

Fatima Jinnah Women University

Subject: Cloud Computing



Name:

Tehreem khan(5-B)

Registration number:

2023-BSE-064

Submitted To:

Sir Shoaib

LAB 5

Task 1:

```
tehreem064@tehreem:~$ java
Command 'java' not found, but can be installed with:
sudo apt install openjdk-17-jre-headless  # version 17.0.16+8~us1-0ubuntu1~24.04
.1, or
sudo apt install openjdk-21-jre-headless  # version 21.0.8+9~us1-0ubuntu1~24.04.
1
sudo apt install default-jre          # version 2:1.17-75
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
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo apt install default-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  adwaita-icon-theme alsa-topology-conf alsa-ucm-conf
  at-spi2-common at-spi2-core ca-certificates-java
  dconf-gsettings-backend dconf-service default-jre-headless
  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-ini libatk1.0-0t64 libatspi2.0-0t64
```

```
tehreem064@tehreem:~$ java --version
openjdk 21.0.8 2025-07-15
```

```
tehreem064@tehreem:~$ sudo apt remove openjdk-21-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  adwaita-icon-theme alsa-topology-conf alsa-ucm-conf at-spi2-common
  at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service
  default-jre-headless 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 libdrm-amdgpu1 libdrm-intel1 libepoxy0
  libgbm1 libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common
  libgif7 libgl1 libgl1-mesa-dri libglvnd0 libglx-mesa0 libglx0 libgraphite2-3
  libgtk-3-0t64 libgtk-3-bin libgtk-3-common libharfbuzz0b libice6 liblcms2-2
  libl1vm20 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0
  libpcssclite1 libpixman-1-0 librsvg2-2 librsvg2-common libsm6 libthai-data
  libthai0 libvulkan1 libwayland-client0 libwayland-cursor0 libwayland-egl1
  libwayland-server0 libx11-xcb1 libxaw7 libxcb-dri3-0 libxcb-glx0
  libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shape0 libxcb-shm0
  libxcb-sync1 libxcb-xfixes0 libxcomposite1 libxcursor1 libxdamage1 libxfixed3
  libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxrandr2 libxrender1
  libxshmfence1 libxt6t64 libxtst6 libxv1 libxxf86dg1 libxxf86vm1
  mesa-libgallium mesa-vulkan-drivers openjdk-21-jre-headless session-migration
  ubuntu-mono x11-common x11-utils
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  default-jre openjdk-21-jre
0 upgraded, 0 newly installed, 2 to remove and 35 not upgraded.
After this operation, 737 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 139571 files and directories currently installed.)
Removing default-jre (2:1.21-75+exp1) ...
Removing openjdk-21-jre:amd64 (21.0.8+9~us1-Ubuntu1~24.04.1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
```

```
tehreem064@tehreem:~$ java
Usage: java [options] <mainclass> [args...]
      (to execute a class)
  or  java [options] -jar <jarfile> [args...]
      (to execute a jar file)
  or  java [options] -m <module>[/<mainclass>] [args...]
      java [options] --module <module>[/<mainclass>] [args...]
      (to execute the main class in a module)
  or  java [options] <sourcefile> [args]
      (to execute a single source-file program)
```

```
tehreem064@tehreem:~$ hash -r
tehreem064@tehreem:~$ java
Usage: java [options] <mainclass> [args...]
      (to execute a class)
  or  java [options] -jar <jarfile> [args...]
      (to execute a jar file)
  or  java [options] -m <module>[/<mainclass>] [args...]
      java [options] --module <module>[/<mainclass>] [args...]
      (to execute the main class in a module)
  or  java [options] <sourcefile> [args]
      (to execute a single source-file program)

Arguments following the main class, source file, -jar <jarfile>,
-m or --module <module>/<mainclass> are passed as the arguments to
```

Task 2:

```
tehreem064@tehreem:~$ sudo apt-get update
sudo apt-get install default-jre -y
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Ign:7 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata
Ign:8 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Met
adata
Ign:9 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metad
ata
Ign:10 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Me
tadata
Get:7 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata
[13.5 kB]
Err:7 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata
  File has unexpected size (7768 != 13516). Mirror sync in progress? [IP: 103.151.
111.245 80]
  Hashes of expected file:
   - Filesize:13516 [weak]
   - SHA256:e4af0b43336b0c1b84ce9a77f16233e413891311ea16701ea539fc62261a7eb9
   - SHA1:0a3e70d0ffb191f813a5f83897a414ba674e5elc [weak]
   - MD5Sum:e6a74150963935bdbf5a3ccc873915a8 [weak]
```

```
tehreem064@tehreem:~$ java --version
openjdk 21.0.8 2025-07-15
```

```
tehreem064@tehreem:~$ sudo apt-get remove default-jre -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  adwaita-icon-theme alsa-topology-conf alsa-ucm-conf at-spi2-common
  at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service
  default-jre-headless 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
  libcurl2t64 libdatriel libdconf1 libdrm-amdgpu1 libdrm-intel1 libepoxy0
  libgbm1 libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common
  libgif7 libgl1 libgl1-mesa-dri libglvnd0 libglx-mesa0 libglx0 libgraphite2-3
  libgtk-3-0t64 libgtk-3-bin libgtk-3-common libharfbuzz0b libice6 liblcms2-2
  libl1vm20 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpcaccess0
  libpcslite1 libpixman-1-0 librsvg2-2 librsvg2-common libsm6 libthai-data
  libthai0 libvulkan1 libwayland-client0 libwayland-cursor0 libwayland-egl1
```

```
tehreem064@tehreem:~$ hash -r
java
Usage: java [options] <mainclass> [args...]
          (to execute a class)
  or  java [options] -jar <jarfile> [args...]
          (to execute a jar file)
  or  java [options] -m <module>[/<mainclass>] [args...]
      java [options] --module <module>/<mainclass> [args...]
          (to execute the main class in a module)
  or  java [options] <sourcefile> [args]
          (to execute a single source-file program)

Arguments following the main class, source file, -jar <jarfile>,
-m or --module <module>/<mainclass> are passed as the arguments to
main class.
```

