VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

C PROGRAMMING LAB RECORD

Submitted by

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Under the Guidance of
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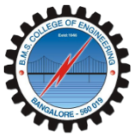
BMSCE

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,GOHIT TYAGI , 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.

Gohit Tyagi (1BM20CS052)

1.Develop a C program to convert degrees Fahrenheit into degrees celsius:

```c
#include<stdio.h>

void main()

{

      float F,C;


      printf("enter the temprature in F\n");

      scanf("%f",&F);


      C=(F-32)*5/9;

      printf("value of temprature in c is %f",C);

}
```

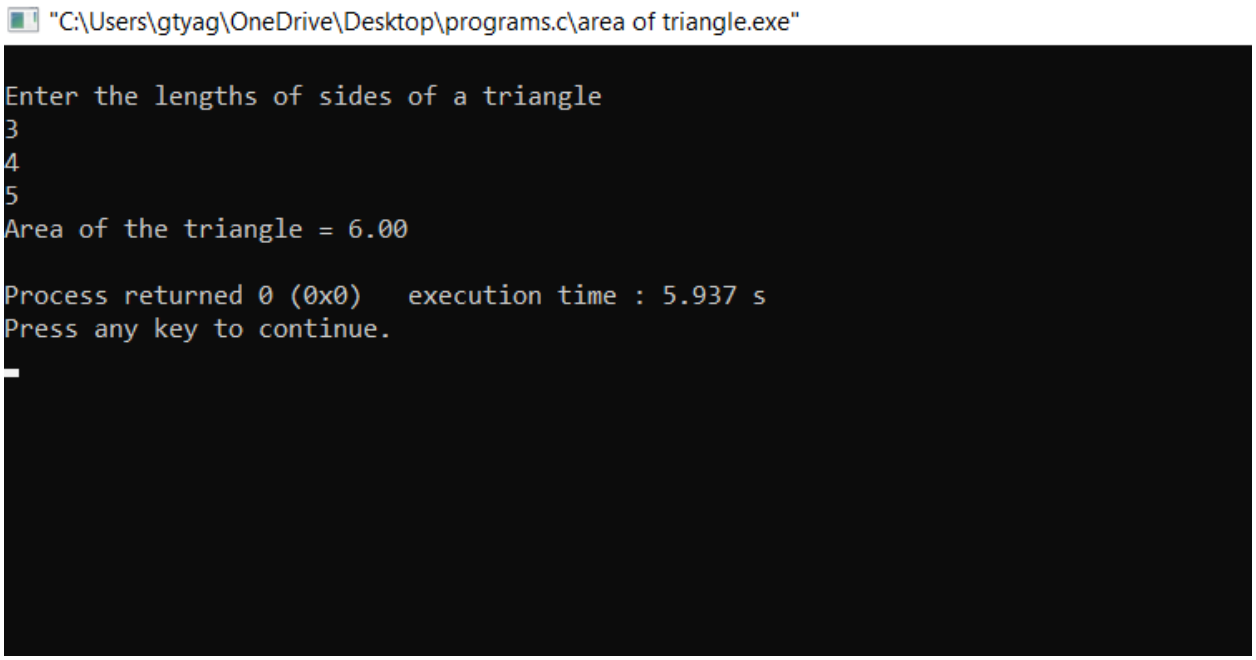
OUTPUT 1:

```
"C:\Users\gtyag\OneDrive\Desktop\programs.c\fahrenhiet to celcius.exe"
enter the temprature in F
98.5
value of temprature in c is 36.944443
Process returned 37 (0x25)   execution time : 6.078 s
Press any key to continue.
```

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

```c
#include <stdio.h>

#include <conio.h>

#include <math.h>

float ar(float a, float b, float c);

int main()

{

  float a, b, c, area;

  printf("\nEnter the lengths of sides of a triangle \n");

  scanf("%f%f%f", &a, &b, &c);

  area = ar(a, b, c);

  printf("Area of the triangle = %.2f\n", area);

  return 0;

  getch();

}


float ar(float a, float b, float c)

{

  float s, area;

  s = (a+b+c)/2;

  area = sqrt(s*(s-a)*(s-b)*(s-c));

  return area;

}
```

OUTPUT 2:


"C:\Users\gtyag\OneDrive\Desktop\programs.c\area of triangle.exe"
Enter the lengths of sides of a triangle
3
4
5
Area of the triangle = 6.00
Process returned 0 (0x0)   execution time : 5.937 s
Press any key to continue.

