

## Assignment 6 - APT

### Objective:

By completing this assignment, you will:

- Learn how to install, update, remove, and search for software using APT (Advanced Package Tool).
- Understand how to manage repositories and resolve package dependencies.
- Gain hands-on experience in troubleshooting package installation issues.

### Instructions

Perform the following tasks step by step, documenting your commands and outputs. If you encounter any errors, note them and describe how you resolved them.

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#### Part 1: Understanding APT & System Updates (15 min)

1. Check your system's APT version:

- Run the following command to display the installed APT version: apt --version
- Record the output.

```
azuredineth@linux-lab:~$ apt --version
apt 2.7.14 (amd64)
azuredineth@linux-lab:~$ |
```

2. Update the package list:

- Run the command: sudo apt update

```

azuredineth@linux-lab:~$ 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 Packages [866 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [196 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1014 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [253 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 [654 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 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [17.6 kB]
Get:17 http://azure.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu noble-security/main amd64 Packages [618 kB]
Get:20 http://azure.archive.ubuntu.com/ubuntu noble-security/main Translation-en [118 kB]
Get:21 http://azure.archive.ubuntu.com/ubuntu noble-security/main amd64 Components [8976 kB]
Get:22 http://azure.archive.ubuntu.com/ubuntu noble-security/universe amd64 Packages [803 kB]
Get:23 http://azure.archive.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]
Get:24 http://azure.archive.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [625 kB]
Get:25 http://azure.archive.ubuntu.com/ubuntu noble-security/restricted Translation-en [121 kB]
Get:26 http://azure.archive.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 kB]
Get:27 http://azure.archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 kB]
Fetched 6368 kB in 1s (6636 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
14 packages can be upgraded. Run 'apt list --upgradable' to see them.
azuredineth@linux-lab:~$ |

```

- Explain why this step is important.

**This will check with the current installed versions and the latest stable versions that you can download**

- Get the latest package information
- Check whats need to be updated
- Get the security and bug fixes patches
- Update packages without dependency issues

### 3. Upgrade installed packages:

- Run: `sudo apt upgrade -y`

```

azuredineth@linux-lab:~$ 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:
  base-files bpftrace grub-efi-amd64-bin grub-efi-amd64-signed libc-bin libc6 linux-cloud-tools-common linux-tools-common lib
  ubuntu-standard
14 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
3 standard LTS security updates
Need to get 13.4 MB of archives.
After this operation, 1062 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 motd-news-config all 13ubuntu10.2 [4000 B]
Get:2 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc6 amd64 2.39-0ubuntu8.4 [3264 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 base-files amd64 13ubuntu10.2 [73.2 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 libc-bin amd64 2.39-0ubuntu8.4 [682 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 locales all 2.39-0ubuntu8.4 [4229 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 ubuntu-minimal amd64 1.539.2 [11.1 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 ubuntu-standard amd64 1.539.2 [11.1 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 bpftrace amd64 0.20.2-1ubuntu4.3 [1011 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 grub-efi-amd64-signed amd64 1.202.2+2.12-1ubuntu7.1 [1
Get:10 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 grub-efi-amd64-bin amd64 2.12-1ubuntu7.1 [1635 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-cloud-tools-common all 6.8.0-53.55 [404 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common all 6.8.0-53.55 [636 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 ubuntu-kernel-accessories amd64 1.539.2 [10.9 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu noble-updates/main amd64 ubuntu-server amd64 1.539.2 [11.0 kB]
Fetched 13.4 MB in 0s (43.1 MB/s)
Preconfiguring packages ...
(Reading database ... 95190 files and directories currently installed.)
Preparing to unpack .../motd-news-config_13ubuntu10.2_all.deb ...
Unpacking motd-news-config (13ubuntu10.2) over (13ubuntu10.1) ...
Preparing to unpack .../libc6_2.39-0ubuntu8.4_amd64.deb ...
Unpacking libc6:amd64 (2.39-0ubuntu8.4) over (2.39-0ubuntu8.3) ...
Setting up libc6:amd64 (2.39-0ubuntu8.4) ...
(Reading database ... 95189 files and directories currently installed.)
Preparing to unpack .../base-files_13ubuntu10.2_amd64.deb ...
Unpacking base-files (13ubuntu10.2) over (13ubuntu10.1) ...