Task 3:

```
tehreem064@tehreem:~$ sudo apt update
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Ign:7 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata
Ign:8 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Met
adata
Ign:9 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metad
ata
Ign:10 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Me
tadata
```

```
tehreem064@tehreem:~$ sudo apt upgrade
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:
  adwaita-icon-theme alsa-topology-conf alsu-ucm-conf at-spi2-common
  at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service
  default-jre-headless 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 libdatriel libdconf1 libdrm-amdgpu1 libdrm-intel1 libepoxy0
  libgbm1 libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common
  libgif7 libgl1 libgl1-mesa-dri libglvnd0 libglx-mesa0 libglx0 libgraphite2-3
  libgtk-3-0t64 libgtk-3-bin libgtk-3-common libharfbuzz0b libice6 liblcms2-2
  liblum20 libnango-1.0-0 libnsgcaire-1.0-0 libnsgsoft2.1-0.0 libnsgaccess0
```

```
GNU nano 7.2                                     /home/tehreem064/apt update vs upgrade.md *
apt update refreshes the local package index - it does not change installed packages.
apt upgrade looks at the updated index and installs newer versions of already-installed packages.
Without apt update, apt upgrade would use outdated package lists and might not find the newest updates.
```

Task 4:

```
tehreem064@tehreem:~$ sudo snap install --classic code
[sudo] password for tehreem064:
snap "code" is already installed, see 'snap help refresh'
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ snap list code
Name  Version  Rev  Tracking      Publisher  Notes
code  7d842fb8  211  latest/stable  vscode✓    classic
```

```
tehreem064@tehreem:~$ code --version
1.105.1
7d842fb85a0275a4a8e4d7e040d2625abbf7f084
x64
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ ls -l /snap/bin | grep code
lrwxrwxrwx 1 root root 13 Oct 25 10:58 code -> /usr/bin/snap
lrwxrwxrwx 1 root root 13 Oct 25 10:58 code.url-handler -> /usr/bin/snap
tehreem064@tehreem:~$
```

