Lab Tasks

By

Hajira Imran(44594)

Submitted to: Ma’am Kausar

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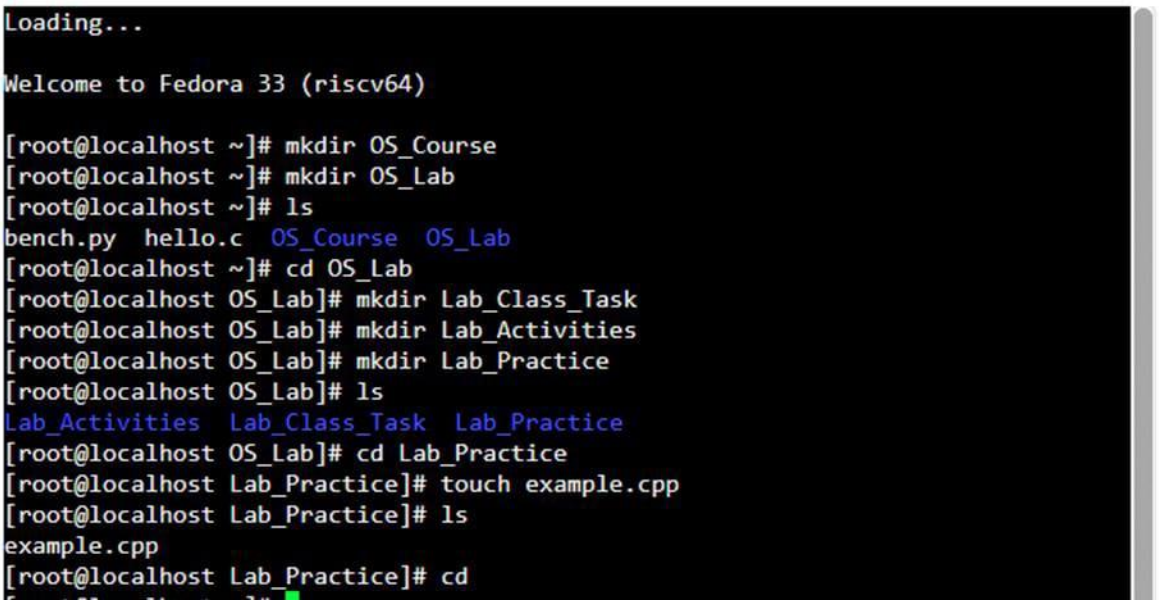
BSCS SEMESTER – 5

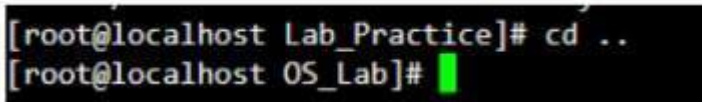
RIPHAH INTERNATIONAL UNIVERSITY

ISLAMABAD, PAKISTAN

Q1. To begin, you need to set up a structured directory layout in your home directory. Start by creating two directories named **OS_Course** and **OS_Lab**. These directories will serve as the main folders for organizing your OS Lab tasks. After creating these directories, switch to the **OS_Lab** directory. Within OS_Lab, create three more directories named **LAB_Class_Task, LAB_Activities, and Lab_Practice**. Each of these directories will help you categorize different aspects of your lab work. Once you have created these directories, go into the **Lab_Practice** directory and create a file named example. cpp. This file should be empty and will be used for practice later. Finally, move back to your home directory. Make sure to take screenshots of each step, including the creation of directories, the file creation, and your navigation commands to document your process.

