VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

C PROGRAMMING LAB RECORD

Submitted by

PAVANKUMAR UPPAR (1BM20AI042)

Under the Guidance of
Prof. Rekha G S

Assistant Professor,

Department of CSE,

BMSCE

in partial fulfillment for the award of the degree of
BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING

B.M.S. COLLEGE OF ENGINEERING
(Autonomous Institution under VTU)
BENGALURU-560019

April-2021 to June-2021

B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I Pavankumar Uppar, student of 2nd Semester B.E, Department of Computer Science and Engineering, B. M. S. College of Engineering, Bangalore, hereby declare that, this laboratory work for "C Programming" course has been carried out by us under the guidance of Prof. Rekha G S ,Assistant Professor, Department of CSE, B. M. S. College of Engineering, Bangalore during the academic semester April-2021-June-2021

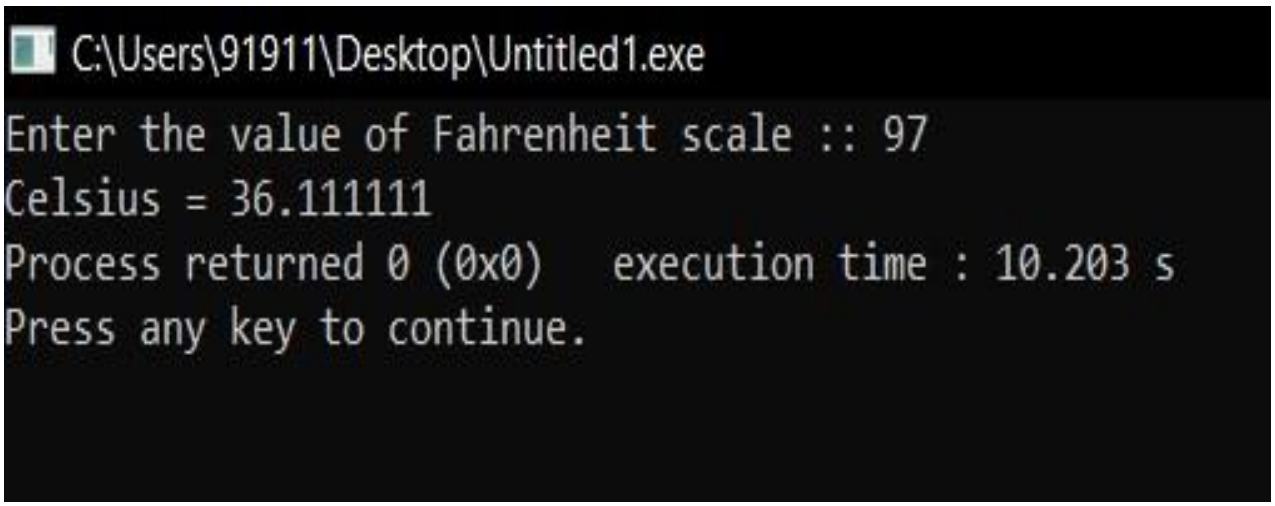
We also declare that to the best of our knowledge and belief, the development reported here is not from part of any other report by any other students.

PAVANKUMAR UPPAR (1BM20AI042)

1. Develop a C program to convert degrees Fahrenheit into degrees Celsius.

```
#include<stdio.h>
int main()
{
   float c,x;
   printf("Enter the value of Fahrenheit scale :: ");
   scanf("%f",&x);
   c = 5*(x-32)/9;
   printf("Celsius = %lf",c);
   return 0;
}
```

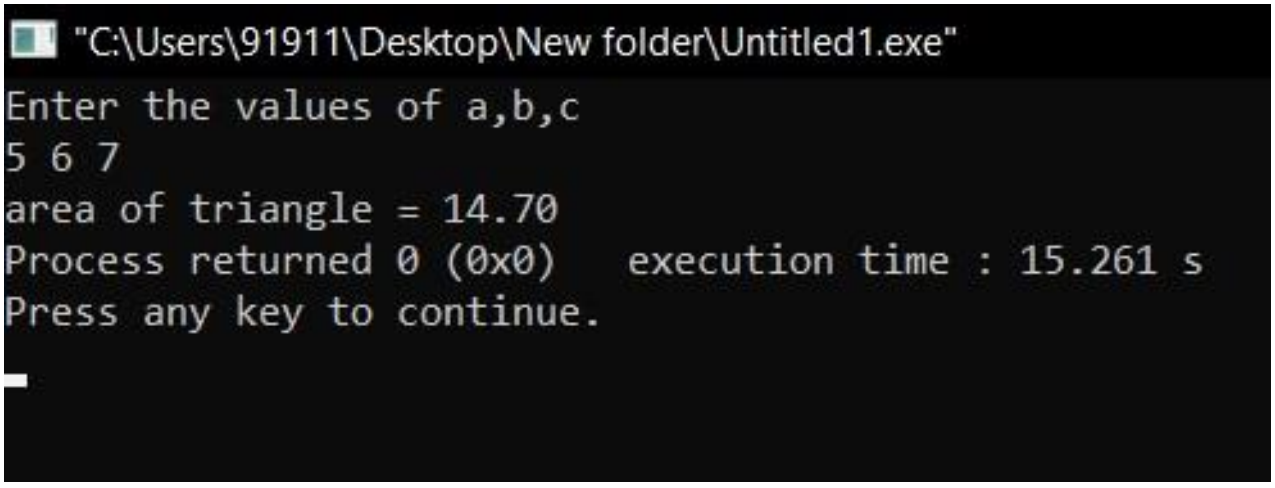
Output :