Task 5:

```
tehreem064@tehreem:~$ sudo apt update && sudo apt upgrade -y
[sudo] password for tehreem064:
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Ign:4 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata
Ign:5 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata
Ign:6 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata
Ign:7 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata
Get:4 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [13.5 kB]
Err:4 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata
  File has unexpected size (7768 != 13516). Mirror sync in progress? [IP: 103.151.111.245 80]
Hashes of expected file:
 - Filesize:13516 [weak]
```

```
aspell-autobuildhash: processing: en [en_GB-is-e-w_accents-only].
aspell-autobuildhash: processing: en [en_GB-is-e-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 sgml-base (1.31) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Pending kernel upgrade!
Running kernel version:
  6.8.0-86-generic
Diagnostics:
  The currently running kernel version is not the expected kernel version 6.8.0-87-generic.

Restarting the system to load the new kernel will not be handled automatically, so you should consider rebo
Restarting services...

Service restarts being deferred:
  /etc/needrestart/restart.d/dbus.service
  systemctl restart systemd-logind.service
  systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
  tehreem064 @ session #1: login[919]
  tehreem064 @ user manager service: systemd[1399]

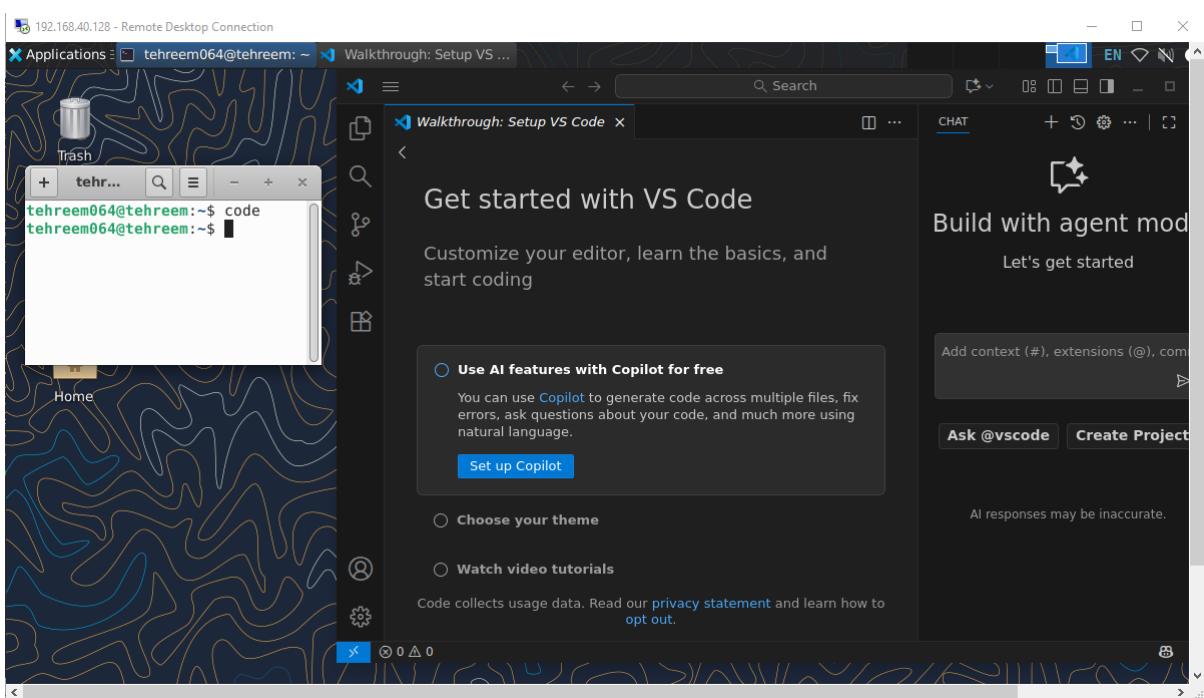
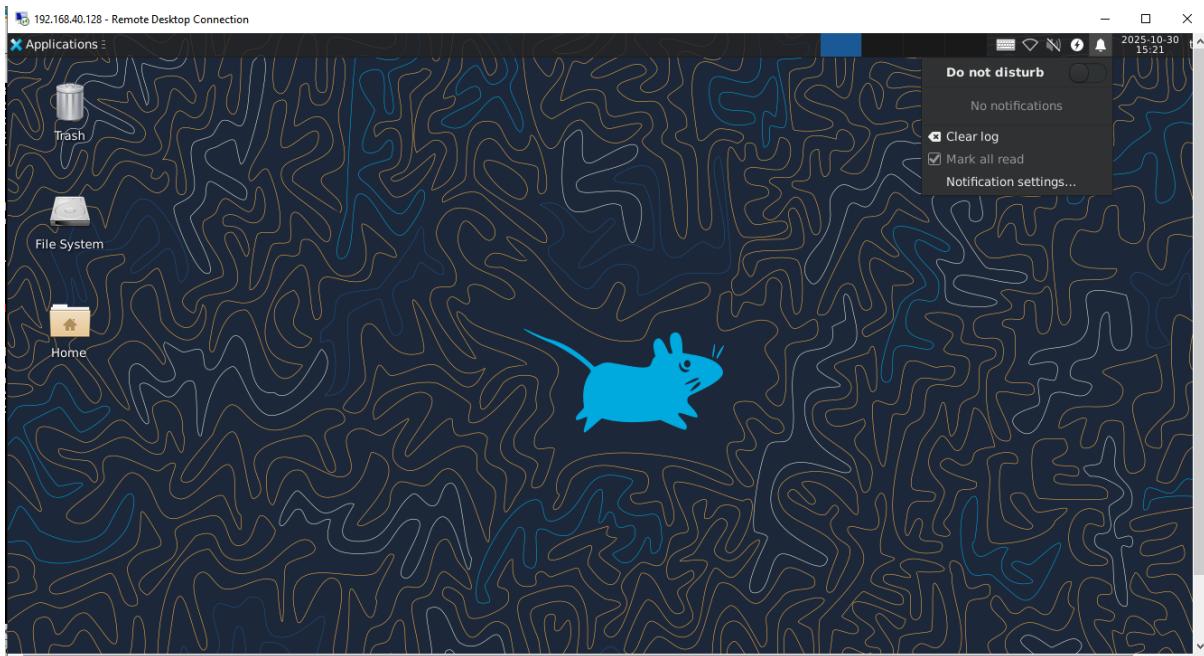
No VM guests are running outdated hypervisor (qemu) binaries on this host.
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ 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
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo systemctl status xrdp
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-10-30 14:17:02 UTC; 2min 19s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
     Main PID: 28407 (xrdp)
        Tasks: 1 (limit: 4548)
       Memory: 876.0K (peak: 1.5M)
          CPU: 57ms
         CGroup: /system.slice/xrdp.service
                   └─28407 /usr/sbin/xrdp

Oct 30 14:17:01 tehreem systemd[1]: Starting xrdp.service - xrdp daemon...
Oct 30 14:17:01 tehreem xrdp[28405]: [INFO ] address [0.0.0.0] port [3389] mode 1
Oct 30 14:17:01 tehreem xrdp[28405]: [INFO ] listening to port 3389 on 0.0.0.0
Oct 30 14:17:01 tehreem xrdp[28405]: [INFO ] xrdp_listen_pp done
Oct 30 14:17:01 tehreem systemd[1]: xrdp.service: Can't open PID file /run/xrdp/xrdp.pid (yet?) after star
Oct 30 14:17:02 tehreem systemd[1]: Started xrdp.service - xrdp daemon.
Oct 30 14:17:03 tehreem xrdp[28407]: [INFO ] starting xrdp with pid 28407
Oct 30 14:17:03 tehreem xrdp[28407]: [INFO ] address [0.0.0.0] port [3389] mode 1
Oct 30 14:17:03 tehreem xrdp[28407]: [INFO ] listening to port 3389 on 0.0.0.0
Oct 30 14:17:03 tehreem xrdp[28407]: [INFO ] xrdp_listen_pp done
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo xfce4-session > /home/tehreem064/.xsession
tehreem064@tehreem:~$ sudo systemctl restart xrdp
```



