RAJSHAHI UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Computer Science & Engineering

LAB REPORT

Topic: Introduction to Linux and Its Basic Commands.

Course No: CSE 3202

Course Name: Sessional Based on Operating Systems

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Topic Name: Introduction to Linux and Its Basic Commands.

Objectives

- To learn about Linux operating system.
- To learn about windows subsystem for Linux.
- To learn basic Linux commands.
- To learn shell coding.

Theory

Linux

Linux is an open-source operating system modelled on Unix. It began as a personal project by Finnish student Linus Torvalds. In 1991, while studying computer science at University of Helsinki, Linus Torvalds began a project that later became the Linux kernel. He wrote the program specifically for the hardware he was using and independent of an operating system because he wanted to use the functions of his new PC with an 80386 processor. Development was done on MINIX using the GNU C Compiler.

Advantages of Linux

- Open source
- High security and stability
- Ease of maintenance
- Runs on any hardware
- Free
- Ease of use
- Flexibility in customization

Distributors of Linux

- Debian
- Gentoo
- Ubuntu
- Linux Mint
- Red Hat Enterprise Linux
- CentOS
- Fedora
- Kali Linux

Shell

Shell is an interface between the user and the kernel. It provides a platform to interact with the kernel. Here we can run our commands, programs, and shell scripts.

Types of Shell

- Bourne Shell (sh)
- Bourne Again Shell (bash)
- C Shell (csh)
- Z Shell (zsh)
- Korn Shell (ksh)
- POSIX shell (sh)

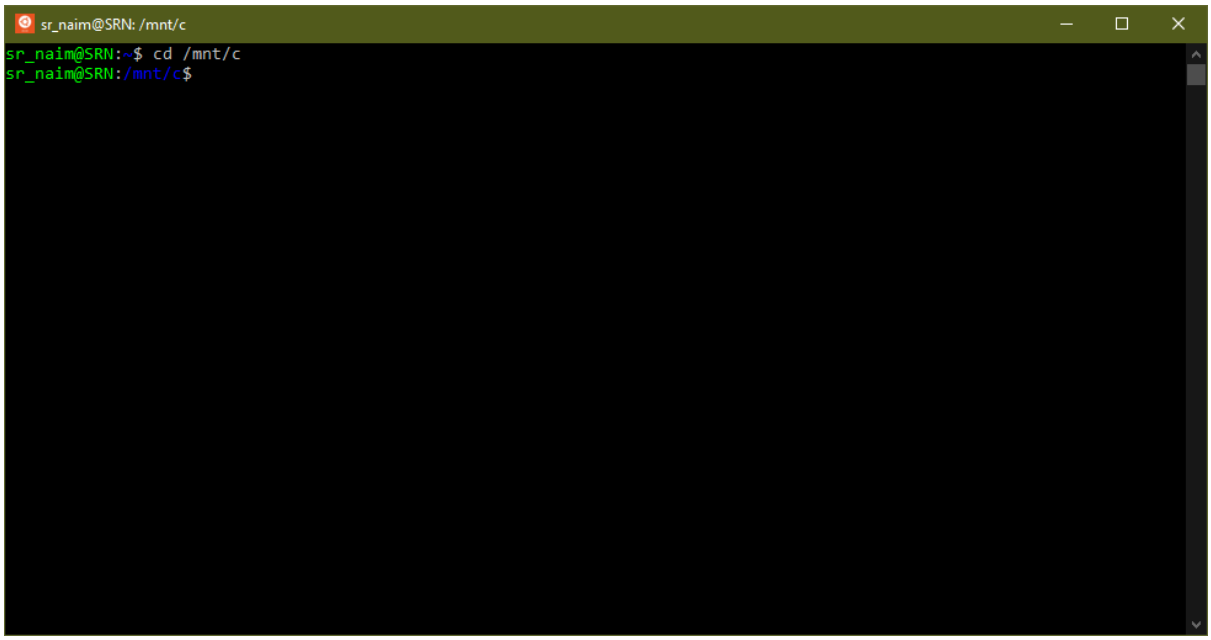
Commands

cd ‘directory_name‘

changes directory to ’directory_name’

