

Date: December 11, 2020

Total Marks: 15

Total Time: 2 Hours

Course Instructor: Mr. Muhammad Wasif

Name: MUHAMMAD HARIS IRFAN Roll No: FA18-BCE-090

Instructions:

1. Use online portal only to submit the lab exam and label the question number clearly to get marks.
2. Peer communication or plagiarized content from internet is strictly prohibited.
3. If viva voce needed, student can be called any time

Questions No	Marks Obtained	Total Marks
Q1		10
Q2		05
Total		15

OS Lab Sessional - 01

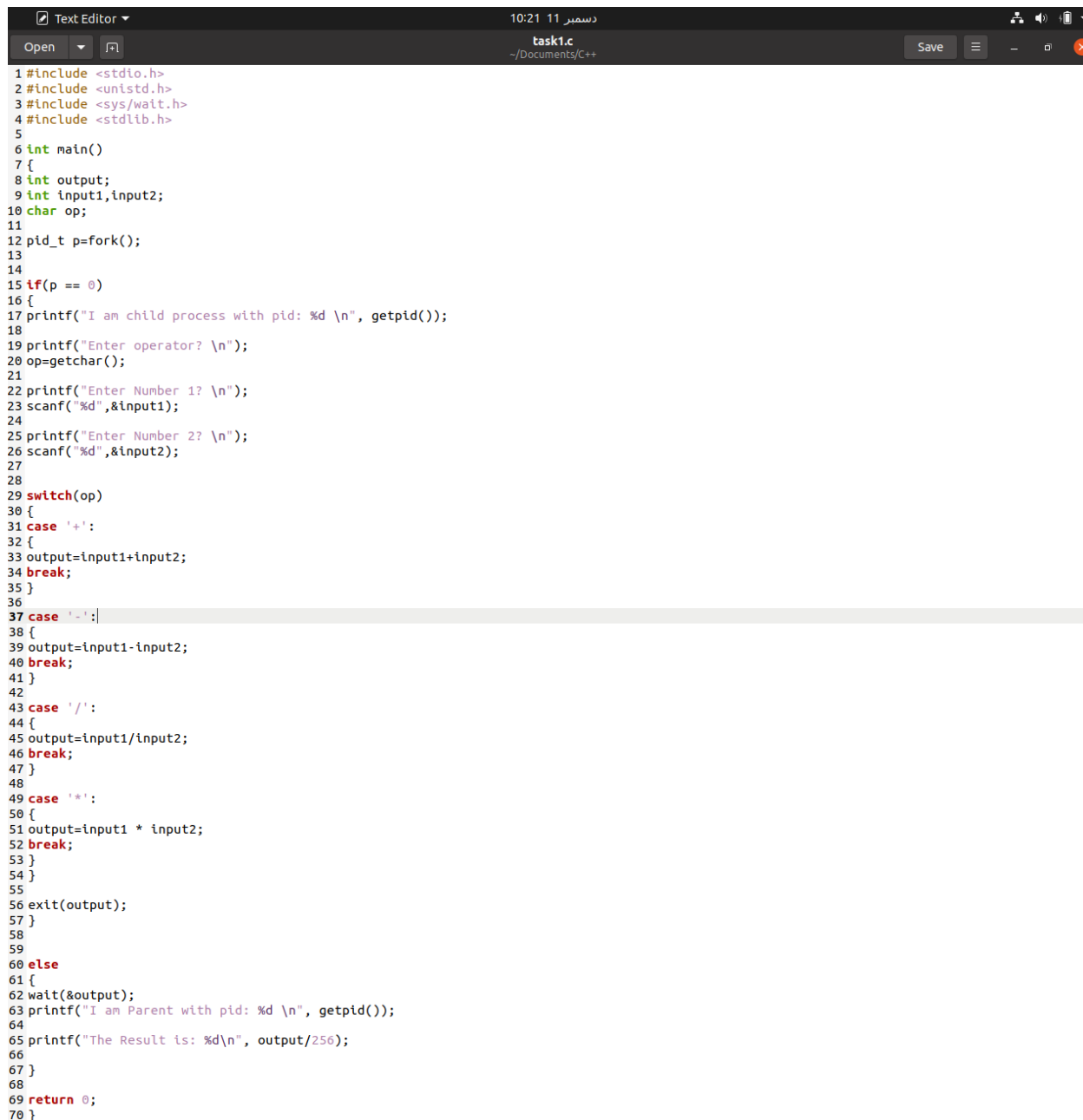
Question 01

Part 1:

[1 * 10] = 10

Write a C/C++ program in which a parent process creates a child process using a fork() system call. The child process takes two numbers and an operator symbol as user input. Based on the operator symbol entered by user performing the operation on two numbers, return the result to main function and display the result on console screen. Operation can be Add, Subtract, Multiply, and Divide.

CODE IS GIVEN BELOW



```
1 #include <stdio.h>
2 #include <unistd.h>
3 #include <sys/wait.h>
4 #include <stdlib.h>
5
6 int main()
7 {
8     int output;
9     int input1, input2;
10    char op;
11
12    pid_t p=fork();
13
14
15    if(p == 0)
16    {
17        printf("I am child process with pid: %d \n", getpid());
18
19        printf("Enter operator? \n");
20        op=getchar();
21
22        printf("Enter Number 1? \n");
23        scanf("%d",&input1);
24
25        printf("Enter Number 2? \n");
26        scanf("%d",&input2);
27
28
29        switch(op)
30        {
31            case '+':
32            {
33                output=input1+input2;
34                break;
35            }
36
37            case '-':
38            {
39                output=input1-input2;
40                break;
41            }
42
43            case '/':
44            {
45                output=input1/input2;
46                break;
47            }
48
49            case '*':
50            {
51                output=input1 * input2;
52                break;
53            }
54
55
56            exit(output);
57        }
58
59    else
60    {
61        wait(&output);
62        printf("I am Parent with pid: %d \n", getpid());
63
64        printf("The Result is: %d\n", output/256);
65
66    }
67
68    return 0;
69 }
```

Terminal Outputs

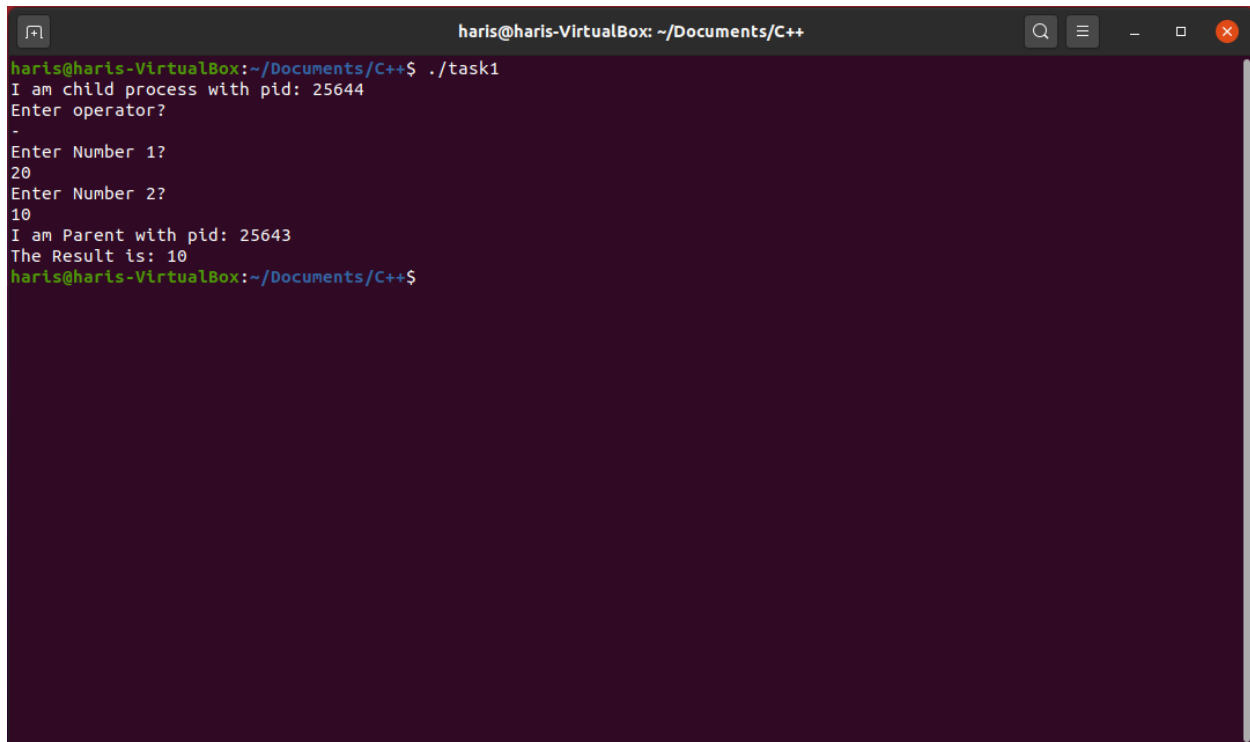
1) For Addition

```
haris@haris-VirtualBox: ~/Documents/C++
haris@haris-VirtualBox:~/Documents/C++$ gcc task1.c -o task1
haris@haris-VirtualBox:~/Documents/C++$ ./task1
I am child process with pid: 25639
Enter operator?
+
Enter Number 1?
10
Enter Number 2?
10
I am Parent with pid: 25638
The Result is: 20
haris@haris-VirtualBox:~/Documents/C++$
```