2. Develop a C program to find the area of a triangle given its sides as input using functions.

```
#include<stdio.h>
#include<math.h>
int main()
{
   int a,b,c,s;
   float area;
   printf("Enter the values of a,b,c\n");
   scanf("%d%d%d",&a,&b,&c);
   s = (a+b+c)/2;
   area = sqrt(s*(s-a)*(s-b)*(s-c));
   printf("area of triangle = %.2f",area);
   return 0;
}
```

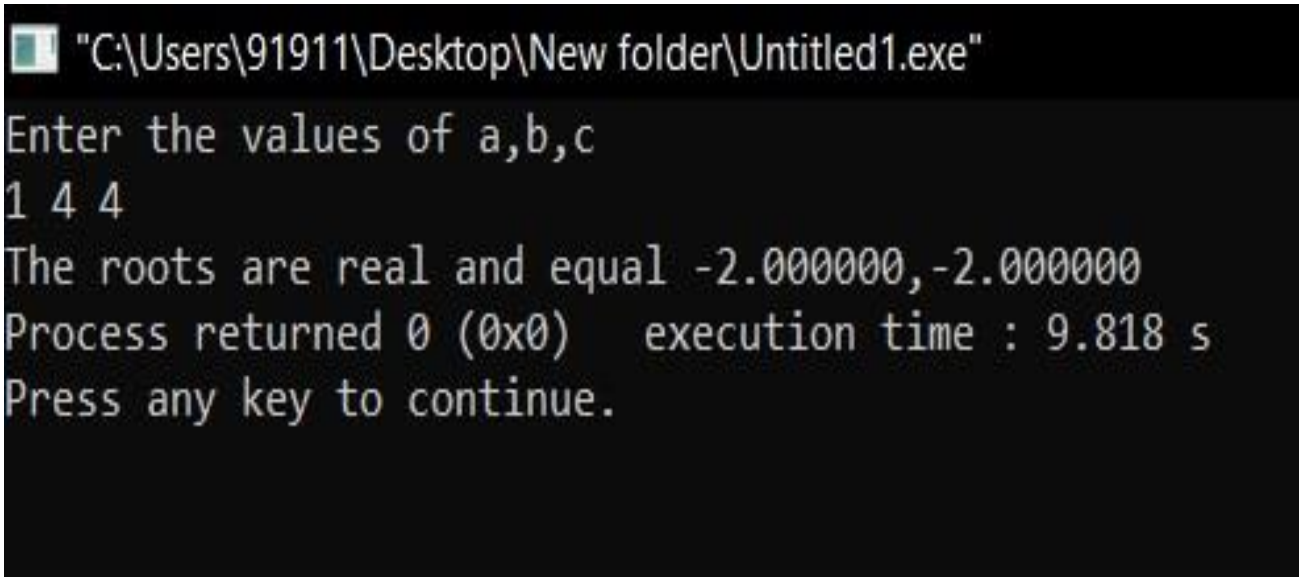
Output:

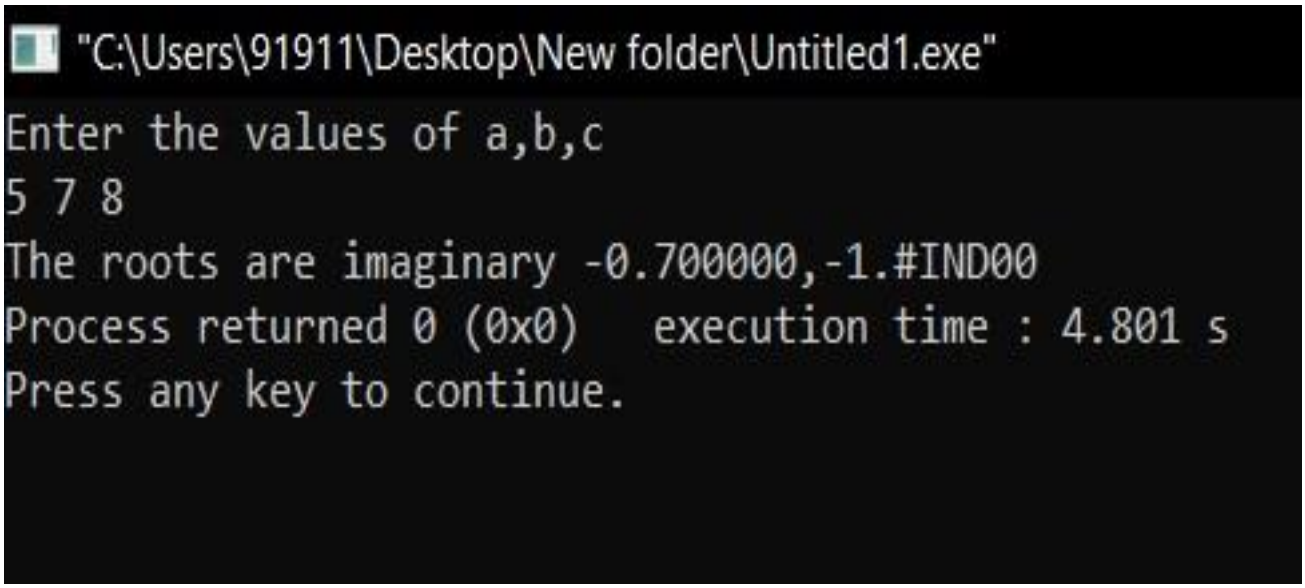


3. Develop a C program to find all possible roots of a quadratic equation.

```
#include <stdio.h>
#include<math.h>
int main()
{
   float a,b,c,d,root1,root2,rpart,ipart;
   printf("Enter the values of a,b,c\n");
   scanf("%f%f%f",&a,&b,&c);
   d = sqrt((b*b)-(4*a*c));
   if(d>0)
   {
      root1 = ((-b)+d)/(2*a);
      root2 = ((-b)-d)/(2*a);
      printf("The roots are real and unequal %f,%f",root1,root2);
   }
   else if(d == 0)
   {
      root1 = (-b)/(2*a);root2=root1;
      printf("The roots are real and equal %f,%f",root1,root2);
   }
   else
   {
      d = sqrt(abs(d));
      rpart = (-b)/(2*a);
      ipart = (d)/(2*a);
      printf("The roots are imaginary %f,%f",rpart,ipart);
   }
   return 0;
}
```

