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Roll No: 2023-BSE-062

Submitted to: Sir Shoaib

Task 1:

```
shumaila062@shumailaa:~$ 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
shumaila062@shumailaa:~$ _
```

```
Adding debian:Security_Communication_ECC_RootCA1.pem
Adding debian:Security_Communication_RootCA2.pem
Adding debian:Security_Communication_RootCA3.pem
Adding debian:Security_Communication_Root_CA.pem
Adding debian:SSL.com_EV_Root_Certification_Authority_ECC.pem
Adding debian:SSL.com_EV_Root_Certification_Authority_RSA_R2.pem
Adding debian:SSL.com_Root_Certification_Authority_ECC.pem
Adding debian:SSL.com_Root_Certification_Authority_RSA.pem
Adding debian:SSL.com_TLS_ECC_Root_CA_2022.pem
Adding debian:SSL.com_TLS_RSA_Root_CA_2022.pem
Adding debian:Starfield_Class_2_CA.pem
Adding debian:Starfield_Root_Certificate_Authority_-_G2.pem
Adding debian:Starfield_Services_Root_Certificate_Authority_-_G2.pem
Adding debian:SwissSign_Gold_CA_-_G2.pem
Adding debian:SwissSign_Silver_CA_-_G2.pem
Adding debian:SZAFIR_ROOT_CA2.pem
Adding debian:Telia_Root_CA_v2.pem
Adding debian:TeliaSonera_Root_CA_v1.pem
Adding debian:TrustAsia_Global_Root_CA_G3.pem
Adding debian:TrustAsia_Global_Root_CA_G4.pem
Adding debian:Trustwave_Global_Certification_Authority.pem
Adding debian:Trustwave_Global_ECC_P256_Certification_Authority.pem
Adding debian:Trustwave_Global_ECC_P384_Certification_Authority.pem
Adding debian:T-TeleSec_GlobalRoot_Class_2.pem
Adding debian:T-TeleSec_GlobalRoot_Class_3.pem
Adding debian:TUBITAK_Kamu_SM_SSL_Kok_Sertifikasi_-_Surum_1.pem
Adding debian:TunTrust_Root_CA.pem
Adding debian:TWCA_Global_Root_CA.pem
Adding debian:TWCA_Root_Certification_Authority.pem
Adding debian:UCA_Extended_Validation_Root.pem
Adding debian:UCA_Global_G2_Root.pem
Adding debian:USERTrust_ECC_Certification_Authority.pem
Adding debian:USERTrust_RSA_Certification_Authority.pem
Adding debian:vTrus_ECC_Root_CA.pem
Adding debian:vTrus_Root_CA.pem
Adding debian:XRamp_Global_CA_Root.pem
done.
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.
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ java --version
openjdk 17.0.16 2025-07-15
OpenJDK Runtime Environment (build 17.0.16+8-Ubuntu-0ubuntu124.04.1)
OpenJDK 64-Bit Server VM (build 17.0.16+8-Ubuntu-0ubuntu124.04.1, mixed mode, sharing)
shumaila062@shumailaa:~$ _
```

```
shumaila062@shumailaa:~$ sudo apt remove openjdk-17-jre-headless
[sudo] password for shumaila062:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are now
  alsas-topology-conf alsas-ucm-conf ca-certificates-java java-c
  libasound2-data libasound2t64 libpcsclite1
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  openjdk-17-jre-headless
0 upgraded, 0 newly installed, 1 to remove and 27 not upgraded.
After this operation, 193 MB disk space will be freed.
(Reading database ... 140198 files and directories currently i
Removing openjdk-17-jre-headless:amd64 (17.0.16+8~us1-0ubuntu1
shumaila062@shumailaa:~$
```

Search Explanation

operation help

```
shumaila062@shumailaa:~$ 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
```

```
shumaila062@shumailaa:~$ hash -r
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.
```

Task 2:

```
Get:24 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [303 kB]
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [378 kB]
Get:27 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [31.4 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:29 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7,148 B]
Get:30 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [212 B]
Get:31 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [11.0 kB]
Get:32 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Fetched 12.6 MB in 7s (1,907 kB/s)
Reading package lists... Done
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ 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)
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ 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:
  alsa-topology-conf alsa-ucm-conf ca-certificates-java default-jre-headless
  fonts-dejavu-extra java-common libasound2-data libasound2t64
  libatk-wrapper-java libatk-wrapper-java-jni libgif7 libpcsclite1
  libxcb-shape0 libxft2 libxv1 libxxf86dga1 openjdk-21-jre
  openjdk-21-jre-headless x11-utils
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  default-jre
0 upgraded, 0 newly installed, 1 to remove and 34 not upgraded.
After this operation, 6,144 B disk space will be freed.
(Reading database ... 140355 files and directories currently installed.)
Removing default-jre (2:1.21-75+exp1) ...
shumaila062@shumailaa:~$
```

```
Setting up libatk-wrapper-java-jni:amd64 (0.40.0-3build2) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for fontconfig (2.15.0-1.1ubuntu2) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Processing triggers for ca-certificates-java (20240118) ...
done.
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) ...
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.
shumaila062@shumailaa:~$
```

