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Assignment No. 1

Theory -

. What is Open Source?

Open source means the software's code is open to everyone. You can look at how it works, change it, and even share your own version of it. It's free to use and improves over time because lots of people around the world contribute to it.

Example: Linux, Firefox, VLC media player.

2. What Tools and Technologies Are Used in Open Source?

People working with open source often use tools like:

- **Git** – to track changes in code.
- **GitHub/GitLab** – to store and share code online.
- **Linux** – an open source operating system.
- **Programming languages** – like Python, JavaScript, or C++.
- **VS Code or Vim** – for writing code.
- **Package managers** – like **apt**, **npm**, or **pip** to install software.

These tools help people collaborate, build, and improve open source projects easily.

3. What's the Difference Between Open Source and Closed Source?

Here's a simple breakdown:

Open Source	Closed Source
You can see and edit the code	Code is hidden and locked
Free to use and share	Often paid or licensed
Anyone can contribute	Only the company can make changes
Examples: Linux, GIMP	Examples: Windows, Photoshop

So, open source is more open and community-driven, while closed source is controlled by companies.

4. How Is the Internet Used in Open Source?

The internet is super important for open source. It lets people:

- **Work together** from anywhere in the world.
- **Share updates** or new versions of their software.
- **Learn and get help** through forums, YouTube, or documentation.
- **Report and fix bugs** quickly through online tools like GitHub.

Basically, without the internet, open source wouldn't be what it is today.

5. Which Operating System Did We Use in Experiment No. 1?

That depends on your lab or course, but if you used commands like `apt install`, then you were likely using a **Linux-based OS**, probably **Ubuntu** or **Debian**.

6. Why Is Git Called a Version Control System?

Git is called a version control system because it **keeps track of changes** in your files over time.

Imagine writing a big project – Git saves every version so you can:

- Go back if something breaks
- See what changed, when, and by who
- Work with others without messing things up

It's like Google Docs for code – with history, teamwork, and backups built in.

Code & Explanation -

1. **mv** – Moves or renames files and directories.
2. **cd** – Changes the current directory.
3. **pwd** – Prints the current working directory (where you are).
4. **ls** or **dir** – Lists files and folders in the current directory.
5. **mkdir** – Creates a new directory (folder).
6. **sudo** – Runs a command with superuser (admin) privileges.
7. **rm -rf** – Forcefully deletes files and directories recursively (use carefully).
8. **cat** – Displays the contents of a file.
9. **uname** – Shows system information (like OS name).
10. **whoami** – Displays the username of the current user.

11. **chmod** – Changes file or directory permissions.
12. **apt install** – Installs software packages on Debian-based systems.
13. **apt-get remove** – Removes installed software (but keeps config files).
14. **sudo apt-get install git** – Installs Git using admin privileges.
15. **git --version** – Shows the installed version of Git.

```

Processing triggers for man-db (2.12.0-4build2) ...
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ sudo apt-get remove htop
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  htop
0 upgraded, 0 newly installed, 1 to remove and 124 not upgraded.
After this operation, 434 kB disk space will be freed.
Do you want to continue? [Y/n] Y
(Reading database ... 155602 files and directories currently installed.)
Removing htop (3.3.0-4build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$

```

```

Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  lm-sensors
The following NEW packages will be installed:
  htop
0 upgraded, 1 newly installed, 0 to remove and 124 not upgraded.
Need to get 171 kB of archives.
After this operation, 434 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu noble/main amd64 htop amd64 3.3.0-4build1 [171 kB]
Fetched 171 kB in 3s (54.8 kB/s)
Selecting previously unselected package htop.
(Reading database ... 75%
(Reading database ... 155592 files and directories currently installed.)
Preparing to unpack .../htop-3.3.0-4build1 amd64.deb ...
Unpacking htop (3.3.0-4build1) ...
Setting up htop (3.3.0-4build1) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ █

```

```

sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ cd ..
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: $ cd Parth
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ mv p.txt f1.txt
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ pwd
/home/sysadmin-31/Parth
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ ls
f1.txt
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ mkdir f2
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ ls
f1.txt  f2
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ sudo echo f1.txt
[sudo] password for sysadmin-31:
Sorry, try again.
[sudo] password for sysadmin-31:
f1.txt
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ sudo cat f1.txt
this is parth
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ rm f1.txt
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ ls
f2
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ uname
Linux
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ whoami
sysadmin-31
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ chmod 744 f2
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ █

```

B) Installing GIT






1. What is Git?

Git is a free and open-source version control system that helps you manage and track changes to files, especially in software development.

- It lets multiple people work on the same project without messing up each other's work.
- Every change is saved in a timeline, so you can go back to any previous version if needed.

2. What is the Usage of Git?

Git is used for:

-  Tracking changes in your project files over time.
-  Collaborating with others without overwriting each other's work.
-  Undoing mistakes by reverting to previous versions.
-  Branching to try out new features or fix bugs without affecting the main project.
-  Syncing projects with remote repositories like GitHub or GitLab.

In short, Git keeps your project organized, safe, and easy to manage—especially when working with teams.

3. What are the commands required to install Git ?

1. `sudo apt install git`
2. `git --version`

```

sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ sudo apt-get install git
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-email git-gui gitk gitweb git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  git
0 upgraded, 1 newly installed, 0 to remove and 124 not upgraded.
Need to get 0 B/3,680 kB of archives.
After this operation, 22.2 MB of additional disk space will be used.
Selecting previously unselected package git.
(Reading database ... 154717 files and directories currently installed.)
Preparing to unpack .../git_1%3a2.43.0-1ubuntu7.3_and64.deb ...
Unpacking git (1:2.43.0-1ubuntu7.3) ...
Setting up git (1:2.43.0-1ubuntu7.3) ...
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ git --version
unknown option: --version
usage: git [-v | --version] [-h | --help] [-C <path>] [-c <name>=<value>]
  [--exec-path<=path>] [--html-path] [--man-path] [--info-path]
  [-p | --paginate] [-P | --no-pager] [--no-replace-objects] [--bare]
  [--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
  [--config-env=<name>=<envvar>] <command> [<args>]
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ git --version
git version 2.43.0
sysadmin-31@sysadmin-31-HP-ProOne-440-23-8-inch-G9-All-in-One-Desktop-PC: ~/Parth$ █

```

Conclusion - From this experiment we learnt how to use some of the basic command of linux we also learned how to install git on linux.