Task 6:

```
tehreem064@tehreem:~$ sudo apt install lightdm lightdm-gtk-greeter -y
[sudo] password for tehreem064:
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.
```

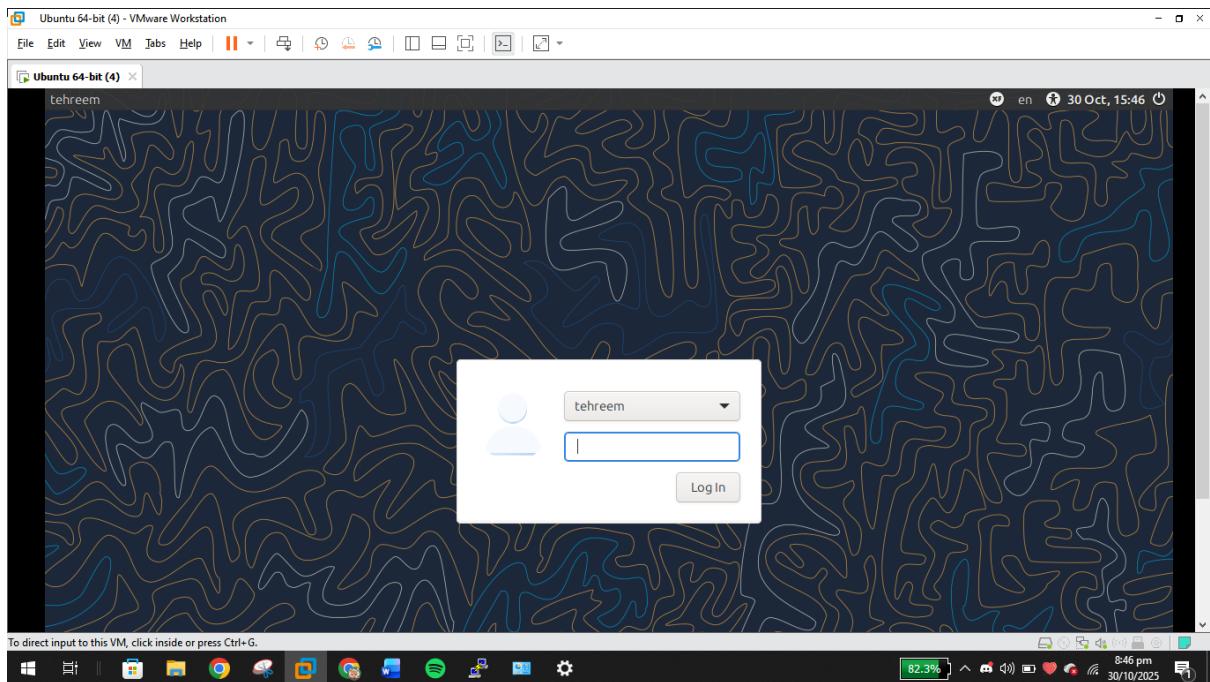
```
tehreem064@tehreem:~$ sudo mkdir -p /etc/lightdm/lightdm.conf.d
echo -e "[Seat:*]\ngreeter-session=lightdm-gtk-greeter\nuser-session=xfce\nautologin-user-timeout=0" | sudo tee /etc/lightdm/lightdm.conf.d/99-xfce.conf
[Seat:*]
greeter-session=lightdm-gtk-greeter
user-session=xfce
autologin-user-timeout=0
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo rm -f /var/lib/lightdm/.Xauthority
tehreem064@tehreem:~$ sudo rm -f ~/.Xauthority
tehreem064@tehreem:~$ sudo rm -rf ~/.cache/sessions
tehreem064@tehreem:~$ sudo chown -R tehreem064:tehreem064 /home/tehreem064
chown: cannot access '/home/tehreem064/thinclient_drives': Permission denied
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo systemctl restart lightdm
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ 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.
tehreem064@tehreem:~$ sudo systemctl set-default graphical.target
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
tehreem064@tehreem:~$
```

