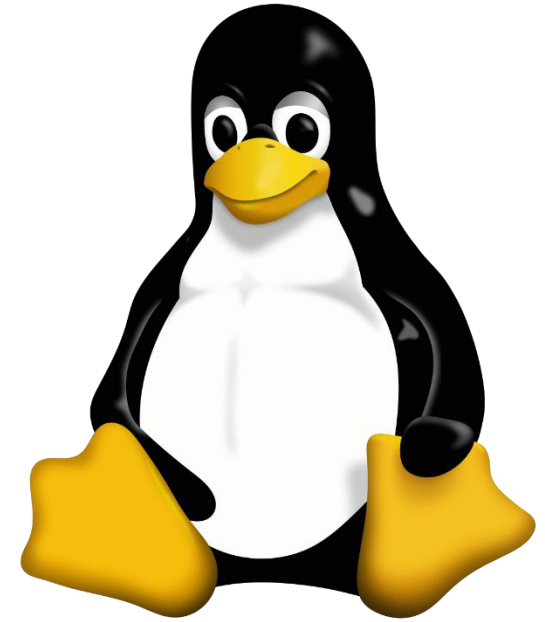


# Introduction to Linux

History, Layers of Linux OS,  
Shell Process, Files and Directories

# Linux Operating System

- Linux, computer operating system created in the early **1990s** by Finnish software engineer **Linus Torvalds** and the Free Software Foundation (FSF)
- While still a student at the University of Helsinki, Torvalds started developing Linux to create a system similar to MINIX, a UNIX operating system
- In **1991** he released version 0.02; **Version 1.0** of the **Linux kernel**, the core of the operating system, was released in **1994**



# Features of Linux OS

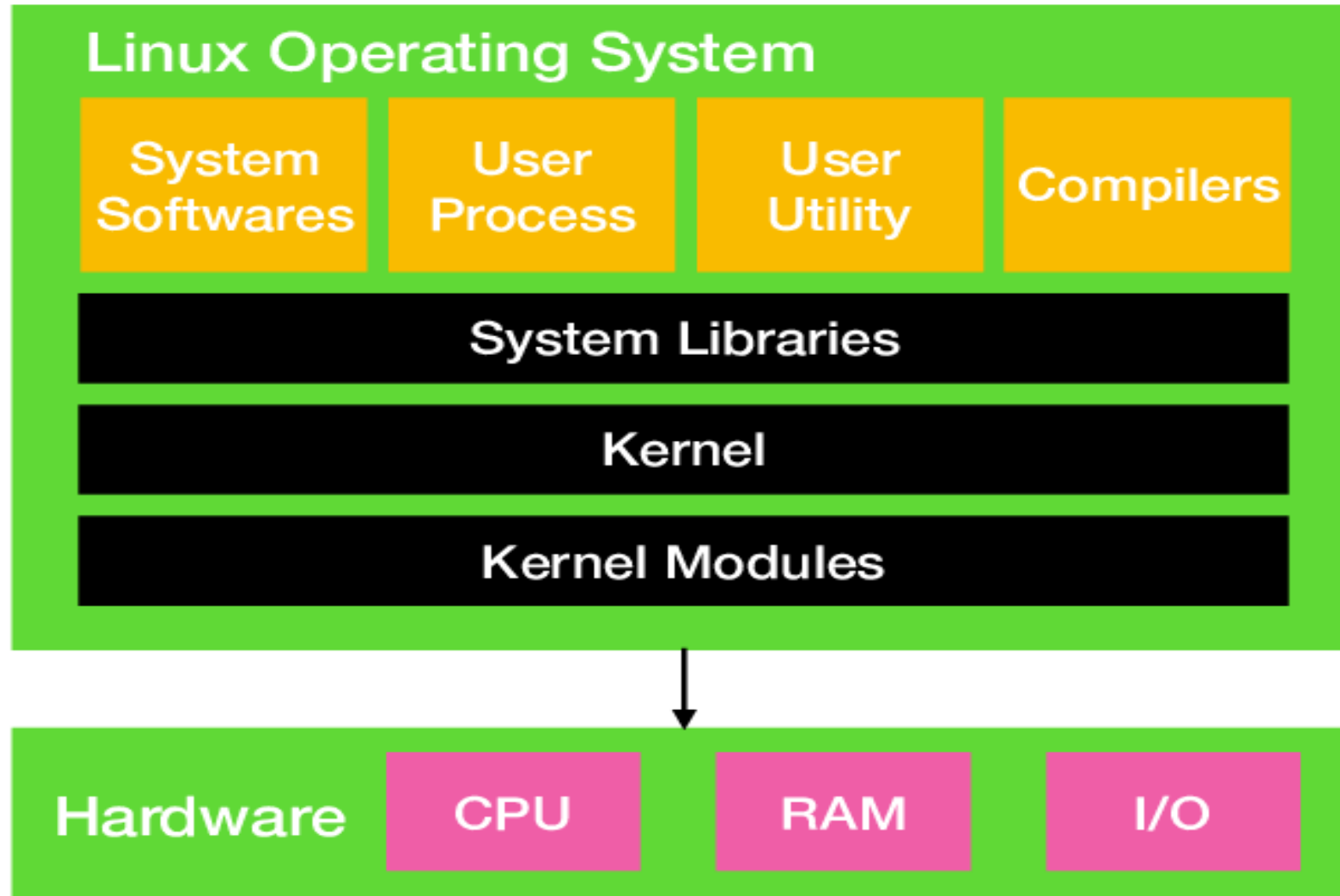
- Portable
- Open Source
- Multi-User
- Multiprogramming
- Hierarchical File System
- Shell
- Security
- Live CD/USB
- GUI
- Supports Customized Keyboards
- Application Support Repository