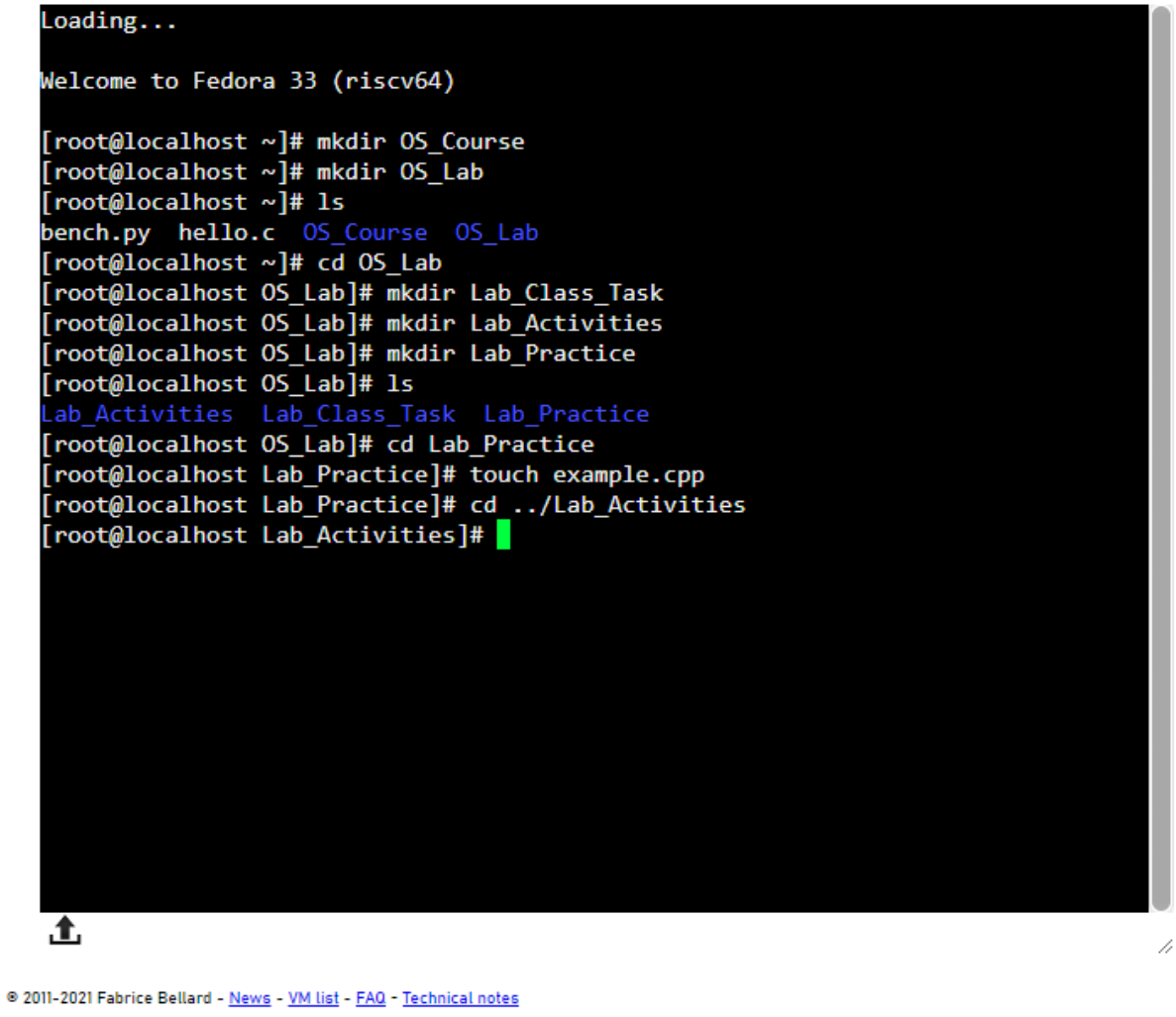
Note: Include screenshots, where required to illustrate your explanation.





Q2. Finally, you need to understand the concepts of absolute and relative paths. Explain the difference between these two types of paths and provide an example of each. This will help you navigate directories more effectively. If you are currently in the Lab_`Practice` directory, describe the relative path to access the **`LAB_Activities`** directory. This will test your understanding of how to move between directories using relative paths.
Note: Include screenshots, where required to illustrate your explanation.

Relative Path:
Shows the path from our current directory
It doesn't start with /.
Example:



Absolute Path

Show the full path from the root directory.

Example:

```
Loading...

Welcome to Fedora 33 (riscv64)

[root@localhost ~]# mkdir OS_Lab
[root@localhost ~]# mkdir OS_Course
[root@localhost ~]# ls
bench.py  hello.c  OS_Course  OS_Lab
[root@localhost ~]# cd OS_Lab
[root@localhost OS_Lab]# mkdir Lab_Class_Task
[root@localhost OS_Lab]# mkdir Lab_Practice
[root@localhost OS_Lab]# mkdir Lab_Activities
[root@localhost OS_Lab]# pwd
/root/OS_Lab
```

Q3. Imagine you're working on your computer when you suddenly need to turn it off quickly. You press and hold the power button until the computer shuts down completely. After an hour, you turn the computer back on, and it quickly shows the login screen or desktop.
Why does your computer start up smoothly and quickly after being turned off? Describe the process that happens between powering off the computer and seeing the login or desktop screen. What steps does the computer go through to get everything ready in a short amount of time?

- When we press the power button to turn the computer on again, the power supply sends power to the motherboard and other components.
- The computer performs the Power-On Self-Test (POST), where it checks the basic hardware components CPU, RAM, and storage devices to ensure they are functioning correctly. We will hear a beep sound or see error messages if there's an issue.
- After POST, the system loads the bootloader from the storage device (e.g., hard drive or SSD). It is a small program that prepares the system to load the operating system.
- After that operating system kernel is loaded into memory and starts initializing system hardware and software components.
- Then operating system loads device drivers needed for the hardware components (e.g., graphics card, network adapter).
- Then operating system loads the graphical user interface (GUI). Depending on our operating system, we may see a login screen if use the password.

Reason of being start quickly

Modern computers often use SSDs (Solid State Drives) which have faster read and write speeds as compared to traditional HDDs (Hard Disk Drives). This speeds up the boot process**.**

Efficient bootloaders and operating system optimizations can significantly reduce boot times.

Operating systems cache certain data in RAM, which speeds up access to frequently used files and settings.