```

- What is the difference between update and upgrade?
  - upgrade: This will update the packages in the linux system.
  - update: This will list down the updatable packages in the system without updating them.

#### 4. View pending updates (if any):

- Run: apt list --upgradable
- Take note of any pending updates.

```

User sessions running outdated binaries:
azuredineth @ session #33: apt[2312], sshd[1671,1806]
azuredineth @ user manager service: systemd[1676]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
azuredineth@linux-lab:~$ apt list --upgradable
Listing... Done
azuredineth@linux-lab:~$
```

## Part 2: Installing & Managing Packages (20 min)

5. Search for a package using APT:

- Find an image editor using: apt search image editor

```
azuredineth@linux-lab:~$ apt search image editor
Sorting... Done
Full Text Search... Done
android-platform-tools-base/noble 2.2.2-4ubuntu1 all
  base tools for developing applications for the Android system

briquolo-data/noble 0.5.7-11build2 all
  data files for the fast paced 3d Breakout game Briquolo

charactermanaj/noble 0.998+git20190331.e45260e3-3 all
  avatar editor application

chntpw/noble 140201-1 amd64
  NT SAM password recovery utility

copyq/noble 7.1.0-1build2 amd64
  Advanced clipboard manager with editing and scripting features

copyq-plugins/noble 7.1.0-1build2 amd64
  Plugins for CopyQ

digikam/noble-updates 4:8.2.0-0ubuntu6.2 amd64
  digital photo management application for KDE

drawing/noble 1.0.2-1build1 amd64
  simple drawing application for the GNOME desktop

ephoto/noble 1.6.0-1build2 amd64
  Comprehensive Image Viewer Using EFL

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

- Pick one package from the list and write down its name.

Package Name : xpaint - xpaint/noble 2.9.1.4-4.1build2 amd64 - simple paint program for X

6. View package details:

- Get detailed information about the selected package: apt show
- What dependencies does it require?
  - Depends: libc6 (>= 2.35), libfontconfig1 (>= 2.12.6), libjpeg8 (>= 8c), libpng16-16t64 (>= 1.6.2), libtiff6 (>= 4.0.3), libx11-6, libxaw3dxft6t64 (>= 2.9.1.4), libxext6, libxft2 (>> 2.1.1), libxmu6 (>= 2:1.1.3), libxpm4, libxt6t64

```

azuredineth@linux-lab:~$ apt show xpaint
Package: xpaint
Version: 2.9.1.4-4.1build2
Priority: optional
Section: universe/graphics
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Debian QA Group <packages@qa.debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 1723 kB
Depends: libc6 (>= 2.35), libfontconfig1 (>= 2.12.6), libjpeg8 (>= 8c), libpng16-16t64 (>= 1.6.2), libtiff6 (>= 4.0.3), libx11-6, libxaw3dxt6t64 (>= 2.9.1.4), libxext6, libxft2 (> 2.1.1), libxmu6 (>= 2:1.1.3), libxpm4, libxt6t64
Suggests: gv, netpbm, lpr, x-terminal-emulator, editor, imagemagick, ocrad
Homepage: https://sourceforge.net/projects/sf-xpaint/
Download-Size: 495 kB
APT-Sources: http://azure.archive.ubuntu.com/ubuntu noble/universe amd64 Packages
Description: simple paint program for X
  XPaint is suitable for producing simple graphics. It does offer some
  advanced features such as image processing functions and gradient
  fill.
.
  In the C Script Editor of XPaint, the External editor in the File menu
  will invoke x-terminal-emulator -e sensible-editor.
.
  The gv package will be needed for PDF/PS reading, netpbm will be needed
  for external conversion, lpr for printing.