# Some Linux Flavors

- MX Linux
- Manjaro
- Linux Mint
- Ubuntu
- Debian
- Elementary OS
- Solus
- Zorin OS
- Fedora



# Linux OS Layers

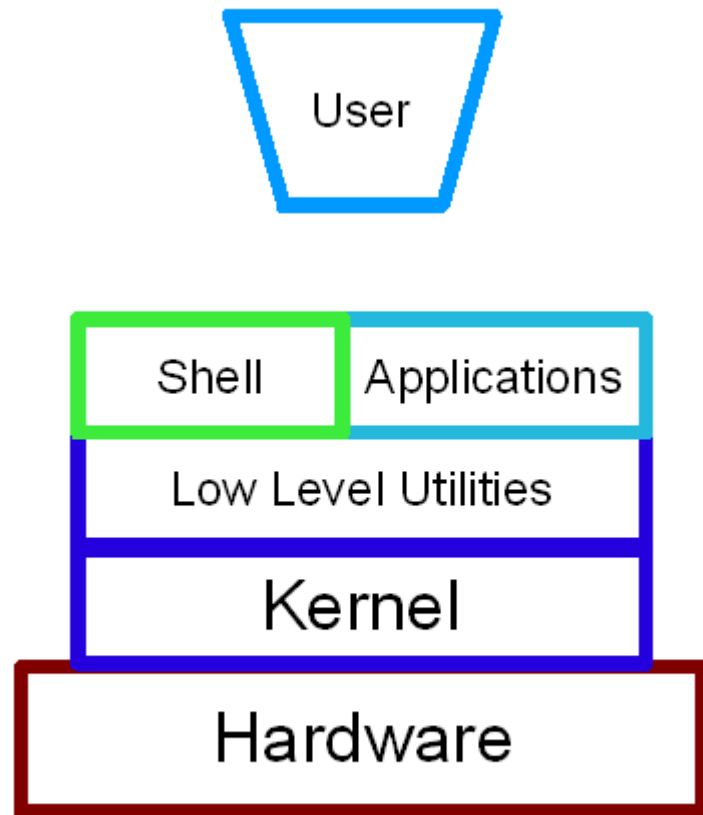


# Kernel Mode Vs User Mode

- **Kernel** component code executes in a **special privileged mode** called kernel mode **with full access to all resources of the computer.**
- User programs and other system programs works in User Mode which has no access to system hardware and kernel code
- User programs/ utilities use **System libraries to access Kernel functions** to get system's low level tasks.