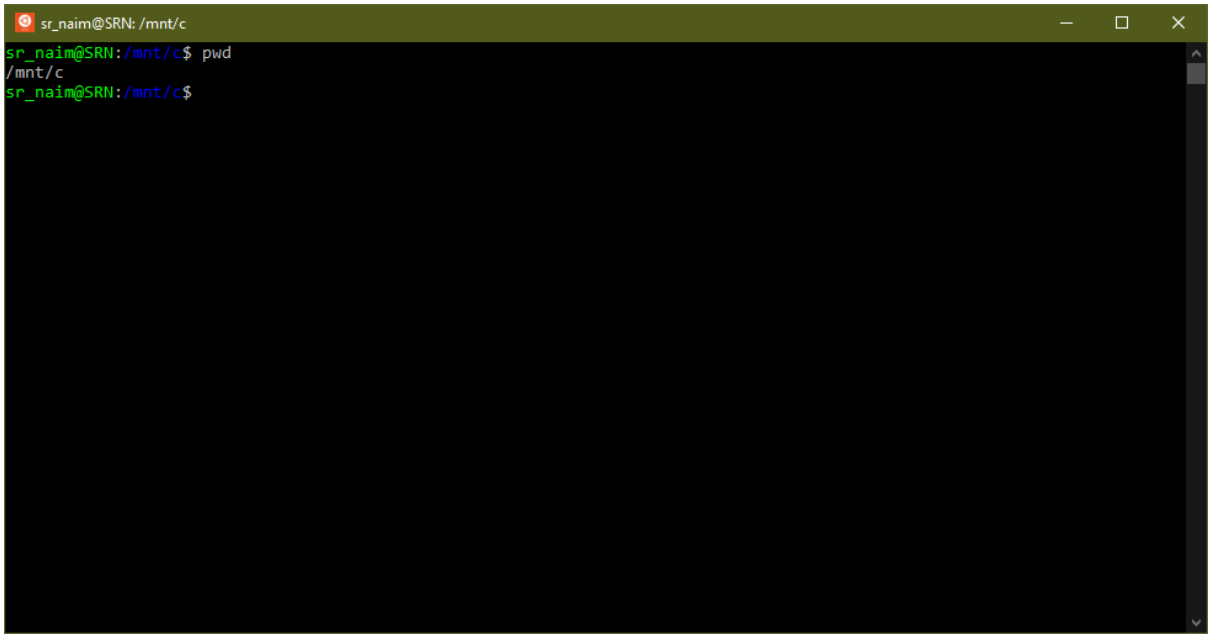
cd /mnt/’directory_name’

changes directory to ’directory_name’ [on windows subsystem for Linux]