azuredineth@linux-lab:~$
```

## 7. Install the package:

- Run: sudo apt install -y

```

azuredineth@linux-lab:~$ sudo apt install xpaint -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  fontconfig fonts-dejavu-core fonts-dejavu-mono libdeflate0 libfontconfig1 libice6 libjbig0 libjpeg-turbo8 libjpeg8
  liblerc4 libsharpyuv0 libsm6 libtiff6 libwebp7 libxaw3dxt6t64 libxft2 libxmu6 libxpm4 libxrender1 libxt6t64 x11-common
Suggested packages:
  gv netpbm lpr x-terminal-emulator imagemagick ocrad
The following NEW packages will be installed:
  fontconfig fonts-dejavu-core fonts-dejavu-mono libdeflate0 libfontconfig1 libice6 libjbig0 libjpeg-turbo8 libjpeg8
  liblerc4 libsharpyuv0 libsm6 libtiff6 libwebp7 libxaw3dxt6t64 libxft2 libxmu6 libxpm4 libxrender1 libxt6t64 x11-common
  xpaint
0 upgraded, 22 newly installed, 0 to remove and 0 not upgraded.
Need to get 3391 kB of archives.
After this operation, 10.2 MB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu/noble/main amd64 fonts-dejavu-mono all 2.37-8 [502 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu/noble/main amd64 fonts-dejavu-core all 2.37-8 [835 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu/noble/main amd64 fontconfig-config amd64 2.15.0-1.1ubuntu2 [37.3 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu/noble-updates/main amd64 libdeflate0 amd64 1.19-1build1.1 [43.9 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu/noble/main amd64 libfontconfig1 amd64 2.15.0-1.1ubuntu2 [139 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu/noble/main amd64 x11-common all 1:7.7+23ubuntu3 [21.7 kB]
```

- Confirm that the package is successfully installed.

- dpkg -l | grep xpaint

```

azuredineth@linux-lab:~$ dpkg -l | grep xpaint
ii  xpaint          2.9.1.4-4.1build2          amd64      simple paint program for X
```

## 8. Check installed package version:

- Run: apt list --installed | grep xpaint

```

azuredineth@linux-lab:~$ apt list --installed| grep xpaint
WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

xpaint/noble,now 2.9.1.4-4.1build2 amd64 [installed]
```

- What version was installed?
    - Version : 2.9.1.4-4.1build2
- 

### Part 3: Removing & Cleaning Packages (10 min)

#### 9. Uninstall the package:

- Run: sudo apt remove -y

```
azuredineth@linux-lab:~$ sudo apt remove xpaint -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  fontconfig-config fonts-dejavu-core fonts-dejavu-mono libdeflate0 libfontconfig1 libice6 libjbig0 libjpeg-turbo8 libjpeg8
  liblerc4 libsharpyuv0 libsm6 libtiff6 libwebp7 libxaw3dxt64 libxft2 libxmu6 libxpm4 libxrender1 libxt6t64 x11-common
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  xpaint
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
After this operation, 1723 kB disk space will be freed.
(Reading database ... 95569 files and directories currently installed.)
Removing xpaint (2.9.1.4-4.1build2) ...
Processing triggers for man-db (2.12.0-4build2) ...
azuredineth@linux-lab:~$ |
```

- Is the package fully removed?

```
azuredineth@linux-lab:~$ dpkg -l | grep xpaint
rc xpaint          2.9.1.4-4.1build2           amd64      simple paint program for X
azuredineth@linux-lab:~$ apt list --installed| grep xpaint
WARNING: apt does not have a stable CLI interface. Use with caution in scripts.
azuredineth@linux-lab:~$ |
```

#### 10. Remove configuration files as well:

- Run: sudo apt purge -y