# Shell in Linux OS

- The shell is the command interpreter in an operating system
- A Shell provides you with an interface to the Unix system



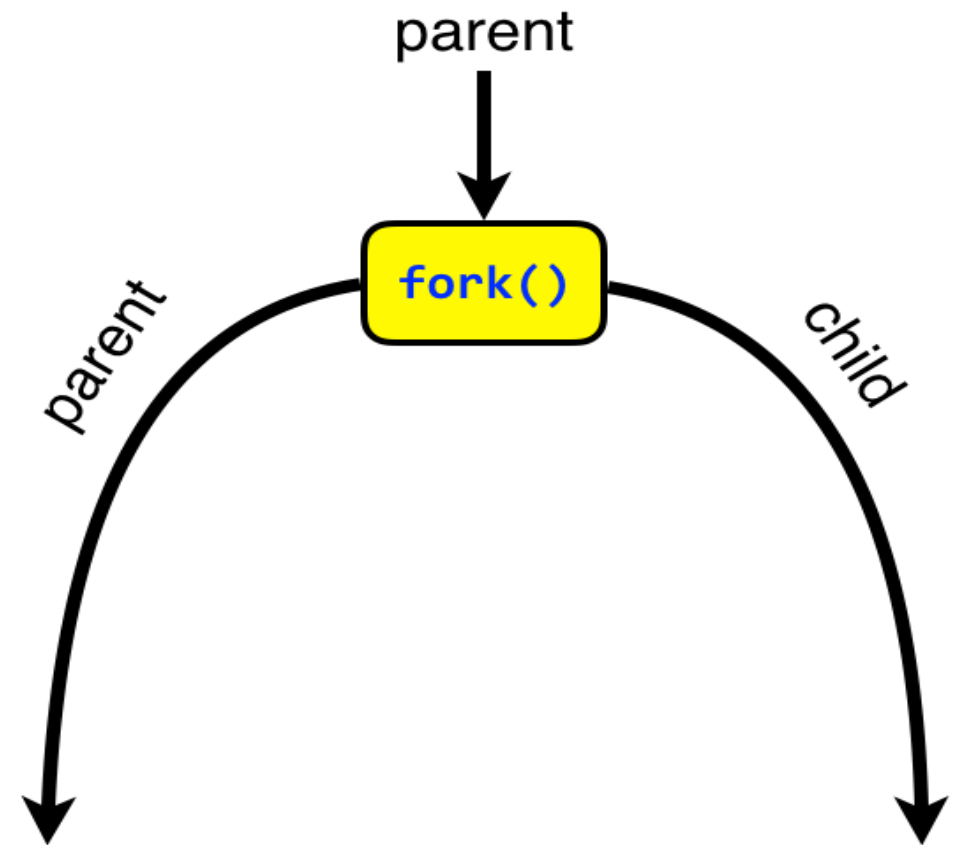
A screenshot of a Linux terminal window. The window has a title bar with "File Edit View Search Terminal Help". The terminal shows the following commands and output:

```
vagrant@vagrant:~/GeeksForGeeks$ ls
dbpool.go  Languages  poolTest.go
vagrant@vagrant:~/GeeksForGeeks$ mkdir Linux
vagrant@vagrant:~/GeeksForGeeks$ ls
dbpool.go  Languages  Linux  poolTest.go
vagrant@vagrant:~/GeeksForGeeks$
```

The terminal window also features a sidebar with several application icons, including a terminal icon, a file manager icon, a web browser icon, a mail icon, and a settings icon.

