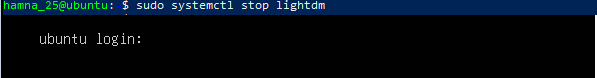
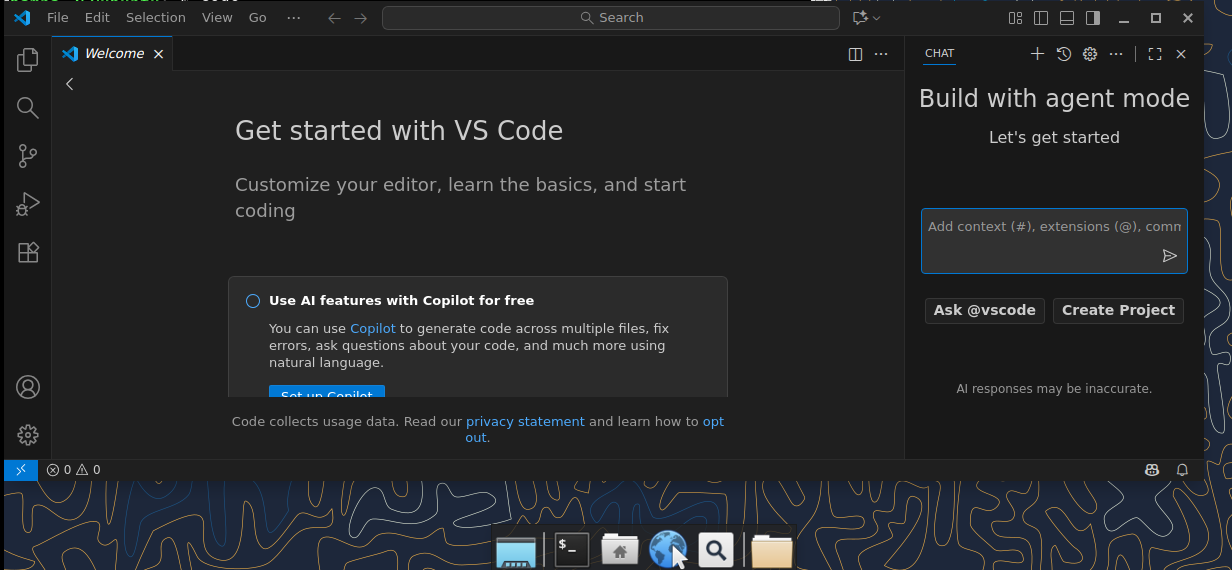
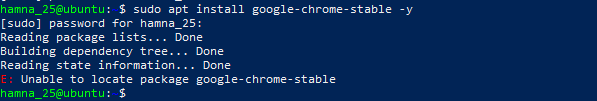
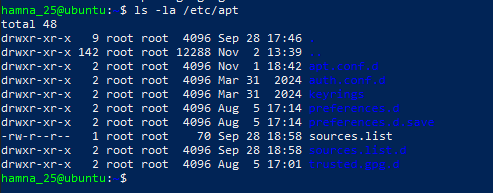
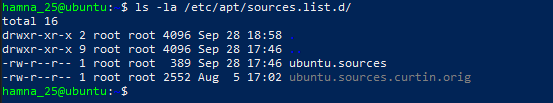
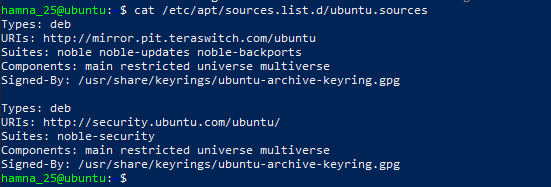
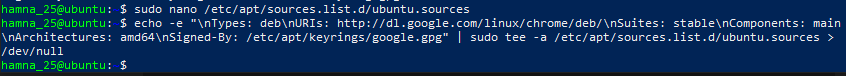
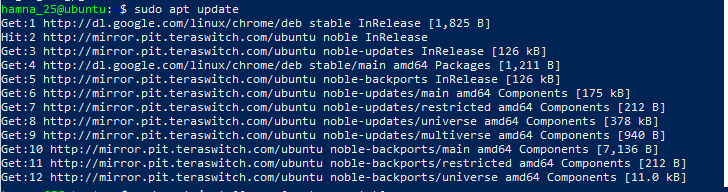
