1. Navigating the File system

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ pwd
/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal
```

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab$ ls
a.out         cppProgram.cpp  filing1.   filing1.o  open2.c  program2.c  program3.cu  program5.c  read1.c  sample.c  thread1.c   write.c
cppProg.cpp  cppProgram.o    filing1.c  open1.c    osFinal  program3.c  program4.c   program6.c  read2.c  test.txt  towrite.txt
```

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab$ cd osFinal/
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$
```

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cd ~
root1@RADHERADHE:~$
```

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cd ~
root1@RADHERADHE:~$ cd -
/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$
```

2. Managing Files and Directories

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab$ mkdir osFinal
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab$ cd osFinal/
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ touch example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ touch test.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ ls -l
total 0
-rwxrwxrwx 1 root1 root1 0 May 15 15:42 example.txt
-rwxrwxrwx 1 root1 root1 0 May 15 15:42 test.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ mkdir TestFolder
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ mv test.txt TestFolder/
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cp example.txt TestFolder/
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cd TestFolder/
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ ls
example.txt   test.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ mv example.txt sample.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ ls
sample.txt   test.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ rm sample.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ ls
test.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$
```

3. Working with File content.

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ touch example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ echo "This is my first file" > example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ cat example.txt
This is my first file
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ echo "I am learning Linux commands" >> example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ cat example.txt
This is my first file
I am learning Linux commands
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$
```

4. Understanding File Permissions

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$  ls -l
total 0
drwxrwxrwx 1 root1 root1 512 May 15 15:45 TestFolder
-rwxrwxrwx 1 root1 root1   0 May 15 15:42 example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ chmod 600 example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ ls -l
total 0
drwxrwxrwx 1 root1 root1 512 May 15 15:45 TestFolder
-rwxrwxrwx 1 root1 root1   0 May 15 15:42 example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ chmod 777 example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ ls -l
total 0
drwxrwxrwx 1 root1 root1 512 May 15 15:45 TestFolder
-rwxrwxrwx 1 root1 root1   0 May 15 15:42 example.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$
```

5. Finding Files and Directories

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ find test.txt
test.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ grep "Linux" test.txt
I am learning Linux Commands
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$
```

6. Basic System Information

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ date
Wed May 15 15:54:35 PKT 2024
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal/TestFolder$ who
root1     pts/1         2024-05-15 14:24
```

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ uptime
 16:05:39 up  1:37,  1 user,  load average: 0.15, 0.09, 0.02
```

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ df
Filesystem      1K-blocks        Used  Available Use% Mounted on
none              1960356           4    1960352   1% /mnt/wsl
none            191455440   146955704   44499736  77% /usr/lib/wsl/drivers
none              1960356           0    1960356   0% /usr/lib/modules
none              1960356           0    1960356   0% /usr/lib/modules/5.15.146.1-microsoft-standard-WSL2
/dev/sdc       1055762868     2842968  999216428   1% /
none              1960356         380    1959976   1% /mnt/wslg
none              1960356           0    1960356   0% /usr/lib/wsl/lib
rootfs            1957100        1884    1955216   1% /init
none              1960356         828    1959528   1% /run
none              1960356           0    1960356   0% /run/lock
none              1960356           0    1960356   0% /run/shm
tmpfs                4096           0       4096   0% /sys/fs/cgroup
none              1960356          76    1960280   1% /mnt/wslg/versions.txt
none              1960356          76    1960280   1% /mnt/wslg/doc
C:\             191455440   146955704   44499736  77% /mnt/c
D:\             133118972    71365584   61753388  54% /mnt/d
E:\             174078972    31453020  142625952  19% /mnt/e
snapfuse              128         128          0 100% /snap/bare/5
snapfuse            76032       76032          0 100% /snap/core22/1122
snapfuse            93952       93952          0 100% /snap/gtk-common-themes/1535
snapfuse            41472       41472          0 100% /snap/snapd/20671
snapfuse           134144      134144          0 100% /snap/ubuntu-desktop-installer/1284
snapfuse           134912      134912          0 100% /snap/ubuntu-desktop-installer/1286
snapfuse            39680       39680          0 100% /snap/snapd/21465
snapfuse            76032       76032          0 100% /snap/core22/1380
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$
```

Perform the following tasks.

Program 1: To write some data on the standard output device to working of the write() system call.

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ nano write.c
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cat write.c
#include<unistd.h>
int main()
{
        write(1,"hello\n",6);
}
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ gcc write.c
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ ./a.out
hello
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ |
```

Program 2: To read data from the standard input device and write it on the screen.

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ nano read.c
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cat read.c
#include<unistd.h>
int main()
{
char buff[20];
read(0,buff,10);//read 10 bytes from standard input device(keyboard), store in buffer (buff)
write(1,buff,10);//print 10 bytes from the buffer on the screen
}
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ gcc read.c
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ ./a.out
Sagar
Sagar
```

Program 3: Write a program using open() system call to read the first 10 character of an existing file "OSLAB.txt" and print them on screen.

```
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ nano OSLAB.txt
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ cat OSLAB.txt
Sagar Chhabriya
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ nano open.c
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ gcc open.c
root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ ./a.out
Sagar ChhaThe file descriptor of the file is: 3root1@RADHERADHE:/mnt/c/Users/Mr Sagar Kumar/Desktop/osLab/osFinal$ |
```