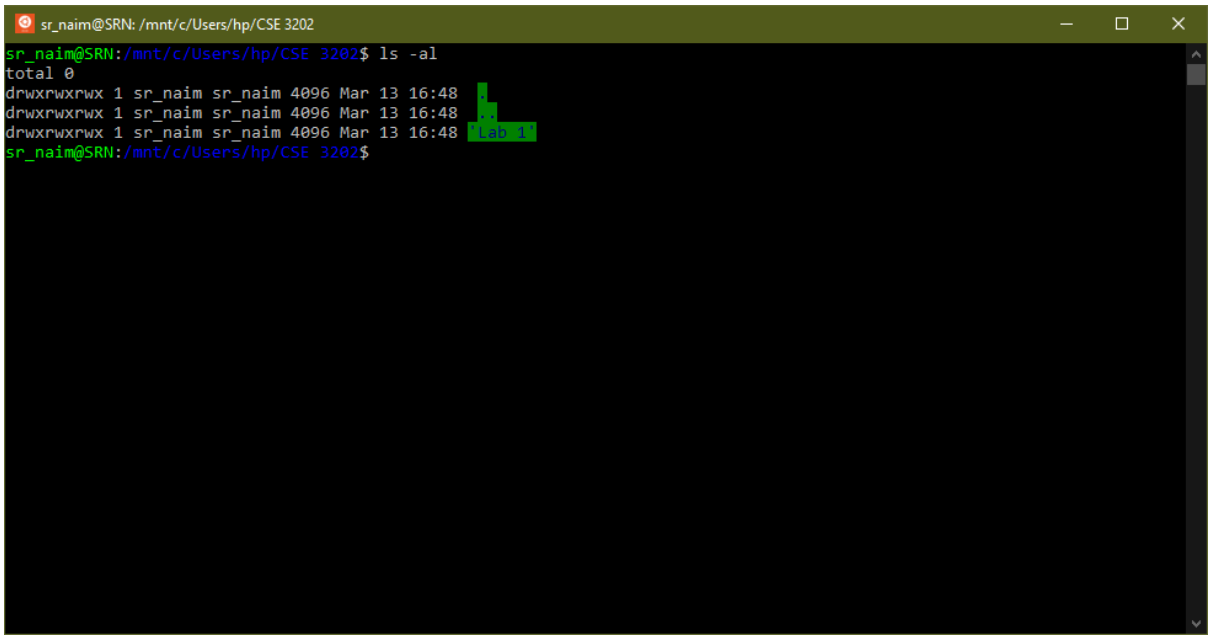
pwd

Shows present working directory



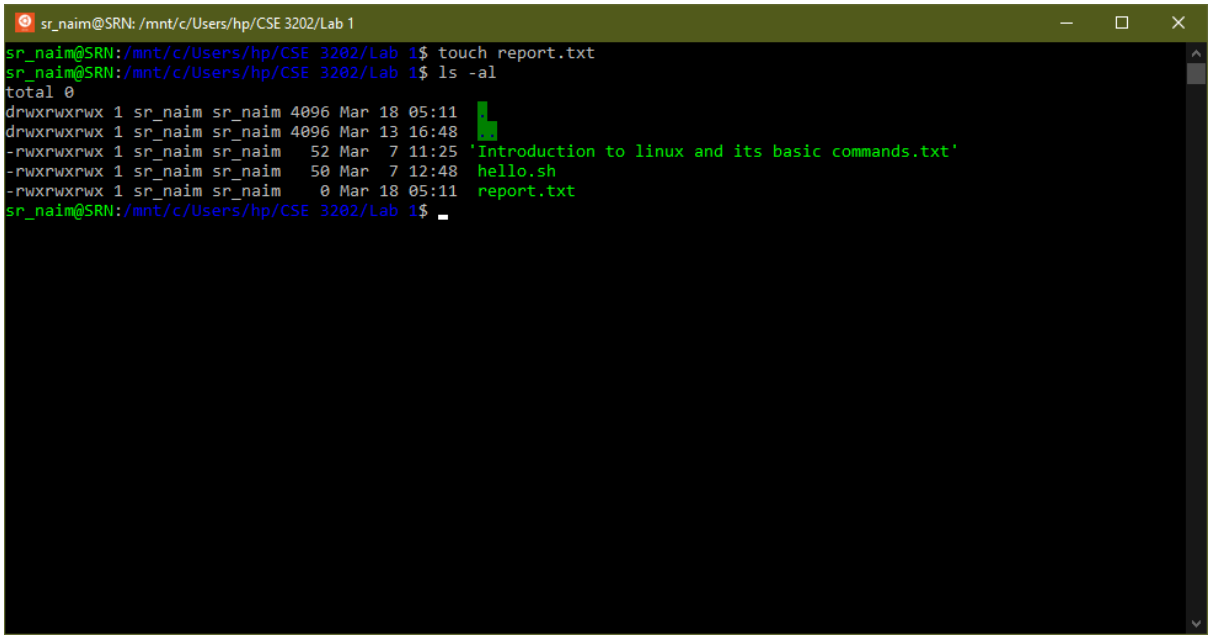
ls -al

List of all files and directories