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

```c
#include <stdio.h>
#include <math.h>


void main()
{
    float a,b,c;
    float discriminant;
    float root1, root2, imaginary;

    printf("Enter values of a, b, c of quadratic (aX^2 + bX + c): ");
    scanf("%f%f%f", &a, &b, &c);

    discriminant = (b * b) - (4 * a * c);

    if(discriminant > 0)
    {
        root1 = (-b + sqrt(discriminant)) / (2*a);
        root2 = (-b - sqrt(discriminant)) / (2*a);

        printf("Two distinct and real roots exists: %.2f and %.2f", root1,
root2);
    }
      else if(discriminant < 0)
    {
        root1 = root2 = -b / (2 * a);
```

```
        imaginary = sqrt(-discriminant) / (2 * a);


        printf("Two distinct complex roots exists: %.2f + i%.2f and %.2f -
i%.2f",
                root1, imaginary, root2, imaginary);
    }
    else if(discriminant == 0)
    {
        root1 = root2 = -b / (2 * a);


        printf("Two equal and real roots exists: %.2f and %.2f", root1,
root2);
    }




}
```

OUTPUT 3:

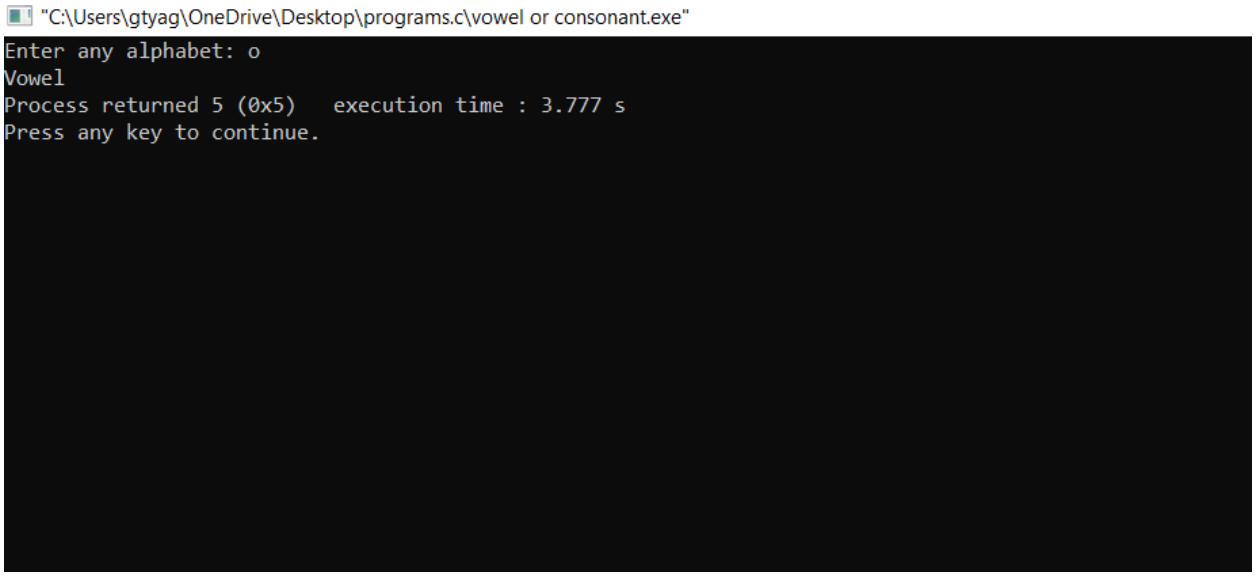
```
"C:\Users\gtyag\OneDrive\Desktop\programs.c\roots of quadratic.exe"
Enter values of a, b, c of quadratic (aX^2 + bX + c): 1
2
1
Two equal and real roots exists: -1.00 and -1.00
Process returned 48 (0x30)   execution time : 31.231 s
Press any key to continue.
```