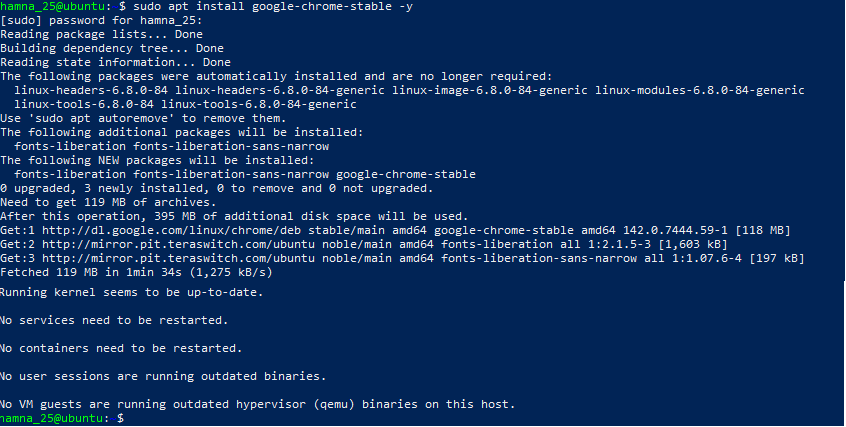
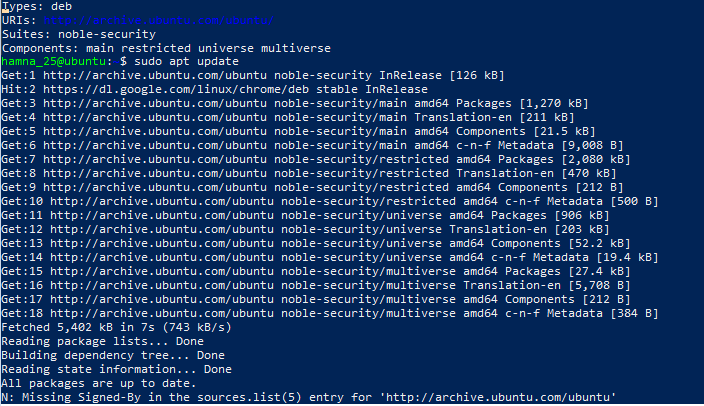
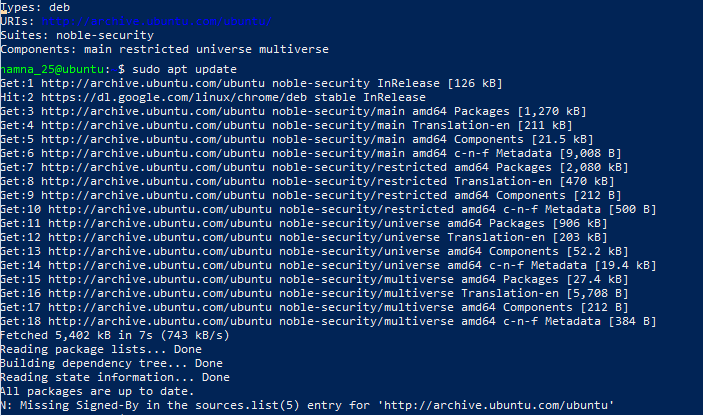
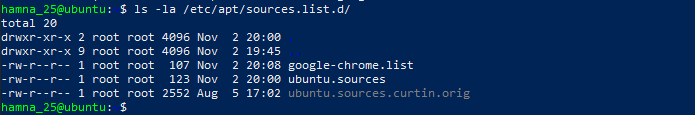
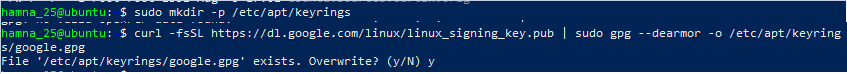
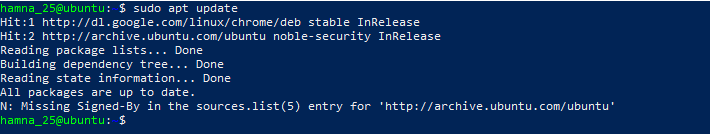
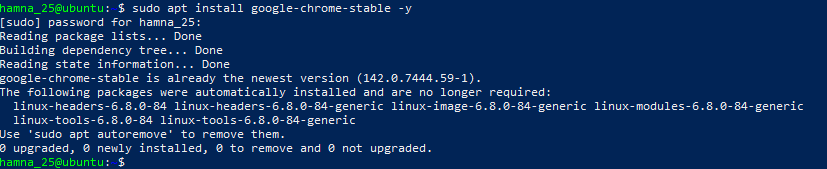