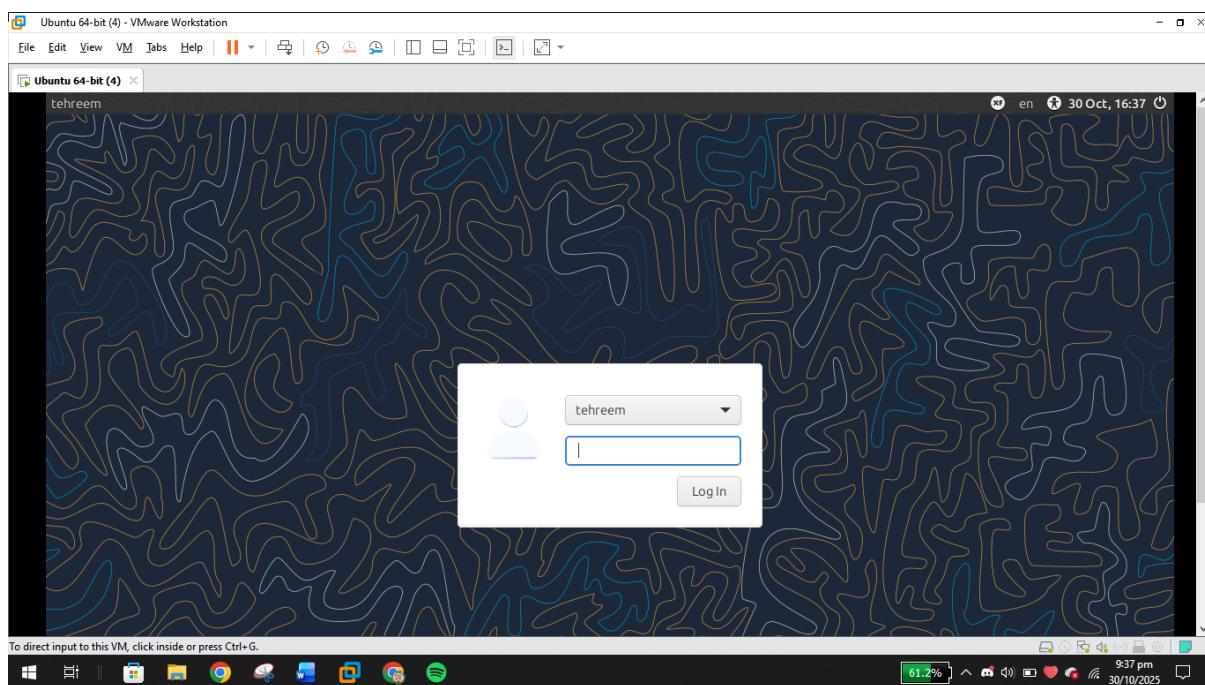
A screenshot of the same Ubuntu 64-bit desktop environment, but now a terminal window is open. The terminal window has a title bar "Applications" and a tab labeled "tehreem064@tehreem: ~". The main area of the terminal shows the following command history:

```
tehreem064@tehreem:~$ sudo systemctl set-default multi-user.target
[sudo] password for tehreem064:
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/multi-user.target.
tehreem064@tehreem:~$ sudo systemctl disable lightdm
Unknown command verb 'diable', did you mean 'disable'?
tehreem064@tehreem:~$ sudo systemctl disable lightdm
Synchronizing state of lightdm.service with SysV service script with /usr/lib/systemd/system-sysv-install.
Executing: /usr/lib/systemd/system-sysv-install disable lightdm
Removed "/etc/systemd/system/display-manager.service".
tehreem064@tehreem:~$
```

The terminal window is set against the same dark blue wavy patterned background as the desktop. The title bar at the top of the window also reads "Ubuntu 64-bit (4) - VMware Workstation". The bottom of the screen shows the same dock and system tray as the previous screenshot.

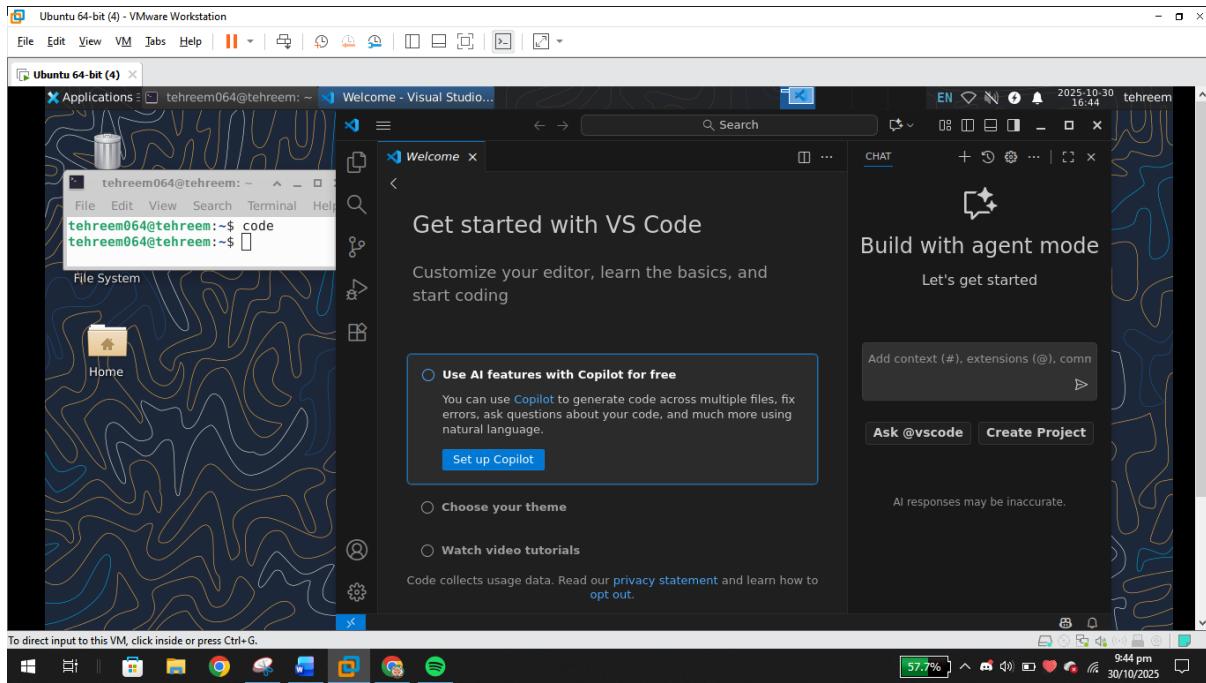
```
Ubuntu 24.04.3 LTS tehreem tty1
tehreem login: _
```

```
tehreem064@tehreem:~$ sudo systemctl start lightdm
```



```
tehreem064@tehreem:~$ sudo systemctl stop lightdm
[sudo] password for tehreem064:
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo systemctl start lightdm
```