Task 3:

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

Restarting services...
systemctl restart multipathd.service open-vm-tools.service polkit.service ssh.s
service udisks2.service upower.service vgauth.service

Service restarts being deferred:
systemctl restart ModemManager.service
/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:
shumaila062 @ session #1: login[1165]
shumaila062 @ session #12: apt[3530], sshd[3034]
shumaila062 @ session #3: sshd[1421]
shumaila062 @ session #7: sshd[1669]
shumaila062 @ user manager service: systemd[1380]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
shumaila062@shumailaa:~$
```

```
Get:19 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Component
s [212 B]
Get:20 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1
,498 kB]
Get:21 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components
[378 kB]
Get:22 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metad
ata [31.4 kB]
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Component
s [940 B]
Get:24 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7
,140 B]
Get:25 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Compone
nts [216 B]
Get:26 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Component
s [11.0 kB]
Get:27 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Compone
nts [212 B]
Fetched 9,376 kB in 1min 30s (105 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
36 packages can be upgraded. Run 'apt list --upgradable' to see them.
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ nano ~/apt_update_vs_upgrade.md
shumaila062@shumailaa:~$ cat ~/apt_update_vs_upgrade.md
The command 'apt update' refreshes the package index by downloading the latest l
ist of available software from Ubuntu repositories. It does not install or upgra
de anything; it only updates the database. The command 'apt upgrade' installs th
e newest versions of the packages that are already installed on the system. It u
ses the updated list created by 'apt update' to know what upgrades are available
. Without running 'apt update' first, 'apt upgrade' may miss new updates.
shumaila062@shumailaa:~$ ^C
shumaila062@shumailaa:~$
```

Task 4:

```
shumaila062@shumailaa:~$ sudo snap install --classic code
[sudo] password for shumaila062:
2025-10-31T15:28:47Z INFO Waiting for automatic snapd restart...
code 7d842fb8 from Visual Studio Code (vscode✓) installed
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ snap list code
Name Version Rev Tracking Publisher Notes
code 7d842fb8 211 latest/stable vscode✓ classic
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ code --version
1.105.1
7d842fb85a0275a4a8e4d7e040d2625abbf7f084
x64
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ ls -l /snap/bin | grep code
lrwxrwxrwx 1 root root 13 Oct 31 15:39 code -> /usr/bin/snap
lrwxrwxrwx 1 root root 13 Oct 31 15:39 code.url-handler -> /usr/bin/snap
shumaila062@shumailaa:~$
```

Task 5:

```
Get:6 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.3 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Get:8 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [15.4 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:12 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [378 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:14 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7,140 B]
Get:15 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:16 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [11.0 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Fetched 1,041 kB in 27s (38.2 kB/s)
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:
  alsa-topology-conf alsa-ucm-conf ca-certificates-java default-jre-headless fonts-dejavu-extra java-common
  libasound2-data libasound2t64 libatk-wrapper-java libatk-wrapper-java-jni libgif7 libpcsclite1 libxcb-shape0 libxft2
  libxv1 libxxf86dga1 linux-headers-6.8.0-85 linux-headers-6.8.0-85-generic linux-image-6.8.0-85-generic
  linux-modules-6.8.0-85-generic linux-modules-extra-6.8.0-85-generic linux-tools-6.8.0-85
  linux-tools-6.8.0-85-generic openjdk-21-jre openjdk-21-jre-headless x11-utils
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
shumaila062@shumailaa:~$
```

```
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 rebooting.

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.