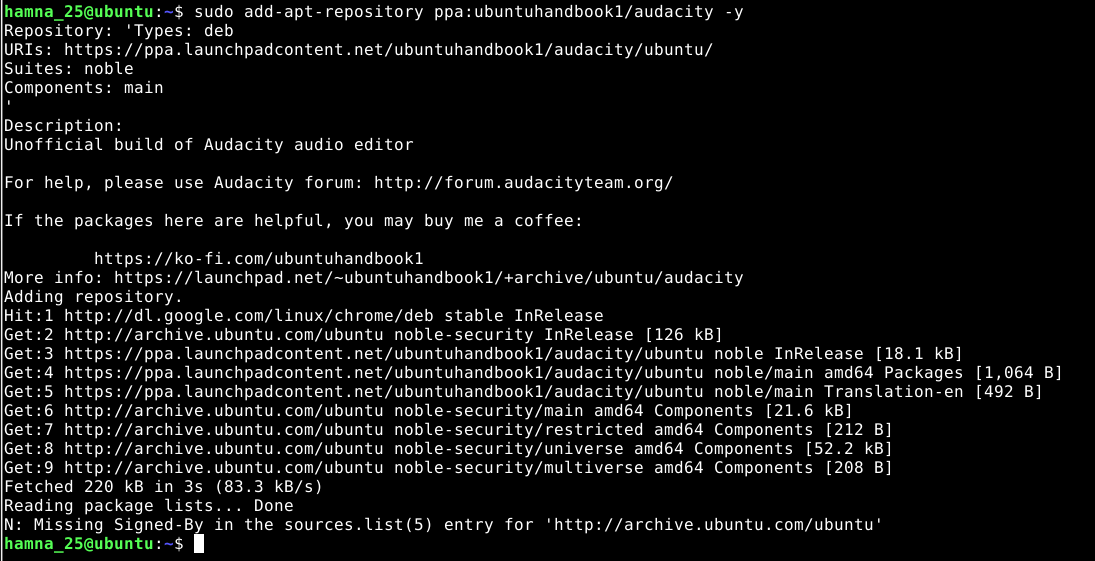
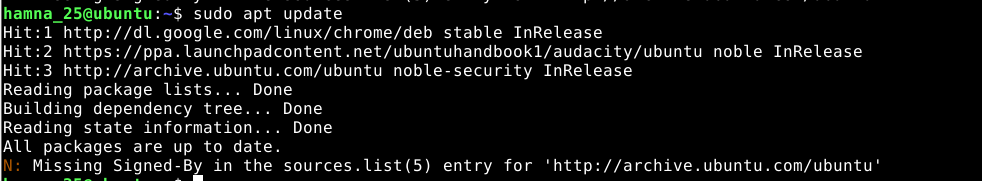
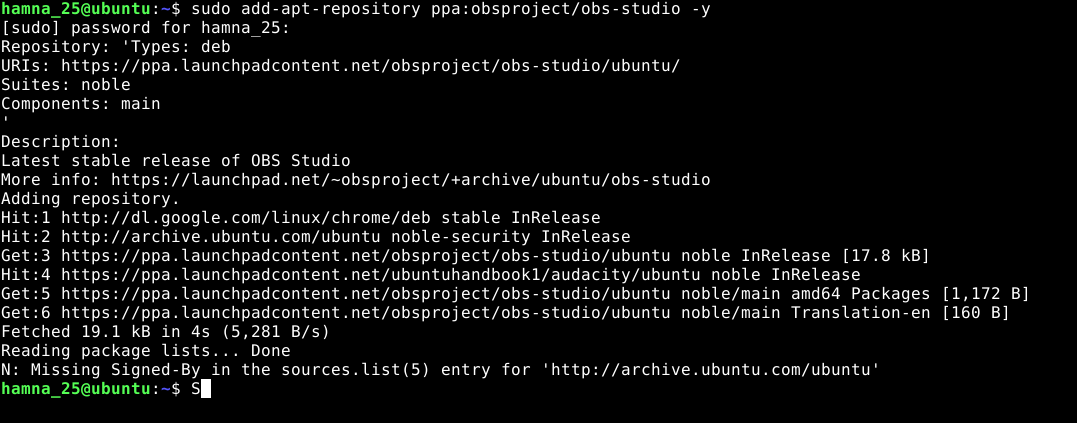
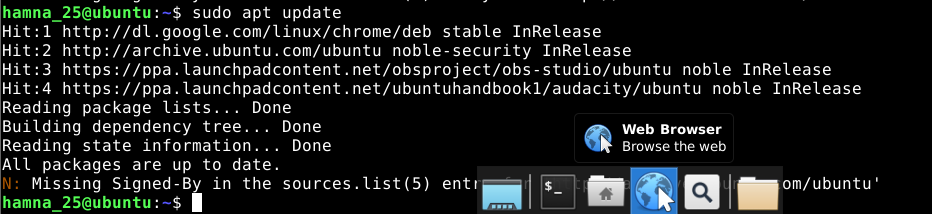
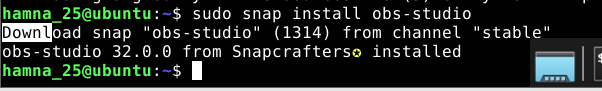
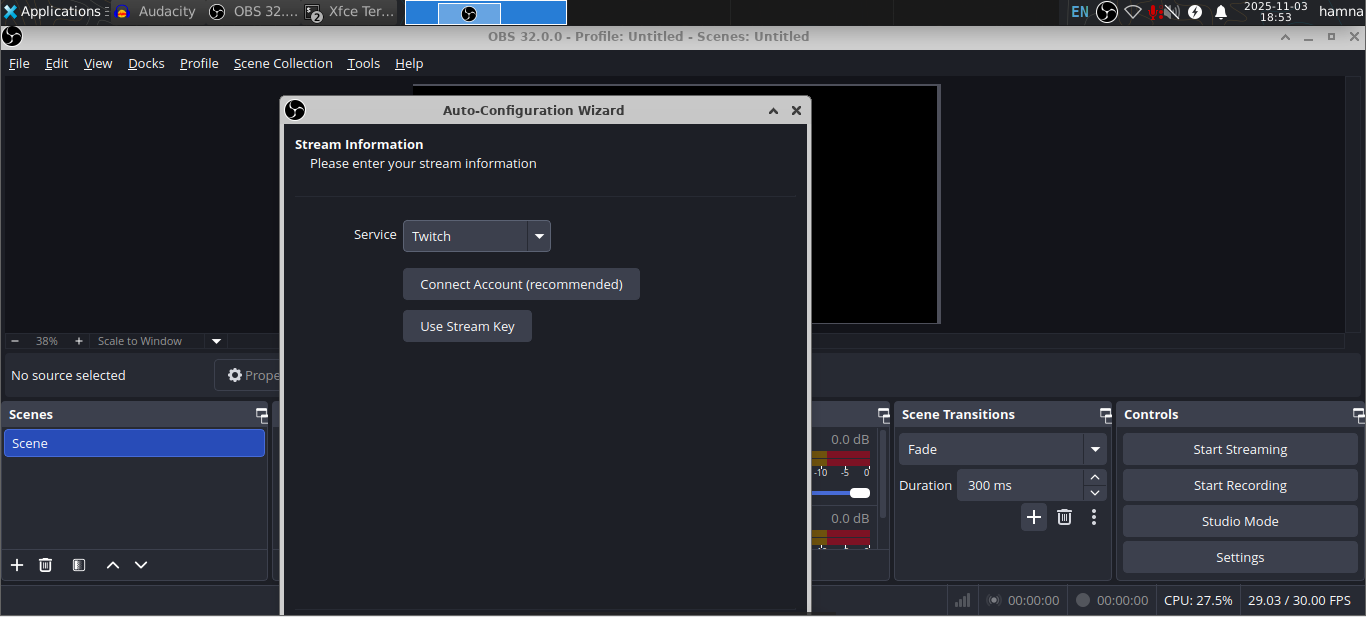
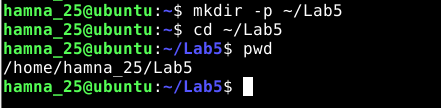
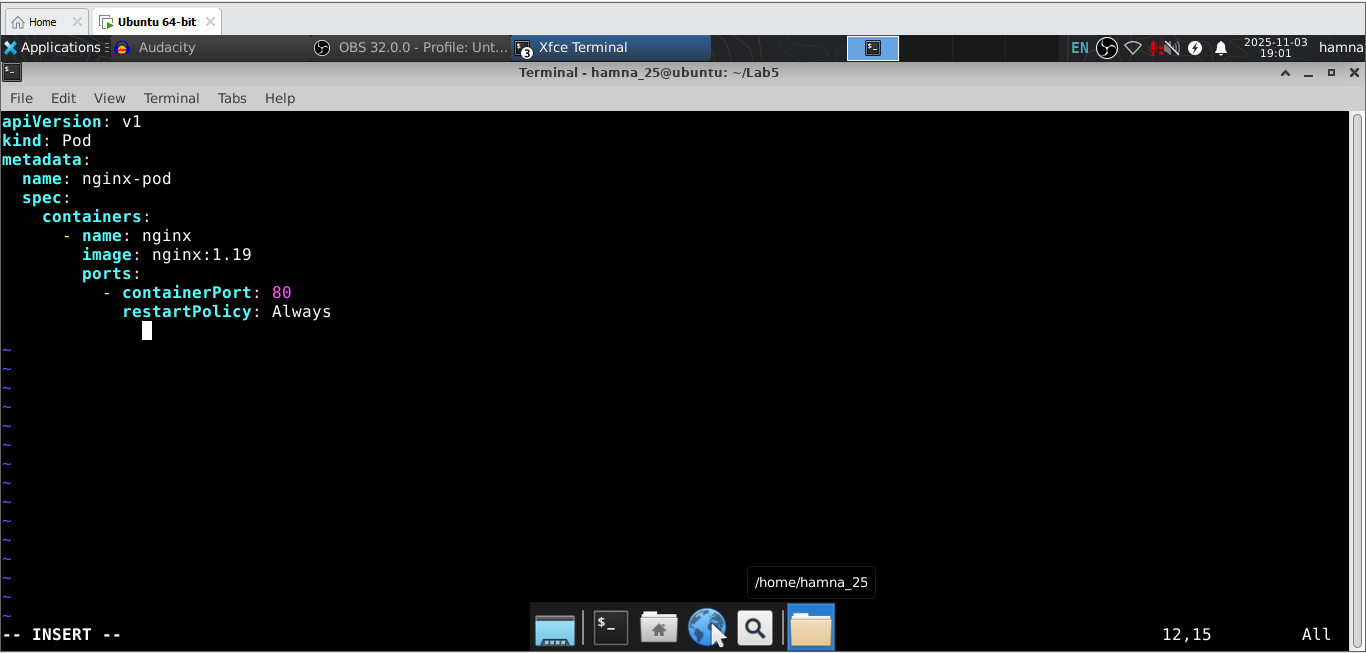