Output:


"C:\Users\91911\Desktop\New folder\Untitled1.exe"
Enter the values of a,b,c
1 4 4
The roots are real and equal -2.000000,-2.000000
Process returned 0 (0x0)   execution time : 9.818 s
Press any key to continue.


"C:\Users\91911\Desktop\New folder\Untitled1.exe"
Enter the values of a,b,c
5 7 8
The roots are imaginary -0.700000,-1.#IND00
Process returned 0 (0x0)   execution time : 4.801 s
Press any key to continue.

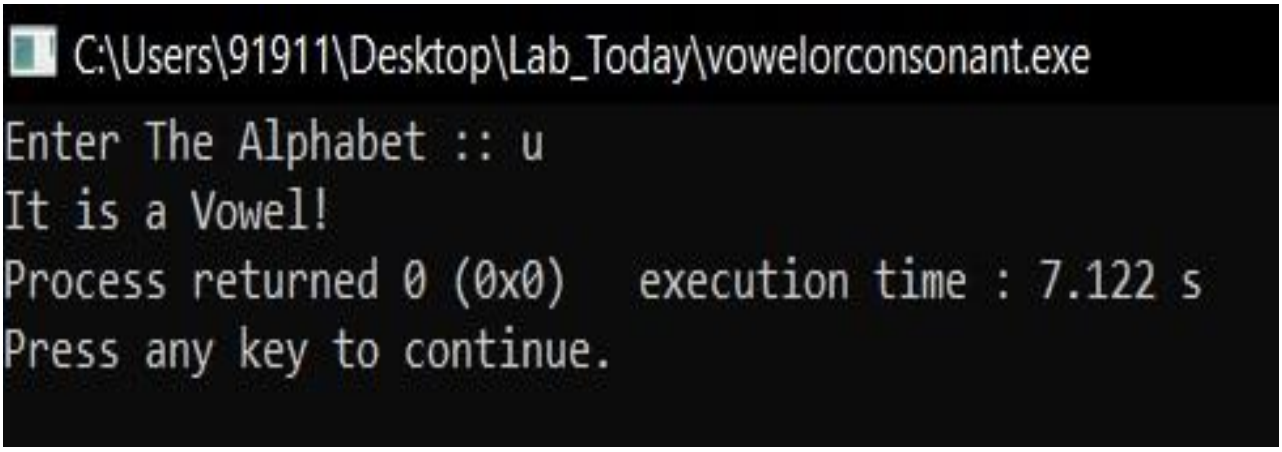
4. Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement.

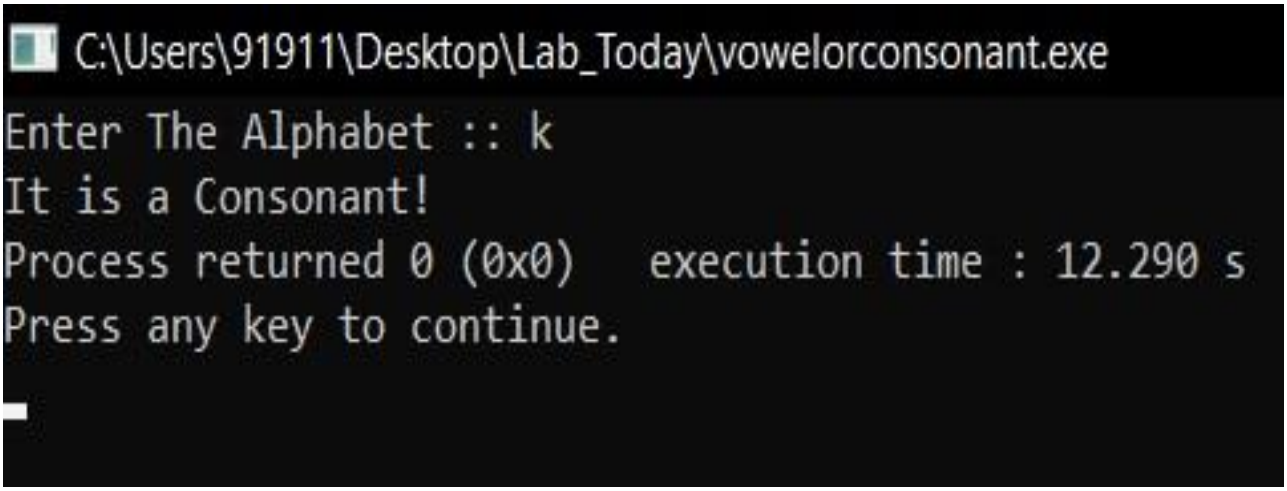
```
#include<stdio.h>
int main()
{
   char ch;
   printf("Enter The Alphabet :: ");
   scanf("%c",&ch);
   switch(ch)
   {
      case 'a':
      case 'A':
      case 'e':
      case 'E':
      case 'i':
      case 'I':
      case 'o':
      case 'O':
      case 'u':
      case 'U':
         printf("It is a Vowel!");
      break;
      default:
         printf("It is a Consonant!");

   }
   return 0;

}
```

Output:


C:\Users\91911\Desktop\Lab_Today\vowelorconsonant.exe
Enter The Alphabet :: u
It is a Vowel!
Process returned 0 (0x0)   execution time : 7.122 s
Press any key to continue.