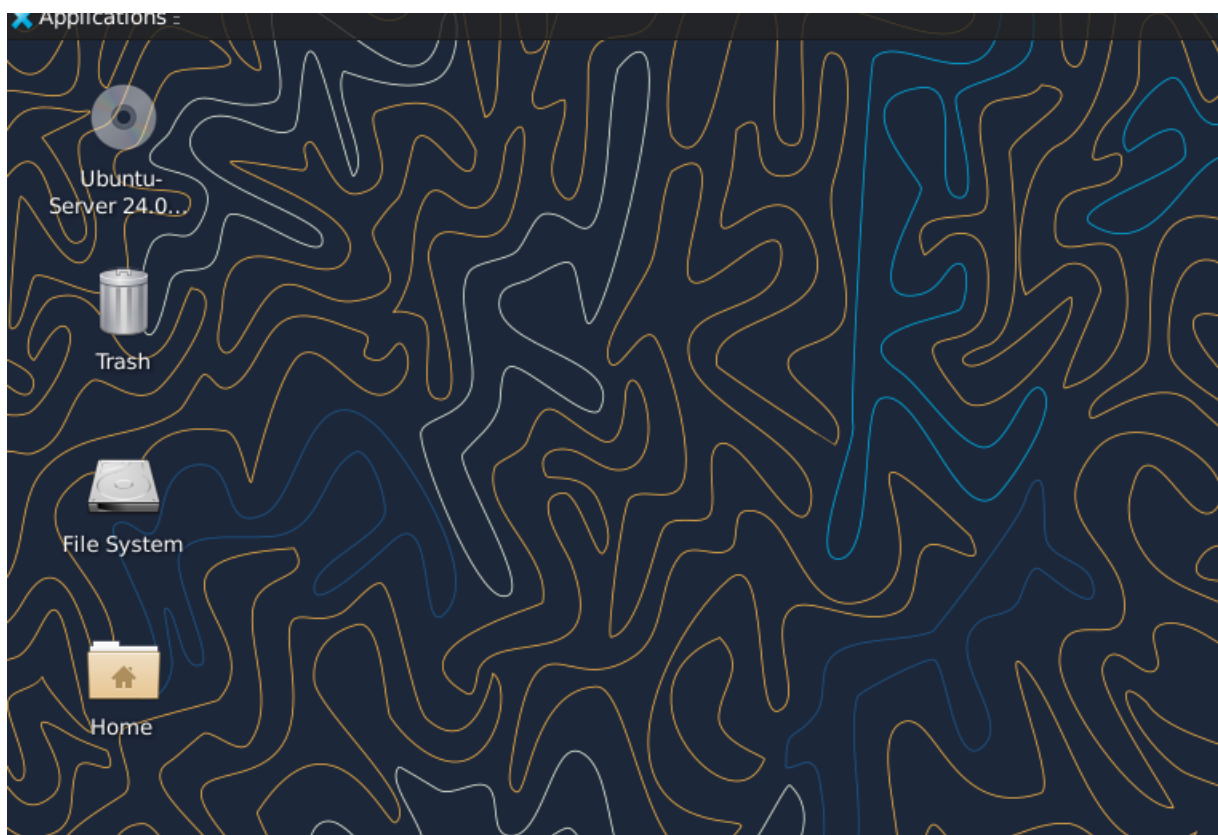
User sessions running outdated binaries:
shumaila062 @ session #1: login[1165]
shumaila062 @ session #12: sshd[3034]
shumaila062 @ user manager service: systemd[1380]

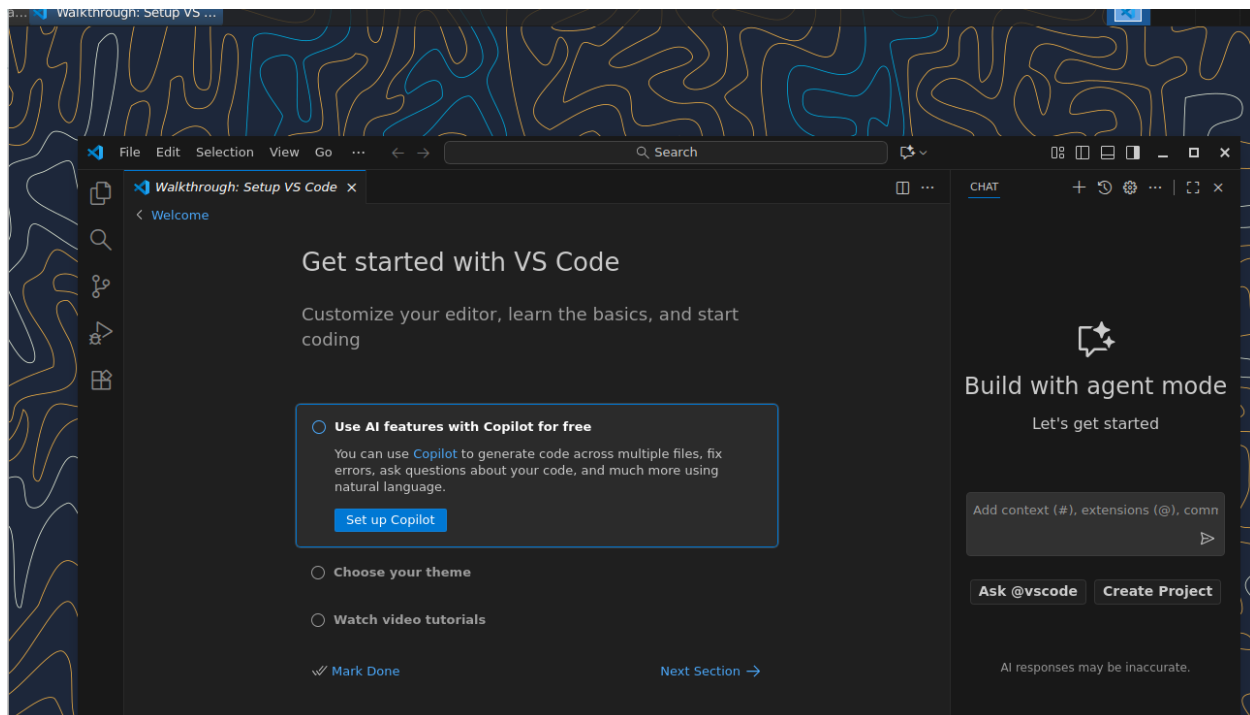
No VM guests are running outdated hypervisor (qemu) binaries on this host.
Synchronizing state of xrdp.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable xrdp
shumaila062@shumailaa:~$
```