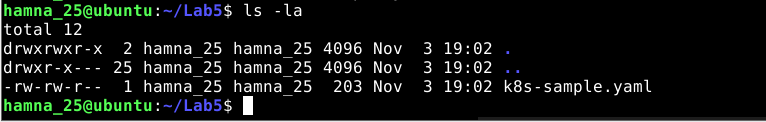
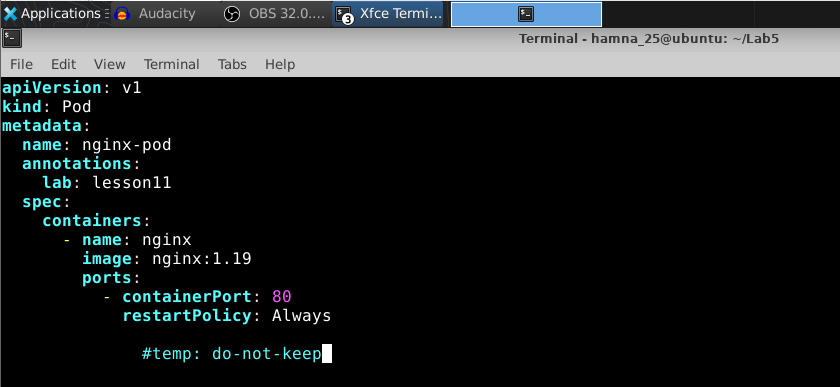
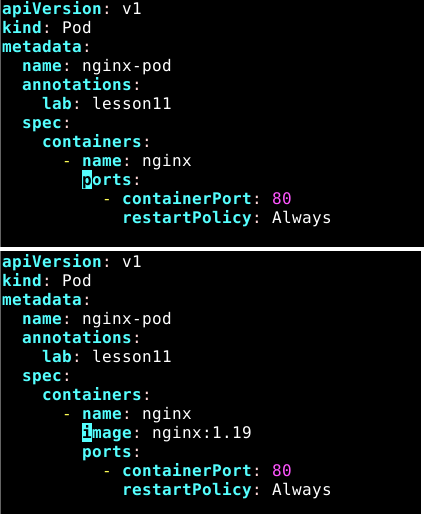
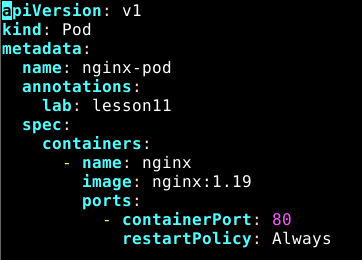
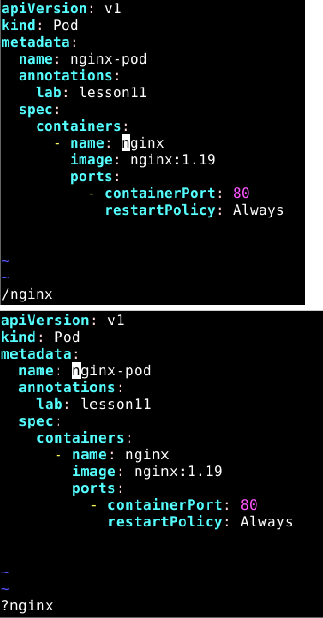
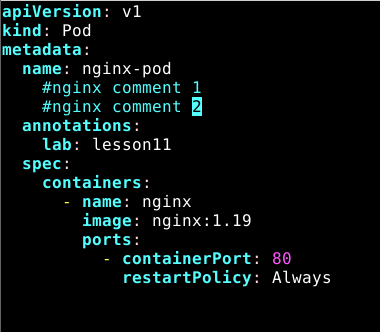
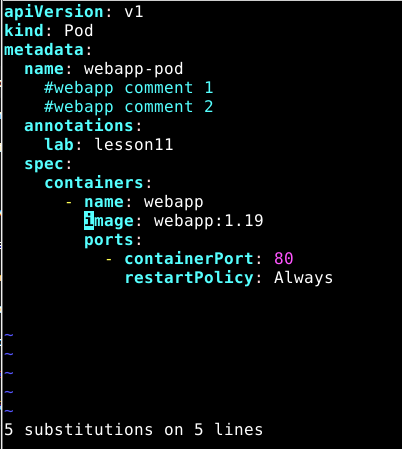