4.Develop a C program to determine whether the entered character is a vowel or consonant:

```c
#include <stdio.h>


void main()
{
    char ch;

    printf("Enter any alphabet: ");
    scanf("%c", &ch);

    switch(ch)
    {
        case 'a':
            printf("Vowel");
            break;
        case 'e':
            printf("Vowel");
            break;
        case 'i':
            printf("Vowel");
            break;
        case 'o':
            printf("Vowel");
            break;
        case 'u':
            printf("Vowel");
```

```
            break;
        case 'A':
            printf("Vowel");
            break;
        case 'E':
            printf("Vowel");
            break;
        case 'I':
            printf("Vowel");
            break;
        case 'O':
            printf("Vowel");
            break;
        case 'U':
            printf("Vowel");
            break;
        default:
            printf("Consonant");
    }


}
```

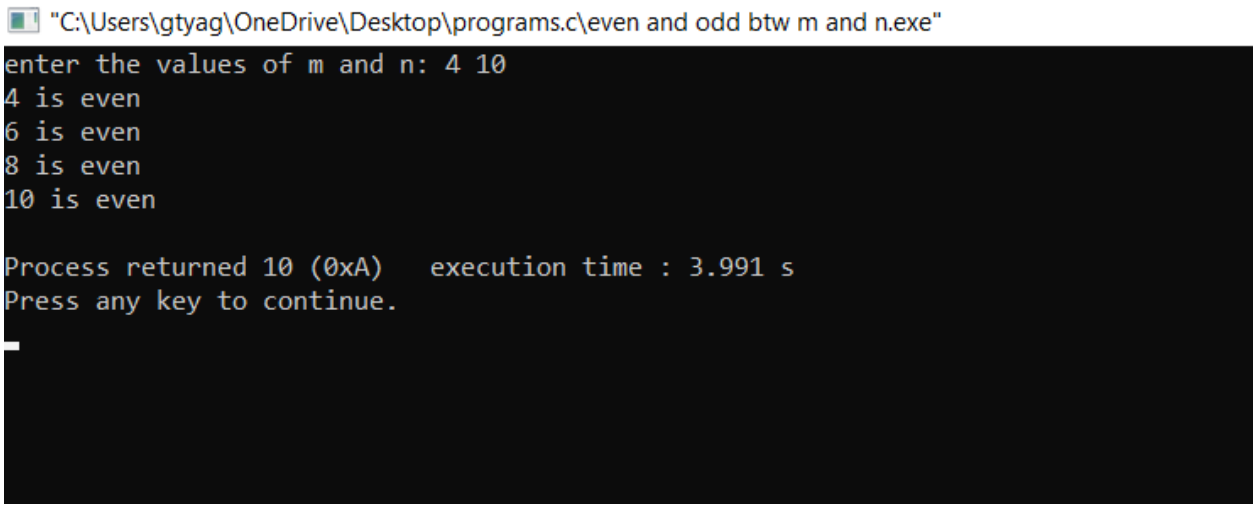
OUTPUT 4:


"C:\Users\gtyag\OneDrive\Desktop\programs.c\vowel or consonant.exe"
Enter any alphabet: o
Vowel
Process returned 5 (0x5)   execution time : 3.777 s
Press any key to continue.

