



Name: M. Hassan Sattar

Roll No: 22F-3773

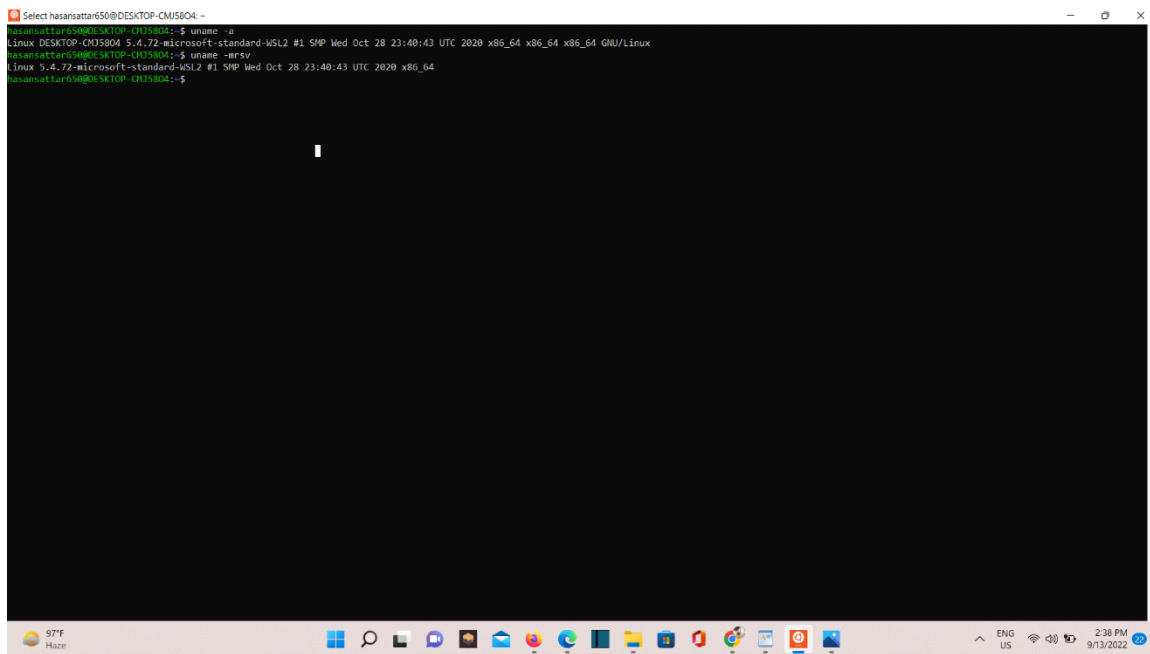
Submitted to: Dr. Bilal Khan

National University of Computer and Emerging Sciences

OPERATING SYSTEM

Q-1 (a)

Find out the Linux kernel version of your system using the command on the terminal. You are required to paste the screenshot in the answer?