Task 7:

```
tehreem064@tehreem: ~
File Edit View Search Terminal Help
tehreem064@tehreem:~$ sudo apt install google-chrome-stable -y
[sudo] password for tehreem064:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package google-chrome-stable
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ ls -la /etc/apt
total 48
drwxr-xr-x  9 root root  4096 Oct 30 15:06 .
drwxr-xr-x 142 root root 12288 Oct 30 15:14 ..
drwxr-xr-x  2 root root  4096 Oct 30 13:43 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   347 Oct 30 13:05 sources.list
drwxr-xr-x  2 root root  4096 Oct 23 19:19 sources.list.d
drwxr-xr-x  2 root root  4096 Aug  5 17:01 trusted.gpg.d
```

```
tehreem064@tehreem:~$ cat /etc/apt/sources.list
```

```
deb http://archive.ubuntu.com/ubuntu noble main restricted universe multiverse
deb http://archive.ubuntu.com/ubuntu noble-updates main restricted universe multiverse
deb http://archive.ubuntu.com/ubuntu noble-backports main restricted universe multiverse
deb http://security.ubuntu.com/ubuntu noble-security main restricted universe multiverse
```

```
tehreem064@tehreem:~$ ls -la /etc/apt/sources.list.d/
total 16
drwxr-xr-x 2 root root 4096 Oct 23 19:19 .
drwxr-xr-x 9 root root 4096 Oct 30 15:06 ..
-rw-r--r-- 1 root root  386 Oct  2 11:17 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug  5 17:02 ubuntu.sources.curtin.orig
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ cat /etc/apt/sources.list.d/ubuntu.sources
```

```
Types: deb
URIs: http://pk.archive.ubuntu.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
```

```
tehreem064@tehreem: ~
File Edit View Search Terminal Help
GNU nano 7.2          /etc/apt/sources.list.d/ubuntu.sources
Types: deb
URIs: http://pk.archive.ubuntu.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

Types: deb
URIs: http://dl.google.com/linux/chrome/deb/
Suites: stable
Components: main
Architecture: amd64
Signed-By: /etc/apt/keyrings/google.gpg
```

```
tehreem064@tehreem:~$ curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/keyrings/google.gpg
```

```
tehreem064@tehreem:~$ sudo apt update
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
```

```
tehreem064@tehreem:~$ sudo apt install google-chrome-stable -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  ca-certificates-java default-jre-headless fonts-dejavu-extra java-common
  libatk-wrapper-java libatk-wrapper-java-jni libgif7 linux-headers-6.8.0-71
  linux-headers-6.8.0-71-generic linux-image-6.8.0-71-generic
  linux-modules-6.8.0-71-generic linux-modules-extra-6.8.0-71-generic
  linux-tools-6.8.0-71 linux-tools-6.8.0-71-generic openjdk-21-jre
  openjdk-21-jre-headless
Use 'sudo apt autoremove' to remove them.
```

```
tehreem064@tehreem:~$ sudo rm -rf google-chrome-stable
```

```
tehreem064@tehreem:~$ sudo nano /etc/apt/sources.list.d/ubuntu.sources
```

```
tehreem064@tehreem:~$ sudo rm -f /etc/apt/keyrings/google.gpg
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/google.gpg] http://dl.google.com/linux/chromr/deb stable main" | sudo tee /etc/apt/sources.list.d/google-chrome.list > /dev/null
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ ls -la /etc/apt/sources.list.d/
total 24
drwxr-xr-x 2 root root 4096 Oct 30 17:50 .
drwxr-xr-x 9 root root 4096 Oct 30 15:06 ..
-rw-r--r-- 1 root root 107 Oct 30 17:34 google-chrome.list
-rw-r--r-- 1 root root 106 Oct 30 17:55 google-chrome.list
-rw-r--r-- 1 root root 541 Oct 30 17:50 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug 5 17:02 ubuntu.sources.curtin.orig
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo mkdir -p /etc/apt/keyrings
tehreem064@tehreem:~$ curl -fsSL https://dl.google.com/linux/linux_signing_key.p
ub | sudo gpg --dearmor -o /etc/apt/keyrings/google.gpg
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo apt update
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:6 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:7 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:8 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Ign:9 http://dl.google.com/linux/chromr/deb stable InRelease
```

```
tehreem064@tehreem:~$ sudo apt install google-chrome-stable -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  google-chrome-stable
0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.
Need to get 118 MB of archives.
After this operation, 390 MB of additional disk space will be used.
Get:1 http://dl.google.com/linux/chrome/deb stable/main amd64 google-chrome-stab
le amd64 142.0.7444.59-1 [118 MB]
17% [1 google-chrome-stable 24.7 MB/118 MB 21%] 2,843 kB/s 32s
```