```
azuredineth@linux-lab:~$ sudo apt purge xpaint -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  fontconfig-config fonts-dejavu-core fonts-dejavu-mono libdeflate0 libfontconfig1 libice6 libjbig0 libjpeg-turbo8 libjpeg8
  liblerc4 libsharpyuv0 libsm6 libtiff6 libwebp7 libxaw3dxt64 libxft2 libxmu6 libxpm4 libxrender1 libxt6t64 x11-common
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  xpaint*
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
After this operation, 0 B of additional disk space will be used.
(Reading database ... 95435 files and directories currently installed.)
Purging configuration files for xpaint (2.9.1.4-4.1build2) ...
azuredineth@linux-lab:~$ |
```

- What is the difference between remove and purge?
  - sudo apt remove -y : This removes the package binaries and executables but keeps the configuration files.

- `sudo apt purge -y` : This removes the package along with its configuration files.

## 11. Clear unnecessary package dependencies:

- Run: `sudo apt autoremove -y`

```
azuredineth@linux-lab:~$ sudo apt autoremove -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  fontconfig-config fonts-dejavu-core fonts-dejavu-mono libdeflate0 libfontconfig1 libice6 libjbig0 libjpeg-turbo8 libjpeg8
  liblrc4 libsharpyuv0 libsm6 libtiff6 libwebp7 libxaw3dxt6t64 libxft2 libxmu6 libxpm4 libxrender1 libxt6t64 x11-common
0 upgraded, 0 newly installed, 21 to remove and 0 not upgraded.
After this operation, 8502 kB disk space will be freed.
(Reading database ... 95431 files and directories currently installed.)
Removing libxaw3dxt6t64 (2.9.1.4-4.1build2) ...
Removing libxt2:amd64 (2.3.6-1build1) ...
Removing libfontconfig1:amd64 (2.15.0-1.1ubuntu2) ...
Removing fontconfig-config (2.15.0-1.1ubuntu2) ...
Removing fonts-dejavu-core (2.37-8) ...
Removing fonts-dejavu-mono (2.37-8) ...
Removing libtiff6:amd64 (4.5.1+git230720-4ubuntu2.2) ...
Removing libdeflate0:amd64 (1.19-1build1.1) ...
Removing libxmu6:amd64 (2:1.1.3-3build2) ...
Removing libxt6t64:amd64 (1:1.2.1-1.2build1) ...
Removing libsm6:amd64 (2:1.2.3-1build3) ...
Removing libice6:amd64 (2:1.0.10-1build3) ...
Removing libjbig0:amd64 (2.1-6.1ubuntu2) ...
Removing libjpeg8:amd64 (8c-2ubuntu11) ...
Removing libjpeg-turbo8:amd64 (2.1.5-2ubuntu2) ...
Removing liblrc4:amd64 (4.0.0+ds-4ubuntu2) ...
Removing libwebp7:amd64 (1.3.2-0.4build3) ...
Removing libsharpyuv0:amd64 (1.3.2-0.4build3) ...
Removing libxpm4:amd64 (1:3.5.17-1build2) ...
Removing libxrender1:amd64 (1:0.9.10-1.1build1) ...
Removing x11-common (1:7.7+23ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for sgml-base (1.31) ...
Processing triggers for libc-bin (2.39-0ubuntu8.4) ...
azuredineth@linux-lab:~$
```

- Why is this step important?
  - It auto deletes the unnecessary files in the system.

## 12. Clean up downloaded package files:

- Run: `sudo apt clean`

```
azuredineth@linux-lab:~$ sudo apt clean
azuredineth@linux-lab:~$
```

- What does this command do?
  - This command will clean only the cache data.

## Part 4: Managing Repositories & Troubleshooting (15 min)

### 13. List all APT repositories:

- Run: cat /etc/apt/sources.list

```
azuredineth@linux-lab:~$ 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.
azuredineth@linux-lab:~$
```