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

```c
#include<stdio.h>

void main()

{

    int m,n;

    printf("enter the values of m and n: ");

    scanf("%d %d",&m,&n);


    for (int i = m; i <= n; i++)

    {

        if (i%2==0)

        {

            printf("%d is even\n",i);

            }




    }


}
```

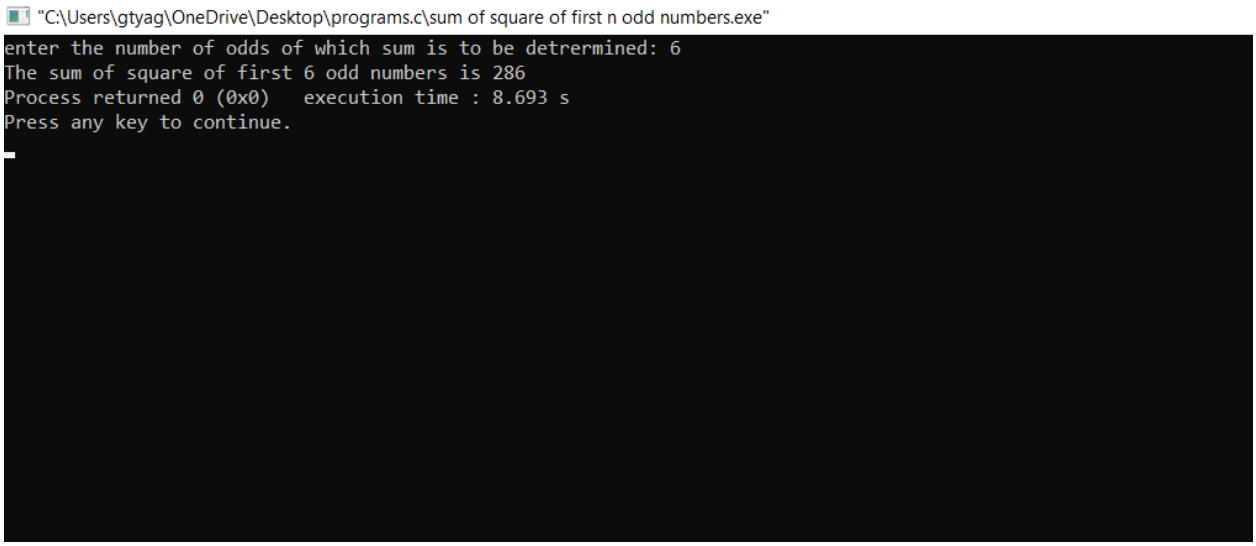
OUTPUT 5:


"C:\Users\gtyag\OneDrive\Desktop\programs.c\even and odd btw m and n.exe"
enter the values of m and n: 4 10
4 is even
6 is even
8 is even
10 is even
Process returned 10 (0xA)   execution time : 3.991 s
Press any key to continue.

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

```c
#include <stdio.h>

int main()

 {

   int n ;


   printf("enter the number of odds of which sum is to be detrermined: ");


   scanf("%d",&n);


   int sum = 0;


   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 6:


"C:\Users\gtyag\OneDrive\Desktop\programs.c\sum of square of first n odd numbers.exe"
enter the number of odds of which sum is to be detrermined: 6
The sum of square of first 6 odd numbers is 286
Process returned 0 (0x0)   execution time : 8.693 s
Press any key to continue.

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

```
#include<stdio.h>

#include<stdlib.h>


void main(){


    int rows1,col1,rows2,col2,row_sum,col_sum;


    int mat1[5][5], mat2[5][5], sum[5][5];
     printf("enter the no. of rows and column in the first matrix:\n");
     scanf("%d %d",&rows1,&col1);


     printf("enter the no. of rows and columns of second matrix\n");
     scanf("%d %d",&rows2,&col2);


     if (rows1 != rows2 || col1 != col2)
     {
         printf("the rows and columns of both the matrices should be
same\n");
         exit(0);
     }


     row_sum=rows1;
     col_sum=col1;


     printf("enter the elements of first matrix\n");
```

```
    for (int i = 0; i < rows1; i++)
    {
        for (int j = 0; j < col1; j++)
        {
            scanf("%d",&mat1[i][j]);
        }