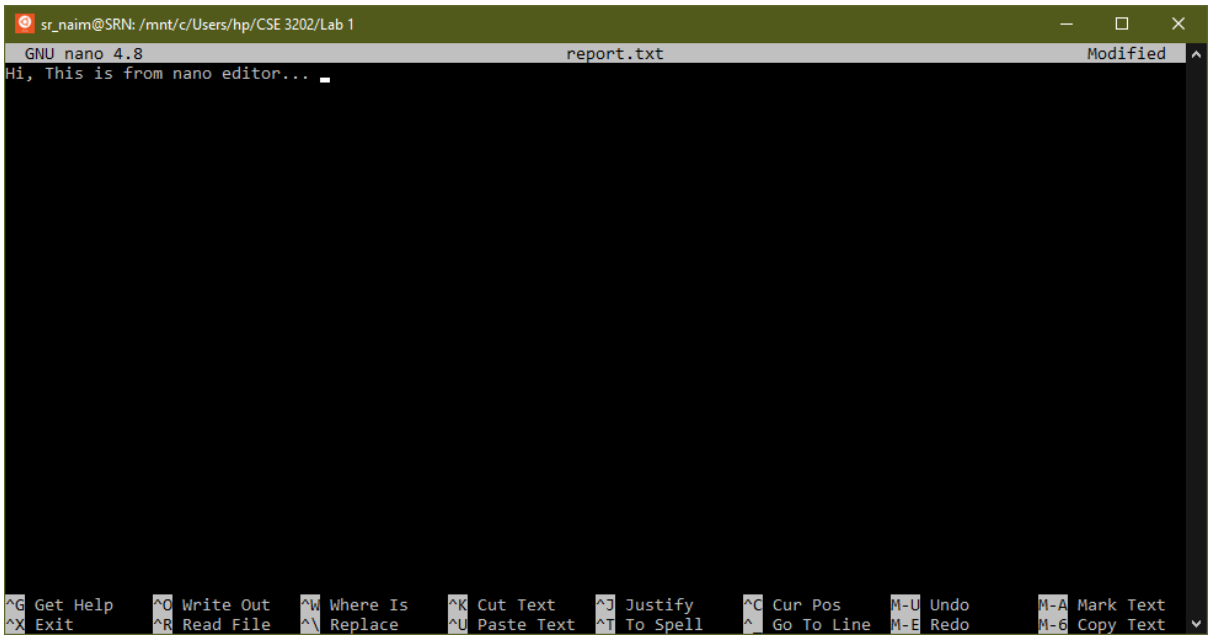
touch ‘file_name.txt’

creates a file named ‘file_name.txt’ in that directory



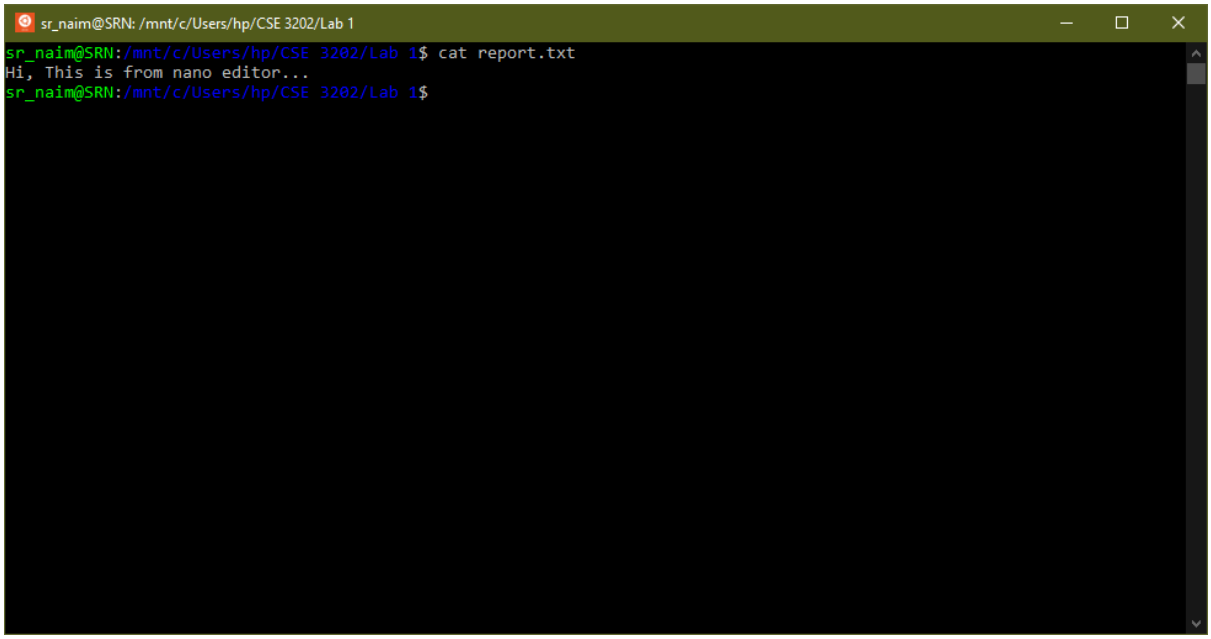
nano ‘file_name.txt’