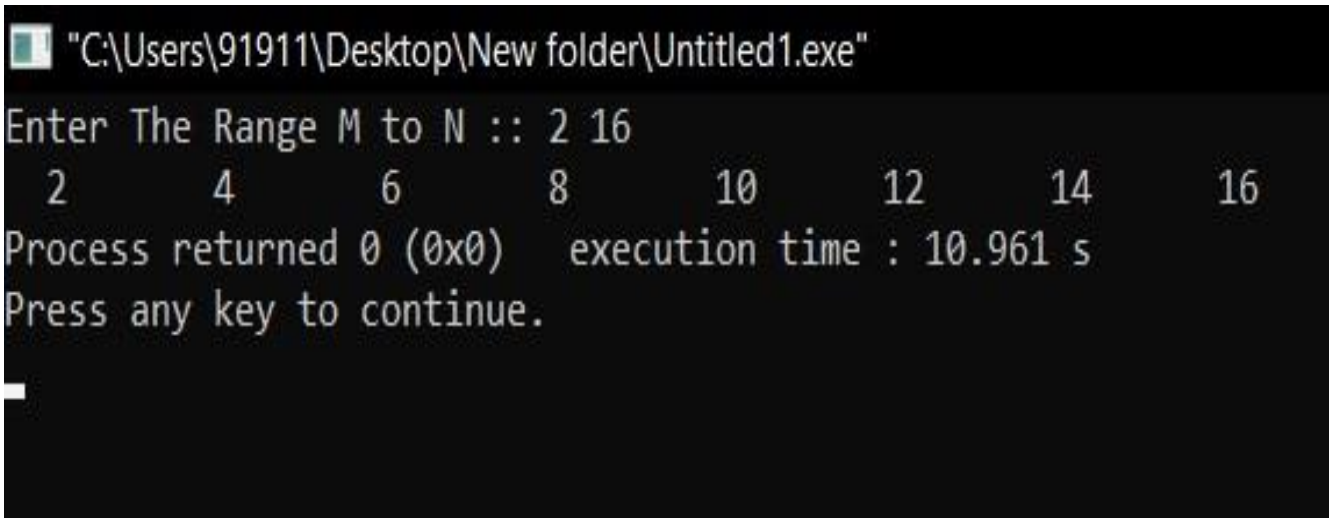

C:\Users\91911\Desktop\Lab_Today\vowelorconsonant.exe
Enter The Alphabet :: k
It is a Consonant!
Process returned 0 (0x0)   execution time : 12.290 s
Press any key to continue.

5. Develop a C program to print even numbers from M to N.

```
#include<stdio.h>
int main()
{
   int m, n, i;
   printf("Enter The Range M to N :: ");
   scanf("%d%d",&m,&n);
   for(i=m; i<=n; i++)
   {
      if(i%2 == 0)
      {
         printf("  %d\t",i);
      }

   }
   return 0;
}
```

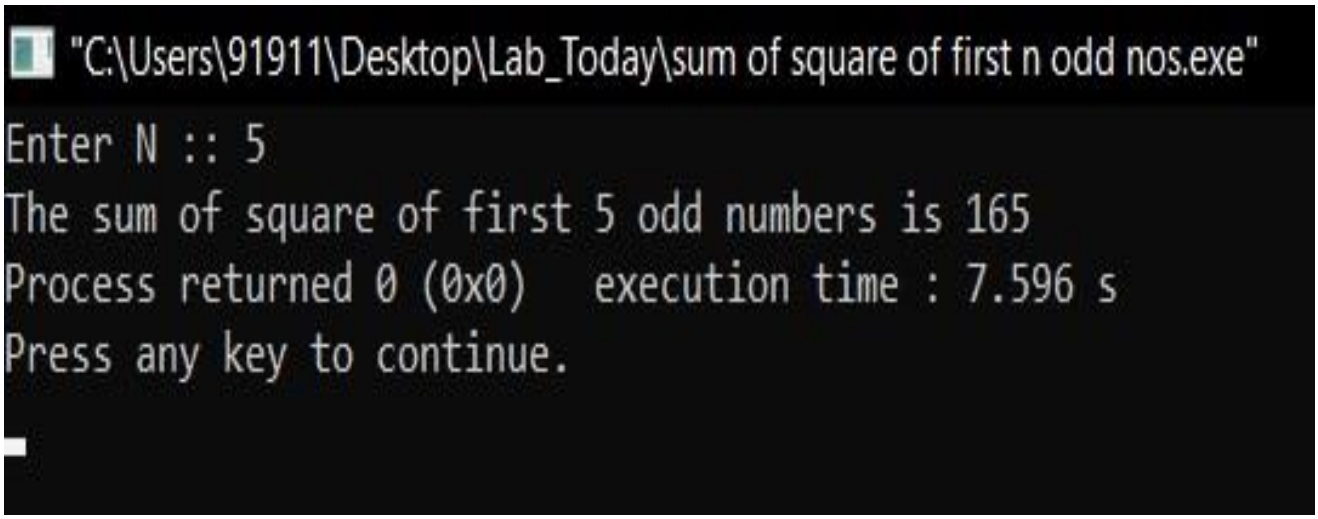
Output:



6. Develop a program to calculate the sum of squares of first n odd numbers.

```
#include <stdio.h>
int main()
{
   int n, sum = 0;
   printf("Enter N :: ");
   scanf("%d",&n);
   for (int i = 1; i <= n; i++)
      sum += (2*i - 1) * (2*i - 1);
   printf("The sum of square of first %d odd numbers is %d",n, sum);
   return 0;
}
```

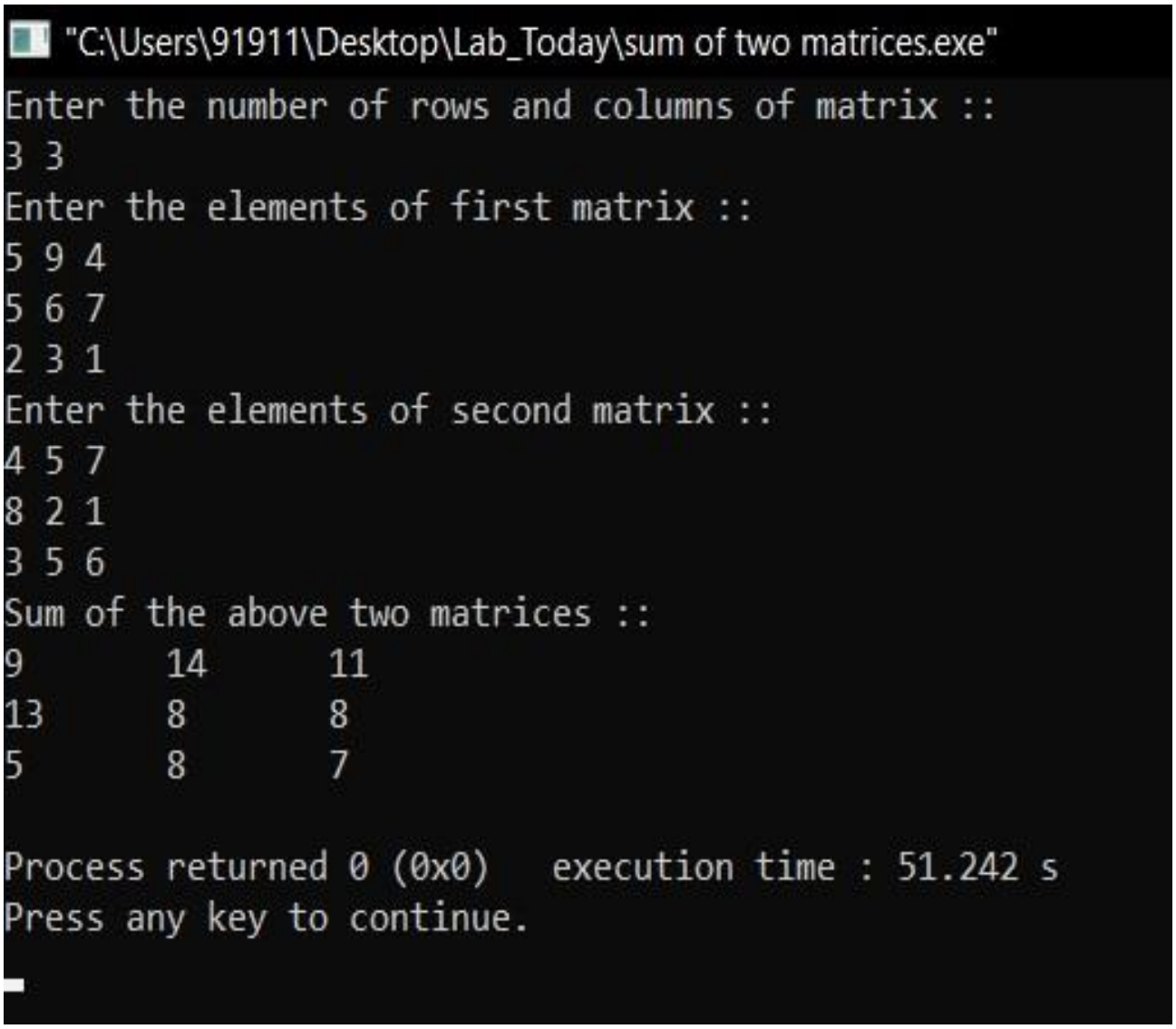
Output:



7. Develop a program to perform addition of two Matrices.

```
#include<stdio.h>
int main()
{
   int m, n, c, d, first[10][10], second[10][10], sum[10][10];
   printf("Enter the number of rows and columns of matrix :: \n");
   scanf("%d %d", &m, &n);
   printf("Enter the elements of first matrix :: \n");
   for(c=0; c<m; c++)
      for(d=0; d<n; d++)
         scanf("%d", &first[c][d]);
   printf("Enter the elements of second matrix :: \n");
   for(c=0; c<m; c++)
      for(d=0; d<n; d++)
         scanf("%d", &second[c][d]);
   printf("Sum of the above two matrices :: \n");
   for(c=0; c<m; c++)
   {
      for(d=0; d<n; d++)
      {
         sum[c][d] = first[c][d] + second[c][d];
         printf("%d\t", sum[c][d]);
      }
      printf("\n");
   }
   return 0;
}
```