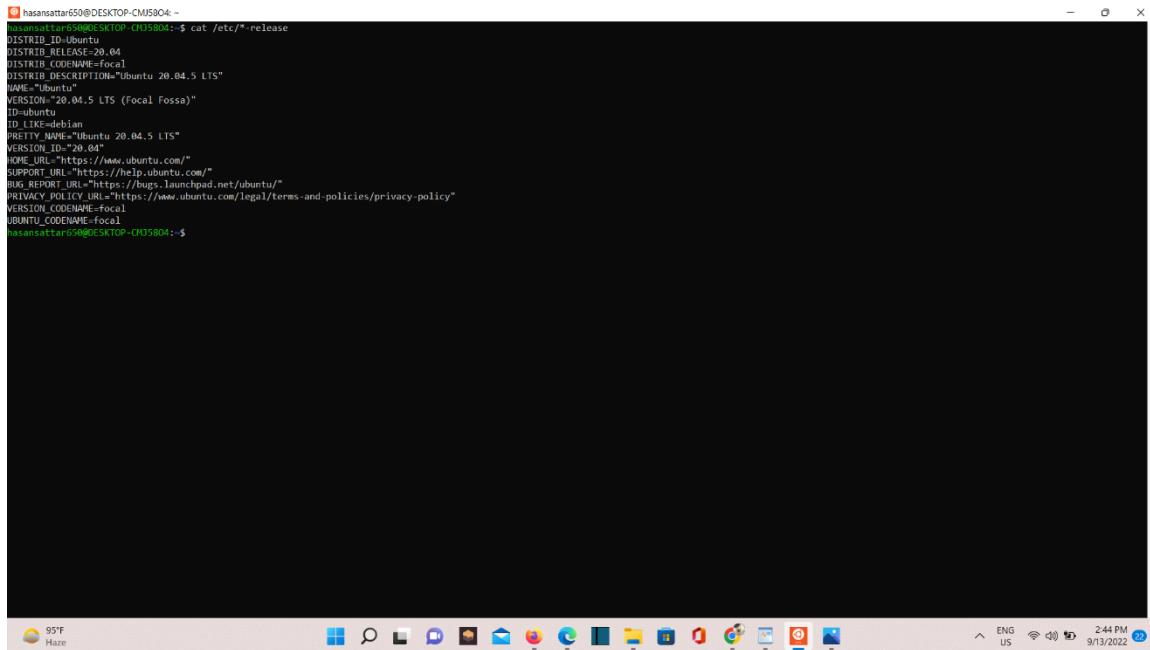


```
Select hasansatta650@DESKTOP-CM15804 -  
hasansattar650@DESKTOP-CM15804:~$ uname -a  
Linux DESKTOP-CM15804 5.4.72-microsoft-standard-WSL2 #1 SMP Wed Oct 28 23:40:43 UTC 2020 x86_64 x86_64 GNU/Linux  
hasansattar650@DESKTOP-CM15804:~$ uname -arsv  
Linux 5.4.72-microsoft-standard-WSL2 #1 SMP Wed Oct 28 23:40:43 UTC 2020 x86_64  
hasansattar650@DESKTOP-CM15804:~$
```

The screenshot shows a Windows 10 desktop environment with a terminal window open. The terminal window title is "Select hasansatta650@DESKTOP-CM15804 -". The terminal output shows the command "uname -a" being executed, resulting in the string "Linux DESKTOP-CM15804 5.4.72-microsoft-standard-WSL2 #1 SMP Wed Oct 28 23:40:43 UTC 2020 x86_64 x86_64 GNU/Linux". The command "uname -arsv" is also executed, resulting in the string "Linux 5.4.72-microsoft-standard-WSL2 #1 SMP Wed Oct 28 23:40:43 UTC 2020 x86_64". The Windows taskbar is visible at the bottom, showing the date and time as 2:38 PM on 9/13/2022.

Q-1 (b)

Find out the distribution name and version of your operating system using the command on the terminal. You are required to paste the screenshot in the answer ?



```
hasanattar650@DESKTOP-CM58Q4: ~  
hasanattar650@DESKTOP-CM58Q4:~$ cat /etc/*-release  
DISTRIB_ID=Ubuntu  
DISTRIB_RELEASE=20.04  
DISTRIB_CODENAME=focal  
DISTRIB_DESCRIPTION="Ubuntu 20.04.5 LTS"  
NAME="Ubuntu"  
VERSION="20.04.5 LTS (Focal Fossa)"  
ID=ubuntu  
ID_LIKE=debian  
PRETTY_NAME="Ubuntu 20.04.5 LTS"  
VERSION_ID="20.04"  
HOME_URL="https://www.ubuntu.com/"  
SUPPORT_URL="https://help.ubuntu.com/"  
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"  
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"  
VERSION_CODENAME=focal  
UBUNTU_CODENAME=focal  
hasanattar650@DESKTOP-CM58Q4:~$
```

Q-2

For this question you are required to use standard c library to perform I/O operations.