Task 8:

```
tehreem064@tehreem:~$ sudo add-apt-repository ppa:ubuntuhandbook1/audacity -y
[sudo] password for tehreem064:
Repository: 'Types: deb
URIs: https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu/
Suites: noble
Components: main
'
Description:
Unofficial build of Audacity audio editor

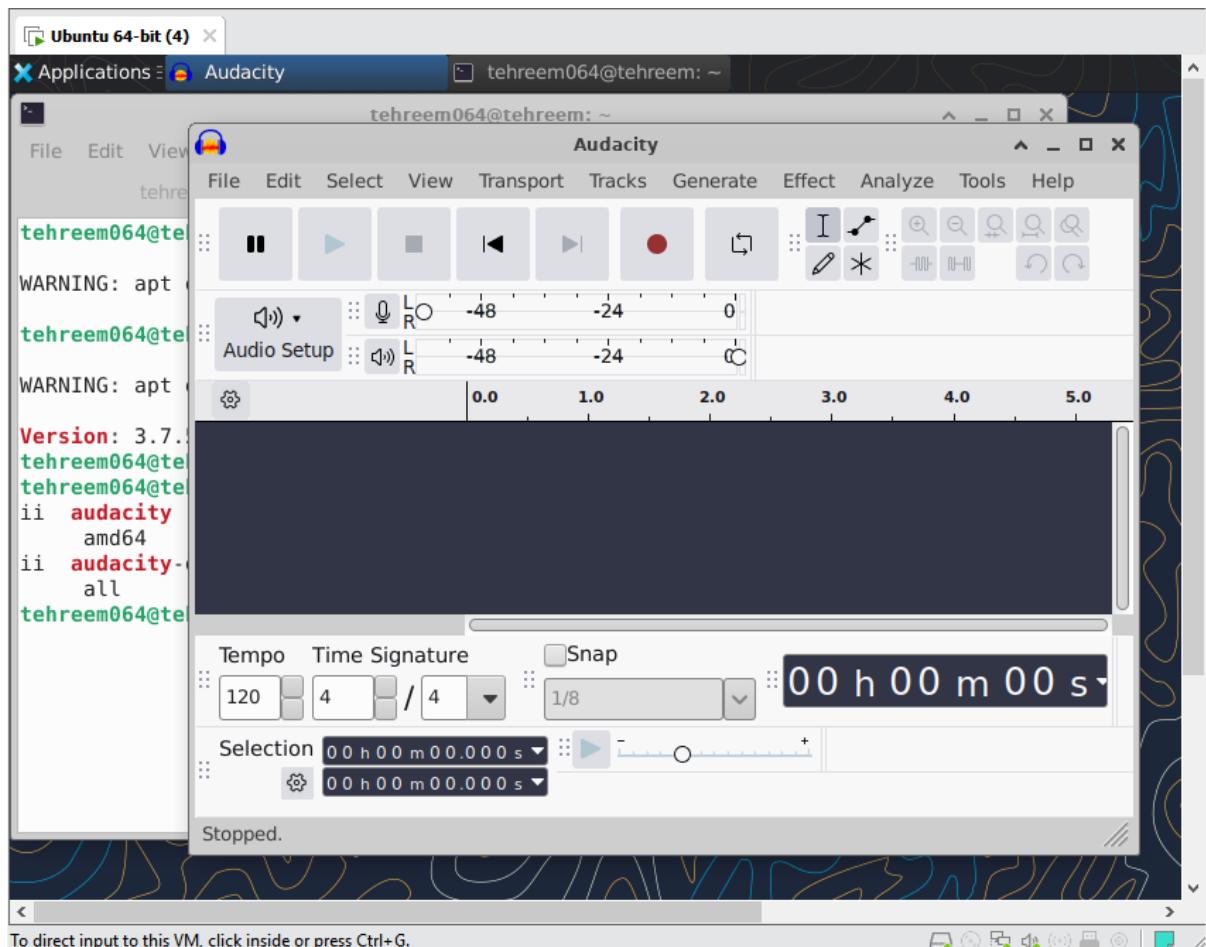
For help, please use Audacity forum: http://forum.audacityteam.org/

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.
E: Conflicting values set for option Signed-By regarding source http://dl.google.com/linux/chrome/deb/ stable: /etc/apt/keyrings/google.gpg !=
E: The list of sources could not be read.
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo apt update
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:5 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:8 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:9 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Reading package lists... 5%
```

```
tehreem064@tehreem:~$ sudo apt install audacity -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  audacity-data libdouble-conversion3 libflac++10 libid3tag0 liblilv-0-0 libmd4c0 libopusfile0
  libpcre2-16-0 libpcre2-32-0 libportaudio2 libportmidi0 libportsmf0t64 libqt5core5t64
  libqt5dbus5t64 libqt5gui5t64 libqt5network5t64 libqt5qml5 libqt5qmlmodels5 libqt5quick5
  libqt5svg5 libqt5waylandclient5 libqt5waylandcompositor5 libqt5widgets5t64 libqt5x11extras5
  libsbsms10 libserd-0-0 libsoundtouch1 libratom-0-0 libsuil-0-0
  libvamp-hostsdk3v5 libwxbase3.2-1t64 libwxgtk3.2-1t64 libxcb-icccm4 libxcb-image0
  libxcb-keysyms1 libxcb-render-util0 libxcb-xinerama0 libxcb-xinput0 libxcb-xkb1
  libxcbcommon-x11-0 libzix-0-0 qt5-gtk-platformtheme qttranslations5-110n qtwayland5
Suggested packages:
  ladspa-plugin_qgnomeplatform-qt5 qt5-image-formats-plugins qt5-qmltooling-plugins serdi
  sordi
The following NEW packages will be installed:
```



```
tehreem064@tehreem:~$ sudo add-apt-repository ppa:obsproject/obs-studio -y
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://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
```

```
tehreem064@tehreem:~$ sudo apt update
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:6 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:7 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:8 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:9 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu noble InRelease
Hit:10 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Reading package lists... 0%
```

```
tehreem064@tehreem:~$ sudo apt install obs-studio -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
libaaacs0 libass9 libavdevice60 libavfilter9 libavformat60 libb2-1 libbdplus0 libblas3
libbluray2 libbs2b0 libchromaprintl libcurl3 libcurl3-openssl1.1 libdecor-0-0
libdecor-0-plugin-1-gtk libfdk-aac2 libfftw3-double3 libflite1 libgfortran5 libgme0
liblapack3 libluajit-5.1-2 libluajit-5.1-common libmbedtls7t64 libmbedtls14t64
libmbedx509-1t64 libmysofa libnorml64 libopenal-data libopenall libopenal-pcm0t64
libpgm-5.3-0t64 libplacebo338 libpocketsphinx3 libpostproc57 libqrcodegenccpl libqt6core6t64
libqt6dbus6t64 libqt6gui6t64 libqt6network6t64 libqt6opengl6t64 libqt6qml16 libqt6qmlmodels6
libqt6quick6 libqt6svg6 libqt6waylandclient6 libqt6waylandcompositor6
libqt6waylandeglclienthwintegration6 libqt6waylandeglcompositorhwintegration6
libqt6widgets6t64 libqt6wlshellintegration6 libqt6xml6t64 librabbitmq4 librist4
librubberband2 libSDL2-2.0-0 libsndio7.0 libspinxbase3t64 libsr1.5-gnutls
libsrt1.5-openssl libSSH-4 libsshd-4 libswscale7 libts0t64 libudfread0 libunibreak5
```

```
tehreem064@tehreem:~$ obs --version
OBS Studio - 32.0.2
tehreem064@tehreem:~$
```