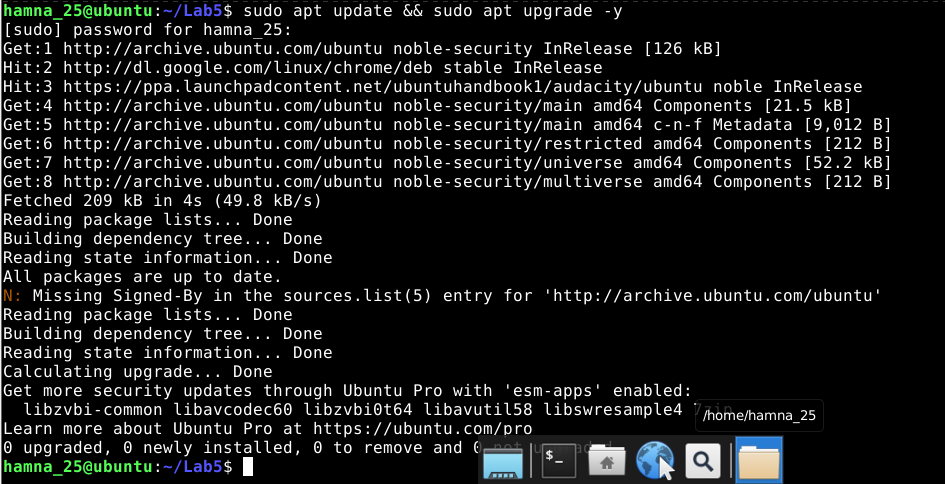
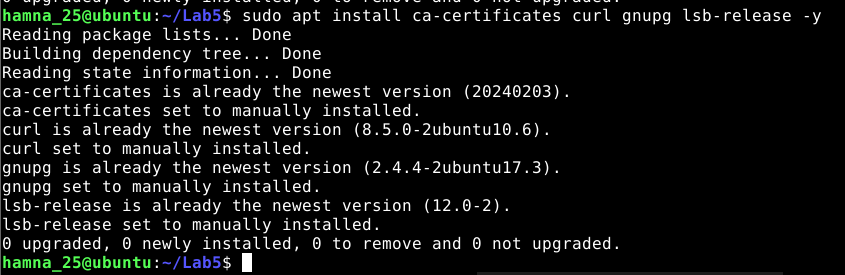
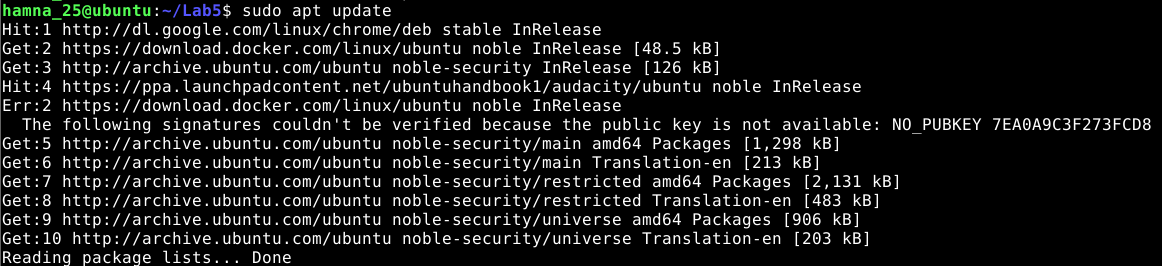
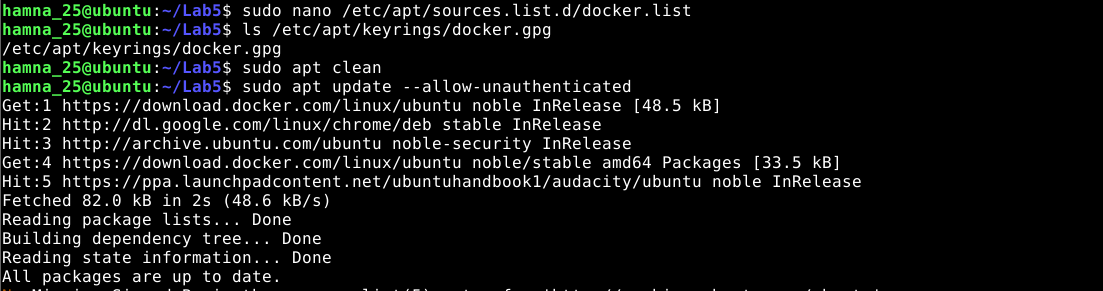
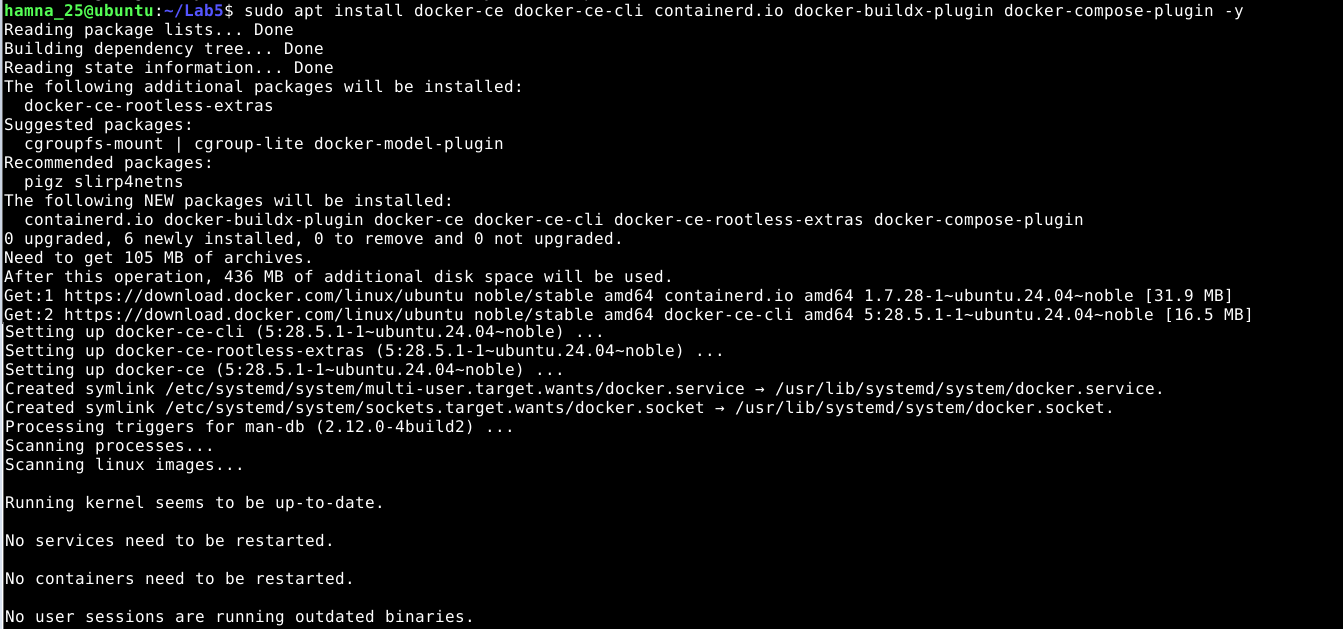
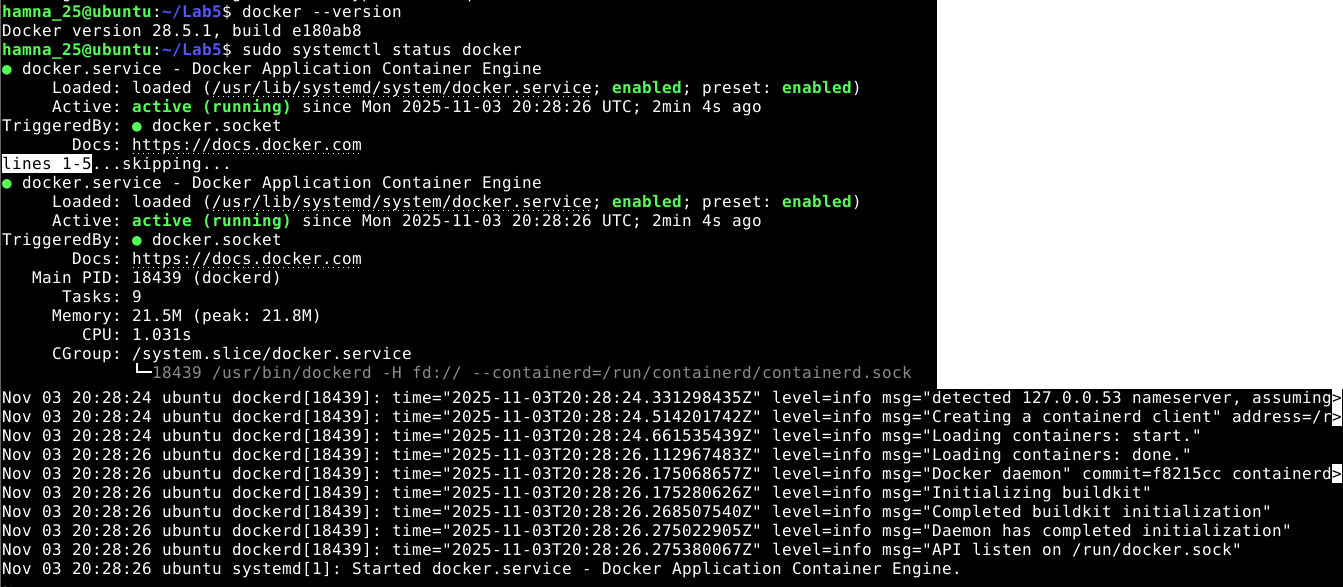
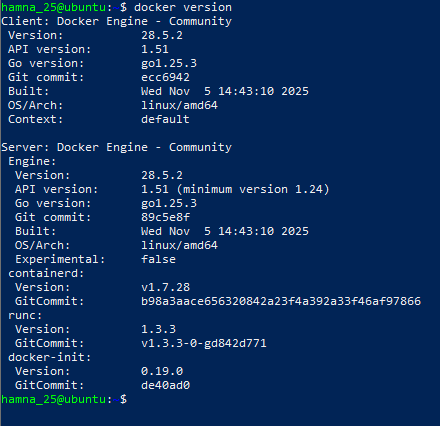
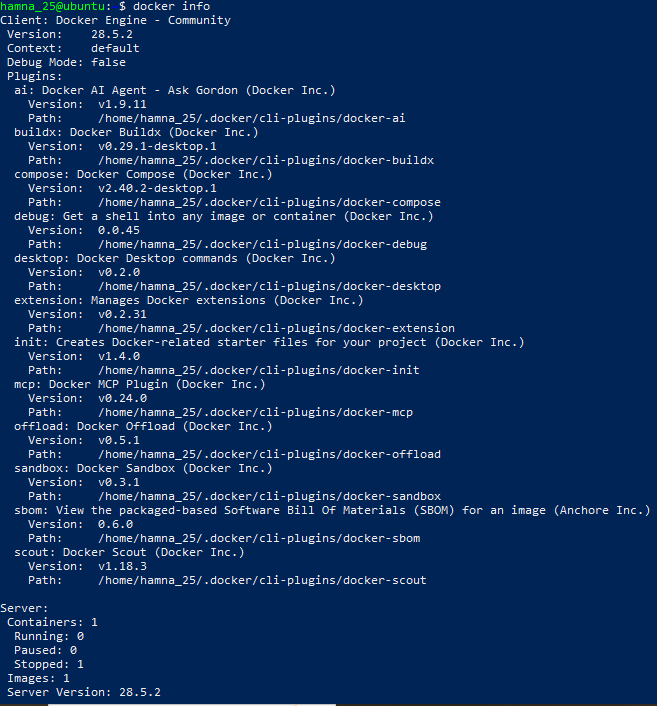