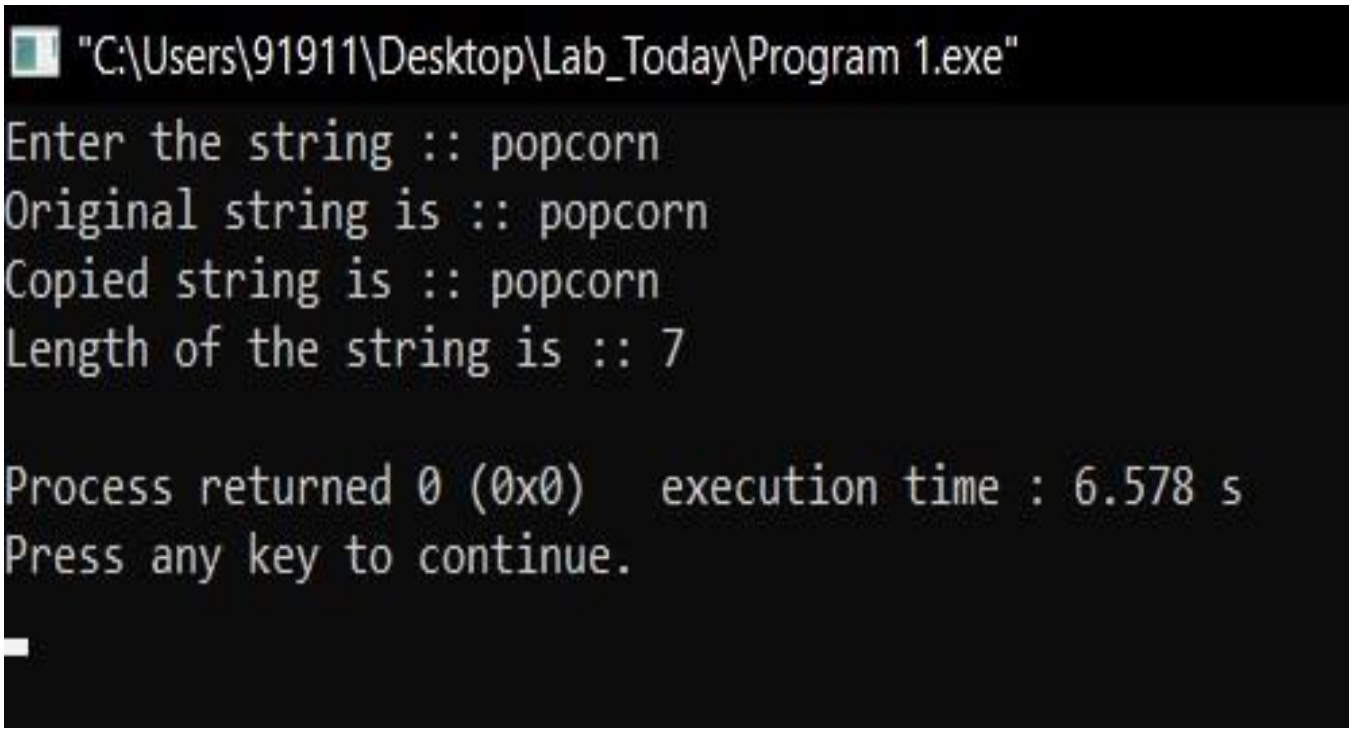
Output:


"C:\Users\91911\Desktop\Lab_Today\sum of two matrices.exe"
Enter the number of rows and columns of matrix ::
3 3
Enter the elements of first matrix ::
5 9 4
5 6 7
2 3 1
Enter the elements of second matrix ::
4 5 7
8 2 1
3 5 6
Sum of the above two matrices ::
9 14 11
13 8 8
5 8 7
Process returned 0 (0x0) execution time : 51.242 s
Press any key to continue.

8. Develop a C program to copy one string to another string and find its length without using built in functions.

```
#include<stdio.h>
int len(char str[20])
{
	int i=0,count=0;
	while(str[i]!='\0')
	{
		count += 1;
		i++;
	}
	return count;
}
int main()
{
	char str1[20],str2[20];
	int i=0,j=0;
	printf("Enter the string :: ");
	scanf("%s",str1);
	while(str1[i] != '\0')
	{
		str2[j]=str1[i];
		i++;
		j++;
	}str2[j]='\0';
	printf("Original string is :: %s\n",str1);
	printf("Copied string is :: %s\n",str2);
	printf("Length of the string is :: %d\n",len(str1));
	return 0;
}
```

Output:


"C:\Users\91911\Desktop\Lab_Today\Program 1.exe"
Enter the string :: popcorn
Original string is :: popcorn
Copied string is :: popcorn
Length of the string is :: 7
Process returned 0 (0x0)   execution time : 6.578 s
Press any key to continue.