```
azuredineth@linux-lab:~$ cd /etc/apt/sources.list.d/
azuredineth@linux-lab:/etc/apt/sources.list.d$ ls
ubuntu.sources
azuredineth@linux-lab:/etc/apt/sources.list.d$ cat ubuntu.sources
## Note, this file is written by cloud-init on first boot of an instance
## modifications made here will not survive a re-bundle.
##
## If you wish to make changes you can:
## a.) add 'apt_preserve_sources_list: true' to /etc/cloud/cloud.cfg
##      or do the same in user-data
## b.) add supplemental sources in /etc/apt/sources.list.d
## c.) make changes to template file
##      /etc/cloud/templates/sources.list.ubuntu.deb822.tmpl
##

# See http://help.ubuntu.com/community/UpgradeNotes for how to upgrade to
# newer versions of the distribution.

## Ubuntu distribution repository
##
## The following settings can be adjusted to configure which packages to use from Ubuntu.
## Mirror your choices (except for URIs and Suites) in the security section below to
## ensure timely security updates.
##
## Types: Append deb-src to enable the fetching of source package.
## URIs: A URL to the repository (you may add multiple URLs)
## Suites: The following additional suites can be configured
## <name>-updates - Major bug fix updates produced after the final release of the
##                  distribution.
## <name>-backports - 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.
## Components: Aside from main, the following components can be added to the list
## restricted - Software that may not be under a free license, or protected by patents.
```

- What do you notice in this file?
  - This file contains the list of the dep file which is binary package repository (for installing software). So we can update this file so we can install the necessary file packages along-side with ubuntu.

```

## See the sources.list(5) manual page for further settings.
Types: deb
URIs: http://azure.archive.ubuntu.com/ubuntu/
Suites: noble noble-updates noble-backports
Components: main universe restricted multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg

## Ubuntu security updates. Aside from URIs and Suites,
## this should mirror your choices in the previous section.
Types: deb
URIs: http://azure.archive.ubuntu.com/ubuntu/
Suites: noble-security
Components: main universe restricted multiverse
Signed-By: /usr/share/keyrings/ubuntu-archive-keyring.gpg
azuredineth@linux-lab:/etc/apt/sources.list.d$ |

```

#### 14. Add a new repository (example: universe repository):

- Run: sudo add-apt-repository universe sudo apt update

```

azuredineth@linux-lab:~$ sudo add-apt-repository universe
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 Components [151 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 [17.7 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 [8960 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 972 kB in 0s (2322 kB/s)
Reading package lists... Done
azuredineth@linux-lab:~$ 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
All packages are up to date.
azuredineth@linux-lab:~$
```

- What types of packages are found in the universe repository?

- The packages which are not developed by Ubuntu is available in the universal apt-repository

#### 15. Simulate an installation failure and troubleshoot:

- Try installing a non-existent package: sudo apt install fakepackage
- What error message do you get?
- How would you troubleshoot this issue?

```
azuredineth@linux-lab:~$ sudo apt install fakepackage
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package fakepackage
azuredineth@linux-lab:~$
```

- 1. To troubleshoot this error first we need to identify there are no any word mistypings.
- 2. Search the package using ` apt search fakepackage` it will not display a list of similar packages if the package is incorrect.

```
azuredineth@linux-lab:~$ apt search fakepackage
Sorting... Done
Full Text Search... Done
azuredineth@linux-lab:~$ |
```

---

### Submission Requirements

- A markdown document containing:
- The commands you used.
- Screenshots (if possible) of important outputs.
- Answers to the questions provided in each step.
- Submit your work via GitHub repository URL.

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### Bonus Challenge (Optional):

- Use apt-mark to hold and unhold a package so it doesn't get updated. sudo apt-mark hold sudo apt-mark unhold

```
azuredineth@linux-lab:~$ sudo apt-mark hold xpaint
xpaint set on hold.
azuredineth@linux-lab:~$ sudo apt-mark unhold xpaint
Canceled hold on xpaint.
azuredineth@linux-lab:~$
```

- Why would you want to hold a package?
  - You can hold a package if you want to keep the same version during the updates.
  - Sometimes updating a package might affect other installed packages on the system such as dependency issues.
  - Some features might change / removed in the newer versions.