2) For Multiplication

```
haris@haris-VirtualBox: ~/Documents/C++
haris@haris-VirtualBox:~/Documents/C++$ ./task1
I am child process with pid: 25669
Enter operator?
*
Enter Number 1?
10
Enter Number 2?
10
I am Parent with pid: 25668
The Result is: 100
haris@haris-VirtualBox:~/Documents/C++$
```

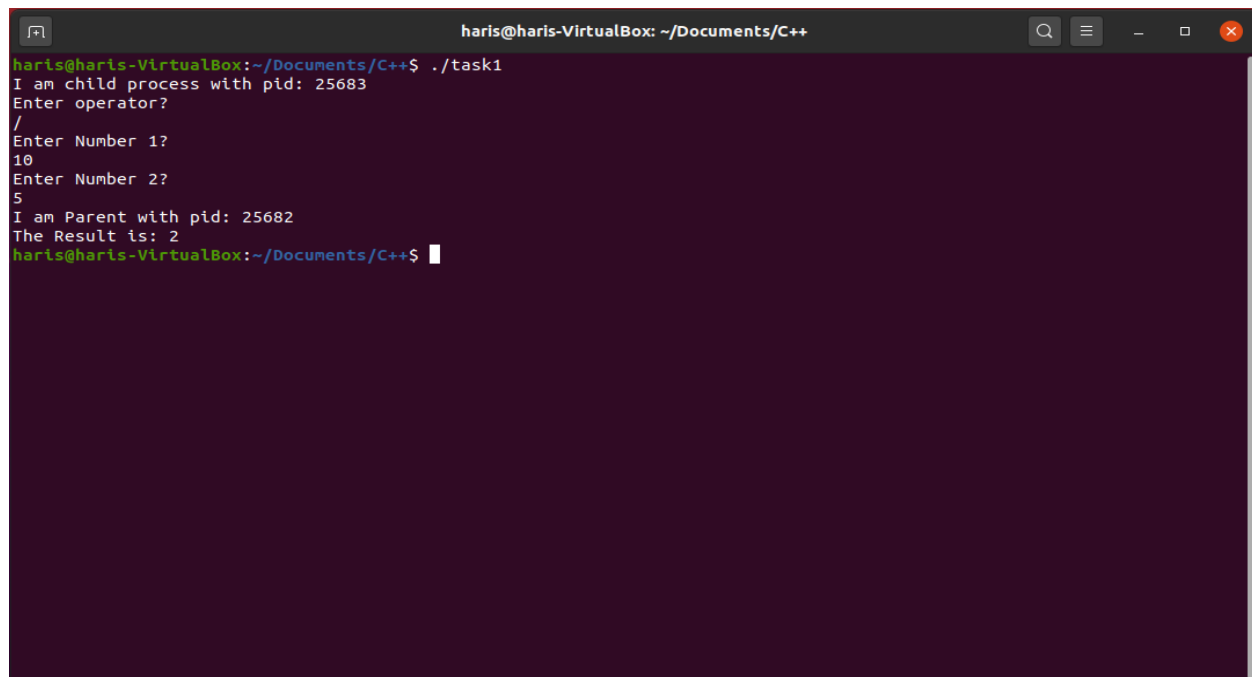
3) Subtraction



A terminal window titled "haris@haris-VirtualBox: ~/Documents/C++" showing the execution of a subtraction program. The user runs `./task1`, which outputs "I am child process with pid: 25644". The program prompts for an operator, which is entered as "-". It then prompts for "Number 1?" (20) and "Number 2?" (10). The parent process outputs "I am Parent with pid: 25643" and "The Result is: 10".

```
haris@haris-VirtualBox:~/Documents/C++$ ./task1
I am child process with pid: 25644
Enter operator?
-
Enter Number 1?
20
Enter Number 2?
10
I am Parent with pid: 25643
The Result is: 10
haris@haris-VirtualBox:~/Documents/C++$
```

4) Division



A terminal window titled "haris@haris-VirtualBox: ~/Documents/C++" showing the execution of a division program. The user runs `./task1`, which outputs "I am child process with pid: 25683". The program prompts for an operator, which is entered as "/". It then prompts for "Number 1?" (10) and "Number 2?" (5). The parent process outputs "I am Parent with pid: 25682" and "The Result is: 2".

```
haris@haris-VirtualBox:~/Documents/C++$ ./task1
I am child process with pid: 25683
Enter operator?
/
Enter Number 1?
10
Enter Number 2?
5
I am Parent with pid: 25682
The Result is: 2
haris@haris-VirtualBox:~/Documents/C++$
```