Opens GNU nano editor for editing ‘file_name.txt’



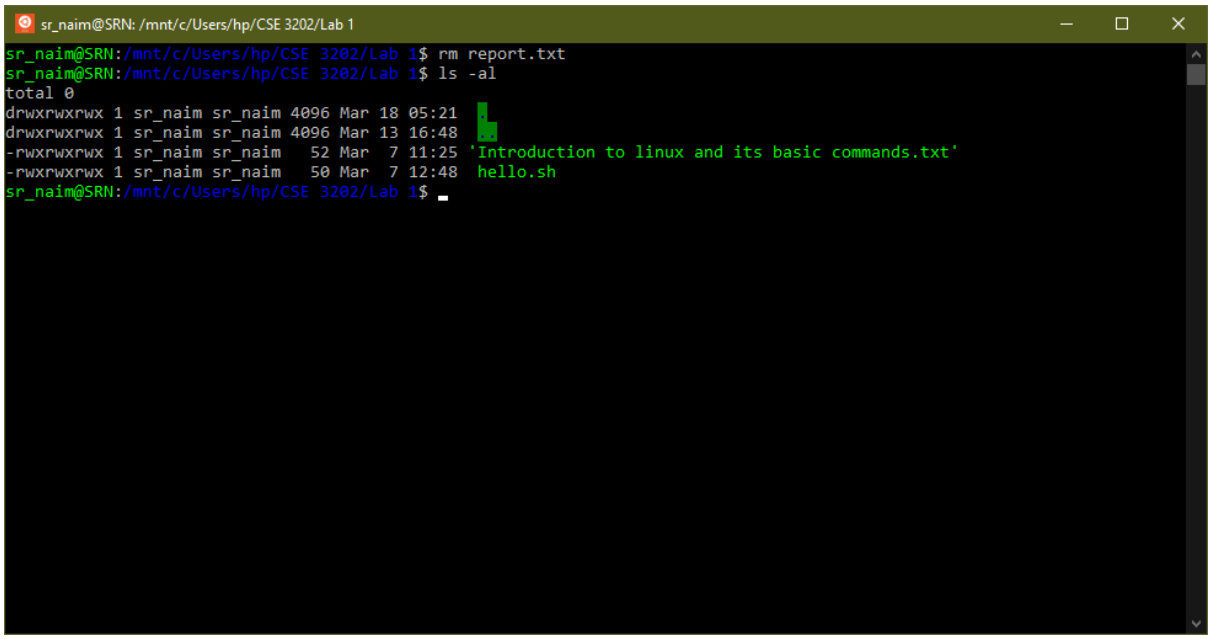
cat ‘file_name.txt’

