

Assignment 1

Part 1: Linux Commands

```
sanjana@sanjana-Precision-5540:~$ echo "User: $(whoami), Hostname: $(hostname)" && history | tail -n 60
User: sanjana, Hostname: sanjana-Precision-5540
2068 mkdir assignment_directory
2069 cd assignment_directory/
2070 cd ..
2071 rmdir assignment_directory/
2072 ls
2073 cd Desktop
2074 cd ..
2075 mkdir new_dir
2076 cd new_dir
2077 history
2078 touch file1.txt
2079 touch file2.txt file3.txt
2080 ls
2081 cat file4.txt
2082 cat >file4.txt
2083 cat file4
2084 cat file4.txt
2085 rm file4.txt
2086 ls
2087 cat >file1.txt
2088 cat file1.txt
2089 cp file1.txt Documents
2090 cd ..
2091 cd Documents
2092 ls
2093 cd ..
2094 cd new_dir
2095 ls
2096 head file1.txt
2097 tail file1.txt
2098 tac file1.txt
2099 id
2100 sudo useradd new_user
2101 groupadd new_grp
2102 sudo groupadd new_grp
2103 userdel new_user
2104 sudo userdel new_user
2105 sudo groupdel new_grp
2106 wc file1.txt
2107 cat file1.txt | tr 'l' 'L'
2108 find . -name "*.pdf"
2109 cd ..
2110 find . -name "*.pdf"
2111 cd new_dir
2112 locate file1.txt
2113 date
2114 cal
2115 sleep 1
2116 time
2117 df
2118 clear
2119 ipconfig
2120 iconfig
2121 cd ..
2122 iconfig
2123 ping javapoint.com
```

Description:

Created Directory, moved into directory space, removed directory.

Created new directory, created sigle, multiple files using cat, added information in one file, removed that file, copied a file into a new file called documents.

Head , tail and tac commands to display file contents, created new user group, and deleted them.

Checked wordcount of a file, displayed date calendar, used find,locate and sleep.

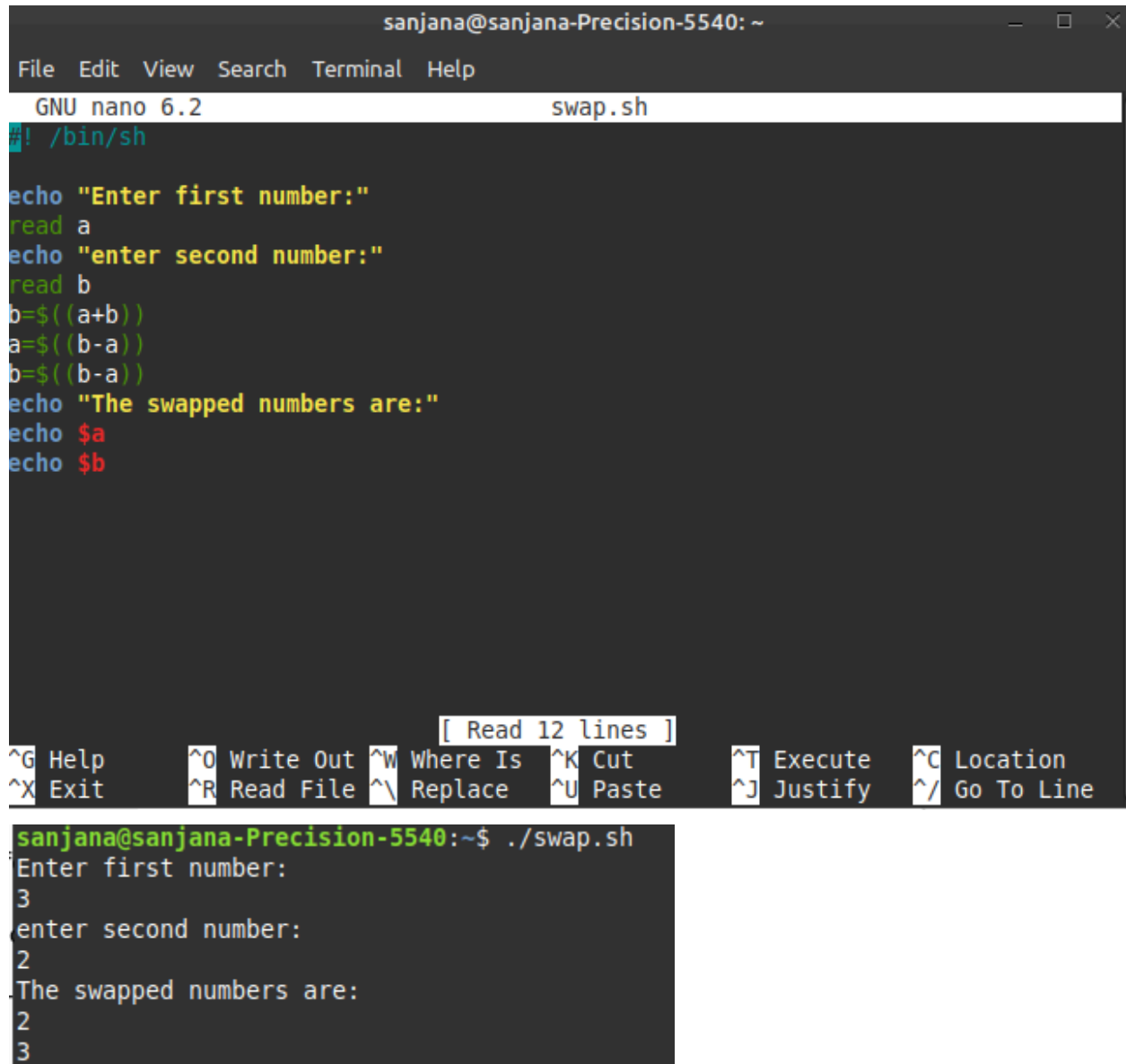
```
sanjana@sanjana-Precision-5540:~$ echo "User: $(whoami), Hostname: $(hostname)" && history | tail -n 5
User: sanjana, Hostname: sanjana-Precision-5540
2001 ls -l
2002 chmod 437 new_dir
2003 ls
2004 ls -l
```