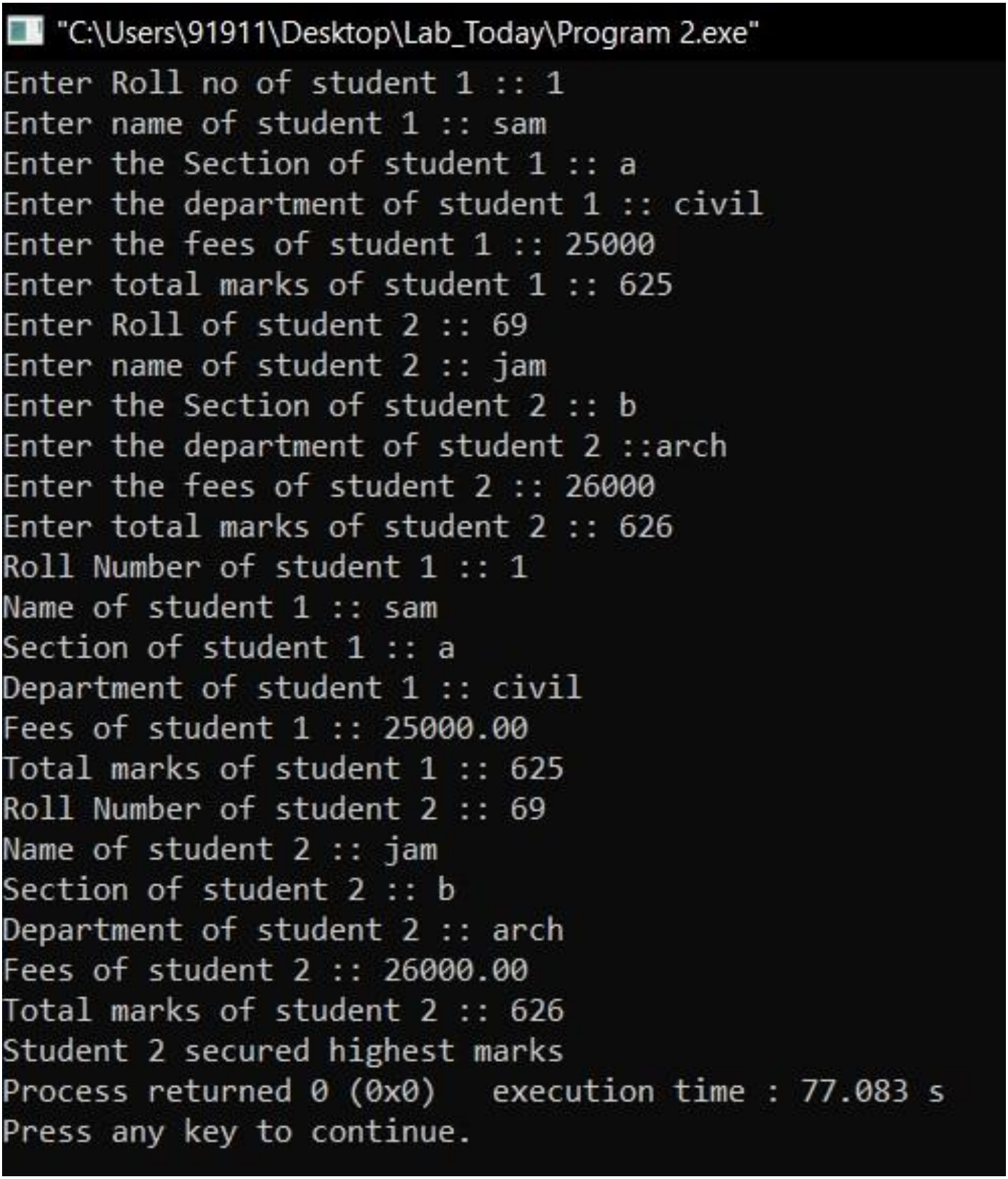
9. Develop a C program to create student structure, read two student details(Student roll number, name, section, department, fees, and results i.e., total marks obtained) and print the student details who has scored the highest.

```
#include<stdio.h>
struct student
{
        int rollnumber;
        char name[20];
        char section[20];
        char dept[10];
        float fees;
        int totalmarks;
};
int main()
{
        int i;
        struct student stud1,stud2;
        printf("Enter Roll no of student 1 :: ");
        scanf("%d",&stud1.rollnumber);
        printf("Enter name of student 1 :: ");
        scanf("%s",stud1.name);
        printf("Enter the Section of student 1 :: ");
        scanf("%s",stud1.section);
        printf("Enter the department of student 1 :: ");
```

```
scanf("%s",stud1.dept);
printf("Enter the fees of student 1 :: ");
scanf("%f",&stud1.fees);
printf("Enter total marks of student 1 :: ");
scanf("%d",&stud1.totalmarks);
printf("Enter Roll of student 2 :: ");
scanf("%d",&stud2.rollnumber);
printf("Enter name of student 2 :: ");
scanf("%s",stud2.name);
printf("Enter the Section of student 2 :: ");
scanf("%s",stud2.section);
printf("Enter the department of student 2 ::");
scanf("%s",stud2.dept);
printf("Enter the fees of student 2 :: ");
scanf("%f",&stud2.fees);
printf("Enter total marks of student 2 :: ");
scanf("%d",&stud2.totalmarks);
printf("Roll Number of student 1 :: %d\n",stud1.rollnumber);
printf("Name of student 1 :: %s\n",stud1.name);
printf("Section of student 1 :: %s\n",stud1.section);
printf("Department of student 1 :: %s\n",stud1.dept);
printf("Fees of student 1 :: %0.2f\n",stud1.fees);
printf("Total marks of student 1 :: %d\n",stud1.totalmarks);
printf("Roll Number of student 2 :: %d\n",stud2.rollnumber);
printf("Name of student 2 :: %s\n",stud2.name);
printf("Section of student 2 :: %s\n",stud2.section);
printf("Department of student 2 :: %s\n",stud2.dept);
printf("Fees of student 2 :: %0.2f\n",stud2.fees);
```

```
	printf("Total marks of student 2 :: %d\n",stud2.totalmarks);
	if(stud1.totalmarks>stud2.totalmarks)
	{
		printf("Student 1 secured highest marks");
	}
	else if(stud1.totalmarks==stud2.totalmarks)
	{
		printf("Student 1 and 2 secured same marks");
	}
	else
	{
		printf("Student 2 secured highest marks");
	}
	return 0;
}
```