shows the text on kernel



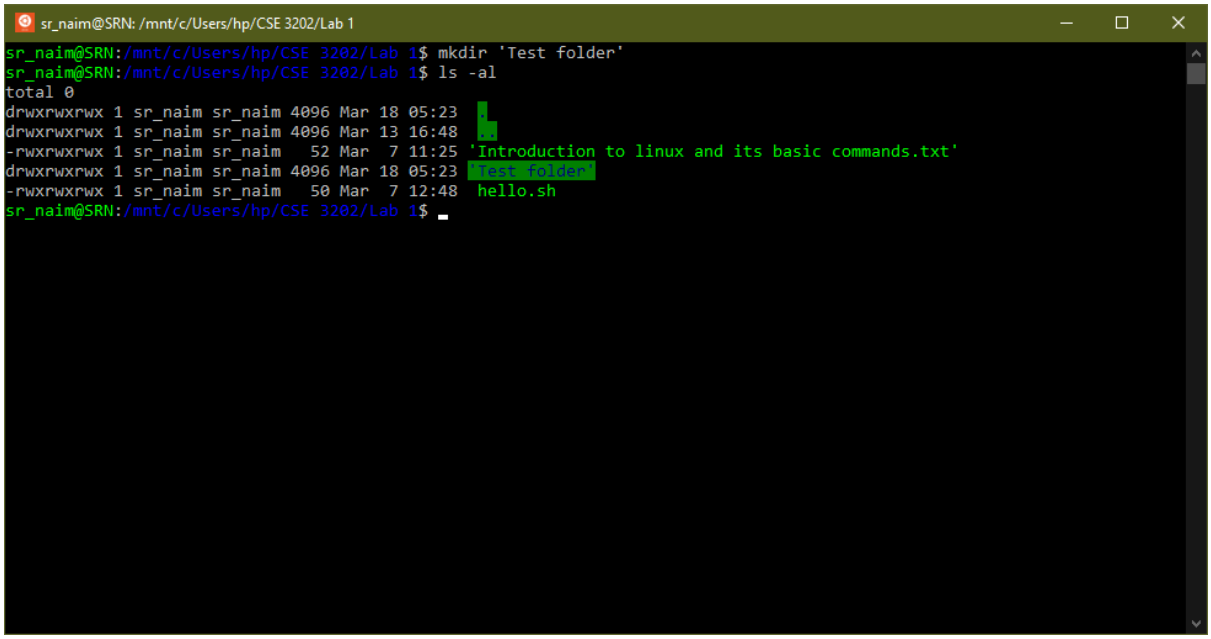
rm ‘file_name.txt’

deletes file from directory



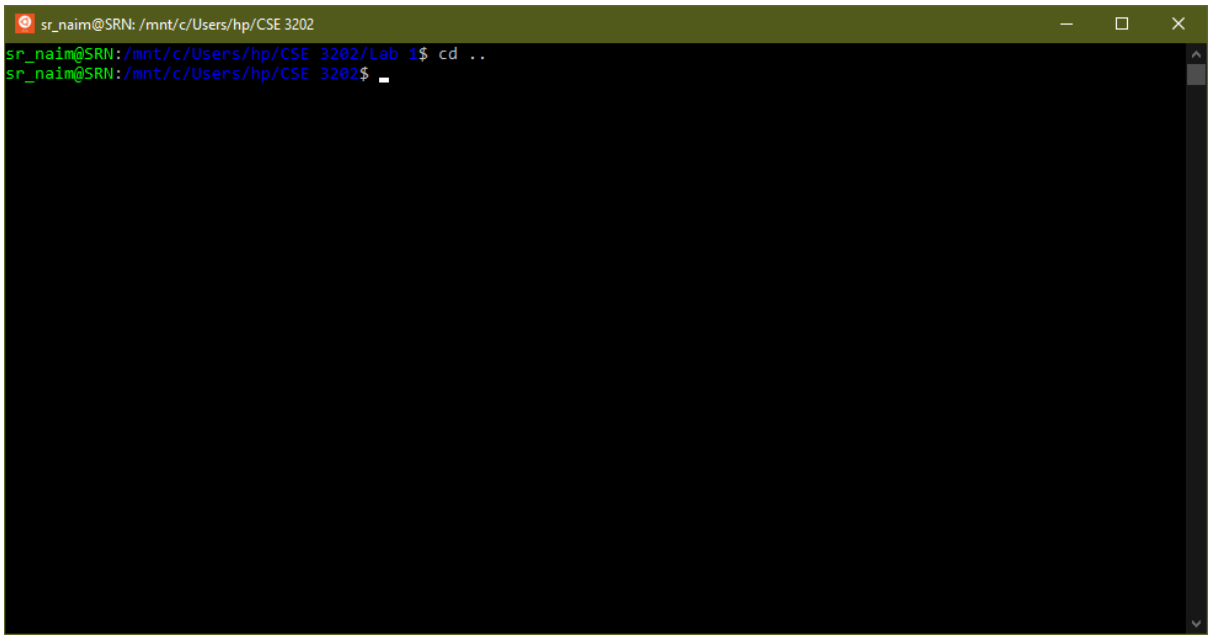
mkdir ‘folder_name’