# Process: Parent and Child Processes

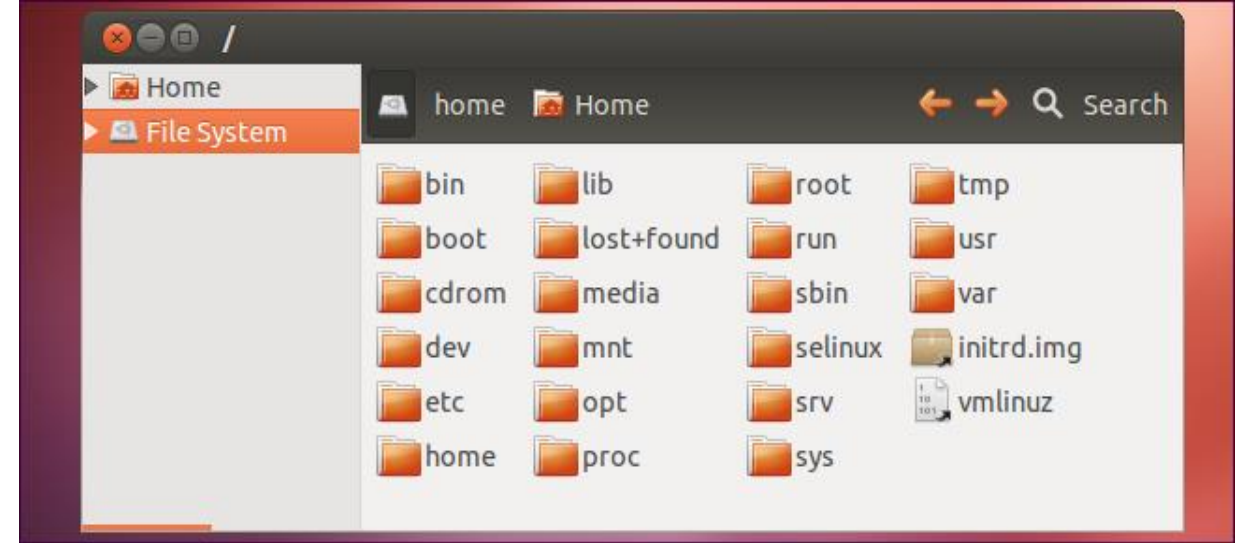
- A **process** is an active program i.e a program that is under execution
- All the processes in operating system are created when a process executes the `fork()` **system call** except the startup process
- The process that used the `fork()` system call is the parent process.
- In other words, a parent process is one that creates a child process





