Part 1:

1.Apt version:

- apt 2.7.14 (amd64)

2.why this step is important?

- This step refreshes the list of available packages and their versions. It ensures that your system knows about the latest updates and can install them when requested.

```
shefa@lab-robotics:~$ apt --version
apt 2.7.14 (amd64)
shefa@lab-robotics:~$ sudo apt update
Hit:1 http://azure.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [150 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [363 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:8 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:9 http://azure.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:10 http://azure.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [20.0 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:12 http://azure.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:13 http://azure.archive.ubuntu.com/ubuntu noble-security/main amd64 Components [8976 B]
Get:14 http://azure.archive.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:16 http://azure.archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Fetched 975 kB in 0s (2426 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
5 packages can be upgraded. Run 'apt list --upgradable' to see them.
shefa@lab-robotics:~$ sudo apt upgrade -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
  libcap2 libcap2-bin libldap-common libldap2 libpam-cap
```

3.What is the difference between update and upgrade?

- Sudo apt update only updates the local database of available packages. It doesn't install anything. -Sudo apt upgrade installs newer versions of the packages already installed on your system. The -y flag automatically answers "yes" to prompts.

4.Pending updates:
-libldap-common/noble-updates 2.6.7+dfsg-1~exp1ubuntu8.2 all [upgradable from: 2.6.7+dfsg-1~exp1ubuntu8.1]
libldap2/noble-updates 2.6.7+dfsg-1~exp1ubuntu8.2 amd64 [upgradable from: 2.6.7+dfsg-1~exp1ubuntu8.1]

Part 2:

5. Name:

-gimp/noble-updates 2.10.36-3ubuntu0.24.04.1 amd64
GNU Image Manipulation Program.

6.Require Depends:

- libgimp2.0t64 (>= 2.10.36), libgimp2.0t64 (<= 2.10.36-z), gimp-data (>= 2.10.36), gimp-data (<= 2.10.36-z), graphviz, xdg-utils, libaa1 (>= 1.4p5), libbabl-0.1-0 (>= 1:0.1.78), libbz2-1.0, libc6 (>= 2.38), libcairo2 (>= 1.12.2), libfontconfig1 (>= 2.12.6), libfreetype6 (>= 2.2.1), libgcc-s1 (>= 3.3.1), libgdk-pixbuf-2.0-0 (>= 2.30.8), libgegl-0.4-0t64 (>= 1:0.4.38), libgexiv2-2 (>= 0.10.6), libglib2.0-0t64 (>= 2.79.0), libgs10 (>= 9.10~dfsg), libgtk2.0-0t64 (>= 2.24.10), libgudev-1.0-0 (>= 167), libharfbuzz0b (>= 0.6.0), libheif1 (>= 1.13.0), libjpeg8 (>= 8c), libjson-glib-1.0-0 (>= 1.5.2), libjxl0.7 (>= 0.7.0), liblcms2-2 (>= 2.9), liblzma5 (>= 5.1.1alpha+20120614), libmng2 (>= 2.0.2), libmypaint-1.5-1 (>= 1.5.0), libopenexr-3-1-30 (>= 3.1.5), libopenjp2-7 (>= 2.0.0), libpango-1.0-0 (>= 1.29.4), libpangocairo-1.0-0 (>= 1.29.4), libpangoft2-1.0-0 (>= 1.29.4), libpng16-16t64 (>= 1.6.2), libpoppler-glib8t64 (>= 0.44.0), librsvg2-2 (>= 2.32.0), libstdc++6 (>= 13.1), libtiff6 (>= 4.0.3), libwebp7 (>= 1.3.2), libwebpdemux2 (>= 1.3.2), libwebpmux3 (>= 1.3.2), libwmf-0.2-7 (>= 0.2.12), libwmflite-0.2-7 (>= 0.2.12), libx11-6, libxcursor1 (>> 1.1.2), libxext6, libxfixes3, libxmu6 (>= 2:1.1.3), libxpm4, zlib1g (>= 1:1.1.4)

