

Linux History and philosophy

Linux began in 1991 with Linus Torvalds creating a free kernel, combining it with GNU tools for a full OS, driven by the philosophy of free and open-source software (FOSS), emphasizing collaboration, transparency, user freedom (to use, study, modify, share), and a decentralized approach, growing from a hobby into powering servers, Android, supercomputers, and more, contrasting proprietary models.

History of Linux

- 1991: Finnish student Linus Torvalds started developing a Unix-like kernel as a personal project, inspired by the MINIX OS, aiming for a free alternative to proprietary systems.
- Early Development: Torvalds released his kernel's source code, and it quickly grew through global developer contributions, combining with the GNU Project's free tools to form complete operating systems (distributions like Debian, Red Hat).
- Licensing Shift: Initially restricted, the kernel adopted the GNU General Public License (GPL) in 1992.
- Growth & Adoption: Linux gained traction in servers, embedded systems and became a stable, secure alternative to Windows/macOS.

Linux Philosophy

- Free & Open Source (FOSS)
- User Freedom
- Collaboration & Transparency
- Decentralization
- Customization & Control

Task-1

- 1) write a brief history of linux

```
student@student-virtual-machine:~$ nano LinuxHistory.txt
```

- Creating a LinuxHistory.txt file and editing it in nano.

The screenshot shows a terminal window titled "student@student-virtual-machine: ~". The file being edited is "LinuxHistory.txt". The content of the file discusses the origin and principles of the Linux system, mentioning Richard Stallman's GNU project, Linus Torvalds' Linux kernel development, and the principles of open source and modularity.

```
student@student-virtual-machine: ~
GNU nano 6.2
Origin and Principles of Linux System

The GNU/Linux system is a powerful, free and open-source operating system that combines the Linux Kernel with software from the GNU project.

GNU/Linux System is result of two independent projects.

The GNU project (1984):Richard Stallman launched the GNU project in 1984 with goal of creating a complete,free,Unix-like operating system.

By the early 1990's the project had produced most necessary user space softwares,including GNU Compiler collection like(gcc),GNU C Library (glibc),the bash shell.

The linux kernel was developed linus torvalds in 1991, who was a computer science student, began a hobby project to create his own operating system kernel as free alternative to MNIX.

later he release it sep 17,1991 which was further licensed by GPL (General Public License) in 1992.

Principles of GNU/Linux operating system
1)open source and free software
2)modularity and simplicity
```

Task-2

2) File Navigation and Directory Structure

```
student@student-virtual-machine:~$ ls -la
```

- ls – cmd used to display the files in a directory
- -l - flag used to list in vertical format
- -a – used to display the hidden files.

```
student@student-virtual-machine:~$ pwd
/home/student
```

- pwd – cmd used to print the correct working directory.
- realpath – cmd also used to view the abspath of a file/folder.

```
student@student-virtual-machine:~$ mkdir Practise
student@student-virtual-machine:~$ cd Practise
student@student-virtual-machine:~/Practise$
```

- mkdir – command use to create a make directory
- -p – flag used to create a non parent directory

Task-3

3) File management commands to organize files and directories

```
student@student-virtual-machine:~$ touch Practise/sample.txt
```

touch – cmd used to create any file in a directory or folder.

```
student@student-virtual-machine:~$ cp Practise/sample.txt Practise/duplicate.txt
```

cp- cmd used to copy the file from one directory/folder to another directory or folder or within same directory or folder.

```
student@student-virtual-machine:~/Practise$ ls -lh
total 0
-rw-rw-r-- 1 student student 0 Dec 17 15:04 duplicate.txt
-rw-rw-r-- 1 student student 0 Dec 17 15:02 sample.txt
```

rm – command used to delete a file, folder, directory.

```
student@student-virtual-machine:~/Practise$ rm duplicate.txt
```