```
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-10-31 17:29:20 UTC; 2min 37s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
  Main PID: 26228 (xrdp)
    Tasks: 1 (limit: 4548)
  Memory: 876.0K (peak: 1.5M)
     CPU: 96ms
  CGroup: /system.slice/xrdp.service
          └─26228 /usr/sbin/xrdp
```

```
shumaila062@shumailaa:~$ cat ~/.xsession
xfce4-session
shumaila062@shumailaa:~$ |
```





Task 6:

```
Setting up gnome-themes-extra:amd64 (3.28-2ubuntu5) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
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 rebooting.

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:
shumaila062 @ session #1: login[1165]
shumaila062 @ session #12: sshd[3034]
shumaila062 @ user manager service: systemd[1380]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
shumaila062@shumailaa:~$
```

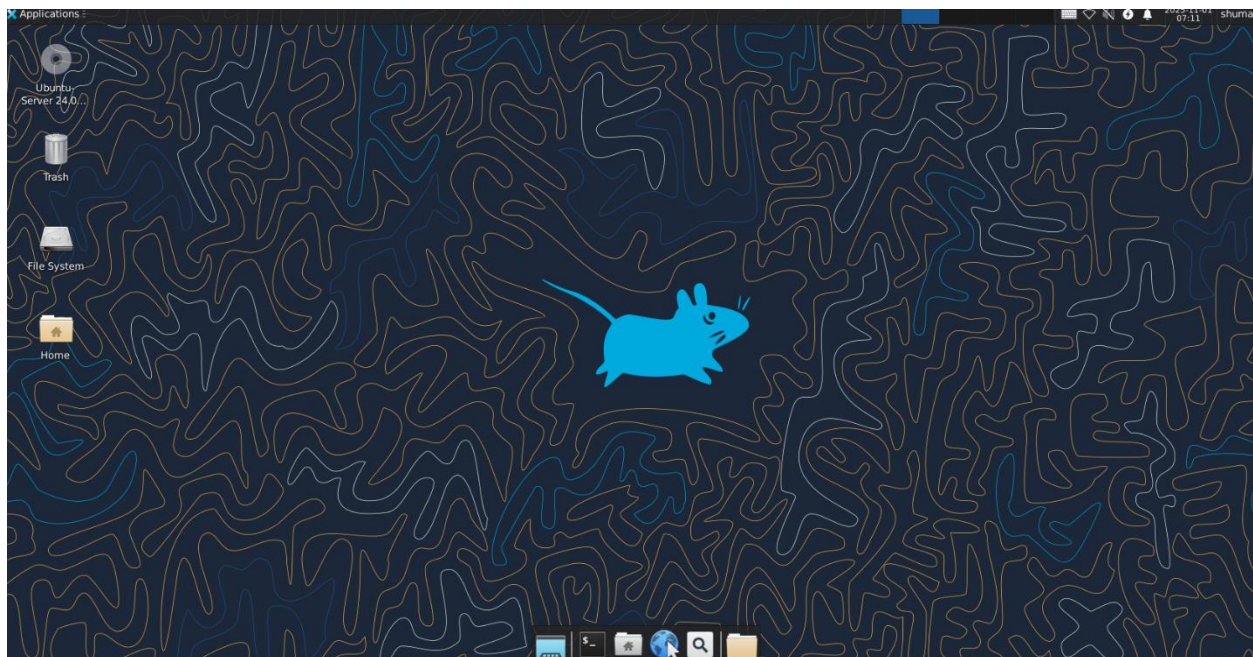
```
shumaila062@shumailaa:~$ sudo mkdir -p /etc/lightdm/lightdm.conf.d
echo -e "[Seat:*]\ngreeter-session=lightdm-gtk-greeter\nuser-session=xfce\nautologin-user-timeout=0" | sudo tee /etc/lightdm/lightdm.conf.d/99-xfce.conf
[Seat:*]
greeter-session=lightdm-gtk-greeter
user-session=xfce
autologin-user-timeout=0
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ sudo rm -f /var/lib/lightdm/.Xauthority
sudo rm -f ~/.Xauthority
sudo rm -rf ~/.cache/sessions
sudo chown -R $USER:$USER /home/$USER
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ sudo systemctl restart lightdm
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ sudo systemctl enable lightdm
sudo systemctl set-default graphical.target
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.
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
shumaila062@shumailaa:~$
```



```
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/multi-user.target.
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".
shumaila062@shumailaa:~$
```