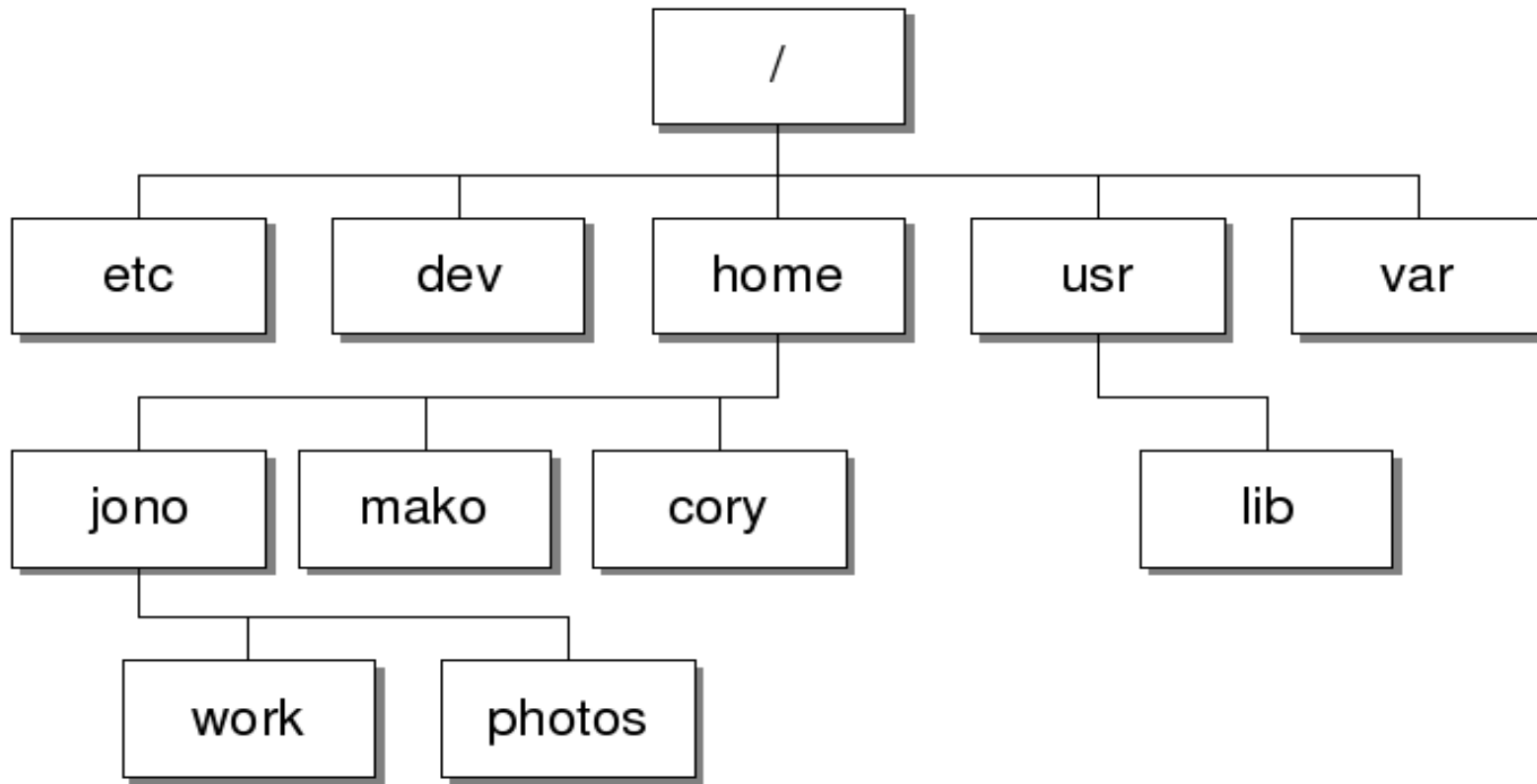
# Files and Directories

- `/` – The Root Directory
- `/bin` – Essential User Binaries
- `/boot` – Static Boot Files
- `/cdrom` – Historical Mount Point for CD-ROMs
- `/dev` – Device Files
- `/etc` – Configuration Files
- `/home` – Home Folders
- `/lib` – Essential Shared Libraries
- `/lost+found` – Recovered Files
- `/media` – Removable Media
- `/mnt` – Temporary Mount Points
- `/opt` – Optional Packages



- `/proc` – Kernel & Process Files
- `/root` – Root Home Directory
- `/run` – Application State Files
- `/sbin` – System Administration Binaries
- `/tmp` – Temporary Files
- `/usr` – User Binaries & Read-Only Data
- `/var` – Variable Data Files

# Files and Directories



# Linux – Basic Commands

## Hands-on Session

# Webminal - GNU/Linux Online Terminal

## [Webminal]

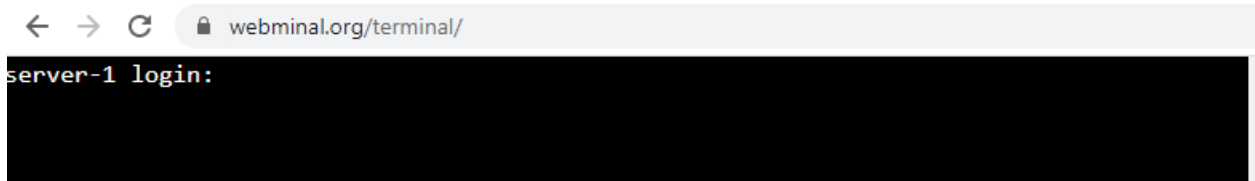
[Home](#) [Register](#) [Log In](#) [Terminal](#) [Root](#) [Code](#) [Forum](#)