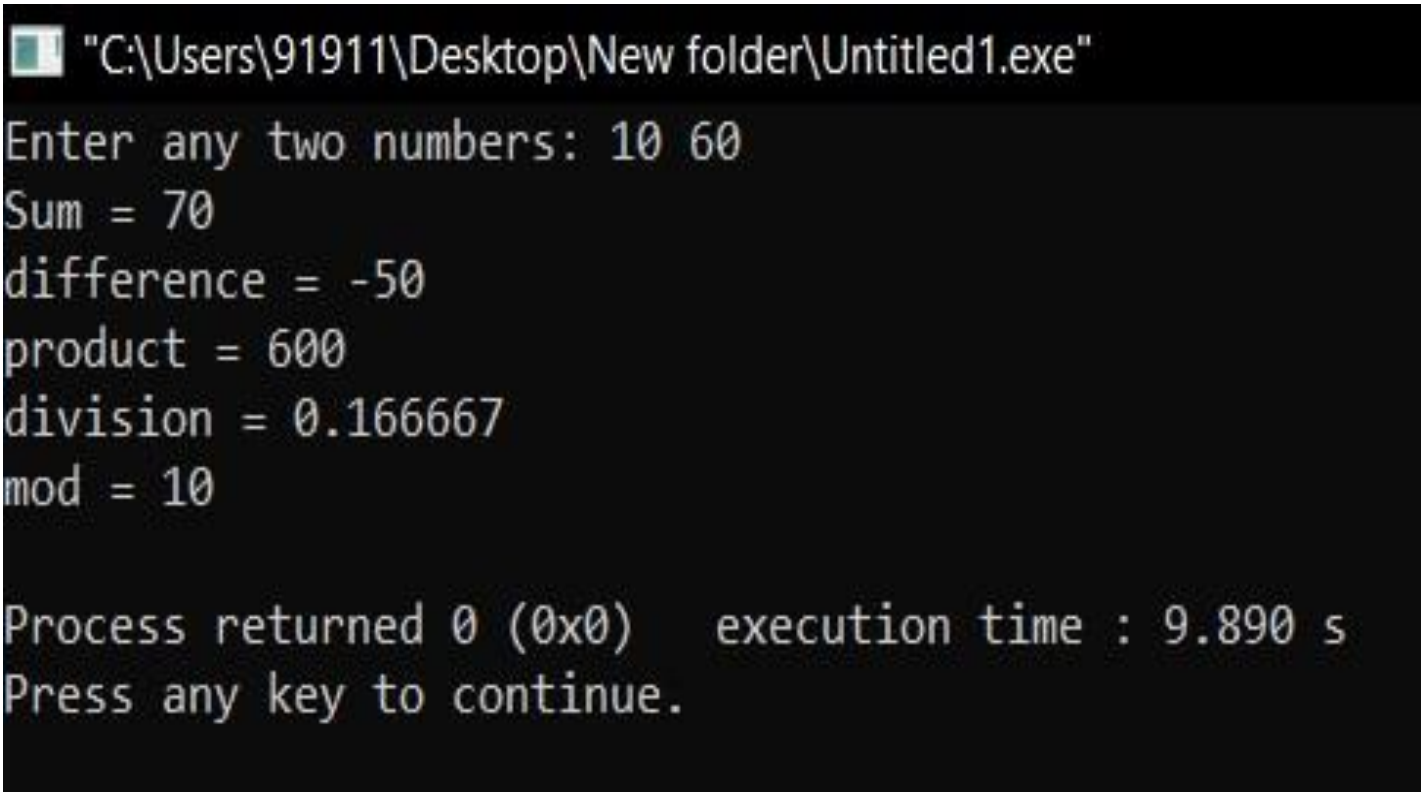
Output:


"C:\Users\91911\Desktop\Lab_Today\Program 2.exe"
Enter Roll no of student 1 :: 1
Enter name of student 1 :: sam
Enter the Section of student 1 :: a
Enter the department of student 1 :: civil
Enter the fees of student 1 :: 25000
Enter total marks of student 1 :: 625
Enter Roll of student 2 :: 69
Enter name of student 2 :: jam
Enter the Section of student 2 :: b
Enter the department of student 2 ::arch
Enter the fees of student 2 :: 26000
Enter total marks of student 2 :: 626
Roll Number of student 1 :: 1
Name of student 1 :: sam
Section of student 1 :: a
Department of student 1 :: civil
Fees of student 1 :: 25000.00
Total marks of student 1 :: 625
Roll Number of student 2 :: 69
Name of student 2 :: jam
Section of student 2 :: b
Department of student 2 :: arch
Fees of student 2 :: 26000.00
Total marks of student 2 :: 626
Student 2 secured highest marks
Process returned 0 (0x0) execution time : 77.083 s
Press any key to continue.

10. Develop a C program to perform arithmetic operations (addition, subtraction, multiplication, division and remainder) on two integers using pointers.

```
#include <stdio.h>
int main()
{
   int num1, num2, sum,mod,mul,dif;
   int *ptr1, *ptr2;
   float divi;
   ptr1 = &num1;
   ptr2 = &num2;
   printf("Enter any two numbers: ");
   scanf("%d%d", ptr1, ptr2);
   sum = *ptr1 + *ptr2;
   dif=*ptr1 - *ptr2;mul=*ptr1 * *ptr2;
   divi=(float)*ptr1 / *ptr2;
   mod=*ptr1 % *ptr2;
   printf("Sum = %d\n", sum);
   printf("difference = %d\n",dif);
   printf("product = %d\n", mul);
   printf("division = %f\n", divi);
   printf("mod = %d\n", mod);
   return 0;
}
```

Output:


"C:\Users\91911\Desktop\New folder\Untitled1.exe"
Enter any two numbers: 10 60
Sum = 70
difference = -50
product = 600
division = 0.166667
mod = 10
Process returned 0 (0x0)   execution time : 9.890 s
Press any key to continue.