Changed user, admin and grp permissions for a directory using chmod.

Part 2:Shell Script

Created a new file to swap numbers using shell script, changed permissions to execute it and executed the file for swapping numbers.

(*chmod +x filename.sh to change executable permissions)



```
sanjana@sanjana-Precision-5540: ~  
File Edit View Search Terminal Help  
GNU nano 6.2 swap.sh  
#!/bin/sh  
  
echo "Enter first number:"  
read a  
echo "enter second number:"  
read b  
b=$((a+b))  
a=$((b-a))  
b=$((b-a))  
echo "The swapped numbers are:"  
echo $a  
echo $b  
  
[ Read 12 lines ]  
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^/ Go To Line  
  
sanjana@sanjana-Precision-5540:~$ ./swap.sh  
Enter first number:  
3  
enter second number:  
2  
The swapped numbers are:  
2  
3
```

Created new file for computing sum of fibonacci numbers in a given range, changed permissions and executed the file

```
sanjana@sanjana-Precision-5540: ~  
File Edit View Search Terminal Help  
GNU nano 6.2 fib_sum.sh  
#!/bin/bash  
a=1  
b=1  
d=0  
sum=$((a+b))  
echo "Enter range:"  
read n  
echo "The fibonacci series is:"  
echo "$a"  
echo "$b"  
for((c=2;c<n;c++))  
do  
    d=$((a+b))  
    echo "$d"  
    sum=$((sum+d))  
    a=$b  
    b=$d  
done  
echo "Sum of first $n numbers in the fibonacci series is $sum"  
  
sanjana@sanjana-Precision-5540:~$ ./fib_sum.sh  
bash: ./fib_sum.sh: Permission denied  
sanjana@sanjana-Precision-5540:~$ chmod +x fib_sum.sh  
sanjana@sanjana-Precision-5540:~$ ./fib_sum.sh  
Enter range:  
3  
The fibonacci series is:  
1  
1  
2  
3  
5  
Sum of first 3 numbers in the fibonacci series is 12
```

Assignment 2

Running a simple c program in Linux

File containing Hello world

Compile and execute c file using `gcc file_name.c -o hello.o`(output executable object file, and then running the executable file.