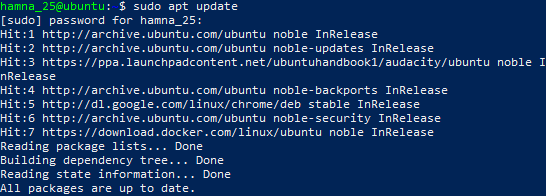
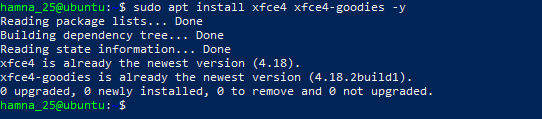
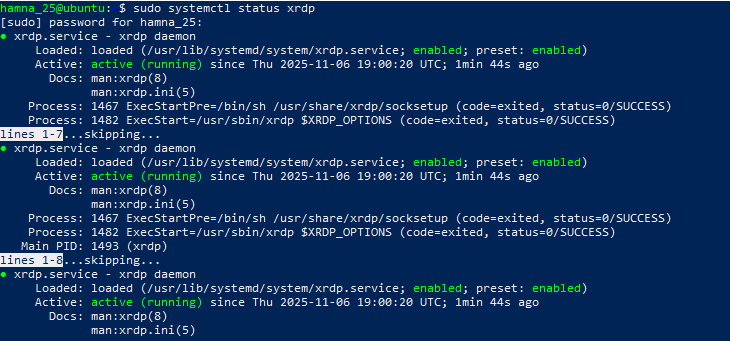
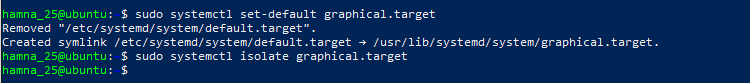
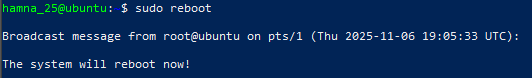
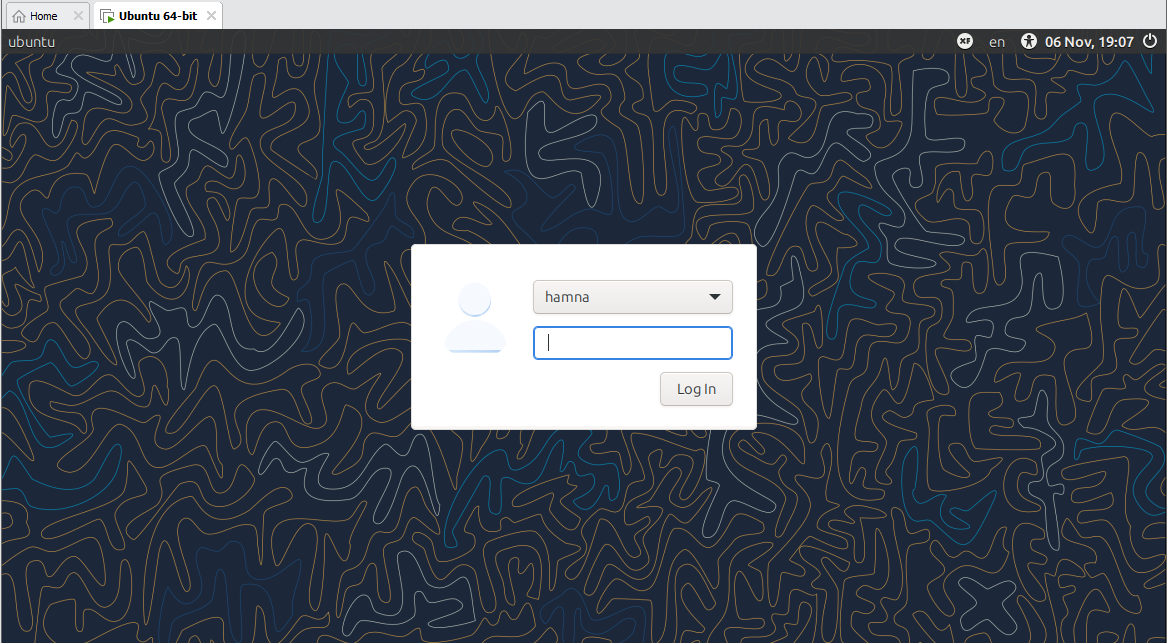
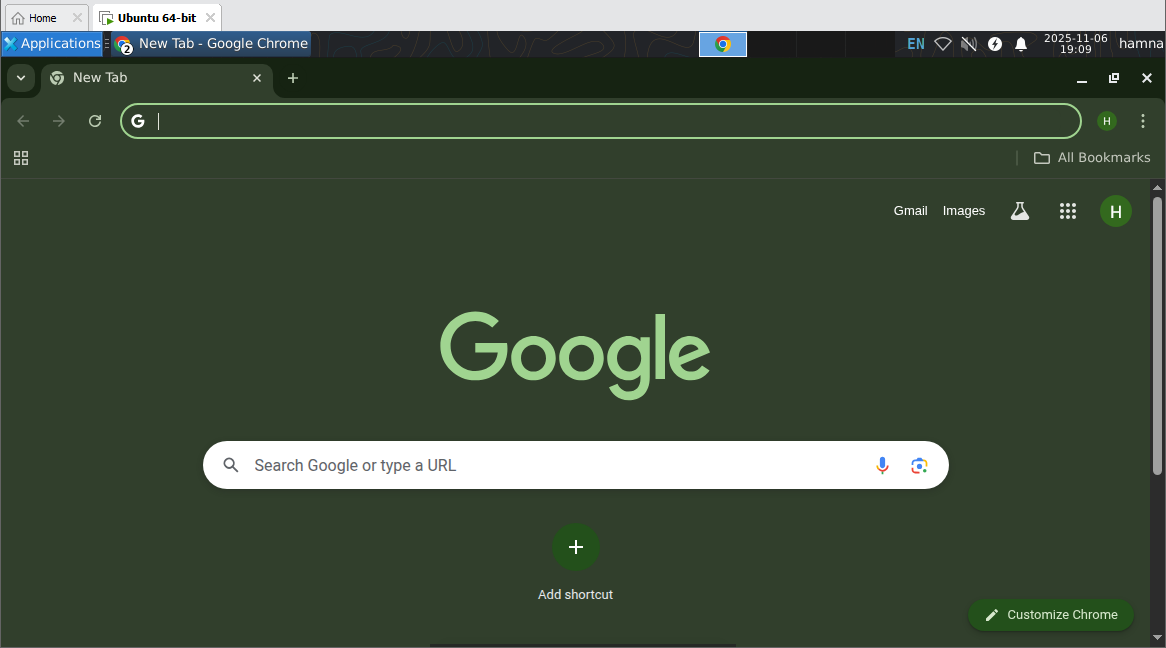
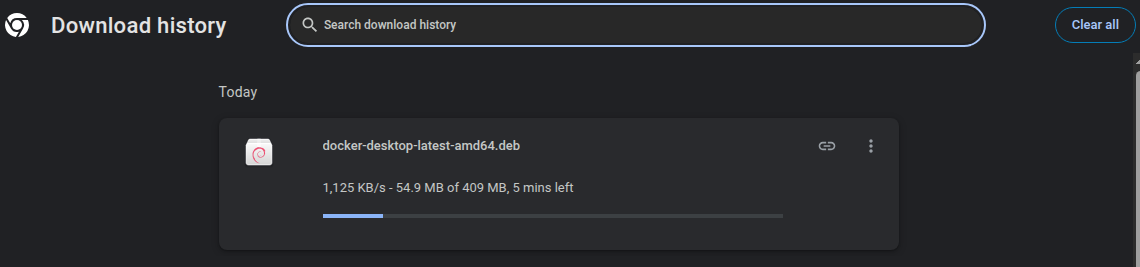