creates a folder



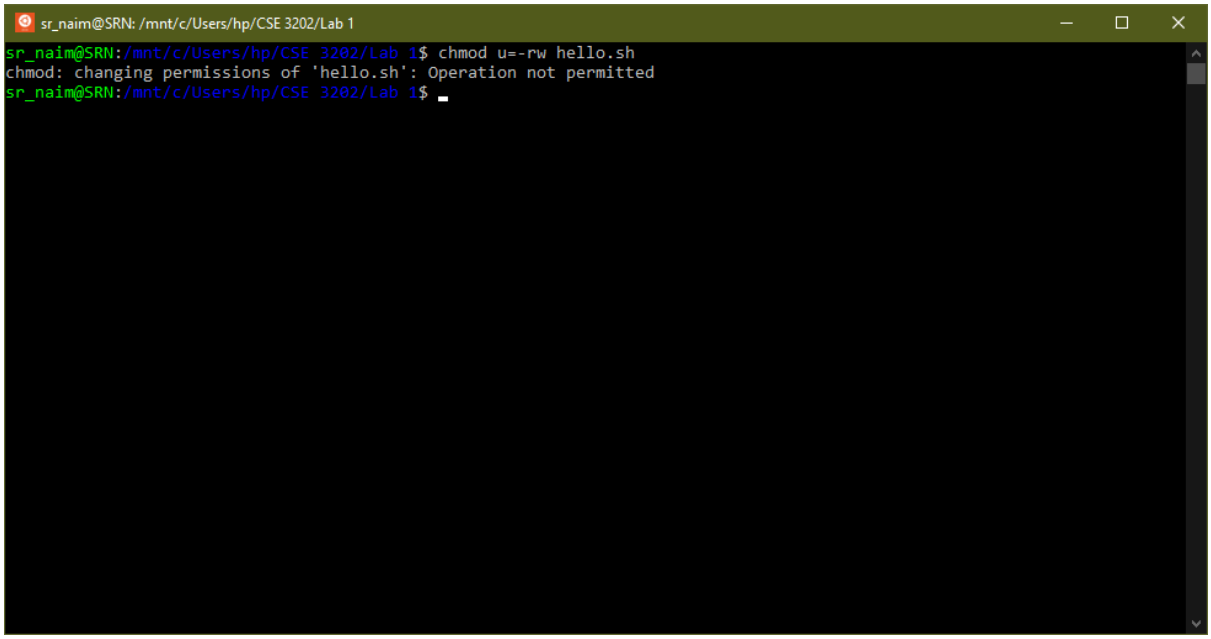
cd ..

Returns to parent folder



chmod u = rwx ‘folder_name’