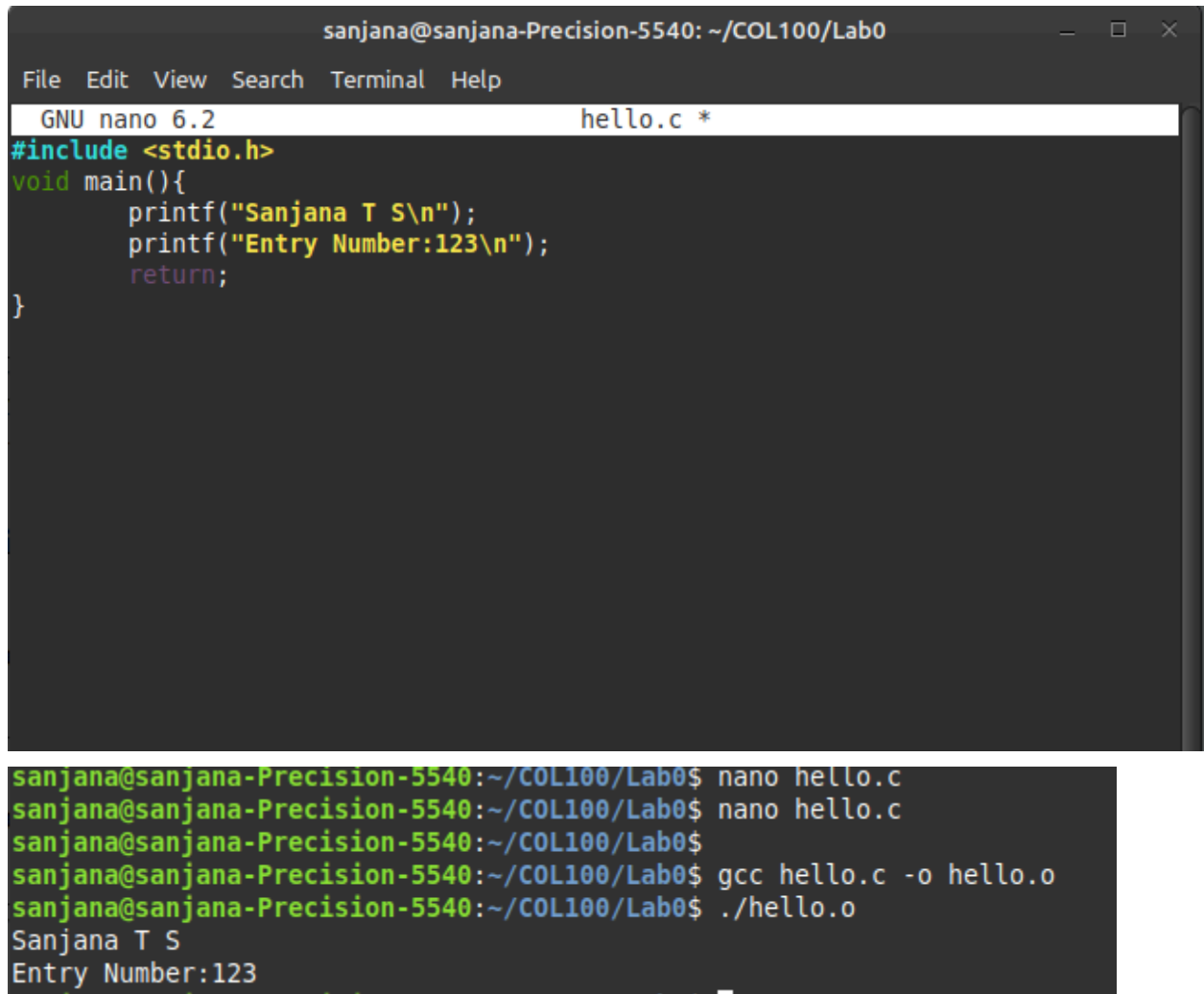
A screenshot of a terminal window showing the GNU nano 6.2 text editor editing a file named hello.c. The code in the editor is a simple C program that prints "Hello World\n".

```
File Edit View Search Terminal Help
GNU nano 6.2 hello.c
#include <stdio.h>
void main(){
    printf("Hello World\n");
    return;
}
```

```
sanjana@sanjana-Precision-5540:~$ gcc --version
gcc (Ubuntu 11.4.0-1ubuntu1~22.04) 11.4.0
Copyright (C) 2021 Free Software Foundation, Inc.
This is free software; see the source for copying conditions. There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

sanjana@sanjana-Precision-5540:~$ mkdir COL100
sanjana@sanjana-Precision-5540:~$ cd COL100
sanjana@sanjana-Precision-5540:~/COL100$ mkdir Lab0
sanjana@sanjana-Precision-5540:~/COL100$ cd Lab0
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ nano hello.c
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ gcc hello.c -o hello.o
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ ./hello.o
Hello World
```

Making changes to above c file , saving it, compiling it and running it again.



```
sanjana@sanjana-Precision-5540: ~/COL100/Lab0
File Edit View Search Terminal Help
GNU nano 6.2 hello.c *
#include <stdio.h>
void main(){
    printf("Sanjana T S\n");
    printf("Entry Number:123\n");
    return;
}

sanjana@sanjana-Precision-5540:~/COL100/Lab0$ nano hello.c
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ nano hello.c
sanjana@sanjana-Precision-5540:~/COL100/Lab0$
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ gcc hello.c -o hello.o
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ ./hello.o
Sanjana T S
Entry Number:123
```

Assignment 3: Shell scripts - Research on Shell scripts

Script to Add Two Numbers

```
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ nano sum.sh
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ ./sum.sh
bash: ./sum.sh: Permission denied
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ chmod +x sum.sh
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ ./sum.sh
Enter first number:
1
Enter second number:
2
The sum of 2 numbers is:
3
```

```
GNU nano 6.2 sum.sh
#!/bin/sh
echo "Enter first number:"
read a
echo "Enter second number:"
read b
c=$((a+b))
echo "The sum of 2 numbers is:"
echo $c
```