8.Installed version:

- gimp-data/noble-updates,now 2.10.36-3ubuntu0.24.04.1 all [installed,automatic]
  gimp/noble-updates,now 2.10.36-3ubuntu0.24.04.1 amd64 [installed]
  libgimp2.0t64/noble-updates,now 2.10.36-3ubuntu0.24.04.1 amd64 [installed,automatic]

Part 3:

9. Is the package fully removed?

-The package is not fully removed because its configuration files are still present. The next step will fully remove the package.

```
Processing triggers for libc-bin (2.39-0ubuntu8.4) ...
shefa@lab-robotics:~$ sudo apt clean
shefa@lab-robotics:~$ cat /etc/apt/sources.list
# Ubuntu sources have moved to the /etc/apt/sources.list.d/ubuntu.sources
# file, which uses the deb822 format. Use deb822-formatted .sources files
# to manage package sources in the /etc/apt/sources.list.d/ directory.
# See the sources.list(5) manual page for details.
shefa@lab-robotics:~$ sudo add-apt-repository universe
sudo apt update
Adding component(s) 'universe' to all repositories.
Press [ENTER] to continue or Ctrl-c to cancel.
Hit:1 http://azure.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [867 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [197 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [150 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1021 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [255 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [363 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [655 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [128 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:14 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [23.4 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [5308 B]
Get:16 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:17 http://azure.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:18 http://azure.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [14.2 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [12.1 kB]
Get:20 http://azure.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [20.0 kB]
Get:21 http://azure.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:22 http://azure.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:23 http://azure.archive.ubuntu.com/ubuntu noble-security/main amd64 Packages [619 kB]
Get:24 http://azure.archive.ubuntu.com/ubuntu noble-security/main Translation-en [119 kB]
Get:25 http://azure.archive.ubuntu.com/ubuntu noble-security/main amd64 Components [9000 B]
```

10. Difference between Remove and Purge:

-Remove deletes the package but leaves configuration files intact.

Purge deletes both the package and its configuration files, ensuring a complete removal.

11. Why is this step important?

-The autoremove command removes any packages that were automatically installed as dependencies and are no longer needed. This helps free up disk space and keeps your system clean.

12. What does this command do?

-The clean command removes all downloaded package files (stored in /var/cache/apt/archives). These files are no longer needed after installation and can take up significant space if not cleaned regularly.

Part 4:

13. What do you notice in this file?

-This file see lines starting with deb or deb-src, indicating binary packages and source packages respectively Repositories might include official Ubuntu/Debian repositories, security updates, and third-party PPAs.

14. What types of packages are found in the universe repository?

-The universe repository contains community-maintained software packages that are not officially supported by the distribution maintainers.

15.Error Massage:

-E: Unable to locate package fakepackage.

To troubleshoot this issue I will Check for typos in the package name, run sudo apt update to refresh

package lists, search for the correct package name using apt search.

```
Building dependency tree... Done
Reading state information... Done
5 packages can be upgraded. Run 'apt list --upgradable' to see them.
shefa@lab-robotics:~$ sudo apt install fakepackage
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package fakepackage
shefa@lab-robotics:~$ sudo apt update
Hit:1 http://azure.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
5 packages can be upgraded. Run 'apt list --upgradable' to see them.
shefa@lab-robotics:~$ apt search gimp
Sorting... Done
Full Text Search... Done
abr2gbr/noble 1:1.0.2-5build2 amd64
  Converts PhotoShop brushes to GIMP

bleachbit/noble 4.6.0-3 all
  delete unnecessary files from the system

compass-blend-modes-plugin/noble 0.0.3+20150331~dfsg-3build1 all
  use standard color blending functions in Sass

create-resources/noble 0.1.3-6 all
  shared resources for use by creative applications

escputil/noble 5.3.4.20220624T01008808d602-1build4 amd64
  maintenance utility for Epson Stylus printers

exult-studio/noble 1.8-2build3 amd64
```