### Join

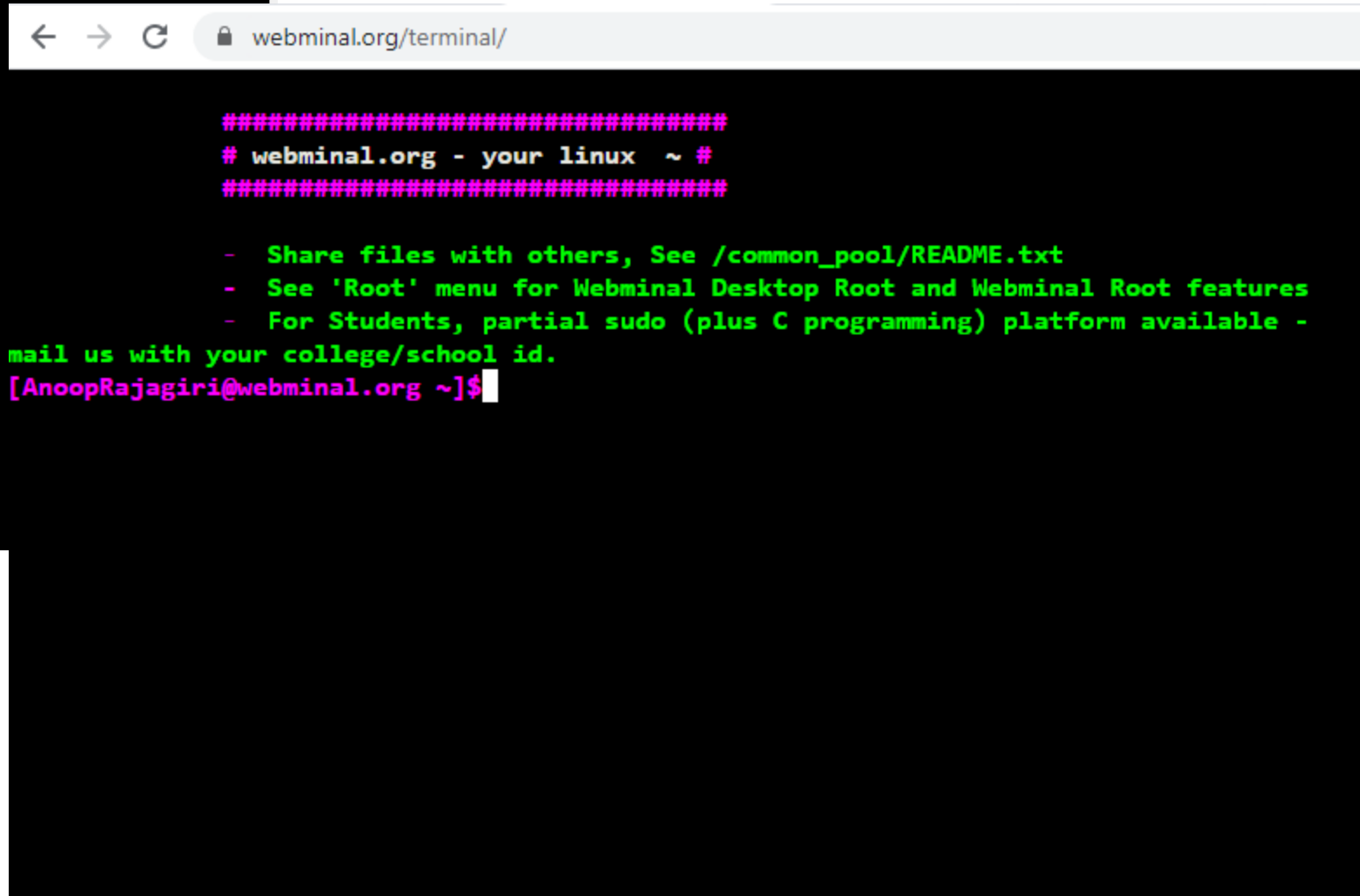
To create a new account, fill-in below form. An activation link will be sent to registered email for verification. We recommend either [Firefox](#) or [Chrome](#). Both username and password are case-sensitive. i.e 'user' is different from 'User'

Username	<input type="text"/>
Email Address	<input type="text"/>
New Password	<input type="password"/>
Repeat Password	<input type="password"/>
I accept the TOS	<input type="checkbox"/>
<input type="button" value="Register"/>	

- Visit: <https://www.webminal.org/>
- After registration, Login using your credentials and Choose **Terminal** from the menu and Login into your Terminal



Before Login



After Login

# Basic Commands

- **pwd** - to find out the path of the current working directory
- **cd** – change directory
  - Syntax: `cd <<directory_name>>`
- **mkdir** – make a new directory
  - Syntax: `mkdir <<directory_name>>`
- **rmdir** – To remove a directory (The directory should be empty)
- **echo** - print a message or value in screen
  - Syntax: `echo <<message>>`
- **ls** – list directories and files
  - Options: `ls -l`, `ls -s`, `ls -a`
- **rm** – remove files/directory
  - `rm <<file_name>>` / `rm -r <<directory_name>>`

# Basic Commands

- **man** - to print online reference manual
  - Syntax: `man <<command_name>>`
- **cat** – print content of a file OR concatenate two files
  - Syntax: `cat <<file_name>>`
  - Syntax: `cat <<file1>> <<file2>>`
- **touch** – modify timestamp of a file
  - Syntax: `touch <<filename>>`
- **date** – to print current date and time
  - Syntax: `date`