Changes permissions of file or directories



Shell Coding

Header

#! /bin/bash

File Extension

.sh

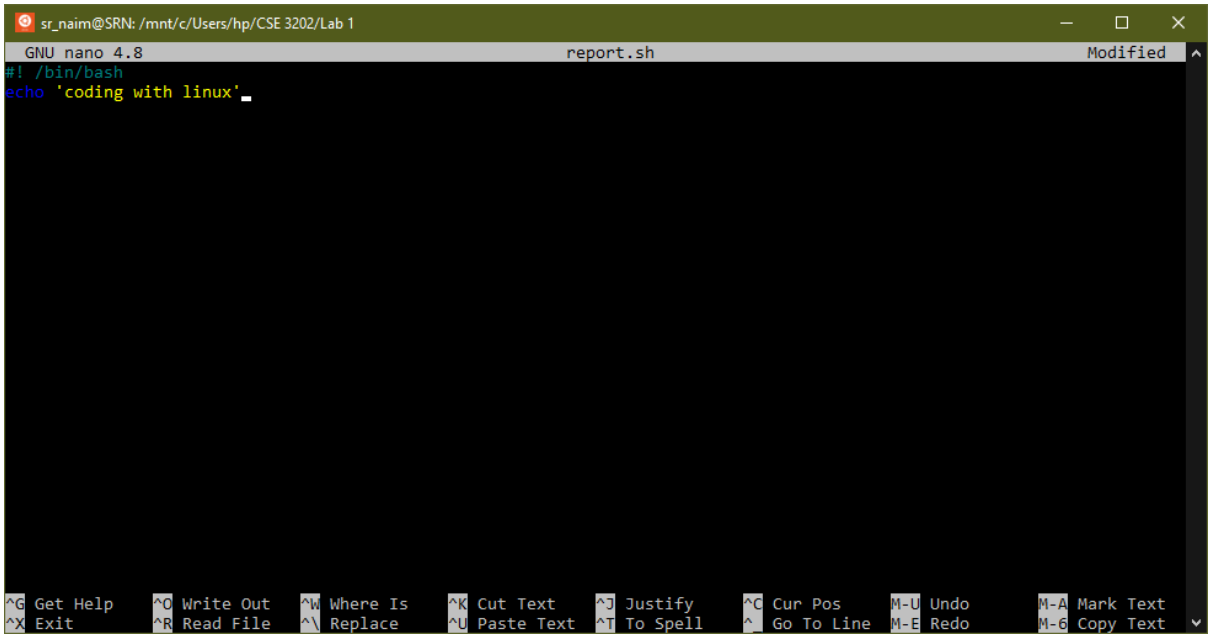
Command to run code

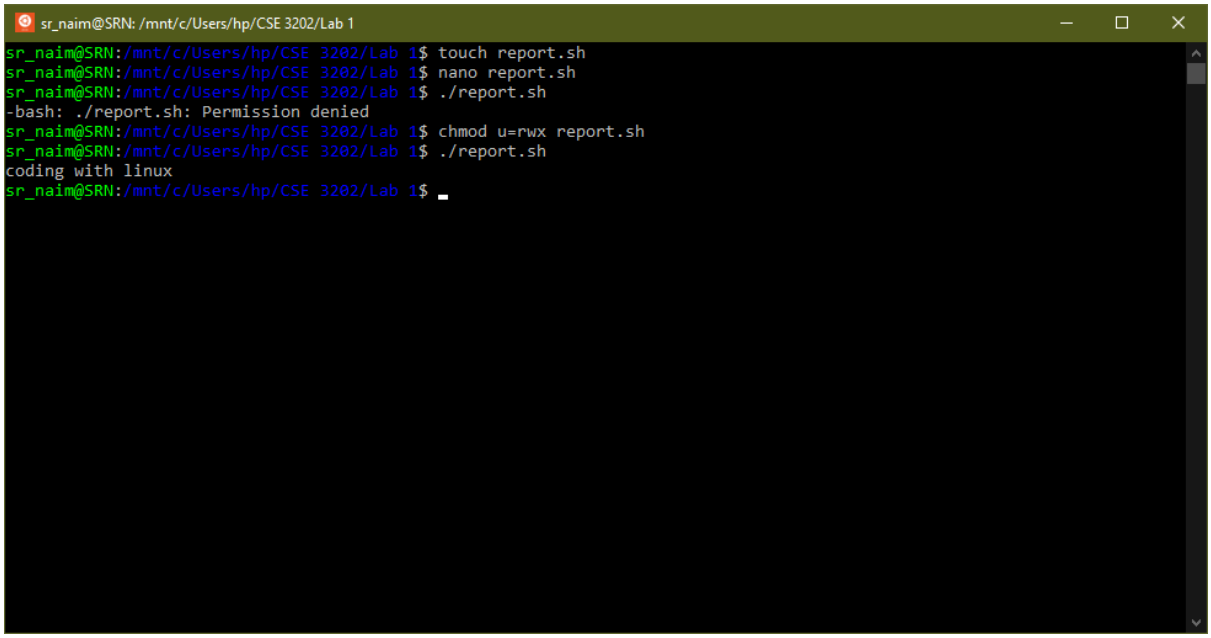
./'file_name'

echo 'string'

prints 'string'

CODE:





Discussion

While running a .sh file it shows ‘Permission denied’. Because the user does not have the permission to execute the file. So, we needed to use ‘chmod’ command to make that file executable.

The ‘chmod’ command shows an error ‘Operation not permitted’ because user is not the owner of /root folder. So, the change of permission can only be done by the root user.

Generally, the ‘chmod’ command does not work in WSL. Because ‘chmod’ does not change file permissions of files stored on NTFS or fat32 file systems. So, files are needed to be copied on WSL file system. This is done by two commands:

sudo umount /mnt/c

sudo mount -t drvfs C: /mnt/c -o metadata