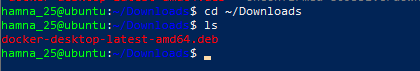
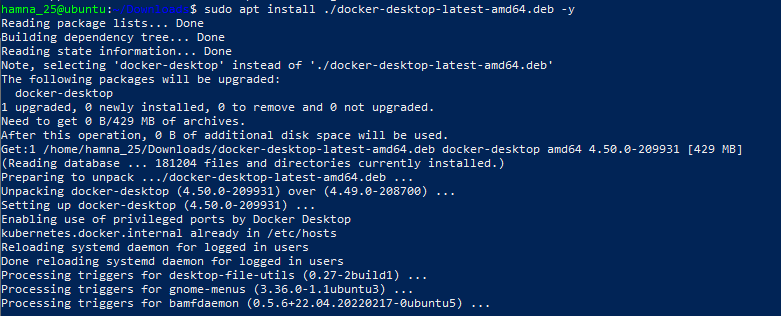
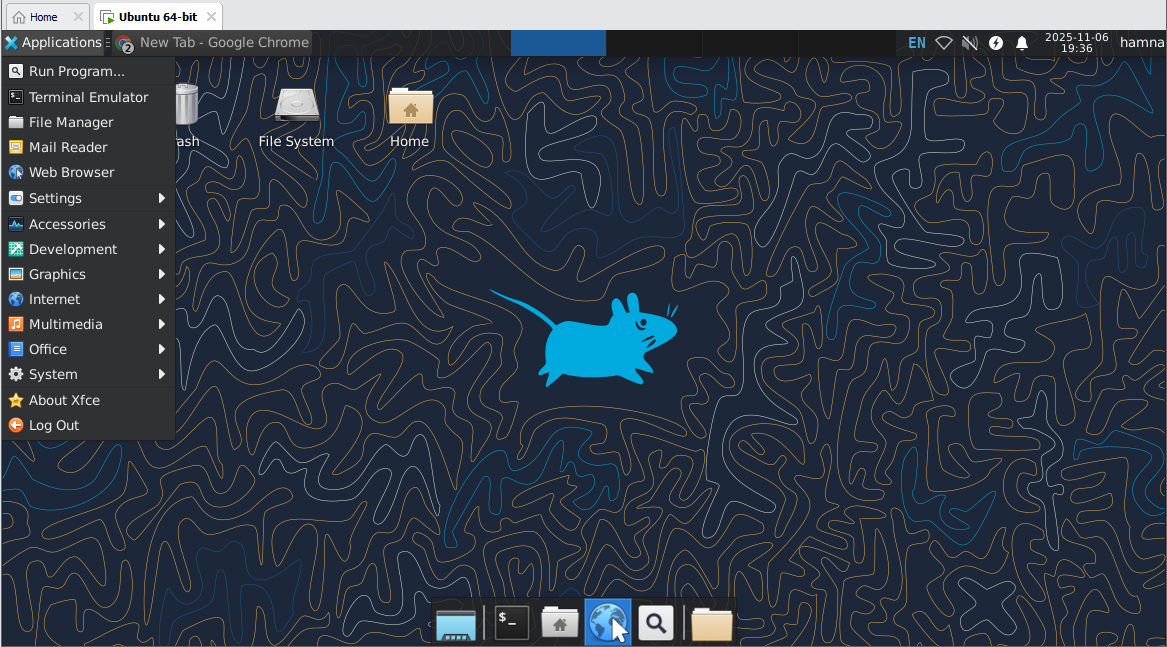
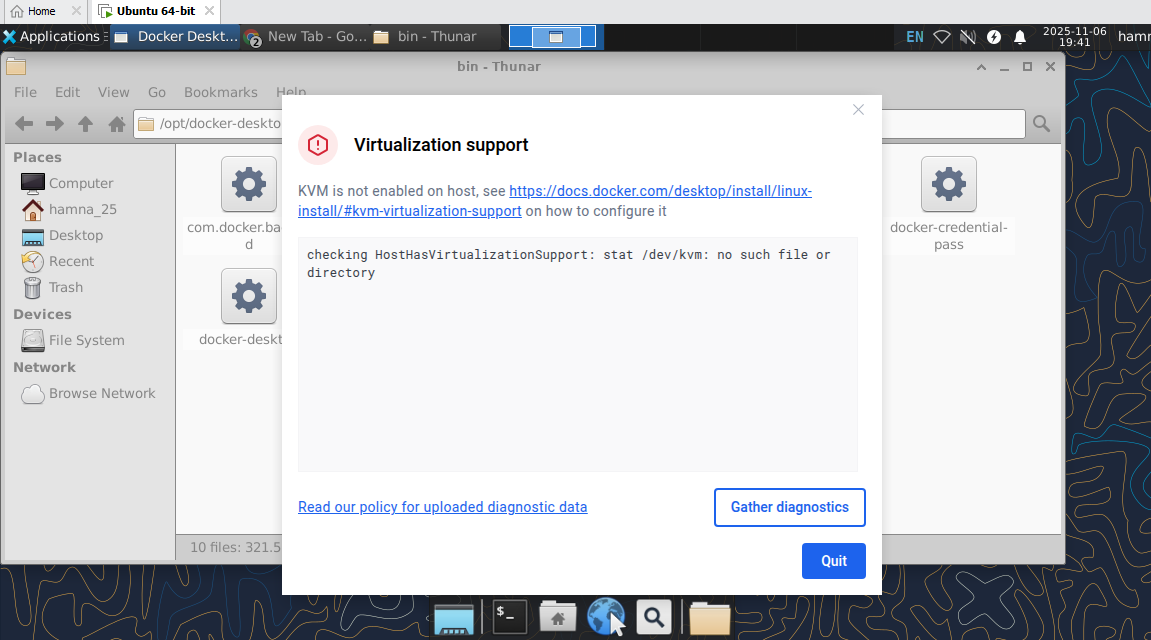
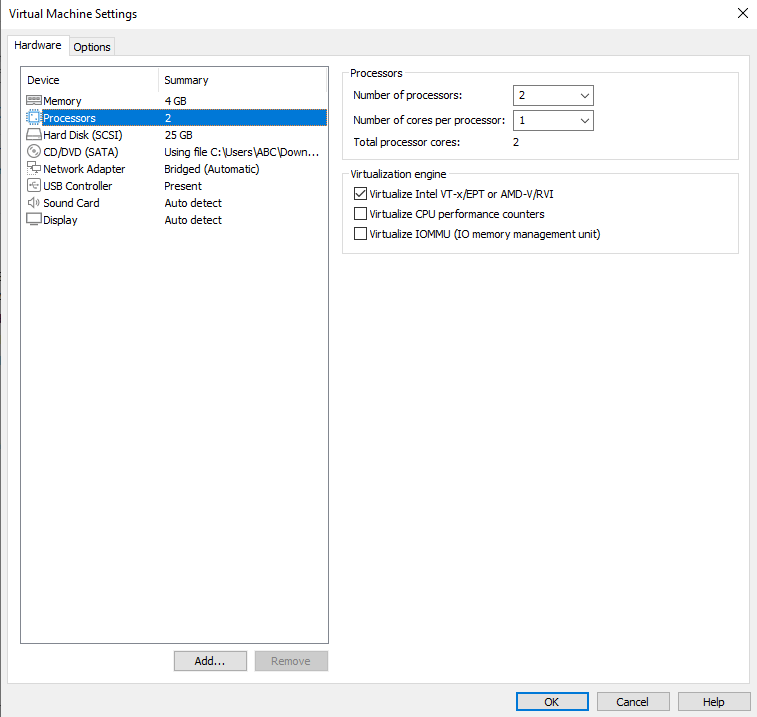
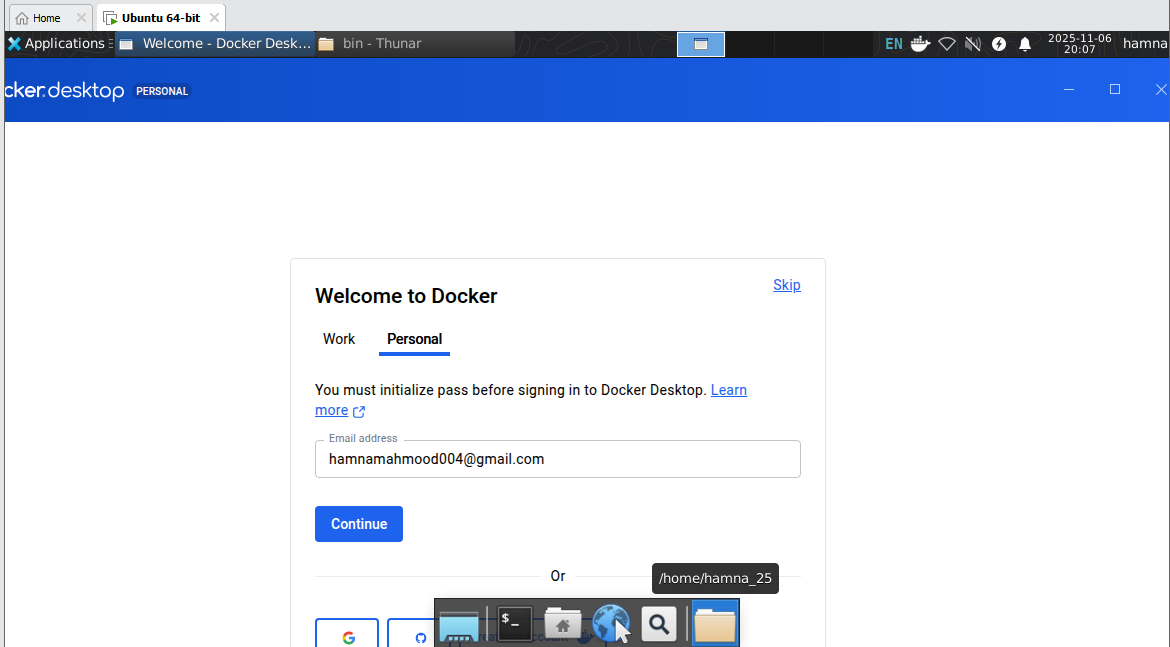
Name: Hamna Mahmood  
Roll Number: 25   
BSE V-A