=====

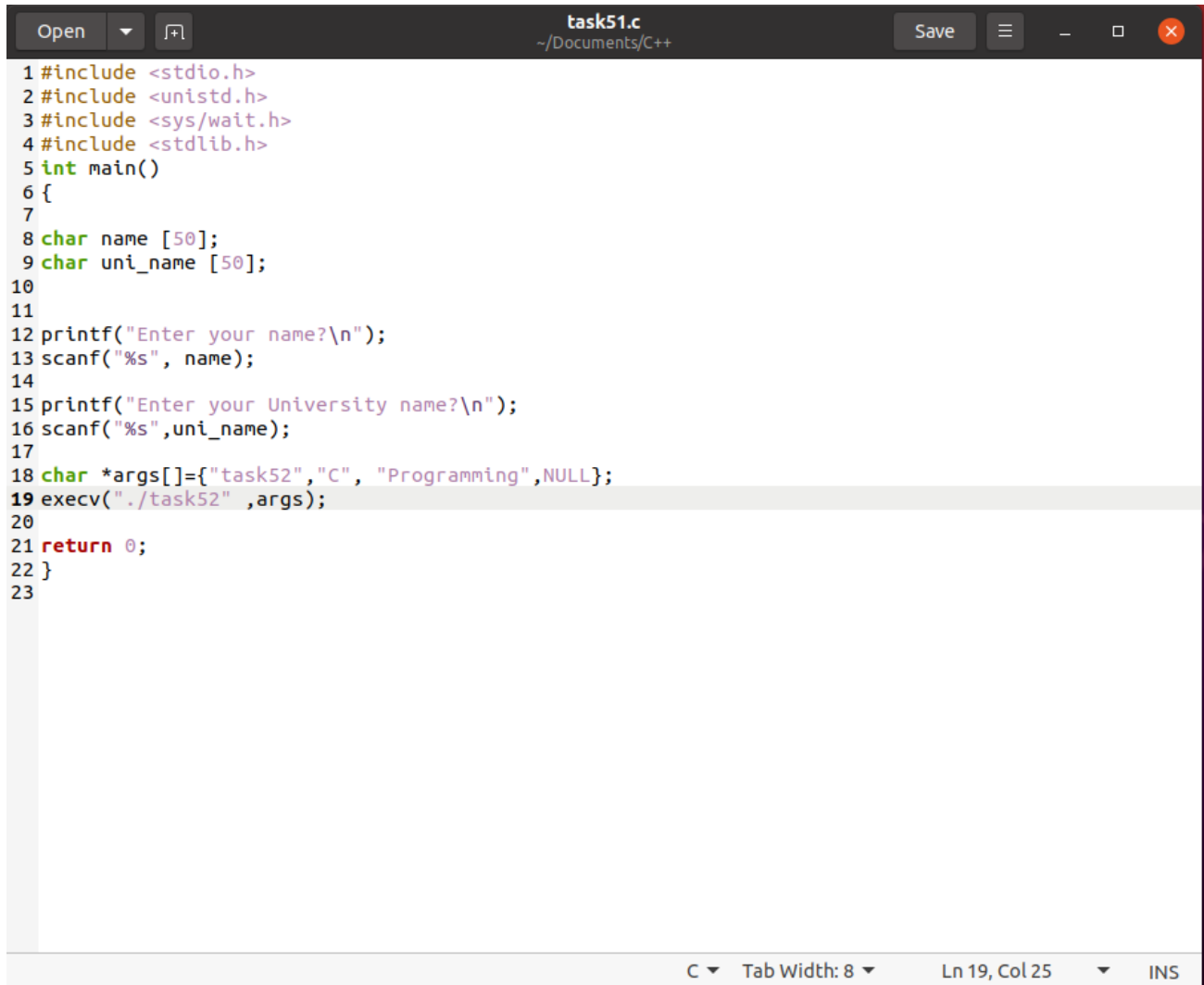
Part 2:

[1 * 05]

Write a C/C++ program that asks user to enter his name and his university name. Within the same program, execute another program that asks the user to enter his degree name and department name.

Code is given below:

Code 1

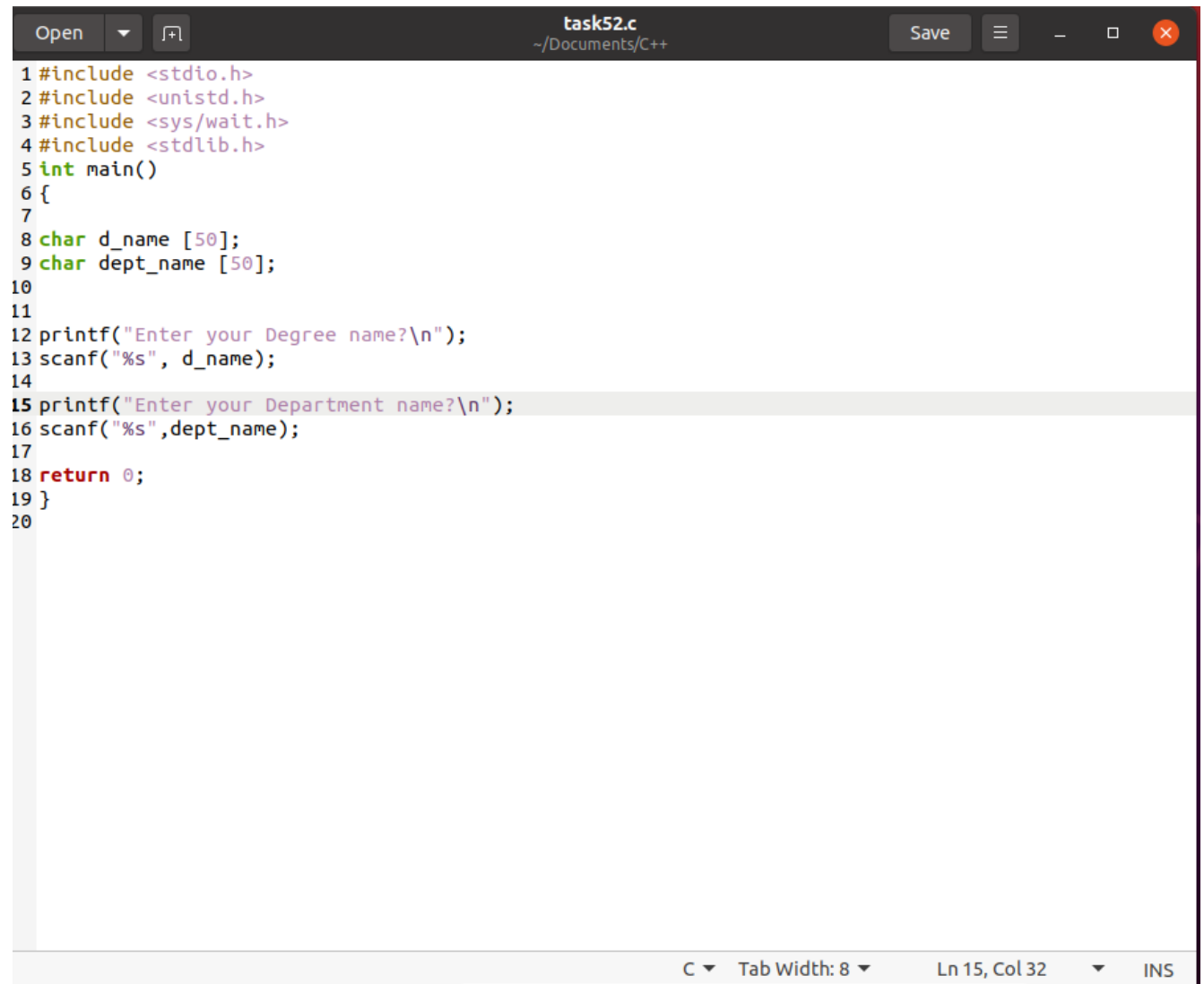


```
task51.c
~/Documents/C++

1 #include <stdio.h>
2 #include <unistd.h>
3 #include <sys/wait.h>
4 #include <stdlib.h>
5 int main()
6 {
7
8     char name [50];
9     char uni_name [50];
10
11
12     printf("Enter your name?\n");
13     scanf("%s", name);
14
15     printf("Enter your University name?\n");
16     scanf("%s", uni_name);
17
18     char *args[]={ "task52", "C", "Programming", NULL};
19     execv("./task52", args);
20
21     return 0;
22 }
23
```