```
Ubuntu 24.04.3 LTS shumailaa tty1
```

```
shumailaa login: shumaila062
```

```
Password:
```

```
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)
```

```
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:        https://ubuntu.com/pro
```

```
System information as of Sat Nov  1 07:13:21 AM UTC 2025
```

```
System load:  0.16           Processes:            315
Usage of /:   46.1% of 19.51GB Users logged in:          1
Memory usage: 18%           IPv4 address for ens33: 192.168.100.105
Swap usage:   0%
```

```
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
  just raised the bar for easy, resilient and secure K8s cluster deployment.
```

```
https://ubuntu.com/engage/secure-kubernetes-at-the-edge
```

```
Expanded Security Maintenance for Applications is not enabled.
```

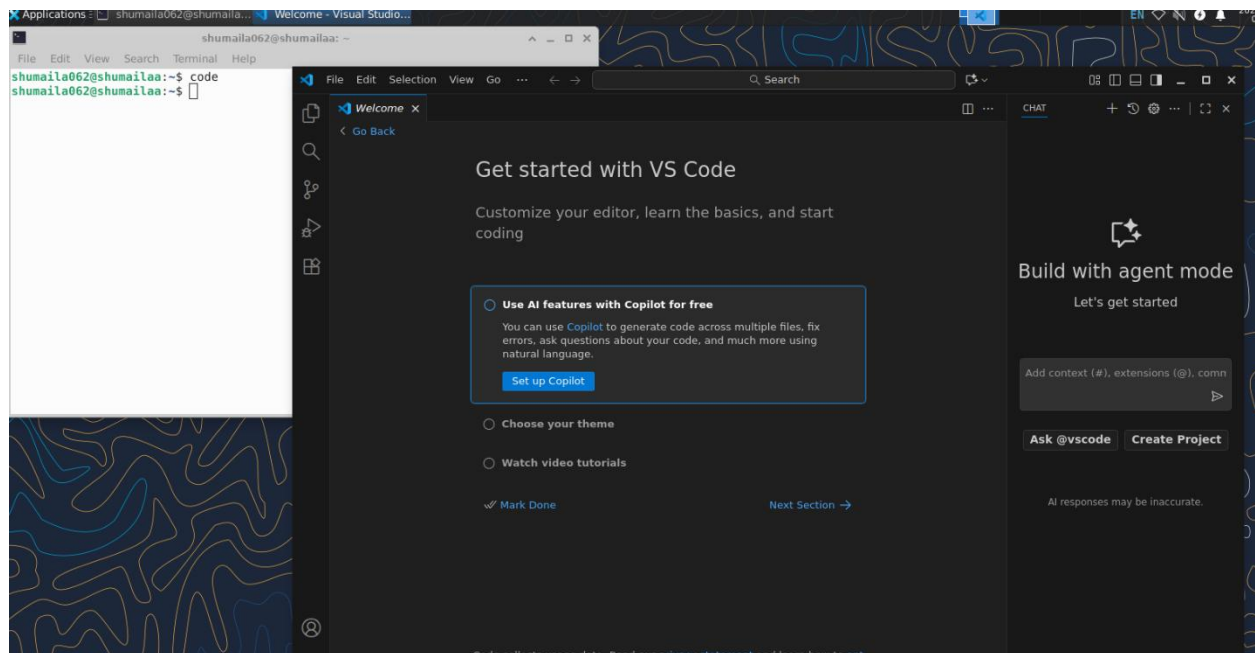
```
0 updates can be applied immediately.
```

```
6 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm
```

```
3 updates could not be installed automatically. For more details,
see /var/log/unattended-upgrades/unattended-upgrades.log
```

```
shumaila062@shumailaa:~$ _
```

```
shumaila062@shumailaa:~$ sudo systemctl start lightdm
[sudo] password for shumaila062:
shumaila062@shumailaa:~$ |
```



Task 7:

```
shumaila062@shumailaa:~$ sudo apt install google-chrome-stable -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package google-chrome-stable
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ ls -la /etc/apt
total 48
drwxr-xr-x  9 root root  4096 Sep 28 07:34 .
drwxr-xr-x 143 root root 12288 Oct 31 17:42 ..
drwxr-xr-x  2 root root  4096 Oct 31 14:48 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 08:15 sources.list
drwxr-xr-x  2 root root  4096 Sep 28 08:15 sources.list.d
drwxr-xr-x  2 root root  4096 Aug  5 17:01 trusted.gpg.d
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ cat /etc/apt/sources.list
# Ubuntu sources have moved to /etc/apt/sources.list.d/ubuntu.sources
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ ls -la /etc/apt/sources.list.d/
total 16
drwxr-xr-x 2 root root 4096 Sep 28 08:15 .
drwxr-xr-x 9 root root 4096 Sep 28 07:34 ..
-rw-r--r-- 1 root root  382 Sep 28 07:34 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug  5 17:02 ubuntu.sources.curtin.orig
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ cat /etc/apt/sources.list.d/ubuntu.sources
Types: deb
URIs: http://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
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/k
eyrings/google.gpg
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ sudo apt update
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Get:4 http://dl.google.com/linux/chrome/deb stable InRelease [1,825 B]
Get:5 http://dl.google.com/linux/chrome/deb stable/main amd64 Packages [1,210 B]
Fetched 3,035 B in 3s (1,016 B/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
shumaila062@shumailaa:~$
```

