



FATIMA JINNAH WOMEN UNIVERSITY

Submitted To:

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Submitted By:

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Section:

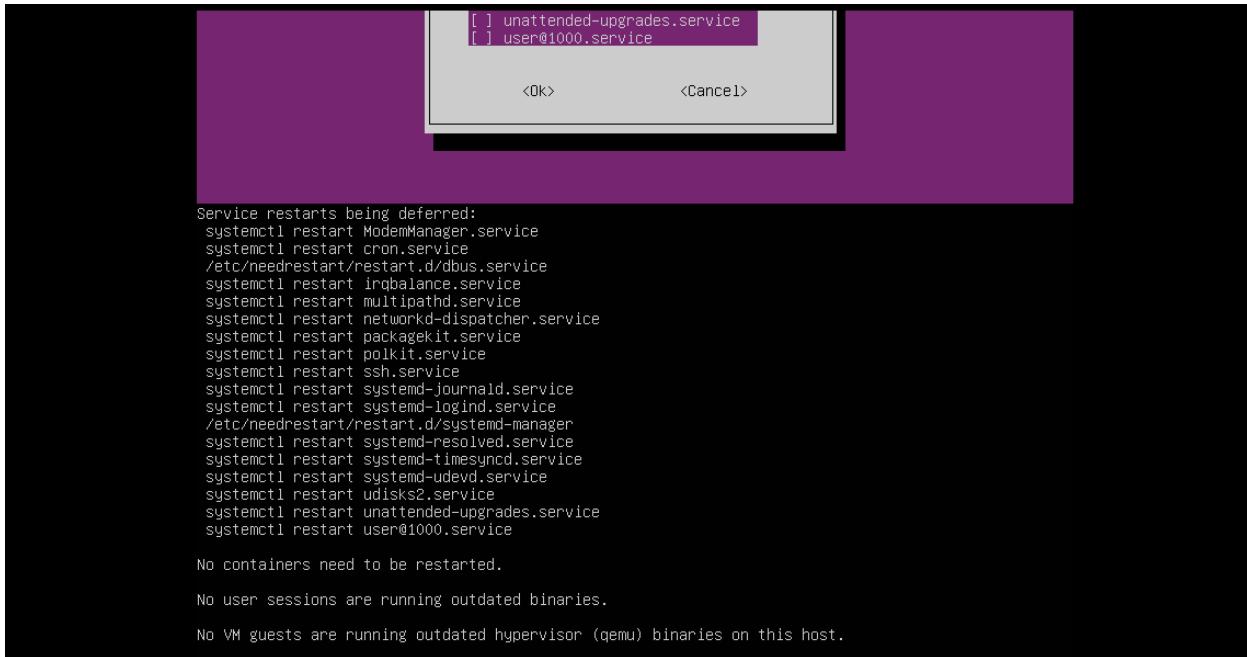
5A

CLOUD COMPUTING

LAB 05

TASK 01&2

Java Installation+Deletion



```
ubuntu027@ubuntu:~$ java --version  
openjdk 11.0.28 2025-07-15  
OpenJDK Runtime Environment (build 11.0.28+6-post-Ubuntu-1ubuntu122.04.1)  
OpenJDK 64-Bit Server VM (build 11.0.28+6-post-Ubuntu-1ubuntu122.04.1, mixed mode, sharing)  
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ 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 alsamixer-conf at-spi2-core ca-certificates-java dconf-gsettings-backend  
dconf-service default-jre-headless fontconfig-config fonts-dejavu-core fonts-dejavu-extra  
gsettings-desktop-schemas java-common libasound2 libasound2-data libatk-bridge2.0-0  
libatk-wrapper-java libatk-wrapper-jni libatk1.0-0 libatk1.0-data libatspi2.0-0  
libavahi-client3 libavahi-common-data libavahi-common3 libcups2 libdconf1 libdrm-amdgpu1  
libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libfontconfig1 libfontenc1 libgif7 libgl1  
libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0 libgraphite2-3  
libharfbuzz0b libice6 libjpeg-turbo8 liblpeg8 liblcms2-2 libllvm15 libpciaccess0 libpcsselite1  
libsensors-config libsensors5 libsm6 libxi1-xcb1 libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0  
libxcb-present0 libxcb-randr0 libxcb-shape0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0  
libcomposite1 libxfixed3 libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxpm4 libxrandr2  
libxrender1 libxshmfence1 libxt6 libxtst6 libxv1 libxf86dga1 libxf86vm1 openjdk-11-jre  
openjdk-11-jre-headless session-migration x11-common 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 71 not upgraded.  
After this operation, 6,144 B disk space will be freed.  
(Reading database ... 111954 files and directories currently installed.)  
Removing default-jre (2:1.11-72build2) ...
```

```
ubuntu027@ubuntu:~$ hash -r  
ubuntu027@ubuntu:~$ java_
```

```
-^          print help on extra options to the error stream  
--help-extra  print help on extra options to the output stream  
-ea[:<packagename>...|:<classname>]  
-enableassertions[:<packagename>...|:<classname>]  
               enable assertions with specified granularity  
-da[:<packagename>...|:<classname>]  
-disableassertions[:<packagename>...|:<classname>]  
               disable assertions with specified granularity  
-esa | -enablesystemassertions  
               enable system assertions  
-dsa | -disablesystemassertions  
               disable system assertions  
-agentlib:<libname>[=<options>]  
               load native agent library <libname>, e.g. -agentlib:jdwp  
               see also -agentlib:jdwp=help  
-agentpath:<pathname>[=<options>]  
               load native agent library by full pathname  
-javaagent:<jarpath>[=<options>]  
               load Java programming language agent, see java.lang.instrument  
-splash:<imagepath>  
               show splash screen with specified image  
               HiDPI scaled images are automatically supported and used  
               if available. The unscaled image filename, e.g. image.ext,  
               should always be passed as the argument to the -splash option.  
               The most appropriate scaled image provided will be picked up  
               automatically.  
               See the SplashScreen API documentation for more information  
@argument files  
               one or more argument files containing options  
-disable-@files  
               prevent further argument file expansion  
--enable-preview  
               allow classes to depend on preview features of this release  
To specify an argument for a long option, you can use --<name>=<value> or  
--<name> <value>.
```

TASK 03

```
ubuntu027@ubuntu:~$ sudo apt update  
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]  
Hit:2 http://archive.ubuntu.com/ubuntu Jammy InRelease  
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]  
Get:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]  
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [3,027 kB]  
Get:6 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,242 kB]  
Fetched 4,653 kB in 9s (512 kB/s)
```

```

The following packages were automatically installed and are no longer required:
  alsamixer-conf alsamixer-alsa at-spi2-core ca-certificates-java dconf-gsettings-backend
  dconf-service default-jre-headless fontconfig-config fonts-dejavu-core fonts-dejavu-extra
  gsettings-desktop-schemas java-common libasound2 libasound2-data libatk-bridge2.0-0
  libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data libatspi2.0-0
  libavahi-client3 libavahi-common-data libavahi-common3 libcurl2 libdconf1 libdrm-amdgpu1
  libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libfontconfig1 libfontenc1 libgl1 libgl1
  libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd libglx-mesa0 libglx0 libgraphite2-3
  libharfbuzz0b libice6 libjpeg-turbo8 liblcms2-2 libl1vml5 libpcaccess0 libpcslite1
  libsensors-config libsensors5 libsm6 libx11-xcb1 libxau7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0
  libxcb-present0 libxcb-randr0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0
  libcomposite1 libxfixes3 libxf86-video-libxinerama1 libxkbfile1 libxmu6 libxpm4 libxrandr2
  librender1 libxshmfence1 libxt6 libxtst6 libxv1 libxxf86dga1 libxxf86vm1 openjdk-11-jre
  openjdk-11-jre-headless session-migration x11-common x11-utils
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  linux-headers-5.15.0-160 linux-headers-5.15.0-160-generic linux-image-5.15.0-160-generic
  linux-modules-5.15.0-160-generic linux-modules-extra-5.15.0-160-generic python3-packaging
The following packages have been kept back:
  libnss-systemd libpam-systemd libsystemd0 libudev1 systemd systemdsysv systemd-timesyncd udev
The following packages will be upgraded:
  apt apt-utils bind9-dnsutils bind9-host bind9-libs cloud-init cryptsetup cryptsetup-bin
  cryptsetup-initramfs distro-info-data dm-event dmidecode dmsetup ethtool
  gir1.2-packagekitglib-1.0 initramfs-tools initramfs-tools-bin initramfs-tools-core
  landscape-common libapt-pkg6.0 libcryptsetup12 libdevmapper-event1.02.1 libdevmapper1.02.1
  libglib2.0-0 libglib2.0-bin libglib2.0-data libldap-2.5-0 libldap-common liblvm2cmd2.03
  libmbim-glib4 libmbim-proxy libmm-glib0 libopeniscsiusr libpackagekit-glib2-18 libpcap0.8
  libseccomp2 linux-base linux-firmware linux-generic linux-headers-generic linux-image-generic
  lvm2 modemmanager needrestart open-iscsi packagekit packagekit-tools pci.ids pollinate
  powermgmt-base python3-update-manager snapd sosreport systemd-hwe-hwdb ubuntu-advantage-tools
  ubuntu-minimal ubuntu-pro-client ubuntu-pro-client-110n ubuntu-server ubuntu-server-minimal
  ubuntu-standard update-manager-core xfsprogs
63 upgraded, 6 newly installed, 0 to remove and 8 not upgraded.
6 standard LTS security updates
Need to get 360 MB/475 MB of archives.
After this operation, 603 MB of additional disk space will be used.
Do you want to continue? [Y/n]

```

```

8:00
Get:29 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 initramfs-tools all 0.140ubuntu13.5
[9,060 B]
Get:30 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 initramfs-tools-core all 0.140ubuntu13.5 [47.8 kB]
Get:31 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 initramfs-tools-bin amd64 0.140ubuntu13.5 [9,330 B]
Get:32 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 linux-base all 4.5ubuntu9+22.04.1 [19.1 kB]
Get:33 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 cryptsetup-initramfs all 2:2.4.3-1ubuntu1.3 [25.6 kB]
Get:34 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 cryptsetup-bin amd64 2:2.4.3-1ubuntu1.3 [145 kB]
Get:35 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 cryptsetup amd64 2:2.4.3-1ubuntu1.3 [194 kB]
Get:36 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 ethtool amd64 1:5.16-1ubuntu0.2 [208 kB]
Get:37 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libpackagekit-glib2-18 amd64 1.2.5-2ubuntu3 [124 kB]
Get:38 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 gir1.2-packagekitglib-1.0 amd64 1.2.5-2ubuntu3 [25.3 kB]
Get:39 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 landscape-common amd64 23.02-0ubuntu1~22.04.6 [88.9 kB]
Get:40 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libldap-2.5-0 amd64 2.5.19+dfsg-0ubuntu20.04.1 [184 kB]
Get:41 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libldap-common all 2.5.19+dfsg-0ubuntu20.04.1 [16.1 kB]
Get:42 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libmbim-proxy amd64 1.28.0-1~ubuntu20.04.2 [6,160 B]
Get:43 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libmbim-glib4 amd64 1.28.0-1~ubuntu20.04.2 [192 kB]
Get:44 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libmm-glib0 amd64 1.20.0-1~ubuntu22.04.4 [262 kB]
Get:45 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 linux-firmware all 20220329.git681281e4-0ubuntu3.40 [316 MB]
47% [45 Linux-firmware 63.0 MB/316 MB] 20s
          3.474 kB/s 1min 22s

```

```
/etc/needrestart/restart.d/systemd-manager
systemctl restart cron.service irqbalance.service multipathd.service open-vm-tools.service polkit.service
ssh.service systemd-journald.service systemd-networkd.service systemd-resolved.service system
d-timesyncd.service systemd-udevd.service udisks2.service vauth.service
Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service
systemctl restart user@1000.service

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.
ubuntu027@ubuntu:~$
```

```
GNU nano 6.2          /home/ubuntu027/apt_update_vs_upgrade.md *
my self Irraj Samreen. I am Software Engineering Student At FJWU._
```

TASK 04

```
error: unknown flag: instaur
ubuntu027@ubuntu:~$ sudo snap install --classic code
[sudo] password for ubuntu027:
code 7d842fb8 from Visual Studio Code (vscode*) installed
ubuntu027@ubuntu:~$
```

```
code 7d842fb8 from Visual Studio Code (vscode*) installed
ubuntu027@ubuntu:~$ snap list code
```

```
code 7d842fb8 from Visual Studio Code (vscode*) installed
ubuntu027@ubuntu:~$ snap list code
Name    Version   Rev  Tracking      Publisher  Notes
code    7d842fb8  211  latest/stable  vscode*    classic
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ code --version
1.105.1
7d842fb85a0275a4a8e4d7e040d2625abbf7f084
x64
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu: ~$ snap info code
name:      code
summary:   Code editing. Redefined.
publisher: Visual Studio Code (vscode)
store-url: https://snapcraft.io/code
contact:   https://twitter.com/code
license:   unset
description: |
    Visual Studio Code is a new choice of tool that combines the
    simplicity of a code editor with what developers need for the core
    edit-build-debug cycle.
commands:
- code
- code.url-handler
snap-id:      Ht0auUHi7ofh9Fbwh6m7jUN2pAy6kzBiU
tracking:     latest/stable
refresh-date: today at 04:50 UTC
channels:
latest/stable: 7d842fb8 2025-10-15 (211) 346MB classic
latest/candidate: ↑
latest/beta:    ↑
latest/edge:    ↑
installed:     7d842fb8          (211) 346MB classic
ubuntu027@ubuntu:~$
```

```
installed:     7d842fb8          (211) 346MB classic
ubuntu027@ubuntu:~$ ls -l /snap/bin | grep code
lrwxrwxrwx 1 root root 13 Oct 24 04:50 code -> /usr/bin/snap
lrwxrwxrwx 1 root root 13 Oct 24 04:50 code.url-handler -> /usr/bin/snap
ubuntu027@ubuntu:~$
```

TASK 05

```
C:\Users\IRRAJ>ssh ubuntu027@192.168.72.142
ubuntu027@192.168.72.142's password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-119-generic x86_64)

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

System information as of Fri Oct 24 05:00:48 AM UTC 2025

System load:  0.09          Processes:           216
Usage of /:   61.2% of 13.18GB  Users logged in:      1
Memory usage: 16%           IPv4 address for ens33: 192.168.72.142
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.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

```
inet6_re�:200:2911:1e65:1070764 scope link
    valid_lft forever preferred_lft forever
ubuntu027@ubuntu:~$ sudo apt update && sudo apt upgrade -y
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [2,771 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [3,028 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [469 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [403 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [19.0 kB]
Get:10 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [13.9 kB]
Get:11 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,242 kB]
87% [5 Packages store 0 B] [11 Packages 36.9 KB/1,242 KB 3%]
```

```
Get:5 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [2,771 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [3,028 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [469 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [403 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [19.0 kB]
Get:10 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [13.9 kB]
Get:11 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,242 kB]
Fetched 8,329 kB in 13s (621 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
8 packages can be upgraded. Run 'apt list --upgradable' to see them.
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:
  alsamixer-conf alsamixer-alsa ca-certificates-java dconf-gsettings-backend
  dconf-service default-jre-headless fontconfig-config fonts-dejavu-core fonts-dejavu-extra
  gsettings-desktop-schemas java-common libasound2 libasound2-data libatk-bridge2.0-0
  libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data libatspi2.0-0
  libavahi-client3 libavahi-common-data libavahi-common3 libcups2 libdconf1 libdrm-amdgpu1
  libdrm-intel libdrm-nouveau2 libdrm-radeon1 libfontconfig1 libfontenc1 libgif7 libgl1
  libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0 libgraphite2-3
  libharfbuzz0e libice6 libjpeg-turbo8 libjpegb liblcms2-2 liblvm15 libpciaccess0 libpcsc-lite1
  libsensors-config libsensors5 libsm6 libx11-xcb1 libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0
  libxcb-present0 libxcb-randr0 libxcb-shape0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0
  libxcomposite1 libxf86input3 libxft2 libxi6 libxinerama1 libxkbfile1 libxmu6 libxpm4 libxrandr2
  libxrender1 libxshmfence1 libxt6 libxtst6 libxv1 libxf86dga1 libxf86vm1
  linux-headers-5.15.0-157 linux-headers-5.15.0-157-generic linux-image-5.15.0-157-generic
  linux-modules-5.15.0-157-generic linux-modules-extra-5.15.0-157-generic openjdk-11-jre
  openjdk-11-jre-headless session-migration x11-common x11-utils
Use 'sudo apt autoremove' to remove them.
The following packages have been kept back:
  libnss-systemd libpam-systemd libsystemd libudev1 systemd systemd-sysv systemd-timesyncd udev
0 upgraded, 0 newly installed, 0 to remove and 8 not upgraded.
ubuntu027@ubuntu:~$ _
```

```
Re-imaged after running updated-grub. (qemu) Binary file diff
```

```
ubuntu027@ubuntu:~$ sudo apt install xfce4 xfce4-goodies -y
```

```
[158 kB]
Get:51 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libpoppler118 amd64 22.02.0-2ubuntu0.11 [1,080 kB]
Get:52 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libpoppler-glib8 amd64 22.02.0-2ubuntu0.11 [134 kB]
Get:53 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libsrmp-base all 5.9.1+dfsg-1ubuntu2.8 [201 kB]
Get:54 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libsrmp40 amd64 5.9.1+dfsg-1ubuntu2.8 [1,070 kB]
Get:55 http://archive.ubuntu.com/ubuntu jammy/main amd64 libsane1 amd64 1.1.1-5 [2,768 kB]
Get:56 http://archive.ubuntu.com/ubuntu jammy/main amd64 sane-utils amd64 1.1.1-5 [198 kB]
Get:57 http://archive.ubuntu.com/ubuntu jammy/main amd64 sgm1-base all 1.30 [12.5 kB]
Get:58 http://archive.ubuntu.com/ubuntu jammy/main amd64 hicolor-icon-theme all 0.17-2 [9,976 kB]
Get:59 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libgdk-pixbuf2.0-common all 2.42.8+dfsg-1ubuntu0.4 [5,546 kB]
Get:60 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libgdk-pixbuf-2.0-0 amd64 2.42.8+dfsg-1ubuntu0.4 [148 kB]
Get:61 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 gtk-update-icon-cache amd64 3.24.33-1ubuntu2.2 [31.4 kB]
Get:62 http://archive.ubuntu.com/ubuntu jammy/main amd64 humanity-icon-theme all 0.6.16 [1,282 kB]
Get:63 http://archive.ubuntu.com/ubuntu jammy/main amd64 ubuntu-mono all 20.10-0ubuntu2 [153 kB]
Get:64 http://archive.ubuntu.com/ubuntu jammy/main amd64 adwaita-icon-theme all 41.0-1ubuntu1 [3,444 kB]
Get:65 http://archive.ubuntu.com/ubuntu jammy/main amd64 libaspell115 amd64 0.60.8-4build1 [325 kB]
Get:66 http://archive.ubuntu.com/ubuntu jammy/main amd64 emacsclient-common all 3.0.4 [14.9 kB]
Get:67 http://archive.ubuntu.com/ubuntu jammy/main amd64 dictionaries-common all 1.28.14 [185 kB]
Get:68 http://archive.ubuntu.com/ubuntu jammy/main amd64 aspell amd64 0.60.8-4build1 [87.7 kB]
Get:69 http://archive.ubuntu.com/ubuntu jammy/main amd64 aspell-en all 2018.04.16-0-1 [299 kB]
Get:70 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 bubblewrap amd64 0.6.1-1ubuntu0.1 [46.3 kB]
Get:71 http://archive.ubuntu.com/ubuntu jammy/main amd64 bzip2 amd64 1.0.8-5build1 [34.8 kB]
Get:72 http://archive.ubuntu.com/ubuntu jammy/main amd64 colord-data all 1.4.6-1 [153 kB]
Get:73 http://archive.ubuntu.com/ubuntu jammy/main amd64 libcolord2 amd64 1.4.6-1 [155 kB]
Get:74 http://archive.ubuntu.com/ubuntu jammy/main amd64 libcolorhug2 amd64 1.4.6-1 [42.3 kB]
Ign:74 http://archive.ubuntu.com/ubuntu jammy/main amd64 libcolorhug2 amd64 1.4.6-1
Get:75 http://archive.ubuntu.com/ubuntu jammy/main amd64 colord amd64 1.4.6-1 [215 kB]
17% [Working] 586 kB/s 3min 40s_
```

Which services should be restarted?

- dbus.service
- networkd-dispatcher.service
- systemd-logind.service
- unattended-upgrades.service
- user@1000.service

<Ok>

<Cancel>

Service restarts being deferred:

```
/etc/needrestart/restart.d/dbus.service
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service
systemctl restart user@1000.service
```

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.
ubuntu027@ubuntu:~\$ _

```
0 upgraded, 0 newly installed, 0 to remove and 8 not
ubuntu027@ubuntu:~$ sudo apt install xrdp -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 libpcsc-lite1 linux-headers-5.15.0-157
  linux-headers-5.15.0-157-generic linux-image-5.15.0-157-generic linux-modules-5.15.0-157-generic
  linux-modules-extra-5.15.0-157-generic openjdk-11-jre openjdk-11-jre-headless
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libfuse2 ssl-cert xorgxrdp
Suggested packages:
  guacamole
The following NEW packages will be installed:
  libfuse2 ssl-cert xorgxrdp xrdp
0 upgraded, 4 newly installed, 0 to remove and 8 not upgraded.
Need to get 690 kB of archives.
After this operation, 3,773 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 ssl-cert all 1.1.2 [17.4 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libfuse2 amd64 2.9.9-Subuntu3 [90.3 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 xrdp amd64 0.9.17-2ubuntu3 [517 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy/universe amd64 xorgxrdp amd64 1:0.2.17-1build1 [65.3 kB]
]
Fetched 690 kB in 2s (321 kB/s)
Preconfiguring packages ...
Selecting previously unselected package ssl-cert.
(Reading database ... 196707 files and directories currently installed.)
Preparing to unpack .../ssl-cert_1.1.2_all.deb ...
Unpacking ssl-cert (1.1.2) ...
Selecting previously unselected package libfuse2:amd64.
Preparing to unpack .../libfuse2_2.9.9-5ubuntu3_amd64.deb ...
Unpacking libfuse2:amd64 (2.9.9-5ubuntu3) ...
Selecting previously unselected package xrdp.
Preparing to unpack .../xrdp_0.9.17-2ubuntu3_amd64.deb ...

Progress: [ 29%] [#####.....]
```

```
NO VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu027@ubuntu:~$ sudo systemctl enable --now xrdp
```

```
NO VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu027@ubuntu:~$ sudo systemctl enable --now xrdp
Synchronizing state of xrdp.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable xrdp
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ sudo systemctl status xrdp
```

```
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service
systemctl restart user@1000.service

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.
ubuntu027@ubuntu:~$ sudo systemctl enable --now xrdp
Synchronizing state of xrdp.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable xrdp
ubuntu027@ubuntu:~$ sudo systemctl status xrdp
● xrdp.service - xrdp daemon
   Loaded: loaded (/lib/systemd/system/xrdp.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2025-10-24 05:14:41 UTC; 2min 41s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
     Main PID: 155467 (xrdp)
        Tasks: 1 (limit: 4513)
       Memory: 864.0K
          CPU: 86ms
         CGroup: /system.slice/xrdp.service
                   └─155467 /usr/sbin/xrdp

Oct 24 05:14:40 ubuntu systemd[1]: Starting xrdp daemon...
Oct 24 05:14:40 ubuntu xrdp[155466]: [INFO ] address [0.0.0.0] port [3389] mode 1
Oct 24 05:14:40 ubuntu xrdp[155466]: [INFO ] listening to port 3389 on 0.0.0.0
Oct 24 05:14:40 ubuntu xrdp[155466]: [INFO ] xrdp_listen_pp done
Oct 24 05:14:40 ubuntu systemd[1]: xrdp.service: Can't open PID file /run/xrdp/xrdp.pid (yet?) after
Oct 24 05:14:41 ubuntu systemd[1]: Started xrdp daemon.
Oct 24 05:14:42 ubuntu xrdp[155467]: [INFO ] starting xrdp with pid 155467
Oct 24 05:14:42 ubuntu xrdp[155467]: [INFO ] address [0.0.0.0] port [3389] mode 1
Oct 24 05:14:42 ubuntu xrdp[155467]: [INFO ] listening to port 3389 on 0.0.0.0
Oct 24 05:14:42 ubuntu xrdp[155467]: [INFO ] xrdp_listen_pp done
[Lines 1-22/22 (END)]
```

```
ubuntu027@ubuntu:~$ echo xfce4-session > ~/.xsession
ubuntu027@ubuntu:~$ ss -ltnp
State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port      Process
LISTEN      0          4096      127.0.0.53%lo:53      0.0.0.0:*          xrdp-sesman
LISTEN      0          128       0.0.0.0:22      0.0.0.0:*          xrdp
LISTEN      0          2         [:1]:3350      [:]:*            xrdp
LISTEN      0          128      [:]:22      [:]:*            xrdp
LISTEN      0          2         *:3389      *:*              xrdp
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ ps aux | grep xrdp
root      155457  0.0  0.0  12144   696 ?          S    05:14  0:00 /usr/sbin/xrdp-sesman
xrdp      155467  0.0  0.0  12264   724 ?          S    05:14  0:00 /usr/sbin/xrdp
ubuntu0+  155676  0.0  0.0   6480  2256 tty1      S+   05:21  0:00 grep --color=auto xrdp
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ code
ubuntu027@ubuntu:~$ _
```

```
ubuntu027@ubuntu:~$ code
ubuntu027@ubuntu:~$ sudo mkdir -p /etc/lightdm/lightdm.conf.d
```

```
*** System restart required ***
Last login: Thu Oct 23 15:20:34 2025
ubuntu027@ubuntu:~$ sudo mkdir -p /etc/lightdm/lightdm.conf.d
[sudo] password for ubuntu027:
ubuntu027@ubuntu:~$ echo -e "[Seat:*]\ngreeter-session=lightdm-gtk-greeter\nuser-session=xfce\nautologin-user-timeout=0"
| sudo tee /etc/lightdm/lightdm.conf.d/99-xfce.conf
[Seat:*]
greeter-session=lightdm-gtk-greeter
user-session=xfce
autologin-user-timeout=0
ubuntu027@ubuntu:~$ sudo rm -f /var/lib/lightdm/.Xauthority
ubuntu027@ubuntu:~$ sudo rm -f ~/.Xauthority
ubuntu027@ubuntu:~$ sudo rm -rf ~/.cache/sessions
ubuntu027@ubuntu:~$ sudo rm R $USER:$USER /home/$USER
rm: cannot remove 'R': No such file or directory
rm: cannot remove 'ubuntu027:ubuntu027': No such file or directory
rm: cannot remove '/home/ubuntu027': Is a directory
ubuntu027@ubuntu:~$ chown -R $USER:$USER /home/$USER
ubuntu027@ubuntu:~$ sudo systemctl restart lightdm
Failed to restart lightdm.service: Unit lightdm.service not found.
ubuntu027@ubuntu:~$ sudo systemctl restart lightdm
```

TASK 06

```
ubuntu027@ubuntu:~$ sudo apt update
Hit:1 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:2 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
8 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu027@ubuntu:~$ sudo apt install lightdm-gtk-greeter -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 libpcsc-lite1 linux-headers-5.15.0-157 linux-headers-5.15.0-157-generic linux-image-5.15.0-157-generic
  linux-modules-5.15.0-157-generic linux-modules-extra-5.15.0-157-generic openjdk-11-jre openjdk-11-jre-headless
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  accounts-service gnome-accessibility-themes gnome-themes-extra gnome-themes-standard
```

```
ubuntu027@ubuntu: ~
After this operation, 8,314 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaccountsservice0 amd64 22.07.5-2ubuntu1.5 [62.6 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 accountsservice amd64 22.07.5-2ubuntu1.5 [70.0 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy/main amd64 gnome-accessibility-themes all 3.28-1ubuntu3 [2,295 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy/main amd64 gnome-themes-extra-data all 3.28-1ubuntu3 [69.4 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 gtk2-engines-pixbuf amd64 2.24.33-2ubuntu2.1 [25.1 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy/main amd64 gnome-themes-extra amd64 3.28-1ubuntu3 [15.4 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy/universe amd64 gnome-themes-standard all 3.28-1ubuntu3 [1,996 B]
Get:8 http://archive.ubuntu.com/ubuntu jammy/main amd64 libayatana-ido3-0.4-0 amd64 0.9.1-1 [61.0 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy/main amd64 libayatana-indicator3-7 amd64 0.9.1-1 [33.6 kB]
Get:10 http://archive.ubuntu.com/ubuntu jammy/universe amd64 liblightdm-gobject-1-0 amd64 1.30.0-0ubuntu5 [42.1 kB]
Get:11 http://archive.ubuntu.com/ubuntu jammy/universe amd64 lightdm-gtk-greeter amd64 2.0.8-2ubuntu1 [83.0 kB]
Fetched 2,759 kB in 18s (155 kB/s)
Selecting previously unselected package libaccountsservice0:amd64.
(Reading database ... 196856 files and directories currently installed.)
Preparing to unpack .../00-libaccountsservice0_22.07.5-2ubuntu1.5_amd64.deb ...
Unpacking libaccountsservice0:amd64 (22.07.5-2ubuntu1.5) ...
Selecting previously unselected package accountsservice.
Preparing to unpack .../01-accountsservice_22.07.5-2ubuntu1.5_amd64.deb ...
Unpacking accountsservice (22.07.5-2ubuntu1.5) ...
Selecting previously unselected package gnome-accessibility-themes.
Preparing to unpack .../02-gnome-accessibility-themes_3.28-1ubuntu3_all.deb ...
Unpacking gnome-accessibility-themes (3.28-1ubuntu3) ...
Selecting previously unselected package gnome-themes-extra-data.
Preparing to unpack .../03-gnome-themes-extra-data_3.28-1ubuntu3_all.deb ...
Unpacking gnome-themes-extra-data (3.28-1ubuntu3) ...
Selecting previously unselected package gtk2-engines-pixbuf:amd64.
Preparing to unpack .../04-gtk2-engines-pixbuf_2.24.33-2ubuntu2.1_amd64.deb ...
Unpacking gtk2-engines-pixbuf:amd64 (2.24.33-2ubuntu2.1) ...
Selecting previously unselected package gnome-themes-extra:amd64.
```

```
ubuntu027@ubuntu: ~
setting up liblightdm-gobject-1-0:amd64 (1.30.0-0ubuntu5) ...
setting up libaccountsservice0:amd64 (22.07.5-2ubuntu1.5) ...
Setting up libayatana-indicator3-7:amd64 (0.9.1-1) ...
setting up lightdm-gtk-greeter (2.0.8-2ubuntu1) ...
update-alternatives: using /usr/share/xgreeters/lightdm-gtk-greeter.desktop to provide /usr/share/xgreeters/lightdm-greeter.desktop (lightdm-greeter) in auto mode
Setting up accountsservice (22.07.5-2ubuntu1.5) ...
Created symlink /etc/systemd/system/graphical.target.wants/accounts-daemon.service → /lib/systemd/system/accounts-daemon.service.
Setting up gnome-themes-extra:amd64 (3.28-1ubuntu3) ...
Setting up gnome-themes-standard (3.28-1ubuntu3) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.35-0ubuntu3.11) ...
Processing triggers for dbus (1.12.20-2ubuntu4.1) ...
Scanning processes...
Scanning candidates...
scanning linux images...

Restarting services...
Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service
systemctl restart user@1000.service

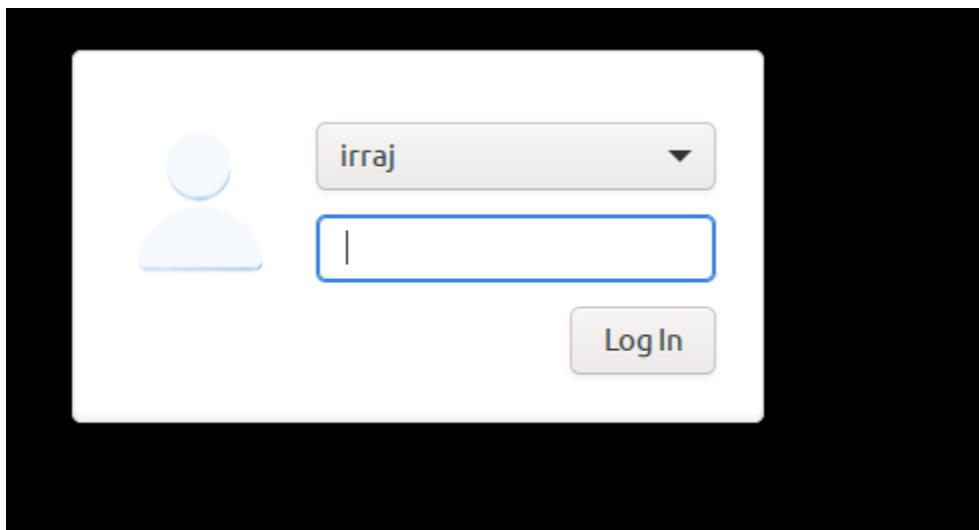
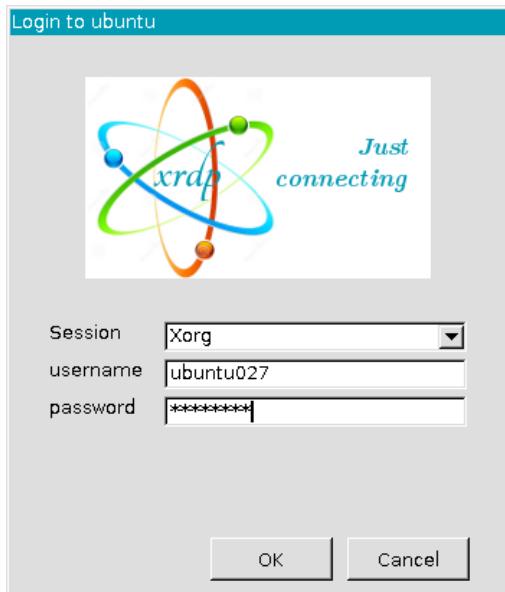
No containers need to be restarted.

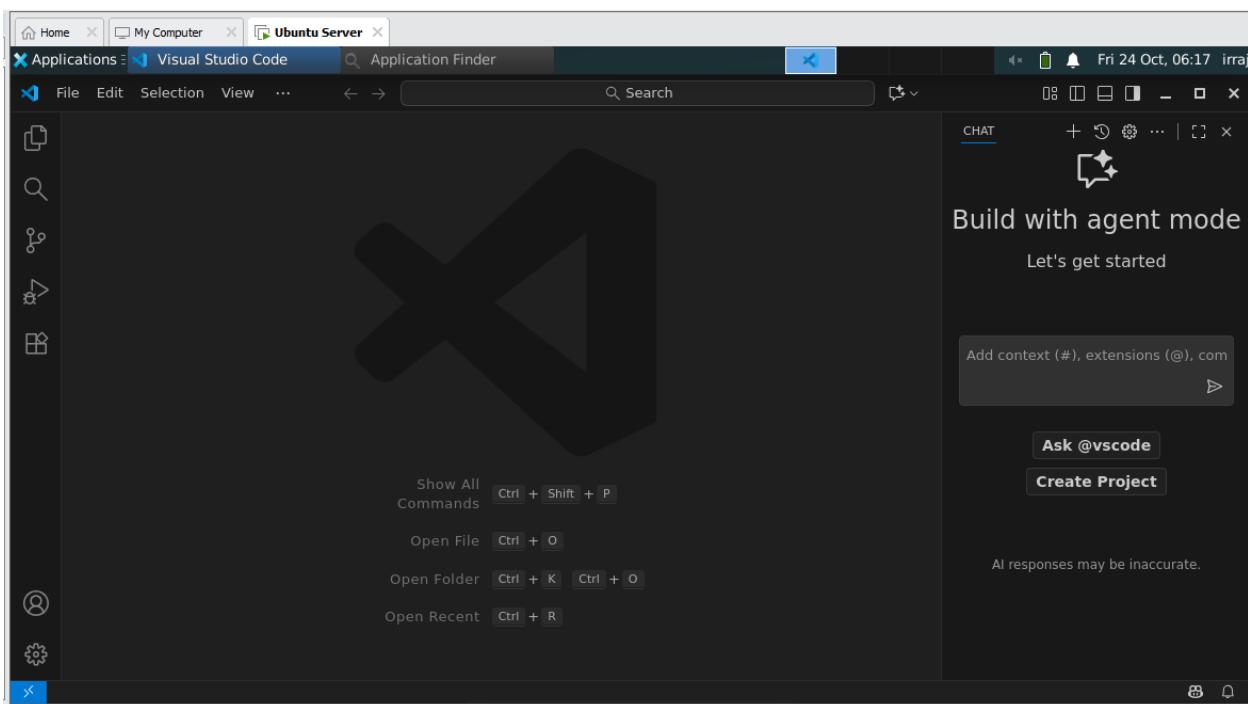
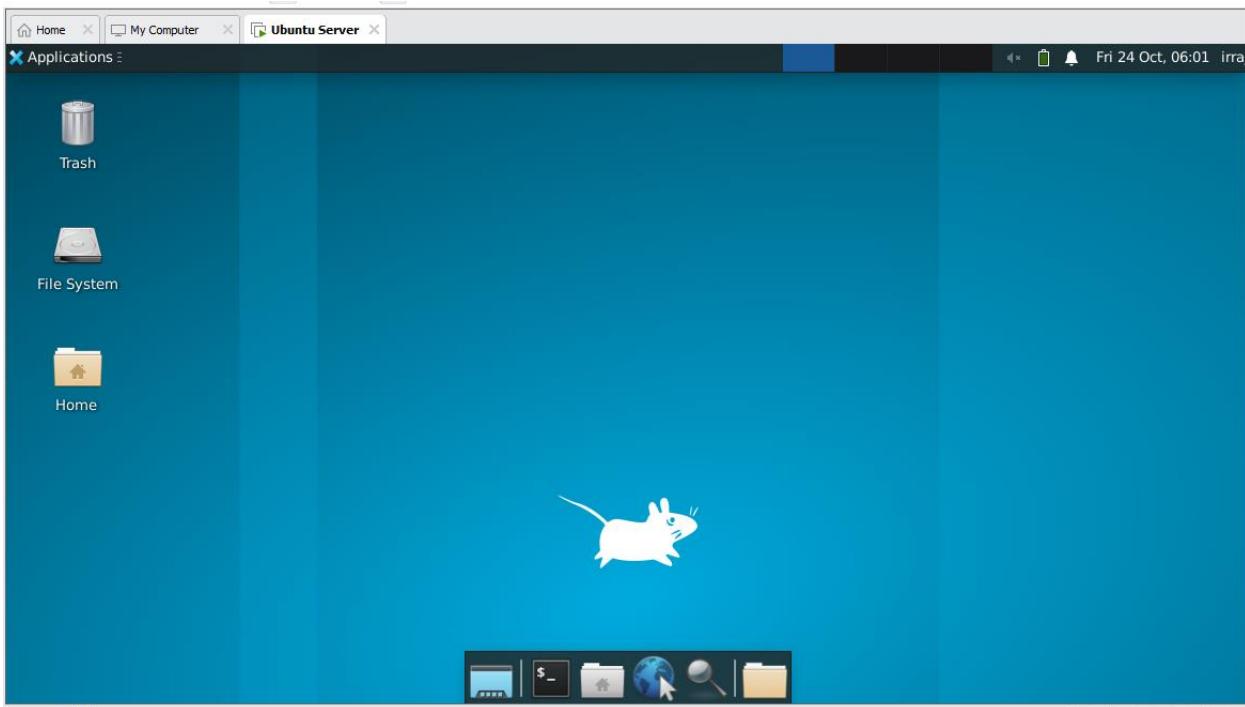
No user sessions are running outdated binaries.
```

```
Options marked [*] produce a lot of output - pipe it through 'less' or 'more' !
ubuntu027@ubuntu:~$ sudo dpkg-reconfigure lightdm
ubuntu027@ubuntu:~$ sudo systemctl restart lightdm
ubuntu027@ubuntu:~$ systemctl status lightdm
● lightdm.service - Light Display Manager
   Loaded: loaded (/lib/systemd/system/lightdm.service; indirect; vendor preset: enabled)
   Active: active (running) since Fri 2025-10-24 05:54:24 UTC; 8s ago
     Docs: man:lightdm(1)
  Process: 157663 ExecStartPre=/bin/sh -c [ "$(basename $(cat /etc/X11/default-display-manager 2>/dev/null))" = "lightdm" ]
 Main PID: 157667 (lightdm)
    Tasks: 7 (limit: 4513)
   Memory: 81.9M
      CPU: 2.225s
     CGroup: /system.slice/lightdm.service
             └─157667 /usr/sbin/lightdm
                   ├─157673 /usr/lib/xorg/Xorg -core :0 -seat seat0 -auth /var/run/lightdm/root/:0 -nolisten tcp vt7 -novtswitch
                   ├─157748 lightdm --session-child 13 20

Oct 24 05:54:24 ubuntu systemd[1]: Starting Light Display Manager...
Oct 24 05:54:24 ubuntu systemd[1]: Started Light Display Manager.
Oct 24 05:54:24 ubuntu lightdm[157667]: Error updating user /org/freedesktop/Accounts/User1000: GDBus.Error:org.freedesktop.Accounts.Error: session opened for user lightdm(uid=120) by user ingroup nopasswdlogin not met
Oct 24 05:54:28 ubuntu lightdm[157682]: Error updating user /org/freedesktop/Accounts/User1000: GDBus.Error:org.freedesktop.Accounts.Error: session opened for user lightdm(uid=120) by user ingroup nopasswdlogin not met
Oct 24 05:54:28 ubuntu lightdm[157682]: pam_unix(lightdm-greeter:session): session opened for user lightdm(uid=120) by user ingroup nopasswdlogin not met
Oct 24 05:54:31 ubuntu lightdm[157748]: pam_succeed_if(lightdm:auth): requirement "user ingroup nopasswdlogin" not met
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ sudo reboot
Connection to 192.168.72.142 closed by remote host.
Connection to 192.168.72.142 closed.
```





TASK 07

```
C:\Users\IRRAJ>sudo apt install google-chrome-stable-y  
'sudo' is not recognized as an internal or external command,  
operable program or batch file.
```

```
C:\Users\IRRAJ>
```

```
Last login: Fri Oct 24 05:00:52 2025 from 192.168.72.1  
ubuntu027@ubuntu:~$ sudo apt install google-chrome-stable -y  
[sudo] password for ubuntu027:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
E: Unable to locate package google-chrome-stable  
ubuntu027@ubuntu:~$
```

Steps (inside the VM)

```
ubuntu027@ubuntu:~$ ls -la /etc/apt  
total 44  
drwxr-xr-x  9 root root 4096 Oct  9 13:39 .  
drwxr-xr-x 122 root root 4096 Oct 24 05:50 ..  
drwxr-xr-x  2 root root 4096 Oct 23 15:56 apt.conf.d  
drwxr-xr-x  2 root root 4096 Apr  8 2022 auth.conf.d  
drwxr-xr-x  2 root root 4096 Apr  8 2022 keyrings  
drwxr-xr-x  2 root root 4096 Oct 23 15:56 preferences.d  
drwxr-xr-x  2 root root 4096 Sep 11 2024 preferences.d.save  
-rw-r--r--  1 root root 2403 Oct  9 13:48 sources.list  
-rw-r--r--  1 root root 2403 Sep 11 2024 sources.list.curtin.orig  
drwxr-xr-x  2 root root 4096 Apr  8 2022 sources.list.d  
drwxr-xr-x  2 root root 4096 Sep 11 2024 trusted.gpg.d  
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ cat /etc/apt/sources.list  
# See http://help.ubuntu.com/community/UpgradeNotes for how to upgrade to  
# newer versions of the distribution.  
deb http://archive.ubuntu.com/ubuntu/ jammy main restricted  
# deb-src http://archive.ubuntu.com/ubuntu/ jammy main restricted  
  
## Major bug fix updates produced after the final release of the  
## distribution.  
deb http://archive.ubuntu.com/ubuntu/ jammy-updates main restricted  
# deb-src http://archive.ubuntu.com/ubuntu/ jammy-updates main restricted  
  
## N.B. software from this repository is ENTIRELY UNSUPPORTED by the Ubuntu  
## team. Also, please note that software in universe WILL NOT receive any  
## review or updates from the Ubuntu security team.  
deb http://archive.ubuntu.com/ubuntu/ jammy universe  
# deb-src http://archive.ubuntu.com/ubuntu/ jammy universe  
deb http://archive.ubuntu.com/ubuntu/ jammy-updates universe  
# deb-src http://archive.ubuntu.com/ubuntu/ jammy-updates universe
```

```
## review or updates from the Ubuntu security team.
deb http://archive.ubuntu.com/ubuntu/ jammy universe
# deb-src http://archive.ubuntu.com/ubuntu/ jammy universe
deb http://archive.ubuntu.com/ubuntu/ jammy-updates universe
# deb-src http://archive.ubuntu.com/ubuntu/ jammy-updates universe

## N.B. software from this repository is ENTIRELY UNSUPPORTED by the Ubuntu
## team, and may not be under a free licence. Please satisfy yourself as to
## your rights to use the software. Also, please note that software in
## multiverse WILL NOT receive any review or updates from the Ubuntu
## security team.
deb http://archive.ubuntu.com/ubuntu/ jammy multiverse
# deb-src http://archive.ubuntu.com/ubuntu/ jammy multiverse
deb http://archive.ubuntu.com/ubuntu/ jammy-updates multiverse
# deb-src http://archive.ubuntu.com/ubuntu/ jammy-updates multiverse

## N.B. software from this repository may not have been tested as
## extensively as that contained in the main release, although it includes
## newer versions of some applications which may provide useful features.
## Also, please note that software in backports WILL NOT receive any review
## or updates from the Ubuntu security team.
deb http://archive.ubuntu.com/ubuntu/ jammy-backports main restricted universe multiverse
# deb-src http://archive.ubuntu.com/ubuntu/ jammy-backports main restricted universe multiverse

deb http://security.ubuntu.com/ubuntu/ jammy-security main restricted
# deb-src http://security.ubuntu.com/ubuntu/ jammy-security main restricted
deb http://security.ubuntu.com/ubuntu/ jammy-security universe
# deb-src http://security.ubuntu.com/ubuntu/ jammy-security universe
deb http://security.ubuntu.com/ubuntu/ jammy-security multiverse
# deb-src http://security.ubuntu.com/ubuntu/ jammy-security multiverse
```

```
"$ deb-src http://security.ubuntu.com/ubuntu/ jammy-security main
ubuntu027@ubuntu:~$ ls -la /etc/apt/sources.list.d/
total 8
drwxr-xr-x 2 root root 4096 Apr  8 2022 .
drwxr-xr-x 9 root root 4096 Oct  9 13:39 ..
ubuntu027@ubuntu:~$ "
```

```
cat. /etc/apt/sources.list.d/ubuntu.sources: No such file or directory
ubuntu027@ubuntu:~$ echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/google.gpg] http://dl.google.com/
stable main" | sudo tee /etc/apt/sources.list.d/google-chrome.list > /dev/null
tee: /etc/apt/sources.list.d/google-chrome.list: No such file or directory
ubuntu027@ubuntu:~$ echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/google.gpg] http://dl.google.com/
stable main" | sudo tee /etc/apt/sources.list.d/google-chrome.list > /dev/null
ubuntu027@ubuntu:~$ ls -la /etc/apt/sources.list.d/
total 12
drwxr-xr-x 2 root root 4096 Oct 24 06:38 .
drwxr-xr-x 9 root root 4096 Oct  9 13:39 ..
-rw-r--r-- 1 root root 107 Oct 24 06:38 google-chrome.list
ubuntu027@ubuntu:~$
```

```
stable main" | sudo tee /etc/apt/sources.list.d/google-chrome.list > /dev/null
ubuntu027@ubuntu:~$ ls -la /etc/apt/sources.list.d/
total 12
drwxr-xr-x 2 root root 4096 Oct 24 06:38 .
drwxr-xr-x 9 root root 4096 Oct  9 13:39 ..
-rw-r--r-- 1 root root 107 Oct 24 06:38 google-chrome.list
ubuntu027@ubuntu:~$ sudo mkdir -p /etc/apt/keyrings
ubuntu027@ubuntu:~$ curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/keyrings/google.gpg
curl: (6) Could not resolve host: dl.google.com
gpg: no valid OpenPGP data found.
ubuntu027@ubuntu:~$ 
ubuntu027@ubuntu:~$ curl -fsSL https://dl.google.com/linux/linux_signing_key.pub | sudo gpg --dearmor -o /etc/apt/keyrings/google.gpg
File '/etc/apt/keyrings/google.gpg' exists. Overwrite? (y/N) y
ubuntu027@ubuntu:~$ sudo apt update
0% [Connecting to archive.ubuntu.com]
```

```
(185.125.190.82). - connect (111: Connection refused) [IP: 185.125.190.82 80]
W: Some index files failed to download. They have been ignored, or old ones used instead.
ubuntu027@ubuntu:~$ 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
  libgif7 libpcsslite1 openjdk-11-jre openjdk-11-jre-headless
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  fonts-liberation
The following NEW packages will be installed:
  fonts-liberation google-chrome-stable
0 upgraded, 2 newly installed, 0 to remove and 8 not upgraded.
Need to get 121 MB of archives.
After this operation, 398 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 fonts-liberation all 1:1.07.4-11 [822 kB]
Get:2 http://dl.google.com/linux/chrome/deb stable/main amd64 google-chrome-stable amd64 141.0.7390.122-1 [120 MB]
11% [2 google-chrome-stable 814 kB/120 MB 1%]
```

```
try: sudo apt install <deb name>
ubuntu027@ubuntu:~$ google-chrome-stable --version
Google Chrome 141.0.7390.122
ubuntu027@ubuntu:~$
```

TASK 08

```
Google Chrome 141.0.7390.122
ubuntu027@ubuntu:~$ sudo add-apt-repository ppa:ubuntuhandbook1/audacity -y
Repository: 'deb https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu/ jammy 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.
Adding deb entry to /etc/apt/sources.list.d/ubuntuhandbook1-ubuntu-audacity-jammy.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/ubuntuhandbook1-ubuntu-audacity-jammy.list
Adding key to /etc/apt/trusted.gpg.d/ubuntuhandbook1-ubuntu-audacity.gpg with fingerprint F4E48910A020E77056748
8480447DDF
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Get:4 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu jammy InRelease [18.3 kB]
Hit:5 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:6 https://dl.google.com/linux/chrome/deb stable InRelease
Get:7 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu jammy/main amd64 Packages [3,044 B]
Get:8 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu jammy/main Translation-en [1,692 B]
Fetched 23.1 kB in 2s (9,629 B/s)
```

```
Reading package lists... Done
ubuntu027@ubuntu:~$ sudo apt update
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu jammy InRelease
Hit:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:5 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:6 https://dl.google.com/linux/chrome/deb stable InRelease
Reading package lists... 20%
```

```
8 packages can be upgraded. Run apt list --upgradable to see them.
ubuntu027@ubuntu:~$ sudo apt install audacity -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 libpcsc-lite1 openjdk-11-jre openjdk-11-jre-headless
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  audacity-data libdouble-conversion3 libflac++6v5 libgail-common libgail18 libgtk2.0-0 libgtk2.0-bin libgtk2.0-common libid3tag0 liblilv-0-0 libmd4c0 libopusfile0 libpcre2-16-0 libpcre2-32-0 libportaudio2 libportmidi0 libportsmf0v5 libqt5core5a libqt5dbus5 libqt5gui5 libqt5network5 libqt5svg5 libqt5widgets5 libqt5x11extras5 libserd-0-0 libssrd-0-0 libsoundtouch1 libratoom-0-0 libsuil-0-0 libvamp-hostsdk3v5 libwxbase3.2-0 libwxgtk3.2-0 libxcb-icccm4 libxcb-image0 libxcb-keysyms1 libxcb-render-util0 libxcb-xinerama0 libxcb-xinput0 libxcb-xkb1 libxcb-xkbcommon-x11-0 qt5-gtk-platformtheme qttranslations5-l10n
Suggested packages:
  ladspa-plugin qt5-image-formats-plugins qwayland5 serdi sordi
The following NEW packages will be installed:
  audacity audacity-data libdouble-conversion3 libflac++6v5 libgail-common libgail18 libgtk2.0-0 libgtk2.0-bin libgtk2.0-common libid3tag0 liblilv-0-0 libmd4c0 libopusfile0 libpcre2-16-0 libpcre2-32-0 libportaudio2 libportmidi0 libportsmf0v5 libqt5core5a libqt5dbus5 libqt5gui5 libqt5network5 libqt5svg5 libqt5widgets5 libqt5x11extras5 libserd-0-0 libssrd-0-0 libsoundtouch1 libratoom-0-0 libsuil-0-0 libvamp-hostsdk3v5 libwxbase3.2-0 libwxgtk3.2-0 libxcb-icccm4 libxcb-image0 libxcb-keysyms1 libxcb-render-util0 libxcb-xinerama0 libxcb-xinput0 libxcb-xkb1 libxcb-xkbcommon-x11-0 qt5-gtk-platformtheme qttranslations5-l10n
0 upgraded, 43 newly installed, 0 to remove and 8 not upgraded.
```

```
Get:1 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libdouble-conversion3 amd64 3.1.7-4 [39.0 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libpcre2-16-0 amd64 10.39-3ubuntu0.1 [203 kB]
Get:3 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu jammy/main amd64 audacity-data all 3.7.5-0ubuntu22.04 [2,849 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 libqt5core5a amd64 5.15.3+dfsg-2ubuntu0.2 [2,000 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libmd4c0 amd64 0.4.8-1 [42.0 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 libqt5dbus5 amd64 5.15.3+dfsg-2ubuntu0.2 [222 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 libqt5network5 amd64 5.15.3+dfsg-2ubuntu0.2 [73.0 kB]
Get:8 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-icccm4 amd64 0.4.1-1.1build2 [11.5 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-image0 amd64 0.4.0-2 [11.5 kB]
Get:10 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-keysyms1 amd64 0.4.0-1build3 [8,746 B]
Get:11 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-render-util0 amd64 0.3.9-1build3 [10.3 kB]
Get:12 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-xinerama0 amd64 1.14-3ubuntu3 [5,414 B]
Get:13 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-xinput0 amd64 1.14-3ubuntu3 [34.3 kB]
Get:14 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxcb-xkb1 amd64 1.14-3ubuntu3 [32.8 kB]
Get:15 http://archive.ubuntu.com/ubuntu jammy/main amd64 libxkbcommon-x11-0 amd64 1.4.0-1 [14.4 kB]
Get:16 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 libqt5gui5 amd64 5.15.3+dfsg-2ubuntu0.2 [3,722 kB]
Get:17 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 libqt5widgets5 amd64 5.15.3+dfsg-2ubuntu0.2 [2,000 kB]
Get:18 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libqt5svg5 amd64 5.15.3-1 [149 kB]
Get:19 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libflac++6v5 amd64 1.3.3-2ubuntu0.2 [32.5 kB]
Get:20 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libid3tag0 amd64 0.15.1b-14 [31.3 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libserd-0-0 amd64 0.30.10-2 [40.8 kB]
Get:22 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libssrd-0-0 amd64 0.16.8-2 [21.2 kB]
Get:23 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libratoom-0-0 amd64 0.6.8-1 [17.0 kB]
Get:24 http://archive.ubuntu.com/ubuntu jammy/universe amd64 liblilv-0-0 amd64 0.24.12-2 [42.8 kB]
Get:25 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libopusfile0 amd64 0.9+20170913-1.1build1 [43.2 kB]
Get:26 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libportaudio2 amd64 19.6.0-1.1 [65.3 kB]
Get:27 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libportmidi0 amd64 1:217-6 [17.8 kB]
Get:28 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libportsmf0v5 amd64 0.1+5v20191010_5ubuntu2 [55.7 kB]
```

```
0 upgraded, 0 newly installed, 0 to remove and 8 not upgraded.  
ubuntu027@ubuntu:~$ echo $XDG_CURRENT_DESKTOP  
  
ubuntu027@ubuntu:~$ sudo add-apt-repository ppa:obsproject/obs-studio -y  
Repository: 'deb https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu/ jammy main'  
Description:  
Latest stable release of OBS Studio  
More info: https://launchpad.net/~obsproject/+archive/ubuntu/obs-studio  
Adding repository.  
Adding deb entry to /etc/apt/sources.list.d/obsproject-ubuntu-obs-studio-jammy.list  
Adding disabled deb-src entry to /etc/apt/sources.list.d/obsproject-ubuntu-obs-studio-jammy.list  
Adding key to /etc/apt/trusted.gpg.d/obsproject-ubuntu-obs-studio.gpg with fingerprint BC7345F522079769F5BBE987EFC71  
425E228  
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease  
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease  
Hit:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease  
Get:4 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu jammy InRelease [18.1 kB]  
Hit:5 http://archive.ubuntu.com/ubuntu jammy-backports InRelease  
Hit:6 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu jammy InRelease  
Hit:7 https://dl.google.com/linux/chrome/deb stable InRelease  
Get:8 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu jammy/main amd64 Packages [1,128 B]  
Get:9 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu jammy/main Translation-en [160 B]  
Fetched 19.3 kB in 3s (6,747 B/s)
```

```
8 packages can be upgraded. Run 'apt list --upgradable' to see them.  
ubuntu027@ubuntu:~$ sudo apt install obs-studio -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 libpcsselite1 openjdk-11-jre openjdk-11-jre-headless  
Use 'sudo apt autoremove' to remove them.  
The following additional packages will be installed:  
  i965-va-driver intel-media-va-driver libaacs0 libao0m3 libass9 libavcodec58 libavdevice58 libavfilter7 libavformat58  
  libavutil56 libbb2-1 libbdplus0 libblas3 libbluray2 libbs2b0 libcdio-cdda2 libcdio-paranoia2 libcdio19  
  libchromaprint1 libcodec2-1.0 libdavids5 libdc1394-25 libdecor-0-0 libdecor-0-plugin-1-cairo libfdk-aac2 libflite1  
  libgfortran5 libgme0 libgsml1 libigdmm12 liblapack3 libluajit-5.1-2 libluajit-5.1-common libmbcrypto7 libmbdtls14  
  libmbdx509-1 libmfx1 libmysofa1 libnorm1 libopenal-data libopenal1 libopenmp7 libpgm-5.3-0 libpocketsphinx3  
  libpostproc55 libqrcodegenccp1 libqt6core6 libqt6dbus6 libqt6gui6 libqt6network6 libqt6opengl6 libqt6qml16  
  libqt6qmlmodels6 libqt6quick6 libqt6svg6 libqt6waylandclient6 libqt6waylandcompositor6  
  libqt6waylandeglclienthwintegration6 libqt6waylandeglcompositorhwintegration6 libqt6widgets6  
  libqt6wlshellintegration6 libqt6xml16 libquadmath0 librabbitmq4 librubberband2 libSDL2-2.0-0 libshine3 libsnappy1v5  
  libsdio7.0 libspinxbase3 libsr1.4-gnutls libssh-gcrypt-4 libswrample3 libswscale5 libts0 libudfread0 libva-drm2  
  libva-x11-2 libva2 libvpaul1 libvidstab1.1 libvp12 libx264-163 libx265-199 libxcb-composite0 libxvidcore4 libzimg2  
  libzmq5 libzvbi-common libzvbi0 mesa-va-drivers mesa-vdpau-drivers ocl-icd-libopencl1 pocketsphinx-en-us
```

```
libmbdx509-1 libmfx1 libmysofa1 libnorm1 libopenal-data libopenal1 libopenmp7 libpgm-5.3-0 libpocketsphinx3  
libpostproc55 libqrcodegenccp1 libqt6core6 libqt6dbus6 libqt6gui6 libqt6network6 libqt6opengl6 libqt6qml16  
libqt6qmlmodels6 libqt6quick6 libqt6svg6 libqt6waylandclient6 libqt6waylandcompositor6  
libqt6waylandeglclienthwintegration6 libqt6waylandeglcompositorhwintegration6 libqt6widgets6  
libqt6wlshellintegration6 libqt6xml16 libquadmath0 librabbitmq4 librubberband2 libSDL2-2.0-0 libshine3 libsnappy1v5  
libsdio7.0 libspinxbase3 libsr1.4-gnutls libssh-gcrypt-4 libswrample3 libswscale5 libts0 libudfread0 libva-drm2  
libva-x11-2 libva2 libvpaul1 libvidstab1.1 libvp12 libx264-163 libx265-199 libxcb-composite0 libxvidcore4 libzimg2  
libzmq5 libzvbi-common libzvbi0 mesa-va-drivers mesa-vdpau-drivers ocl-icd-libopencl1 pocketsphinx-en-us  
qt6-gtk-platformtheme qt6-qpa-plugins qt6-wayland va-driver-all vdpau-driver-all  
uggested packages:  
i965-va-driver-shaders libcuda1 libnvcuid1 libnvidia-encode1 libbluray-bdj qt6-qmltooling-plugins sndiod  
libvdpau-va-gl1  
he following NEW packages will be installed:  
i965-va-driver intel-media-va-driver libaacs0 libao0m3 libass9 libavcodec58 libavdevice58 libavfilter7 libavformat58  
libavutil56 libbb2-1 libbdplus0 libblas3 libbluray2 libbs2b0 libcdio-cdda2 libcdio-paranoia2 libcdio19  
libchromaprint1 libcodec2-1.0 libdavids5 libdc1394-25 libdecor-0-0 libdecor-0-plugin-1-cairo libfdk-aac2 libflite1  
libgfortran5 libgme0 libgsml1 libigdmm12 liblapack3 libluajit-5.1-2 libluajit-5.1-common libmbcrypto7 libmbdtls14  
libmbdx509-1 libmfx1 libmysofa1 libnorm1 libopenal-data libopenal1 libopenmp7 libpgm-5.3-0 libpocketsphinx3  
libpostproc55 libqrcodegenccp1 libqt6core6 libqt6dbus6 libqt6gui6 libqt6network6 libqt6opengl6 libqt6qml16  
libqt6qmlmodels6 libqt6quick6 libqt6svg6 libqt6waylandclient6 libqt6waylandcompositor6  
libqt6waylandeglclienthwintegration6 libqt6waylandeglcompositorhwintegration6 libqt6widgets6  
libqt6wlshellintegration6 libqt6xml16 libquadmath0 librabbitmq4 librubberband2 libSDL2-2.0-0 libshine3 libsnappy1v5  
libsdio7.0 libspinxbase3 libsr1.4-gnutls libssh-gcrypt-4 libswrample3 libswscale5 libts0 libudfread0 libva-drm2  
libva-x11-2 libva2 libvpaul1 libvidstab1.1 libvp12 libx264-163 libx265-199 libxcb-composite0 libxvidcore4 libzimg2  
libzmq5 libzvbi-common libzvbi0 mesa-va-drivers mesa-vdpau-drivers ocl-icd-libopencl1 pocketsphinx-en-us  
qt6-gtk-platformtheme qt6-qpa-plugins qt6-wayland va-driver-all vdpau-driver-all  
upgraded, 100 newly installed, 0 to remove and 8 not upgraded.  
eed to get 193 MB of archives.  
fter this operation, 576 MB of additional disk space will be used.  
et:1 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libva2 amd64 2.14.0-1 [65.0 kB]
```

```
Setting up libqt6wlshellintegration6:amd64 (6.2.4-1) ...
Setting up libchromaprint1:amd64 (1.5.1-2) ...
Setting up qt6-qpa-plugins:amd64 (6.2.4+dfsg-2ubuntu1.1) ...
Setting up libqt6waylandcompositor6:amd64 (6.2.4-1) ...
Setting up libavformat58:amd64 (7:4.4.2-0ubuntu0.22.04.1) ...
Setting up libqt6waylandeglcompositorhwintegration6:amd64 (6.2.4-1) ...
Setting up libqt6waylandeglclienthwintegration6:amd64 (6.2.4-1) ...
Setting up libavfilter7:amd64 (7:4.4.2-0ubuntu0.22.04.1) ...
Setting up qt6-wayland:amd64 (6.2.4-1) ...
Setting up libavdevice58:amd64 (7:4.4.2-0ubuntu0.22.04.1) ...
Setting up obs-studio (30.2.3-0obsproject1~jammy) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu3) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.35-0ubuntu3.11) ...
Processing triggers for man-db (2.10.2-1) ...
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.
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ obs --version
OBS Studio - 30.2.3
ubuntu027@ubuntu:~$
```

```
ubuntu027@ubuntu:~$ obs
qt.qpa.xcb: could not connect to display
qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it was found.
This application failed to start because no Qt platform plugin could be initialized. Reinstalling the application may fix this problem.

Available platform plugins are: eglfs, linuxfb, minimal, minimalegl, offscreen, vkkhrendispatcher, vnc, wayland-egl, wayland-xcb.
```

TASK 09

```
VIM - Vi IMproved  
version 8.2.2121  
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 version8<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
```

```
ubuntu027@ubuntu:~/Lab5$ cd ~/Lab5  
ubuntu027@ubuntu:~/Lab5$ vim k8s-sample.yaml
```

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

```
"k8s-sample.yaml" 37L, 310B
```

37, 0-1

Bo

TASK 10

```
ubuntu027@ubuntu:~/Lab5$ ubuntu027@ubuntu:~/Lab5$ cat vim k8s-sample.yaml
```

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

```
ubuntu027@ubuntu:~/Lab5$
```

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

```
ubuntu027@ubuntu:~/Lab5$ vim k8s-sample.yaml
ubuntu027@ubuntu:~/Lab5$ cat vim k8s-sample.yaml
```

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

TASK 11

```
ubuntu027@ubuntu:~/Lab5$ cd ~/Lab5
ubuntu027@ubuntu:~/Lab5$ vim k8s-sample.yaml
```

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

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

b
~
~
e

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

~
1 change: before #6 24 seconds ago

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

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

TASK12

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

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

~
nginx

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

b
~

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

```
aapiVersion: v1
 kind: Pod
 metadata:
b   name: nginx-pod
 spec:
d     containers:
e       - name: nginx
f     image:nginx:1.19
g       ports:
h         - containerPort: 80
i           restartPolicy: Always
j             # nginx
k             # nginx
l
m
n
o
p
q
r
s
t
u
v
w
x
y
z
ee"nginx-sample.yaml" 291 392B written
```

```
aapiVersion: v1
 kind: Pod
 metadata:
b   name: nginx-pod
 spec:
d     containers:
e       - name: nginx
f     image:nginx:1.19
g       ports:
h         - containerPort: 80
i           restartPolicy: Always
j             # nginx
k             # nginx
l
m
n
o
p
q
r
s
t
u
v
w
x
y
z
ee/nginx
```

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

```
apiVersion: v1
kind: Pod
metadata:
  name: webapp-pod
spec:
  containers:
    - name: webapp
      image:webapp:1.19
  ports:
    - containerPort: 80
      restartPolicy: Always
      # webapp
      # webapp
~5 substitutions on 5 lines
```