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Code 2



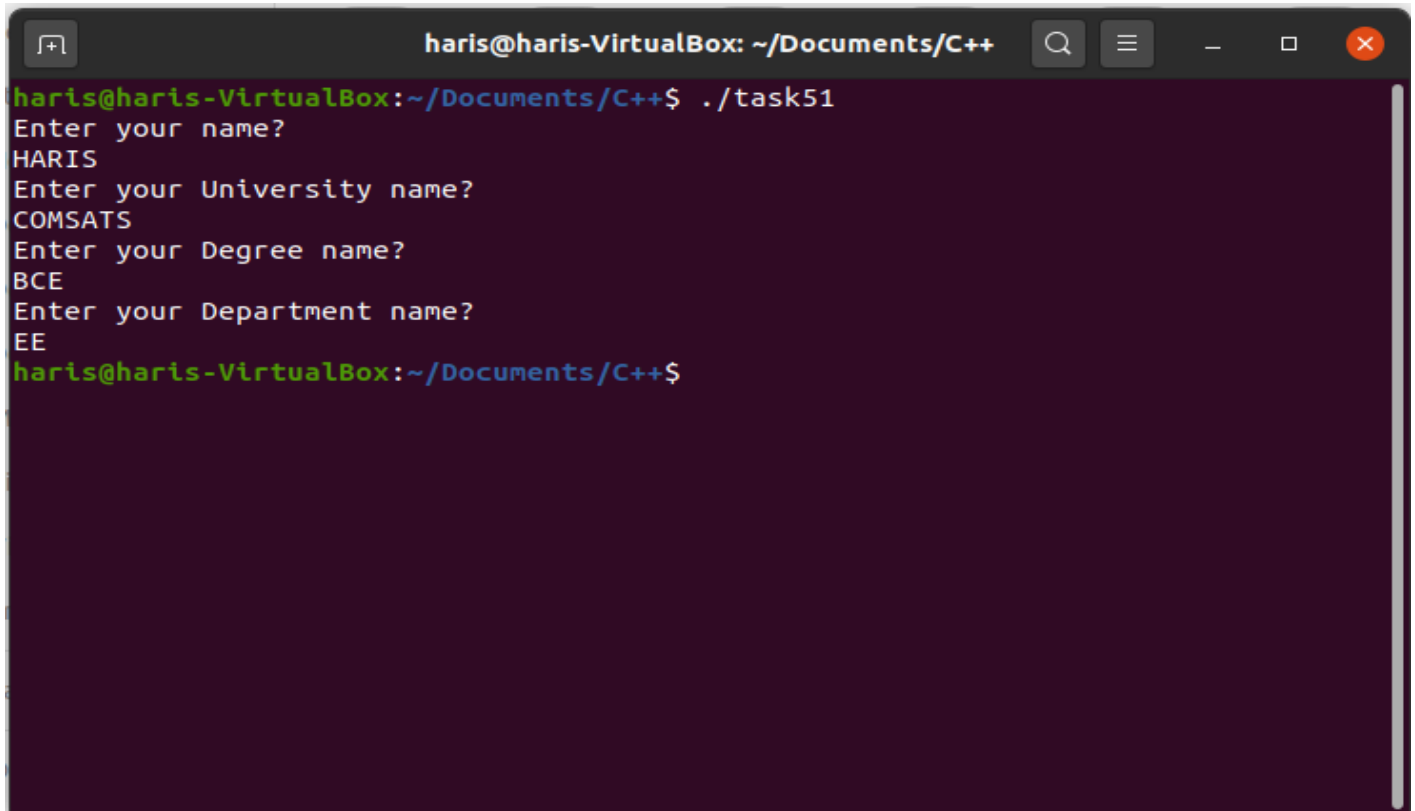
```
task52.c
~/Documents/C++

Open [v] [icon] Save [icon] [icon] [icon] [icon]

1 #include <stdio.h>
2 #include <unistd.h>
3 #include <sys/wait.h>
4 #include <stdlib.h>
5 int main()
6 {
7
8 char d_name [50];
9 char dept_name [50];
10
11
12 printf("Enter your Degree name?\n");
13 scanf("%s", d_name);
14
15 printf("Enter your Department name?\n");
16 scanf("%s", dept_name);
17
18 return 0;
19 }
20
```

C ▾ Tab Width: 8 ▾ Ln 15, Col 32 ▾ INS

Terminal Output

A terminal window titled 'haris@haris-VirtualBox: ~/Documents/C++' with standard window controls. The terminal shows a C++ program being executed with the following input and output:

```
haris@haris-VirtualBox:~/Documents/C++$ ./task51
Enter your name?
HARIS
Enter your University name?
COMSATS
Enter your Degree name?
BCE
Enter your Department name?
EE
haris@haris-VirtualBox:~/Documents/C++$
```

Good Luck ☺