```
Unpacking google-chrome-stable (142.0.7444.59-1) ...
Selecting previously unselected package fonts-liberation-sans-narrow.
Preparing to unpack .../fonts-liberation-sans-narrow_1%3a1.07.6-4_all.deb ...
Unpacking fonts-liberation-sans-narrow (1:1.07.6-4) ...
Setting up fonts-liberation (1:2.1.5-3) ...
Setting up fonts-liberation-sans-narrow (1:1.07.6-4) ...
Setting up google-chrome-stable (142.0.7444.59-1) ...
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/x-www-browser (x-www-browser) in auto mode
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/gnome-www-browser (gnome-www-browser) in au
to mode
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/google-chrome (google-chrome) in auto mode
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for fontconfig (2.15.0-1ubuntu2) ...
Processing triggers for bamfdaemon (0.5.6+22.04.20220217-0ubuntu5) ...
Rebuilding /usr/share/applications/bamf-2.index...
Processing triggers for desktop-file-utils (0.27-2build1) ...
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.
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ sudo apt remove 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 openjdk-21-jre openjdk-21-jre-headless
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  google-chrome-stable
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
After this operation, 390 MB disk space will be freed.
(Reading database ... 180536 files and directories currently installed.)
Removing google-chrome-stable (142.0.7444.59-1) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for bamfdaemon (0.5.6+22.04.20220217-0ubuntu5) ...
Rebuilding /usr/share/applications/bamf-2.index...
shumaila062@shumailaa:~$
```



```
GNU nano 7.2 /etc/apt/sources.list.d/ubuntu.sources
Types: deb
URIs: http://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
Architectures: amd64
Signed-By: /etc/apt/keyrings/google.gpg

[ Read 17 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^_ Go To Line M-E Redo
```

```
shumaila062@shumailaa:~$ sudo rm -f /etc/apt/keyrings/google.gpg
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ sudo rm -f /etc/apt/keyrings/google.gpg
shumaila062@shumailaa:~$ 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
shumaila062@shumailaa:~$ |
```

```
shumaila062@shumailaa:~$ ls -la /etc/apt/sources.list.d/
total 20
drwxr-xr-x 2 root root 4096 Nov  1 07:55 .
drwxr-xr-x 9 root root 4096 Sep 28 07:34 ..
-rw-r--r-- 1 root root  107 Nov  1 07:56 google-chrome.list
-rw-r--r-- 1 root root  532 Nov  1 07:55 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug  5 17:02 ubuntu.sources.curtin.orig
shumaila062@shumailaa:~$ ls -la /etc/apt/sources.list.d/
total 20
drwxr-xr-x 2 root root 4096 Nov  1 07:55 .
drwxr-xr-x 9 root root 4096 Sep 28 07:34 ..
-rw-r--r-- 1 root root  107 Nov  1 07:56 google-chrome.list
-rw-r--r-- 1 root root  532 Nov  1 07:55 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug  5 17:02 ubuntu.sources.curtin.orig
shumaila062@shumailaa:~$
```

```
shumaila062@shumailaa:~$ sudo mkdir -p /etc/apt/keyrings
curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/keyrings/google.gpg
[sudo] password for shumaila062:
shumaila062@shumailaa:~$ |
```

Task 8:

```
shumaila062@shumailaa:~$
```



```

:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en_US) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depi1/Components-amd64.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depi1/Components-all.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Packages (main/binary-amd64/Packages) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Packages (main/binary-all/Packages) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en_US) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depi1/Components-amd64.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depi1/Components-all.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
shumaila062@shumailaa:~$

```

```

Setting up libqt5qmlmodels5:amd64 (5.15.13+dfsg-1ubuntu0.1) ...
Setting up libqt5widgets5:amd64 (5.15.13+dfsg-1ubuntu1) ...
Setting up libqt5svg5:amd64 (5.15.13-1) ...
Setting up audacity (3.7.5-0build1~ubuntu24.04) ...
Setting up qt5-gtk-platformtheme:amd64 (5.15.13+dfsg-1ubuntu1) ...
Setting up libqt5waylandclient5:amd64 (5.15.13-1) ...
Setting up libqt5quick5:amd64 (5.15.13+dfsg-1ubuntu0.1) ...
Setting up libqt5waylandcompositor5:amd64 (5.15.13-1) ...
Setting up qtwayland5:amd64 (5.15.13-1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for shared-mime-info (2.4-4) ...
Processing triggers for bamfdaemon (0.5.6+22.04.20220217-0ubuntu5) ...
Rebuilding /usr/share/applications/bamf-2.index...
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
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.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
shumaila062@shumailaa:~$

```