Script to Print All .txt and .c Files

```
GNU nano 6.2 check.sh
shopt -s nullglob
# !/bin/bash
txt_files=$(ls *.txt)
c_files=$(ls *.c)
if [[ ${#txt_files[@]} -gt 0 || ${#c_files[@]} -gt 0 ]]; then
    ls *.txt *.c 2>/dev/null
else
    echo "Creating dummy files"
    touch file1.txt file2.txt file1.c file2.c
    echo "created:"
    ls *.txt *.c
fi
```

```
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ nano check.sh
sanjana@sanjana-Precision-5540:~/COL100/Lab0$ ./check.sh
abc.txt file1.c file1.txt file2.c file2.txt hello.c
```

Installing Docker Using a Shell Script

```
File Edit View Search Terminal Help
N: See apt-secure(8) manpage for repository creation and user configuration details.
Installing Docker and its components
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package docker-ce is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source

Package docker-ce-cli is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source

E: Package 'docker-ce' has no installation candidate
E: Package 'docker-ce-cli' has no installation candidate
E: Unable to locate package containerd.io
E: Couldn't find any package by glob 'containerd.io'
E: Couldn't find any package by regex 'containerd.io'
E: Unable to locate package docker-buildx-plugin
E: Unable to locate package docker-compose-plugin
Starting and enabling Docker service.
Failed to enable unit: Unit file /etc/systemd/system/docker.service is masked.
Running hello-world Docker container
```

```

sanjana@sanjana-Precision-5540:~$ nano docker_installation.sh
sanjana@sanjana-Precision-5540:~$ chmod +x docker_installation.sh
sanjana@sanjana-Precision-5540:~$ ./docker_installation.sh
Updating package list...
Hit:1 https://packages.microsoft.com/repos/edge stable InRelease
Hit:2 https://packages.microsoft.com/repos/code stable InRelease
Hit:3 https://deb.nodesource.com/node_20.x nodistro InRelease
Hit:4 https://dl.google.com/linux/chrome/deb stable InRelease
Get:5 http://security.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:6 http://apt.postgresql.org/pub/repos/apt focal-pgdg InRelease [129 kB]
Hit:7 http://repo.mysql.com/apt/ubuntu jammy InRelease
Err:6 http://apt.postgresql.org/pub/repos/apt focal-pgdg InRelease
  The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 7FCC7D46ACCC4CF8
Hit:8 http://repo.mongodb.org/apt/debian bullseye/mongodb-org/7.0 InRelease
Ign:9 https://repo.mongodb.org/apt/ubuntu vera/mongodb-org/5.0 InRelease
Hit:10 http://archive.ubuntu.com/ubuntu jammy InRelease
Ign:11 http://packages.linuxmint.com vera InRelease
Get:12 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:13 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:14 https://repo.mongodb.org/apt/ubuntu jammy/mongodb-org/8.0 InRelease
Hit:15 http://packages.linuxmint.com vera InRelease

```

```

echo "Updating package list..."
sudo apt-get update -y
echo "Installing required dependencies..."
sudo apt-get install -y ca-certificates curl
echo "Adding Docker's GPG key..."
sudo install -m 0755 -d /etc/apt/keyrings
sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/gpg
sudo chmod a+r /etc/apt/keyrings/docker.asc
echo "Adding Docker repository..."
echo "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] \
$(. /etc/os-release && echo "$VERSION_CODENAME") stable" | \
sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
echo "Updating package list after adding Docker repository"
sudo apt-get update -y
echo "Installing Docker and its components"
sudo apt-get install -y docker-ce docker-ce-cli containerd.io docker-buildx-plugin
echo "Starting and enabling Docker service."
sudo systemctl enable --now docker
echo "Running hello-world Docker container"
sudo docker run hello-world

```

[Read 21 lines]

Download and Install MySQL Database

```

1996 ./mysql_installation.sh
1997 sudo ./mysql_installation.sh
1998 chmod +x mysql_installation.sh
1999 ./mysql_installation.sh

```



```
sanjana@sanjana-Precision-5540:~$ sudo systemctl status mysql
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset:
   Active: active (running) since Wed 2025-01-29 17:11:27 IST; 54s ago
     Main PID: 534965 (mysqld)
        Status: "Server is operational"
         Tasks: 38 (limit: 37784)
        Memory: 368.6M
           CPU: 1.027s
       CGroup: /system.slice/mysql.service
              └─534965 /usr/sbin/mysqld

Jan 29 17:11:27 sanjana-Precision-5540 systemd[1]: Starting MySQL Community Ser
Jan 29 17:11:27 sanjana-Precision-5540 systemd[1]: Started MySQL Community Serv
lines 1-13/13 (END)
```