LAB 5 Markdown file  
\*\*CLOUD COMPUTING\*\*  
  
\*\*\*\*  
  
\*\*SUBMITTED TO\*\*   
SIR WAQAS SALEEM  
  
\*\*SUBMITTED BY\*\*   
HAMNA MAHMOOD   
2023-BSE-025  
  
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  
  
  
  
task1\_java\_install.png  
  
  
  
task1\_java\_version.png  
  
  
  
task1\_java\_remove.png  
  
\*\*\*\*  
  
task1\_java\_not\_found.png  
  
\*\*\*\*  
  
task1\_hash\_clear.png  
  
\*\*\*\*  
  
\*\*Task 2 - Install & remove Java using apt-get (explicitly)\*\*  
  
task2\_aptget\_install.png  
  
\*\*\*\*  
  
task2\_java\_version\_after\_aptget.png  
  
  
  
task2\_aptget\_remove.png  
  
  
  
task2\_hash\_after\_remove.png  
  
  
  
\*\*Task 3 - apt update vs apt upgrade - run & explain\*\*  
  
task3\_apt\_update.png  
  
  
  
task3\_apt\_upgrade.png  
  
  
  
task3\_explanation.png  
  
  
  
\*\*Task 4 - Install Visual Studio Code via snap on CLI and verify (DO NOT remove Code)\*\*  
  
task4\_snap\_install.png  
  
  
  
task4\_snap\_list.png  
  
  
  
task4\_code\_version\_or\_info.png  
  
  
  
task4\_snap\_bin\_location.png  
  
  
  
\*\*Task 5 - Install XFCE GUI + XRDP - minimal desktop and remote access (GUI) and launch VS Code\*\*  
  
task5\_update.png  
  
  
  
task5\_xfce\_install.png  
  
  
  
task5\_xrdp\_enable.png  
  
  
  
task5\_xrdp\_status.png  
  
  
  
task5\_xsession.png  
  
  
  
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  
  
  
  
task6\_lightdm\_config.png  
  
  
  
task6\_lightdm\_cleanup.png  
  
  
  
task6\_lightdm\_restart.png  
  
  
  
task6\_gui\_enable\_boot.png  
  
  
  
task6\_after\_reboot\_gui.png  
  
  
  
task6\_gui\_disable\_boot.png  
  
  
  
task6\_after\_reboot\_cli.png  
  
  
  
task6\_gui\_start.png  
  
  
  
task6\_gui\_stop.png  
  
  
  
task6\_gui\_start\_command.png  
  
  
  
task6\_vscode\_launch.png  
  
  
  
\*\*Task 7 - Install Google Chrome by adding its apt source & key (Chrome)\*\*  
  
task7\_install\_chrome\_error.png  
  
  
  
task7\_ls\_etc\_apt.png  
  
  
  
task7\_cat\_sources\_list.png  
  
  
  
task7\_ls\_sources\_list\_d.png  
  
  
  
task7\_cat\_ubuntu\_sources.png  
  
  
  
task7\_edit\_ubuntu\_sources.png  
  
  
  
task7\_add\_key.png  
  
  
  
task7\_apt\_update.png  
  
  
  
task7\_install\_chrome.png  
  
  
  
task7\_alternate\_remove.png  
  
Here, in the file, links other than the official ubuntu link of <http://archive.ubuntu.com/ubuntu/> was deleted.  
  
  
  
task7\_alternate\_edit.png  
  
Here, the link was edited from <http://security.ubuntu.com/ubuntu/> to <http://archive.ubuntu.com/ubuntu/>  
  
  
  
task7\_remove\_key.png  
  
  
  
task7\_create\_google\_chrome\_list.png  
  
  
  
task7\_list\_sources\_after\_create.png  
  
  
  
task7\_add\_key\_alt.png  
  
  
  
task7\_apt\_update\_alt.png  
  
  
  
task7\_install\_chrome\_alt.png  
  
  
  
\*\*Task 8 - Install applications via PPA (Audacity & OBS) and launch\*\*  
  
task8\_add\_ppa\_audacity.png (running within XFCE terminal)  
  
  
  
task8\_apt\_update\_audacity.png  
  
task8\_install\_audacity.png  
  
  
  
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)  
  
  
  
task8\_apt\_update\_obs.png (apt update after adding PPA)  
  
  
  
task8\_install\_obs.png (apt install output)  
  
  
  
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  
  
  
  
task9\_vim\_install.png (only if you installed it).  
  
\_Mine is already installed\_  
  
task9\_mkdir\_cd.png  
  
  
  
task9\_vim\_edit.png  
  
  
  
task9\_k8s\_saved.png  
  
  
  
\*\*Task 10 - Edit the Kubernetes YAML - add annotation, verify, then discard temporary change\*\*  
  
task10\_verify\_annotation.png  
  
  
  
task10\_verify\_entering\_temp\_data.png  
  
  
  
task10\_verify\_no\_temp\_comment.png  
  
  
  
\*\*Task 11 - Vim editing practice - delete, undo, numeric deletes, navigation\*\*  
  
task11\_dd\_delete\_and\_undo.png   
\_Both images are shown together (before and after)\_  
  
  
  
task11\_delete3\_and\_undo.png  
  
\_Both images are shown together (before and after)\_  
  
  
  
task11\_line1.png  
  
  
  
task11\_navigation.png  
  
  
  
\*\*Task 12 - Vim search, add matches, substitute, undo\*\*  
  
task12\_search\_nginx.png  
  
  
  
task12\_n\_and\_N\_navigation.png  
  
  
  
task12\_added\_occurrences.png  
  
  
  
task12\_cycle\_matches.png  
  
  
  
task12\_substitute\_result.png  
  
   
  
task12\_undo\_and\_quit.png  
  
  
  
\*\*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,  
  
  
  
Installing prerequisites,  
  
  
  
Adding Docker's official GPG key,  
  
  
  
Adding the Docker repository,  
  
  
  
Updating apt again,  
  
  
  
Installing Docker Desktop,  
  
  
  
  
  
Verify if installed or not,  
  
  
  
- \*\*Verify Docker Desktop is installed by launching the Docker Desktop application and confirming it runs.\*\*  
  
Verified that Docker Engine was running with:  
  
docker version  
  
\*\*\*\*  
  
docker info  
  
\*\*\*\*  
  
Installing GUI (XFCE) Environment  
  
Run this in your Ubuntu VM terminal: sudo apt update  
  
\*\*\*\*  
  
sudo apt install xfce4 xfce4-goodies -y  
  
\*\*\*\*  
  
This installs the XFCE desktop and some useful components (lightweight, works well in VMware).   
It may take a few minutes.  
  
Verify or (Re)Enable XRDP 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  
  
\*\*\*\*  
  
Then check XRDP status: sudo systemctl status xrdp  
  
  
  
Switch to GUI mode  
  
Run this command in your terminal: sudo systemctl set-default graphical.target  
  
sudo systemctl isolate graphical.target  
  
  
  
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  
  
  
  
\*\*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\*\*](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  
  
  
  
Then install it using:  
  
sudo apt install ./docker-desktop-amd64.deb -y  
  
  
  
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\*\*  
  