```
W: Target Translations (main/i18n/Translation-en_US) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/deb11/Components-amd64.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/deb11/Components-all.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Packages (main/binary-amd64/Packages) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Packages (main/binary-all/Packages) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en_US) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/deb11/Components-amd64.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/deb11/Components-all.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
shumaila062@shumailaa:~$
```

```

:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en_US) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depl1/Components-amd64.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depl1/Components-all.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Packages (main/binary-amd64/Packages) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Packages (main/binary-all/Packages) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en_US) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target Translations (main/i18n/Translation-en) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depl1/Components-amd64.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target DEP-11 (main/depl1/Components-all.yml) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/sources.list.d/google-chrome.list:1 and /etc/apt/sources.list.d/ubuntu.sources:2
shumaila062@shumailaa:~$

```

```

Setting up libmbdttls14t64:amd64 (2.28.8-1) ...
Setting up libqt6wlshellintegration6:amd64 (6.4.2-5build3) ...
Setting up libqt6waylandcompositor6:amd64 (6.4.2-5build3) ...
Setting up libqt6waylandeglcompositorhwintegration6:amd64 (6.4.2-5build3) ...
Setting up libqt6waylandeglclienthwintegration6:amd64 (6.4.2-5build3) ...
Setting up libpocketsphinx3:amd64 (0.8.0+real5prealpha+1-15ubuntu5) ...
Setting up qt6-wayland:amd64 (6.4.2-5build3) ...
Setting up libavfilter9:amd64 (7:6.1.1-3ubuntu5) ...
Setting up libavdevice60:amd64 (7:6.1.1-3ubuntu5) ...
Setting up obs-studio (32.0.2-0obsproject1~noble) ...
Processing triggers for bamfdaemon (0.5.6+22.04.20220217-0ubuntu5) ...
Rebuilding /usr/share/applications/bamf-2.index...
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1.1ubuntu3) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

```

Running kernel seems to be up-to-date.

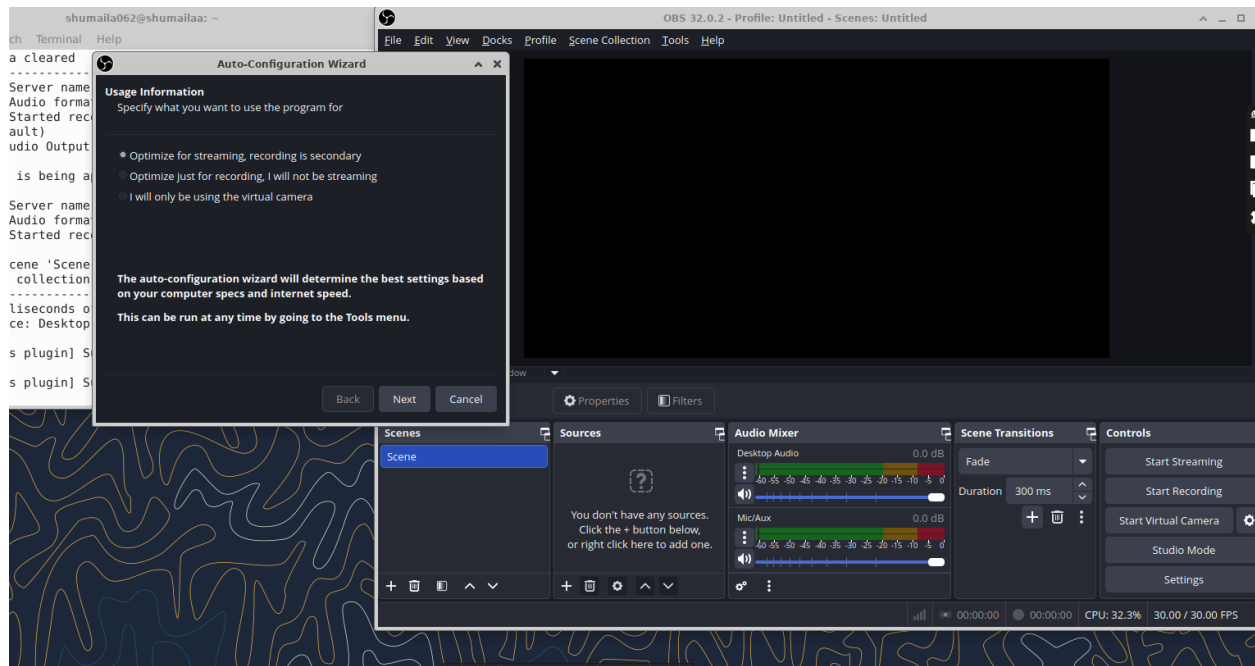
No services need to be restarted.

No containers need to be restarted.

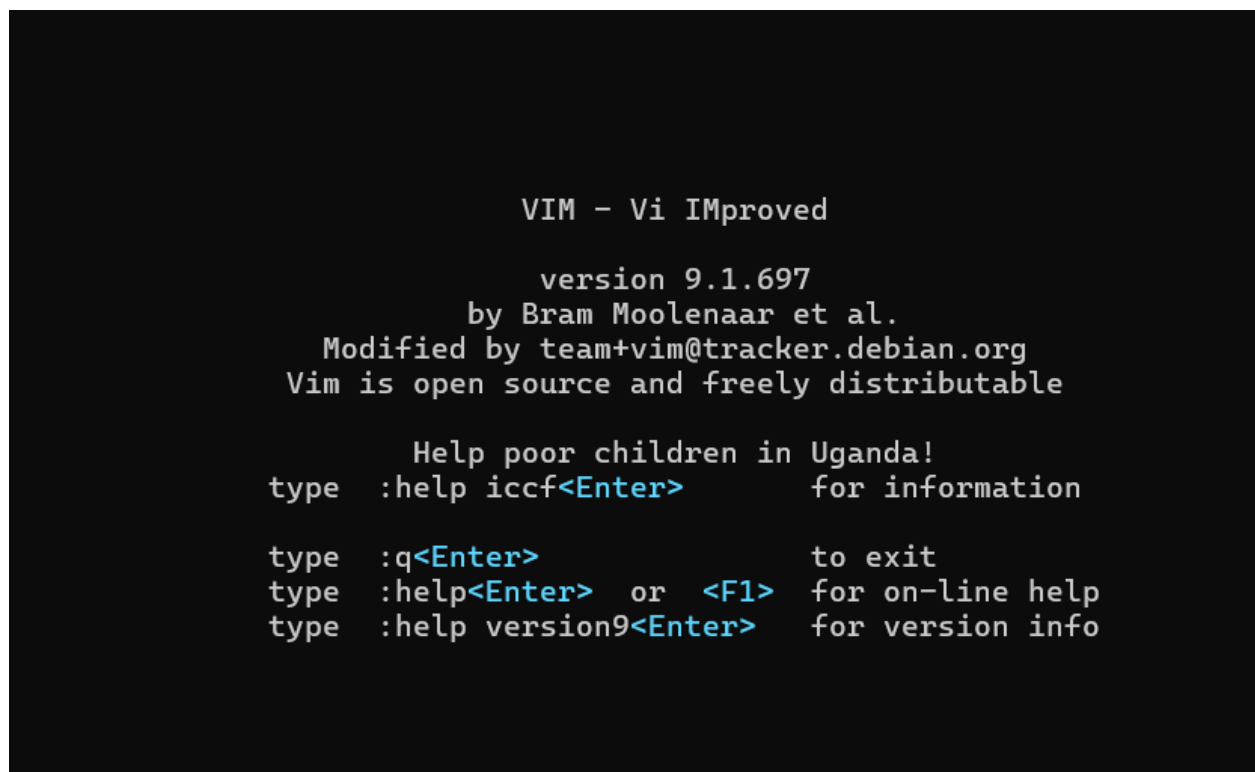
No user sessions are running outdated binaries.

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

```
shumaila062@shumailaa:~$ |
```



Task 9:



```
shumaila062@shumailaa:~$ mkdir -p ~/Lab5
cd ~/Lab5
pwd
/home/shumaila062/Lab5
shumaila062@shumailaa:~/Lab5$
```

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

```
-- INSERT --
```

```
shumaila062@shumailaa:~/Lab5$ ls -la
total 12
drwxrwxr-x  2 shumaila062 shumaila062 4096 Nov  1 12:44 .
drwxr-x--- 24 shumaila062 shumaila062 4096 Nov  1 12:44 ..
-rw-rw-r--  1 shumaila062 shumaila062  174 Nov  1 12:44 k8s-sample.yaml
shumaila062@shumailaa:~/Lab5$
```

Task 10:

```
shumaila062@shumailaa:~/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
:wq
shumaila062@shumailaa:~/Lab5$
```

```
metadata:
  name: nginx-pod
  annotations:
    lab: lesson11

spec:
  containers:
  - name: nginx
    image: nginx:1.19
    ports:
      - containerPort: 80
    restartPolicy: Always
:wq
^[[200~# temp: do-not-keep
# temp: do-not-keep
# temp: do-not-keep
~
```

```
shumaila062@shumailaa:~/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
:wq
shumaila062@shumailaa:~/Lab5$
```

Task 11:

```
spec:
  containers:
  - name: nginx
    image: nginx:1.19
    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
:wq
```



```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  annotations:
  lab: lesson11

spec:
  containers:
  - name: nginx
    image: nginx:1.19
    ports:
    - containerPort: 80
    restartPolicy: Always
:wq
```

Exam Evaluation Question:

```
shumaila062@shumailaa:~$ docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

shumaila062@shumailaa:~$
```