(a)

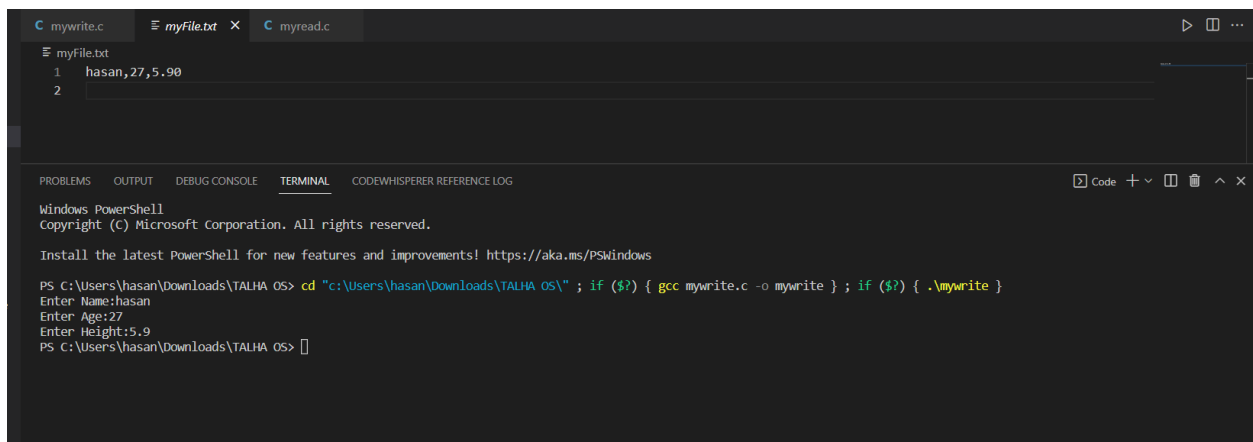
Write a C program (named: mywrite.c) which will open a new text file (myFile.txt) in the write mode. Using the c standard library API, your program should take the following information from the user in the terminal window: Name, Age (type integer), Height (in Feet, type float). Next, it should write the above information to the myFile.txt ?

```
#include <stdio.h>

void main()
{
    char Name[50];
    int Age;
    float Height;

    FILE* FileHandler = fopen( "myFile.txt", "w" );
    if (FileHandler == NULL)
    {
        printf("Not Found .\n");
        return;
    }
}
```

```
printf("Enter Name:");  
  
scanf("%s", &Name);  
  
printf("Enter Age:");  
  
scanf("%d", &Age);  
  
printf("Enter Height:");  
  
scanf("%f", &Height);  
  
fprintf(FileHandler,"%s,%d,%.2f\n", Name, Age, Height);  
  
fclose(FileHandler) ;  
  
}
```



The screenshot shows a code editor with three tabs: `mywrite.c`, `myFile.txt`, and `myread.c`. The `myFile.txt` tab is active, displaying the following content:

```
1 hasan,27,5.90  
2
```

Below the code editor is a terminal window titled "TERMINAL". It shows the output of a PowerShell command executed in a Windows environment. The command is:

```
cd "C:\Users\hasan\Downloads\TALHA OS" ; if ($?) { gcc mywrite.c -o mywrite } ; if ($?) { .\mywrite }
```

The terminal output shows the following sequence of events:

```
Windows PowerShell  
Copyright (c) Microsoft Corporation. All rights reserved.  
  
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows  
  
PS C:\Users\hasan\Downloads\TALHA OS> cd "C:\Users\hasan\Downloads\TALHA OS" ; if ($?) { gcc mywrite.c -o mywrite } ; if ($?) { .\mywrite }  
Enter Name:hasan  
Enter Age:27  
Enter Height:5.9  
PS C:\Users\hasan\Downloads\TALHA OS>
```

(b)