Task 9:

```
VIM - Vi IMproved

      version 9.1.697
      by Bram Moolenaar et al.
Modified by team+vim@tracker.debian.org
Vim is open source and freely distributable

      Help poor children in Uganda!
type :help iccf<Enter>      for information

type :q<Enter>          to exit
type :help<Enter> or <F1> for on-line help
type :help version9<Enter> for version info
```

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

```
tehreem064@tehreem:~/Lab5$ vim k8s-sample.yaml
tehreem064@tehreem:~/Lab5$ vim k8s-sample.yaml
tehreem064@tehreem:~/Lab5$ ls -la
total 12
drwxrwxr-x  2 tehreem064 tehreem064 4096 Oct 30 18:39 .
drwx----- 24 tehreem064 tehreem064 4096 Oct 30 18:39 ..
-rw-rw-r--  1 tehreem064 tehreem064   172 Oct 30 18:39 k8s-sample.yaml
tehreem064@tehreem:~/Lab5$
```

Task 10:

```
tehreem064@tehreem:~/Lab5$ cat k8s-sample.yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
spec:
  containers:
  - name: nginx
    image: nginx:1.19
    ports:
    - containerPort: 80
      restartPolicy: Always

  annotations:
    lab: lesson11
tehreem064@tehreem:~/Lab5$
```

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

  annotations:
    lab: lesson11
    #don't show
```

```
tehreem064@tehreem:~/Lab5$ cat k8s-sample.yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
spec:
  containers:
    - name: nginx
      image: nginx:1.19
      ports:
        - containerPort: 80
      restartPolicy: Always

  annotations:
    lab: lesson11
tehreem064@tehreem:~/Lab5$
```

Task 11:

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

  annotations:
    lab: lesson11
~
```

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

  annotations:
    lab: lesson11
~
```

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

  annotations:
    lab: lesson11
~
```

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

  annotations:
    lab: lesson11
~
```

Task 12:

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

  annotations:
    lab: lesson11
~
```

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

  annotations:
    lab: lesson11
~
```

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

annotations:

```
  lab: lesson11
```

~

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

annotations:

```
  lab: lesson11
```

~

```
apiVersion: v1
kind: Pod
metadata:
  name: webapp-pod
spec:
  containers:
  - name: webapp
    image: webapp:1.19
    ports:
    - containerPort: 80
    restartPolicy: Always
    webapp
    webapp
```

annotations:

```
  lab: lesson11
```

~

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

annotations:

```
  lab: lesson11
```

~

Exam Evaluation Question:

