

CC LAB 5

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BSE-2023-014

task1_java_suggestion.png

```
to check for new updates run: sudo apt update
arshia@ubuntu1804:~$ java
Command 'java' not found, but can be installed with:
sudo apt install openjdk-17-jre-headless  # version 17.0.14+7-1~24.04, or
sudo apt install openjdk-21-jre-headless  # version 21.0.6+7-1~24.04.1
sudo apt install default-jre           # version 2:1.17-75
sudo apt install openjdk-11-jre-headless # version 11.0.26+4-1ubuntu1~24.04
sudo apt install openjdk-8-jre-headless # version 8u442-b06~us1-0ubuntu1~24.04
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
arshia@ubuntu1804:~$
```

task1_java_install.png

```
** unable to locate package install
arshia@ubuntu1804:~$ sudo apt install default-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  adwaita-icon-theme alsamixer-conf at-spi2-common at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service
  default-jre-headless fontconfig fonts-dejavu-extra gsettings-desktop-schemas gtk-update-icon-cache hicolor-icon-theme java
  libasound2-data libasound2t64 libatk-bridge2.0-0t64 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0t64 libatspi2.0-0t64 libavahi-clie
  libavahi-common-data libavahi-common3 libcairo-gobject2 libcairo2 libcolor2 libcups2t64 libdatriel libdconf1 libdrm-amdgpu libdrm-intel li
  libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgifi7 libgl libgl-mesa-dri libglvnd libglx-mesa0 libglx0 libgraphite2-3
  libgtk-3-bin libgtk-3-common libharfbuzz0b libice6 liblcms2-2 liblvm19 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0 li
  libpixman-1-0 librsvg2-2 common libsm6 libthai-data libthai libvulkan libwayland-client0 libwayland-cursor0 libwayland-egl1 libwa
  libx11-xcb libxau7 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shm0 libxcb-sync1 libxcb-xfix
  libcomposite1 libcursor1 libdamage1 libfixes3 libxft2 libxi libxinerama1 libxbfile1 libxml6 libxrander2 libxrender1 libxshmfence1 libxt
  libxv1 libxf86dg1 libxf86vmi mesa-libgallium mesa-vulkan-drivers openjdk-21-jre openjdk-21-jre-headless session-migration ubuntu-mono x11-
  X11-utils
Suggested packages:
  alsamixer libasound2-plugins colord cups-common gvfs liblcms2-utils pcscd librsvg2-bin libnss-mdns fonts-ipafont-gothic fonts-ipafont-mincho
  fonts-way-microhei | fonts-way-zhhei fonts-indic mesa-utils
Recommended packages:
  luit
The following NEW packages will be installed:
  adwaita-icon-theme alsamixer-conf at-spi2-common at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service de
  default-jre-headless fontconfig fonts-dejavu-extra gsettings-desktop-schemas gtk-update-icon-cache hicolor-icon-theme java
  libasound2-data libasound2t64 libatk-bridge2.0-0t64 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0t64 libatspi2.0-0t64 libavahi-clie
  libavahi-common-data libavahi-common3 libcairo-gobject2 libcairo2 libcolor2 libcups2t64 libdatriel libdconf1 libdrm-amdgpu libdrm-intel li
  libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgifi7 libgl libgl-mesa-dri libglvnd libglx-mesa0 libglx0 libgraphite2-3
  libgtk-3-bin libgtk-3-common libharfbuzz0b libice6 liblcms2-2 liblvm19 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0 li
  libpixman-1-0 librsvg2-2 common libsm6 libthai-data libthai libvulkan libwayland-client0 libwayland-cursor0 libwayland-egl1 libwa
  libx11-xcb libxau7 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shm0 libxcb-sync1 libxcb-xfix
  libcomposite1 libcursor1 libdamage1 libfixes3 libxft2 libxi libxinerama1 libxbfile1 libxml6 libxrander2 libxrender1 libxshmfence1 libxt
  libxv1 libxf86dg1 libxf86vmi mesa-libgallium mesa-vulkan-drivers openjdk-21-jre openjdk-21-jre-headless session-migration ubuntu-mono x11-
  X11-utils
0 upgraded, 106 newly installed, 0 to remove and 0 not upgraded.
Need to get 118 MB of archives.
After this operation, 546 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

```
Get:50 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [183 kB]
Get:51 http://pk.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [117 kB]
Get:52 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [8,564 kB]
Get:53 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [7,768 kB]
Get:54 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [280 kB]
Get:55 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [54.8 kB]
Get:56 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 kB]
Get:57 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [397 kB]
Get:58 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [142 kB]
Get:59 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [45.0 kB]
Get:60 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [13.7 kB]
Get:62 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [14.1 kB]
Get:63 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3,608 kB]
Get:64 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [212 kB]
Get:65 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [532 kB]
Get:66 http://pk.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 kB]
Get:67 http://pk.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 kB]
Get:68 http://pk.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 c-n-f Components [216 kB]
Get:69 http://pk.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 c-n-f Metadata [116 kB]
Get:70 http://pk.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [10.3 kB]
Get:71 http://pk.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [10.5 kB]
Get:72 http://pk.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [17.6 kB]
Get:73 http://pk.archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [1,016 kB]
Get:74 http://pk.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 kB]
Get:75 http://pk.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 c-n-f Metadata [116 kB]
Get:40 http://pk.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Fetched 35.6 MB in 12min 40s (46.9 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
38 packages can be upgraded. Run 'apt list --upgradable' to see them.
arshia@ubuntu1004:~$ -
```

```
Preselecting packages for configuration...
Preparing to unpack .../069-libxcb-randr0_1.15-1ubuntu2_amd64.deb ...
Unpacking libxcb-randr0:amd64 (1.15-1ubuntu2) ...
Selecting previously unselected package libxcb-sync1:amd64.
Preparing to unpack .../070-libxcb-sync1_1.15-1ubuntu2_amd64.deb ...
Unpacking libxcb-sync1:amd64 (1.15-1ubuntu2) ...
Selecting previously unselected package libxcb-xfixes0:amd64.
Preparing to unpack .../071-libxcb-xfixes0_1.15-1ubuntu2_amd64.deb ...
Unpacking libxcb-xfixes0:amd64 (1.15-1ubuntu2) ...
Selecting previously unselected package libxshmfence1:amd64.
Preparing to unpack .../072-libxshmfence1_1.3-1build5_amd64.deb ...
Unpacking libxshmfence1:amd64 (1.3-1build5) ...
Selecting previously unselected package libxxf86vm1:amd64.
Preparing to unpack .../073-libxxf86vm1_1%3a1.4-1build4_amd64.deb ...
Unpacking libxxf86vm1:amd64 (1:1.4-1build4) ...
Selecting previously unselected package libvulkan1:amd64.
Preparing to unpack .../074-libvulkan1_1.3.275.0-1build1_amd64.deb ...
Unpacking libvulkan1:amd64 (1.3.275.0-1build1) ...
Selecting previously unselected package libdrm-amdgpu1:amd64.
Preparing to unpack .../075-libdrm-amdgpu1_2.4.120-2build1_amd64.deb ...
Unpacking libdrm-amdgpu1:amd64 (2.4.120-2build1) ...
Selecting previously unselected package libpciaccess0:amd64.
Preparing to unpack .../076-libpciaccess0_0.17-3build1_amd64.deb ...
Unpacking libpciaccess0:amd64 (0.17-3build1) ...
Selecting previously unselected package libdrm-intel1:amd64.
Preparing to unpack .../077-libdrm-intel1_2.4.120-2build1_amd64.deb ...
Unpacking libdrm-intel1:amd64 (2.4.120-2build1) ...
Selecting previously unselected package libdrm-nouveau2:amd64.
Preparing to unpack .../078-libdrm-nouveau2_2.4.120-2build1_amd64.deb ...
Unpacking libdrm-nouveau2:amd64 (2.4.120-2build1) ...
Selecting previously unselected package libdrm-radeon1:amd64.
Preparing to unpack .../079-libdrm-radeon1_2.4.120-2build1_amd64.deb ...
Unpacking libdrm-radeon1:amd64 (2.4.120-2build1) ...
Selecting previously unselected package libllvm17t64:amd64.
Preparing to unpack .../080-libllvm17t64_1%3a17.0.6-9ubuntu1_amd64.deb ...
Unpacking libllvm17t64:amd64 (1:17.0.6-9ubuntu1) ...
```

```
Progress: [ 37%] [#####.....]
```

M, click inside or press Ctrl+G.

```
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:S2AFIR_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:Trustwave_Global_Root_CA_G4.pem
Adding debian:Trustwave_Global_ECC_P256_Certification_Authority.pem
Adding debian:Trustwave_Global_ECC_P384_Certification_Authority.pem
Adding debian:T-TelieSec_GlobalRoot_Class_2.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:X Ramp_Global_CA_Root.pem
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) ...
Processing triggers for libgdk-pixbuf2.0-0:amd64 (2.42.10+dfsg-3ubuntu0.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
arshia@ubuntu1804:~$
```

this VM, click inside or press Ctrl+G.

task1_java_version.png

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
arshia@ubuntu1804:~$ 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)
arshia@ubuntu1804:~$
```

task1_java_remove.png

task1_java_not_found.png

```
arshia@ubuntu1804:~$  
arshia@ubuntu1804:~$ java --version  
-bash: /usr/bin/java: No such file or directory  
arshia@ubuntu1804:~$
```

task1_hash_clear.png

```
arshia@ubuntu1804:~$ Java --version
-bash: /usr/bin/java: No such file or directory
arshia@ubuntu1804:~$ hash -r
arshia@ubuntu1804:~$ java
Command 'java' not found, but can be installed with:
sudo apt install openjdk-17-jre-headless # version 17.0.16+8~us1-0ubuntu1~24.04.1, or
sudo apt install openjdk-21-jre-headless # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install default-jre          # version 2:1.17-75
sudo apt install openjdk-11-jre-headless # version 11.0.28+6~ubuntu1~24.04.1
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
arshia@ubuntu1804:~$
```

Task 2 - Install & Remove Java using apt-get (Explicitly)

task2_aptget_install.png

```
arshia@ubuntu1804:~$ java
Command 'java' not found, but can be installed with:
sudo apt install openjdk-17-jre-headless # version 17.0.16+8~us1-0ubuntu1~24.04.1, or
sudo apt install openjdk-21-jre-headless # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install default-jre          # version 2:1.17-75
sudo apt install openjdk-11-jre-headless # version 11.0.28+6-1ubuntu1~24.04.1
sudo apt install openjdk-25-jre-headless # version 25+36-1~24.04.2
sudo apt install openjdk-8-jre-headless # version 8u462-ga~us1-0ubuntu2~24.04.2
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1
sudo apt install openjdk-22-jre-headless # version 22~22ea-1
arshia@ubuntu1804:~$ sudo apt-get update

sudo
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [208 B]
Get:8 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Fetched 200 kB in 2s (129 kB/s)
Reading package lists... Done
arshia@ubuntu1804:~$
```

task2_java_version_after_aptget.png

```
Reading package lists... Done
arshia@ubuntu1804:~$ java --version
Command 'java' not found, but can be installed with:
sudo apt install openjdk-17-jre-headless # version 17.0.16+8~us1-0ubuntu1~24.04.1, or
sudo apt install openjdk-21-jre-headless # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install default-jre          # version 2:1.17-75
sudo apt install openjdk-11-jre-headless # version 11.0.28+6-1ubuntu1~24.04.1
sudo apt install openjdk-25-jre-headless # version 25+36-1~24.04.2
sudo apt install openjdk-8-jre-headless # version 8u462-ga~us1-0ubuntu2~24.04.2
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1
sudo apt install openjdk-22-jre-headless # version 22~22ea-1
arshia@ubuntu1804:~$
```

task2_aptget_remove.png

```
Sudo apt install openjdk-22-jre-headless # version 22~22ea-1
arshia@ubuntu1804:~$ sudo apt-get remove default-jre -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package 'default-jre' is not installed, so not removed
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
arshia@ubuntu1804:~$
```

task2_hash_after_remove.png

```
Package 'default-jre' is not installed, so not removed
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
arshia@ubunto1804:~$ hash -r
arshia@ubunto1804:~$ java
Command 'java' not found, but can be installed with:
sudo apt install openjdk-17-jre-headless  # version 17.0.16+8~us1-0ubuntu1~24.04.1, or
sudo apt install openjdk-21-jre-headless  # version 21.0.8+9~us1-0ubuntu1~24.04.1
sudo apt install default-jre           # version 2:1.17-75
sudo apt install openjdk-11-jre-headless # version 11.0.28+6-1ubuntu1~24.04.1
sudo apt install openjdk-25-jre-headless # version 25+36-1~24.04.2
sudo apt install openjdk-8-jre-headless # version 8u462+ga~us1-0ubuntu2~24.04.2
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1
sudo apt install openjdk-22-jre-headless # version 22~22ea-1
arshia@ubunto1804:~$
```

Task 3 - apt update vs apt upgrade - Run & Explain

task3_apt_update.png

apt update refreshes the local package index — it does not change installed packages.

```
arshia@ubunto1804:~$ sudo apt update
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
arshia@ubunto1804:~$
```

task3_apt_upgrade.png

apt upgrade looks at the updated index and installs newer versions of already-installed packages.

```
0 packages are up to date.
arshia@ubunto1804:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
arshia@ubunto1804:~$
```

task3_explanation.png

Without apt update, apt upgrade would use outdated package lists and might not find the newest updates.

```
GNU nano 7.2                                     ~/apt_update_
<plete security and feature updates.
```

Task 4 - Install Visual Studio Code via snap on CLI and Verify (DO NOT Remove Code)

task4_snap_install.png

```
Download snap "snapd" (25577) from channel "stable"
```

task4_snap_list.png

```
2025-10-25T11:30:15Z INFO Waiting for automatic snapd restart...
code 7d842fb8 from Visual Studio Code (vscode*) installed
arshia@ubuntu1804:~$
```

task4_code_version_or_info.png

Name	Version	Rev	Tracking	Publisher	Notes
code	7d842fb8	211	latest/stable	vscode*	classic

task4_snap_bin_location.png

```
lrwxrwxrwx 1 root root 13 Oct 25 11:37 code -> /usr/bin/snap
lrwxrwxrwx 1 root root 13 Oct 25 11:37 code.url-handler -> /usr/bin/snap
```

Task 5 - Install XFCE GUI + XRDP - Minimal Desktop and Remote Access (GUI) and Launch VS Code

task5_update.png

```
Last login: Sat Oct 25 19:17:37 2025 from 192.168.78.1
arshia@ubuntu1804:~$ sudo apt update && sudo apt upgrade -y
[sudo] password for arshia:
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:4 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:5 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
arshia@ubuntu1804:~$ |
```

task5_xfce_install.png

```
Processing triggers for dictionaries-common (1.29.7) ...
aspell-autobuildhash: processing: en [en-common].
aspell-autobuildhash: processing: en [en-variant_0].
aspell-autobuildhash: processing: en [en-variant_1].
aspell-autobuildhash: processing: en [en-variant_2].
aspell-autobuildhash: processing: en [en-w_accents-only].
aspell-autobuildhash: processing: en [en-wo_accents-only].
aspell-autobuildhash: processing: en [en_AU-variant_0].
aspell-autobuildhash: processing: en [en_AU-variant_1].
aspell-autobuildhash: processing: en [en_AU-w_accents-only].
aspell-autobuildhash: processing: en [en_AU-wo_accents-only].
aspell-autobuildhash: processing: en [en_CA-variant_0].
aspell-autobuildhash: processing: en [en_CA-variant_1].
aspell-autobuildhash: processing: en [en_CA-w_accents-only].
aspell-autobuildhash: processing: en [en_CA-wo_accents-only].
aspell-autobuildhash: processing: en [en_GB-ise-w_accents-only].
aspell-autobuildhash: processing: en [en_GB-ise-wo_accents-only].
aspell-autobuildhash: processing: en [en_GB-ize-w_accents-only].
aspell-autobuildhash: processing: en [en_GB-ize-wo_accents-only].
aspell-autobuildhash: processing: en [en_GB-variant_0].
aspell-autobuildhash: processing: en [en_GB-variant_1].
aspell-autobuildhash: processing: en [en_US-w_accents-only].
aspell-autobuildhash: processing: en [en_US-wo_accents-only].
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Processing triggers for sgml-base (1.31) ...
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.
arshia@ubuntu1804:~$
```

task5_xrdp_enable.png

```
Selecting previously unselected package pipewire-module-xrdp.
Preparing to unpack .../pipewire-module-xrdp_0.2-2_all.deb ...
Unpacking pipewire-module-xrdp (0.2-2) ...
Selecting previously unselected package xorgxrdp.
Preparing to unpack .../xorgxrdp_1%3a0.9.19-1_amd64.deb ...
Unpacking xorgxrdp (1:0.9.19-1) ...
Setting up libpipewire-0.3-modules-xrdp:amd64 (0.2-2) ...
Setting up xorgxrdp (1:0.9.19-1) ...
Setting up libfuse2t64:amd64 (2.9.9-8.1build1) ...
Setting up xrdp (0.9.24-4) ...

Generating 2048 bit rsa key...

ssl_gen_key_xrdp1 ok

saving to /etc/xrdp/rsakeys.ini

Created symlink /etc/systemd/system/multi-user.target.wants/xrdp-sesman.service → /usr/lib/systemd/system/xrdp-sesman.service.
Created symlink /etc/systemd/system/multi-user.target.wants/xrdp.service → /usr/lib/systemd/system/xrdp.service.
Setting up pipewire-module-xrdp (0.2-2) ...
Processing triggers for man-db (2.12.0-4build2) ...
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.
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
arshia@ubuntu1804:~$
```

task5_xrdp_status.png

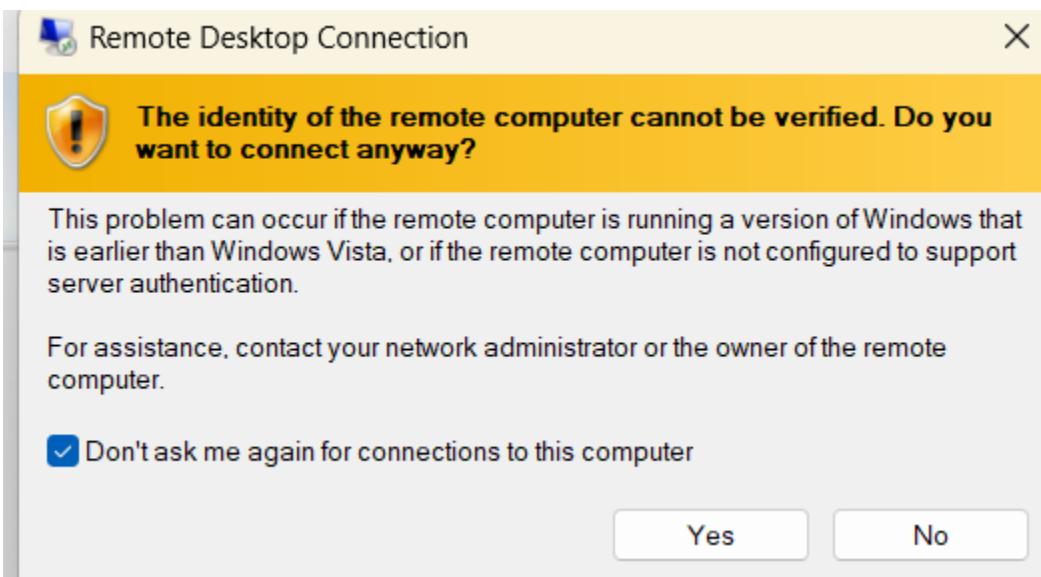
```
arshia@ubuntu1804:~$ sudo systemctl status xrdp
● xrdp.service - xrdp daemon
   Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: enabled)
   Active: active (running) since Sat 2025-10-25 20:19:01 UTC; 56s ago
     Docs: man:xrdp(8)
           man:xrdp.ini(5)
 Main PID: 9384 (xrdp)
   Tasks: 1 (limit: 2210)
  Memory: 872.0K (peak: 1.5M)
    CPU: 28ms
   CGroup: /system.slice/xrdp.service
           └─9384 /usr/sbin/xrdp

Oct 25 20:18:59 ubuntu1804 systemd[1]: Starting xrdp.service - xrdp daemon...
Oct 25 20:19:00 ubuntu1804 xrdp[9383]: [INFO ] address [0.0.0.0] port [3389] mode 1
Oct 25 20:19:00 ubuntu1804 xrdp[9383]: [INFO ] listening to port 3389 on 0.0.0.0
Oct 25 20:19:00 ubuntu1804 xrdp[9383]: [INFO ] xrdp_listen_pp done
Oct 25 20:19:00 ubuntu1804 systemd[1]: xrdp.service: Can't open PID file /run/xrdp/xrdp.pid (yet?) after start: No such f
Oct 25 20:19:01 ubuntu1804 systemd[1]: Started xrdp.service - xrdp daemon.
Oct 25 20:19:02 ubuntu1804 xrdp[9384]: [INFO ] starting xrdp with pid 9384
Oct 25 20:19:02 ubuntu1804 xrdp[9384]: [INFO ] address [0.0.0.0] port [3389] mode 1
Oct 25 20:19:02 ubuntu1804 xrdp[9384]: [INFO ] listening to port 3389 on 0.0.0.0
Oct 25 20:19:02 ubuntu1804 xrdp[9384]: [INFO ] xrdp_listen_pp done
arshia@ubuntu1804:~$ |
```

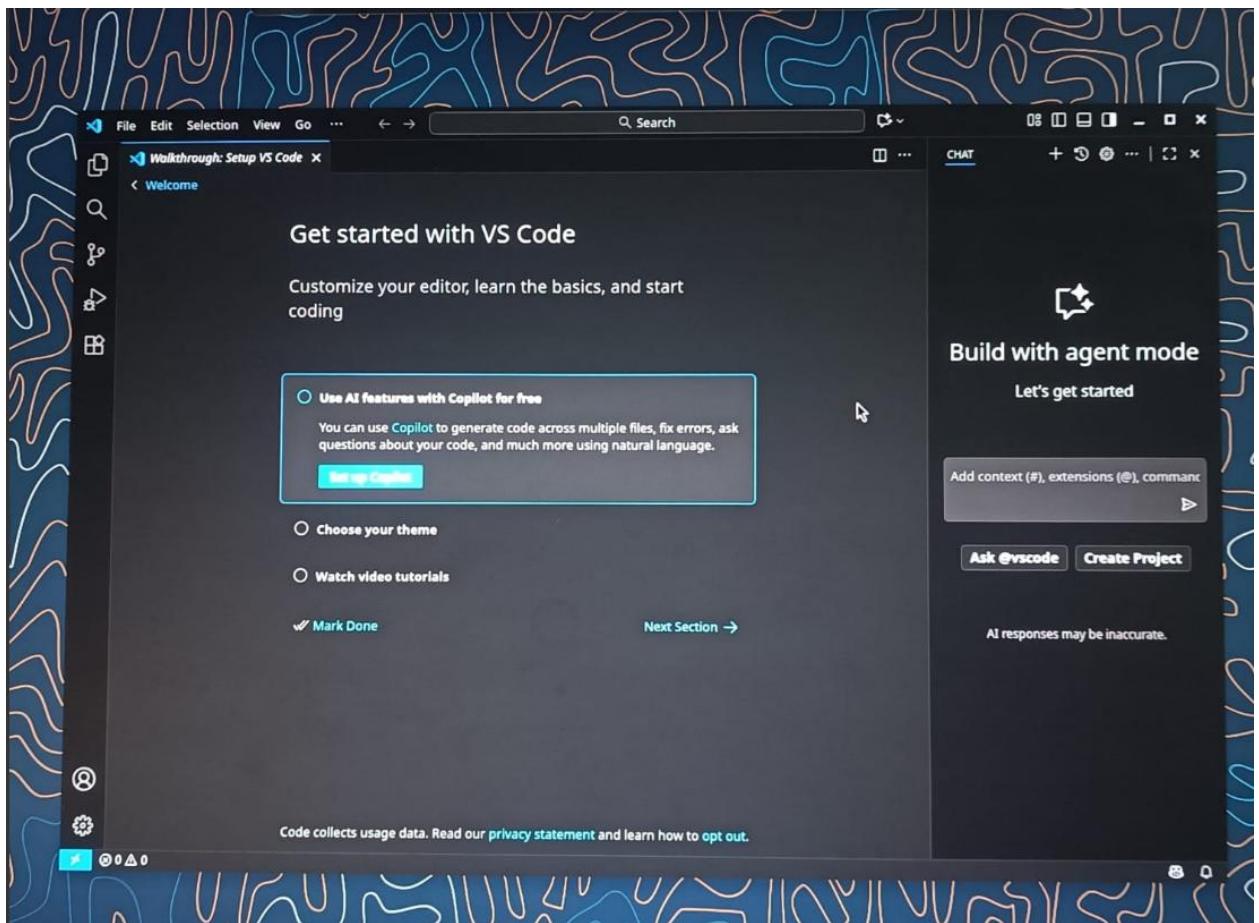
task5_xsSession.png

```
arshia@ubuntu1804:~$ echo xfce4-session > ~/.xsession
arshia@ubuntu1804:~$ |
```

task5_rdp_connect.png



task5_vscode_launch.png



Task 6 - Install lightdm-gtk-greeter and GUI Verification - Start GUI, Open VS Code, Take Snapshot, Then End (GUI)

task6_lightdm_install.png

```
Selecting previously unselected package lightdm-gtk-greeter.
Preparing to unpack .../lightdm-gtk-greeter_2.0.9-0ubuntu3_amd64.deb ...
Unpacking lightdm-gtk-greeter (2.0.9-0ubuntu3) ...
Setting up gnome-themes-extra-data (3.28-2ubuntu5) ...
Setting up gnome-accessibility-themes (3.28-2ubuntu5) ...
Setting up gtk2-engines-pixbuf:amd64 (2.24.33-4ubuntu1.1) ...
Setting up lightdm-gtk-greeter (2.0.9-0ubuntu3) ...
update-alternatives: using /usr/share/xgreeters/lightdm-gtk-greeter.desktop to provide
 (lightdm-greeter) in auto mode
Setting up gnome-themes-extra:amd64 (3.28-2ubuntu5) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
arshia@ubunto1804:~$ |
```

task6_lightdm_config.png

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
arshia@ubunto1804:~$ 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
m.conf.d/99-xfce.conf
[Seat:*]
greeter-session=lightdm-gtk-greeter
user-session=xfce
autologin-user-timeout=0
arshia@ubunto1804:~$ |
```

task6_lightdm_cleanup.png

```
chown: cannot access '/home/arshia/thinclient_drives': Permission denied
arshia@ubunto1804:~$ sudo rm -f /var/lib/lightdm/.Xauthority
sudo rm -f ~/.Xauthority
sudo rm -rf ~/.cache/sessions
sudo chown -R $USER:$USER /home/$USER
chown: cannot access '/home/arshia/thinclient_drives': Permission denied
arshia@ubunto1804:~$ |
```

task6_lightdm_restart.png

```
chown: cannot access '/home/arshia/thinclient_drives': Permiss
arshia@ubunto1804:~$ sudo systemctl restart lightdm
arshia@ubunto1804:~$ |
```

task6_gui_enable_boot.png

```
arshia@ubuntu1804:~$ 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.
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
arshia@ubuntu1804:~$ |
```

task6_after_reboot_gui.png

```
instance name specified.
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/gr
arshia@ubuntu1804:~$ sudo reboot

Broadcast message from root@ubuntu1804 on pts/2 (Sat 2025-10-25 21:37:06 UTC):

The system will reboot now!

arshia@ubuntu1804:~$ Connection to 192.168.78.132 closed by remote host.
Connection to 192.168.78.132 closed.

C:\Users\hp>|
```

task6_gui_disable_boot.png

```
Removed "/etc/systemd/system/display-manager.service".
arshia@ubuntu1804:~$ sudo reboot

Broadcast message from root@ubuntu1804 on pts/1 (Sat 2025-10-25 21:43:38 UTC):

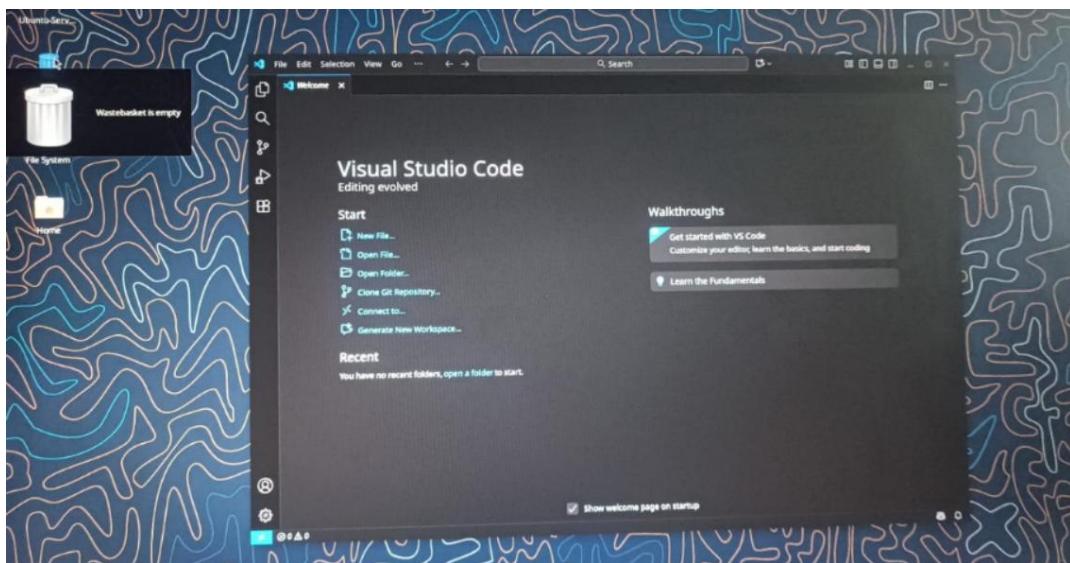
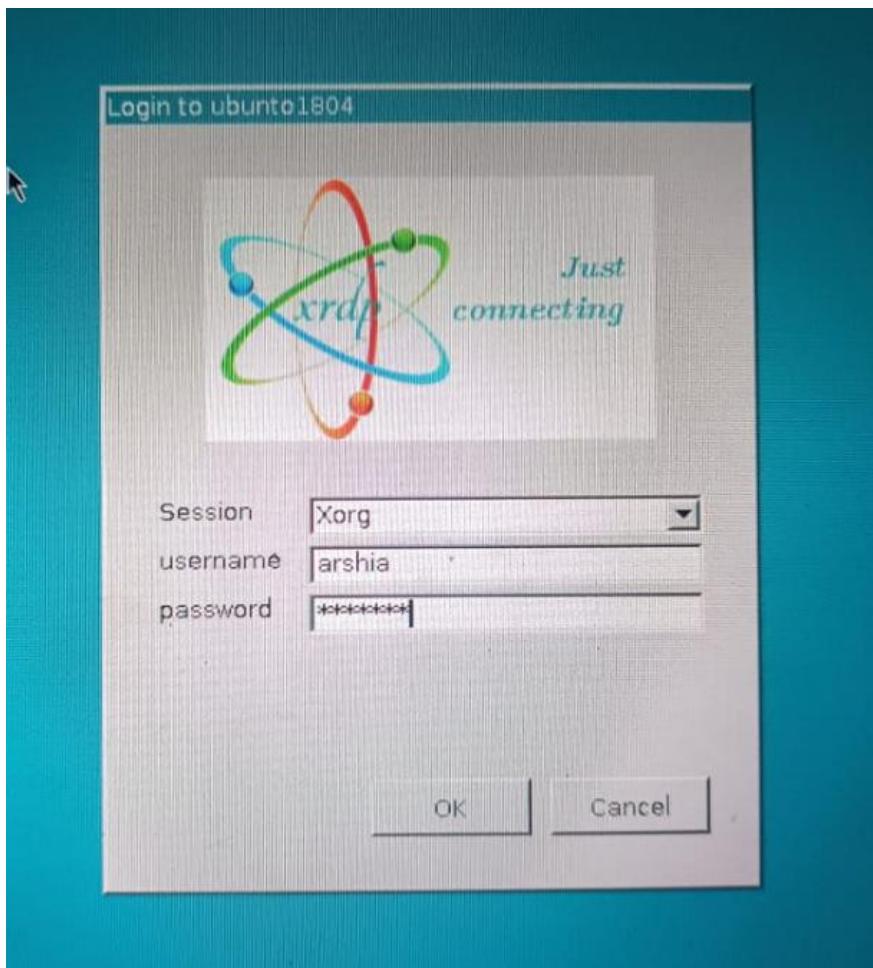
The system will reboot now!

arshia@ubuntu1804:~$ client_loop: send disconnect: Connection reset
```

task6_after_reboot_cli.png

```
arshia@ubuntu1804:~$ sudo systemctl set-default multi-user.target
sudo systemctl disable lightdm
[sudo] password for arshia:
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".
arshia@ubuntu1804:~$ |
```

task6_gui_start.png



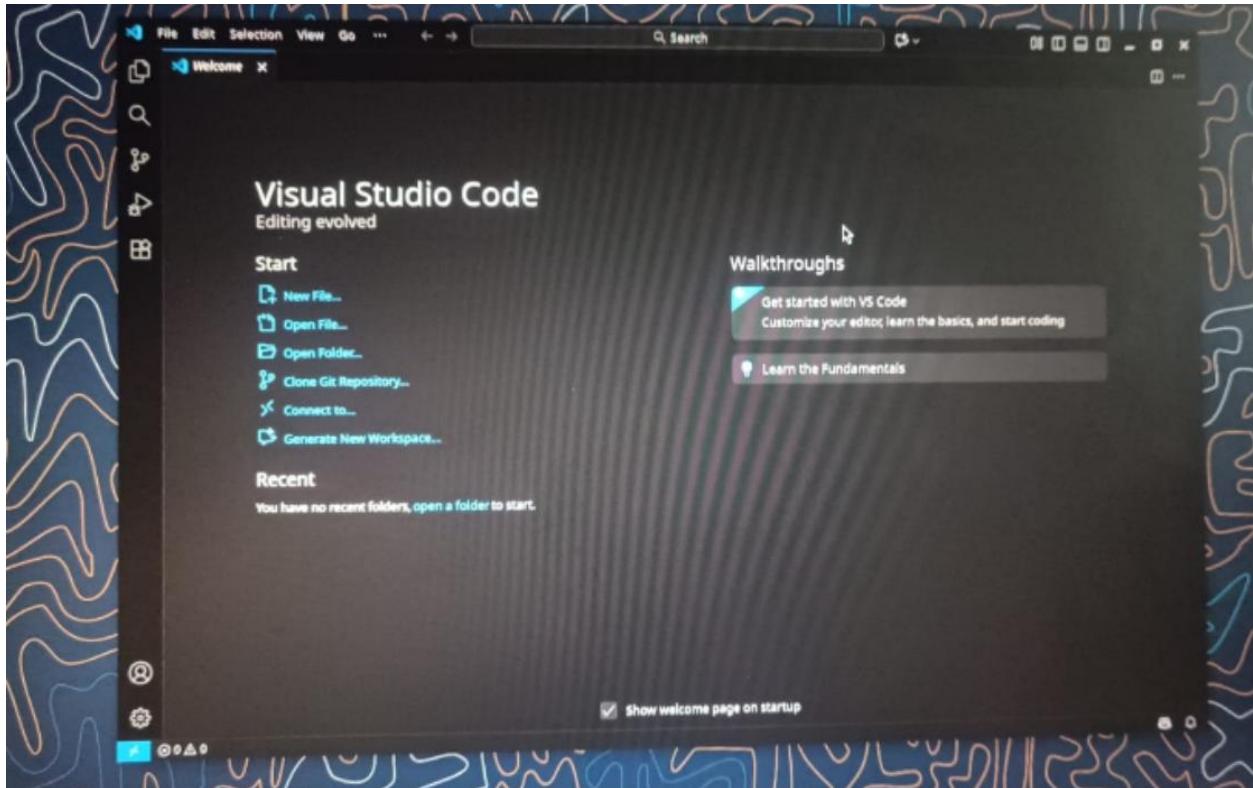
task6_gui_stop.png

```
[sudo] password for arshia:  
arshia@ubuntu1804:~$ sudo systemctl stop lightdm
```

task6_gui_start_command.png

```
arshia@ubunto1804:~$ sudo systemctl start lightdm  
arshia@ubunto1804:~$ |
```

task6_vscode_launch.png



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

task7_install_chrome_error.png

```
arshia@ubunto1804:~$ 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  
arshia@ubunto1804:~$ |
```

task7_ls_etc_apt.png

task7_cat_sources_list.png

task7_ls_sources_list_d.png

task7_ls_sources_list_d.png

```
drwxr-xr-x  2 root root  4096 Oct 24 16:16 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   60 Oct 24 16:36 sources.list
-rw-r--r--  1 root root   60 Oct 24 16:24 sources.list.backup
drwxr-xr-x  2 root root  4096 Oct 25 21:23 sources.list.d
drwxr-xr-x  2 root root  4096 Oct 25 20:51 trusted.gpg.d
deb http://archive.ubuntu.com/ubuntu/ noble main restricted
total 24
drwxr-xr-x 2 root root 4096 Oct 25 21:23 .
drwxr-xr-x 9 root root 4096 Oct 24 16:36 ..
-rw-r--r-- 1 root root 386 Sep 28 10:45 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug  5 17:02 ubuntu.sources.curtin.orig
-rw-r--r-- 1 root root 73 Oct 25 21:23 vscode.list
-rw-r--r-- 1 root root 278 Oct 25 20:40 vscode.sources
Types: deb
URIs: http://pk.archive.ubuntu.com/ubuntu/
Suites: noble noble-updates noble-backports
Components: main restricted universe multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg

Types: deb
URIs: http://security.ubuntu.com/ubuntu/
Suites: noble-security
Components: main restricted universe multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg
arshia@ubunto1804:~$
```

task7_edit_ubuntu_sources.png

```
GNU nano 7.2                                     /etc/apt/sources.list.
Types: deb
URIs: http://pk.archive.ubuntu.com/ubuntu/
Suites: noble noble-updates noble-backports
Components: main restricted universe multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg

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

task7_add_key.png

```
arshia@ubunto1804:~$ 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
arshia@ubunto1804:~$ |
```

task7_apt_update.png

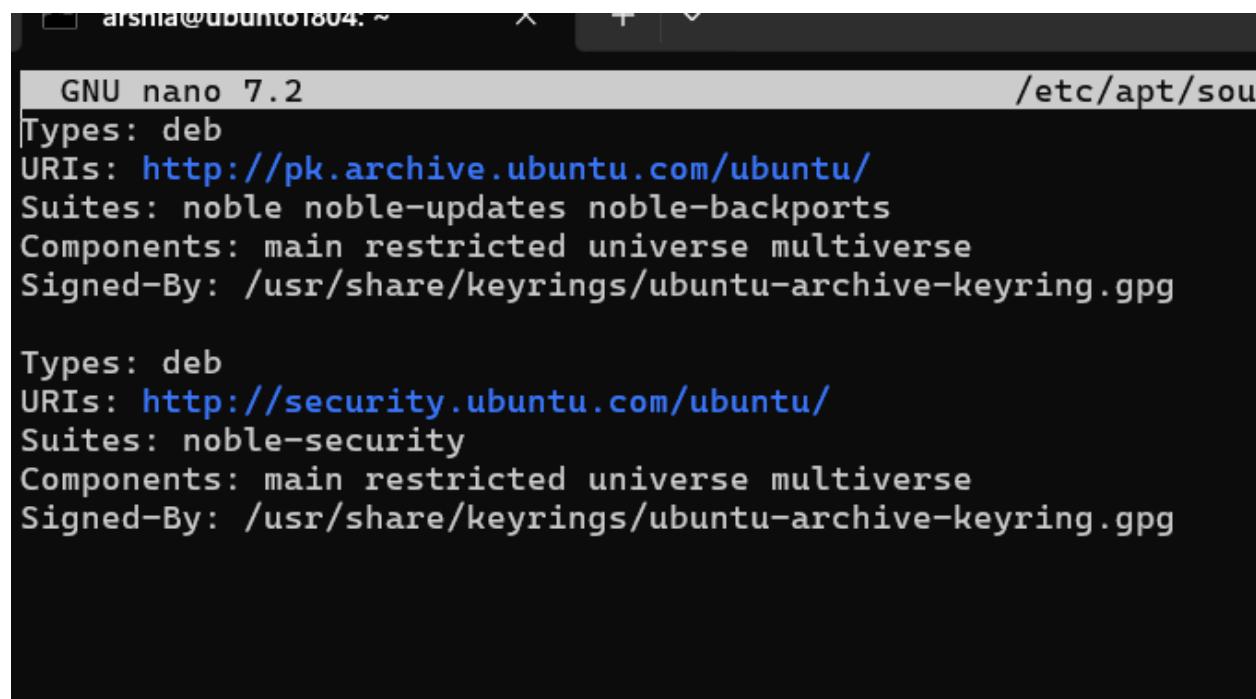
task7_install_chrome.png

```
arshia@ubuntu1804:~$ sudo apt update
sudo apt install google-chrome-stable -y
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:6 https://packages.microsoft.com/repos/vscode stable InRelease
Hit:7 https://packages.microsoft.com/repos/code stable InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package google-chrome-stable
arshia@ubuntu1804:~$ |
```

task7_alternate_remove.png

task7_alternate_edit.png

task7_remove_key.png



```
GNU nano 7.2 /etc/apt/sources.list
Types: deb
URIs: http://pk.archive.ubuntu.com/ubuntu/
Suites: noble noble-updates noble-backports
Components: main restricted universe multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg

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

task7_create_google_chrome_list.png

```
arshia@ubuntu1804:~$ 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
arshia@ubuntu1804:~$ |
```

task7_list_sources_after_create.png

```
arshia@ubuntu1804:~$ ls -la /etc/apt/sources.list.d/
total 28
drwxr-xr-x 2 root root 4096 Oct 25 22:09 .
drwxr-xr-x 9 root root 4096 Oct 24 16:36 ..
-rw-r--r-- 1 root root 107 Oct 25 22:09 google-chrome.list
-rw-r--r-- 1 root root 386 Oct 25 22:09 ubuntu.sources
-rw-r--r-- 1 root root 2552 Aug 5 17:02 ubuntu.sources.curtin.orig
-rw-r--r-- 1 root root 73 Oct 25 21:23 vscode.list
-rw-r--r-- 1 root root 278 Oct 25 20:40 vscode.sources
arshia@ubuntu1804:~$ |
```

task7_add_key_alt.png

```
arshia@ubuntu1804:~$ 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
arshia@ubuntu1804:~$ |
```

task7_apt_update_alt.png

task7_install_chrome_alt.png

```
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/x-www-browser (x
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/gnome-www-browser
to mode
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/google-chrome (g
Processing triggers for mate-menus (1.26.1-1build3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for fontconfig (2.15.0-1.1ubuntu2) ...
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.
arshia@ubuntu1804:~$ |
```

Task 8 - Install Applications via PPA (Audacity & OBS) and Launch

task8_add_ppa_audacity.png

task8_install_audacity.png

task8_apt_update_audacity.png

```
Setting up libsord-0-0:amd64 (0.16.16-2build1) ...
Setting up libsratom-0-0:amd64 (0.6.16-1build1) ...
Setting up liblilv-0-0:amd64 (0.24.22-1build1) ...
Setting up audacity (3.7.5-0build1~ubuntu24.04) ...
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 mate-menus (1.26.1-1build3) ...
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.
arshia@ubunto1804:~$ |
```

task8_audacity_launch.png or task8_audacity_version.png

```
# audacity (If in a GUI session)
arshia@ubunto1804:~$ audacity --version
arshia@ubunto1804:~$ |
```

task8_add_ppa_obs.png

task8_apt_update_obs.png

task8_install_obs.png

```
: Setting up libavdevice60:amd64 (7:6.1.1-3ubuntu5) ...
Setting up obs-studio (32.0.0-0obsproject1~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 mate-menus (1.26.1-1build3) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Processing triggers for man-db (2.12.0-4build2) ...
t 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.

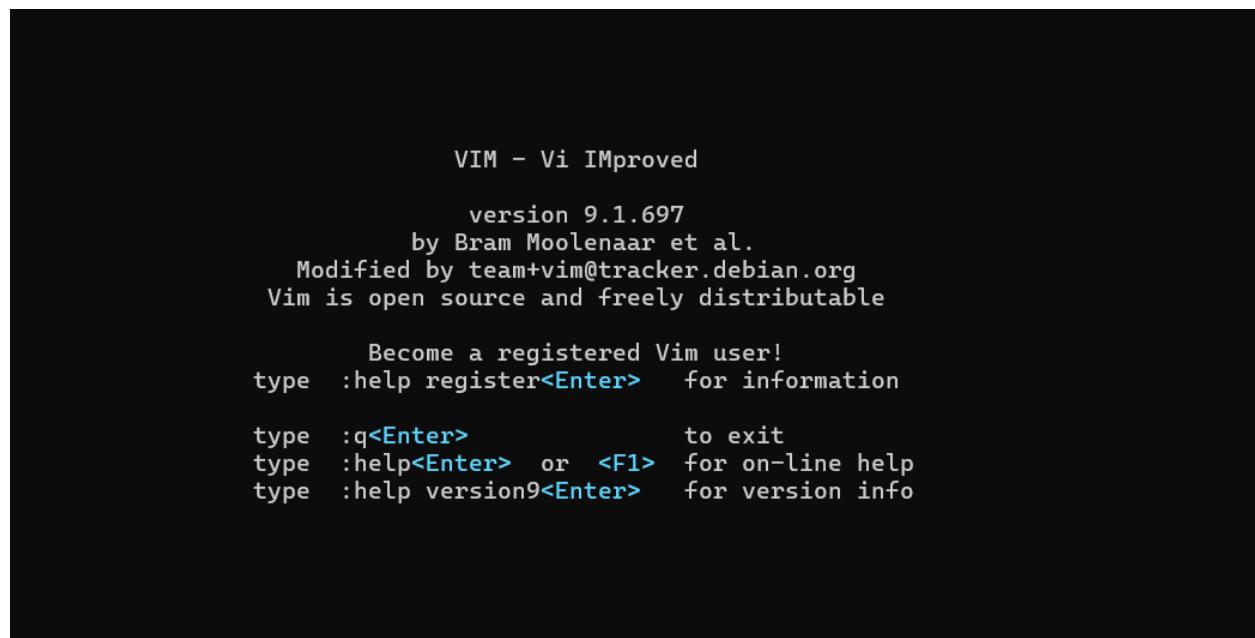
< No VM guests are running outdated hypervisor (qemu) binaries on this host.
arshia@ubuntu1804:~$ |
```

task8_obs_launch.png or task8_obs_version.png

```
No VM guests are running outdated hype
arshia@ubuntu1804:~$ obs --version
OBS Studio - 32.0.0
arshia@ubuntu1804:~$ |
```

Task 9 - Create a Kubernetes Sample YAML using vim

task9_vim_check.png



task9_vim_install.png (only if you installed vim)

```
arshia@ubuntu1804:~$ sudo apt update
sudo apt install vim -y
[sudo] password for arshia:
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 https://packages.microsoft.com/repos/vscode stable InRelease
Hit:5 https://packages.microsoft.com/repos/code stable InRelease
Hit:6 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:7 https://ppa.launchpadcontent.net/obsproject/obs-studio/ubuntu noble InRelease
Hit:8 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:9 https://ppa.launchpadcontent.net/ubuntuhandbook1/audacity/ubuntu noble InRelease
Hit:10 https://dl.google.com/linux/chrome/deb stable InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
vim is already the newest version (2:9.1.0016-1ubuntu7.9).
vim set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
arshia@ubuntu1804:~$ |
```

task9 mkdir cd.png

```
vim set to manually installed.  
0 upgraded, 0 newly installed, 0 to remove and  
arshia@ubuntu1804:~$ mkdir -p ~/Lab5  
cd ~/Lab5  
arshia@ubuntu1804:~/Lab5$ |
```

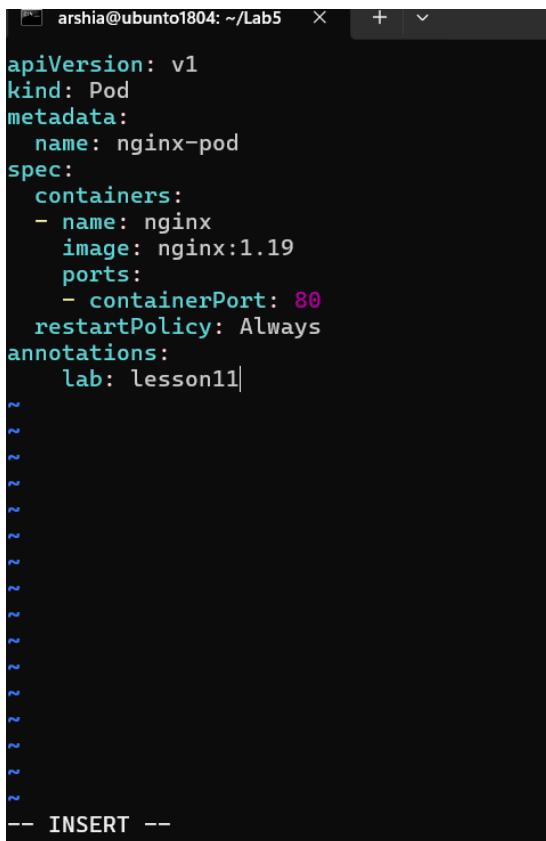
task9_vim_edit.png

task9_k8s_saved.png

```
cd ~/Lab5
arshia@ubuntu1804:~/Lab5$ vim k8s-sample.yaml
arshia@ubuntu1804:~/Lab5$ ls -la
total 12
drwxrwxr-x  2 arshia arshia 4096 Oct 25 22:50 .
drwxr-x--- 21 arshia arshia 4096 Oct 25 22:50 ..
-rw-rw-r--  1 arshia arshia 171 Oct 25 22:50 k8s-sample.yaml
arshia@ubuntu1804:~/Lab5$ |
```

Task 10 - Edit the Kubernetes YAML - Add Annotation, Verify, Then Discard Temporary Change

task10_verify_annotation.png



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

-- INSERT --

```
arshia@ubuntu1804:~/Lab5$ cd ~/Lab5
arshia@ubuntu1804:~/Lab5$ vim k8s-sample.yaml
arshia@ubuntu1804:~/Lab5$ cat k8s-sample.yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
spec:
  containers:
  - name: nginx
    image: nginx:1.19
    ports:
    - containerPort: 80
  restartPolicy: Always
annotations:
  lab: lesson11
arshia@ubuntu1804:~/Lab5$ |
```

vim k8s-sample.yaml

task10_verify_no_temp_comment.png

```
arshia@ubuntu1804:~/Lab5$ cat k8s-sample.yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
spec:
  containers:
  - name: nginx
    image: nginx:1.19
    ports:
    - containerPort: 80
  restartPolicy: Always
annotations:
  lab: lesson1temp: do-not-keep1
arshia@ubuntu1804:~/Lab5$ |
```

Task 11 - Vim Editing Practice - Delete, Undo, Numeric Deletes, Navigation

task11 dd delete and undo.png

```
image: nginx:1.19
ports:
```

```
arshia@ubuntu1804: ~/Lab5  X + ▾
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
spec:
  containers:
  - name: nginx|
  ports:
    - containerPort: 80
  restartPolicy: Always
  annotations:
    lab: lesson1temp: do-not-keep1
  -- INSERT --
```

```
image: nginx:1.19
```

task11_delete3_and_undo.png

```
- name: nginx

    ports:
        - containerPort: 80

            restartPolicy: Always
            i
            annotations:
                lab: lesson1
                # temp: do-not-keep
```

task11_line1.png



```
- name: nginx

    ports:
        - containerPort: 80
```

task11_navigation.png



```
- name: nginx

    port
```



```
- name: nginx

    ports:
        - containerPort: 80
    annotations:
        lab: lesson1
        # temp: do-not-keep
```

Task 12 - Vim Search, Add Matches, Substitute, Undo

task12_search_nginx.png

task12_n_and_N_navigation.png

task12_added_occurrences.png

```
annotations:  
    lab: lesson1temp: do-  
qqq|
```

task12_cycle_matches.png

```
~
```

```
/nginx|
```

```
~
```

```
  name: nginx
  image: nginx:1.19
  ports:
    - containerPort: 80
  restartPolicy: Always
  annotations:
    lab: lesson1temp: do-not
qqq
```

```
~
```

task12 substitute result.png



task12_undo_and_quit.png