Write another C program (myread.c) which will open an already existing file (myFile.txt obtained from the above program) in read mode. Using the c standard library API, your program will read the information in the myFile.txt and print it to the terminal window ?

```
#include <stdio.h>

void main()
{
    FILE* FileHandler = fopen( "myFile.txt", "r" );
    if( FileHandler == NULL )
    {
        printf("Not Found.\n");
        return;
    }

    char ch;

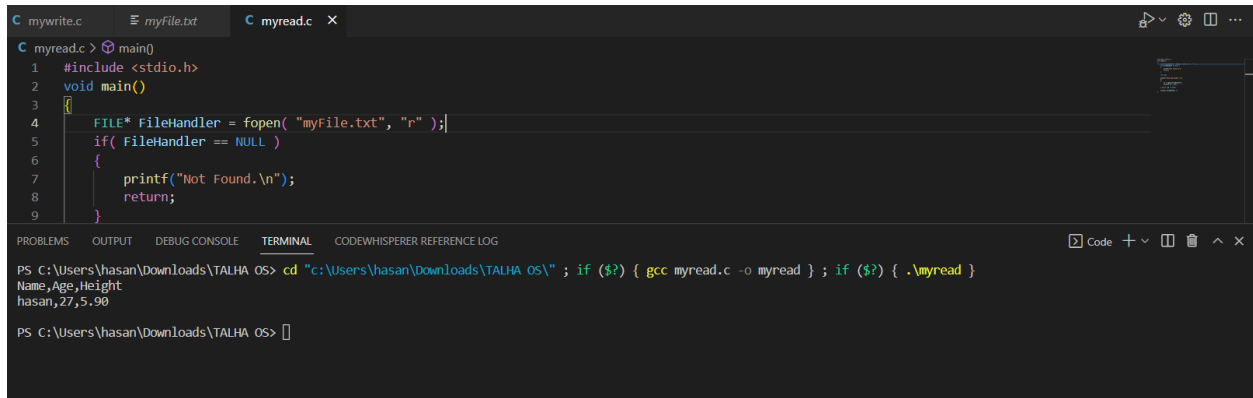
    printf("Name, Age, Height \n");
    do
    {
        ch = fgetc(FileHandler);
        printf("%c", ch);
```

```

    } while (ch != EOF);

    fclose( FileHandler );
}

```



The screenshot shows a Visual Studio Code editor with a C program named `myread.c` and a terminal window. The C program is as follows:

```

1  #include <stdio.h>
2  void main()
3  {
4      FILE* FileHandler = fopen( "myFile.txt", "r" );
5      if( FileHandler == NULL )
6      {
7          printf("Not Found.\n");
8          return;
9      }

```

The terminal window shows the following commands and output:

```

PS C:\Users\hasan\Downloads\TALHA OS> cd "c:\Users\hasan\Downloads\TALHA OS\" ; if ($?) { gcc myread.c -o myread } ; if ($?) { .\myread }
Name,Age,Height
hasan,27,5.90
PS C:\Users\hasan\Downloads\TALHA OS>

```

Q-3

What does POSIX stand for? Write a short (up to 10 lines) description on POSIX?

POSIX stand for Portable Operating System Interface. It is a portable operating system based on the UNIX operating system. This standard specified by IEEE computer society. It describes both user-level and system level application programming interfaces along with a CMD (command line interface). **POSIX** is used to make application portability easier. POSIX is considering a subset of UNIX and is used to cover different Unix-like environments for many other operating systems. POSIX at the beginning hold different environments, such as Eunice for Virtual Machines, POSIX Personality, and NT from Windows OS. **POSIX** is portable between different

variants of UNIX. In general terms, we can call POSIX as an operating system of UNIX.

Q-4

Various Operating systems use various structures such as Monolithic, Layered or Microkernel. Give at least five examples of operating systems for each of the structure.?

Various Operating systems use various structures such as Monolithic, Layered or Microkernel.

Monolithic Kernel:

- 1) Linux
- 2) Microsoft Windows (95, 98)
- 3) Solaris
- 4) HP-UX
- 5) DOS

Layered or microkernel:

- 1) Symbian
- 2) Mac OS X
- 3) PikeOS
- 4) Minix and Coyotos.
- 5) L4Linux