        }

        printf("enter the elements of second matrix\n");

       for (int i = 0; i < rows2; i++)
       {
           for (int j = 0; j < col2; j++)
           {
               scanf("%d",&mat2[i][j]);
           }

       }


       for (int i = 0; i < row_sum; i++)
       {
           for (int j = 0; j < col_sum; j++)
           {
               sum[i][j] = mat1[i][j] + mat2[i][j];
```

```
            }


        }


        printf("Sum matrix of entered matrices is: \n");


        for (int i = 0; i < row_sum; i++)

        {

        printf("\n");

        for (int j = 0; j < col_sum; j++)


        printf("%d\t", sum[i][j]);


        }

        return 0;

        }
```

OUTPUT 7:

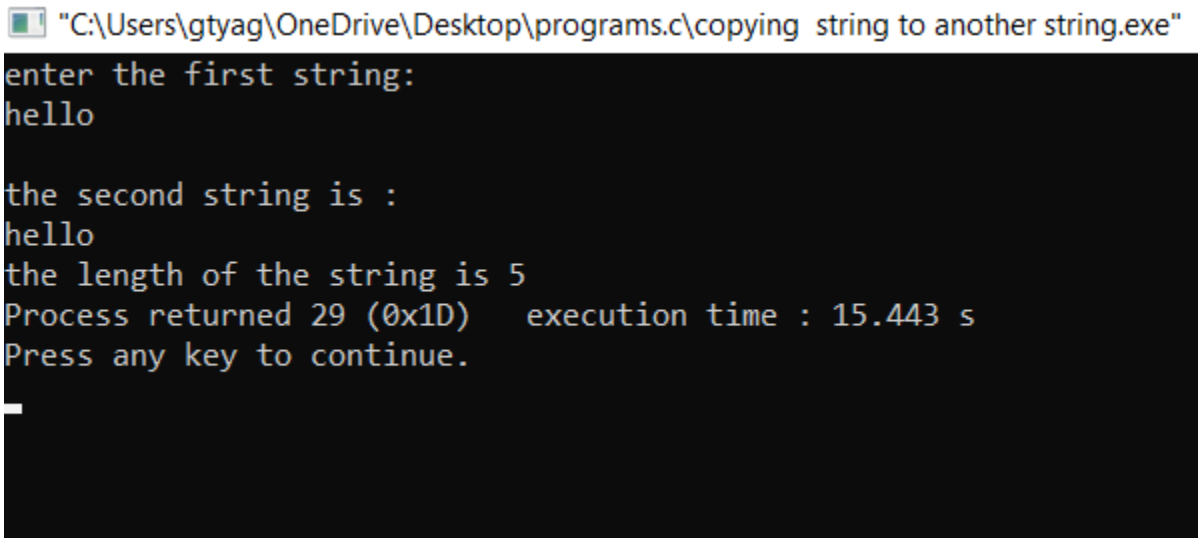
```
"C:\Users\gtyag\OneDrive\Desktop\programs.c\sum of matrix.exe"
enter the no. of rows and column in the first matrix:
2 2
enter the no. of rows and columns of second matrix
2 2
enter the elements of first matrix
1 2 3 4
enter the elements of second matrix
3 4 6 7
Sum matrix of entered matrices is:

4       6
9       11
Process returned 2 (0x2)   execution time : 14.522 s
Press any key to continue.
```

8.Develop a C program to copy one string to another string and find its length:

```c
#include<stdio.h>

void main(){


    char str1[10], str2[10];

    int i;


    printf("enter the first string:\n");


    gets(str1);


    for (i = 0; str1[i] != '\0';)

    {

        str2[i] = str1[i];


        i++;

    }







    printf("\nthe second string is :\n");

    puts(str2);


    printf("the length of the string is %d",i);
```

```
}
```

OUTPUT 8:


"C:\Users\gtyag\OneDrive\Desktop\programs.c\copying string to another string.exe"
enter the first string:
hello
the second string is :
hello
the length of the string is 5
Process returned 29 (0x1D)   execution time : 15.443 s
Press any key to continue.

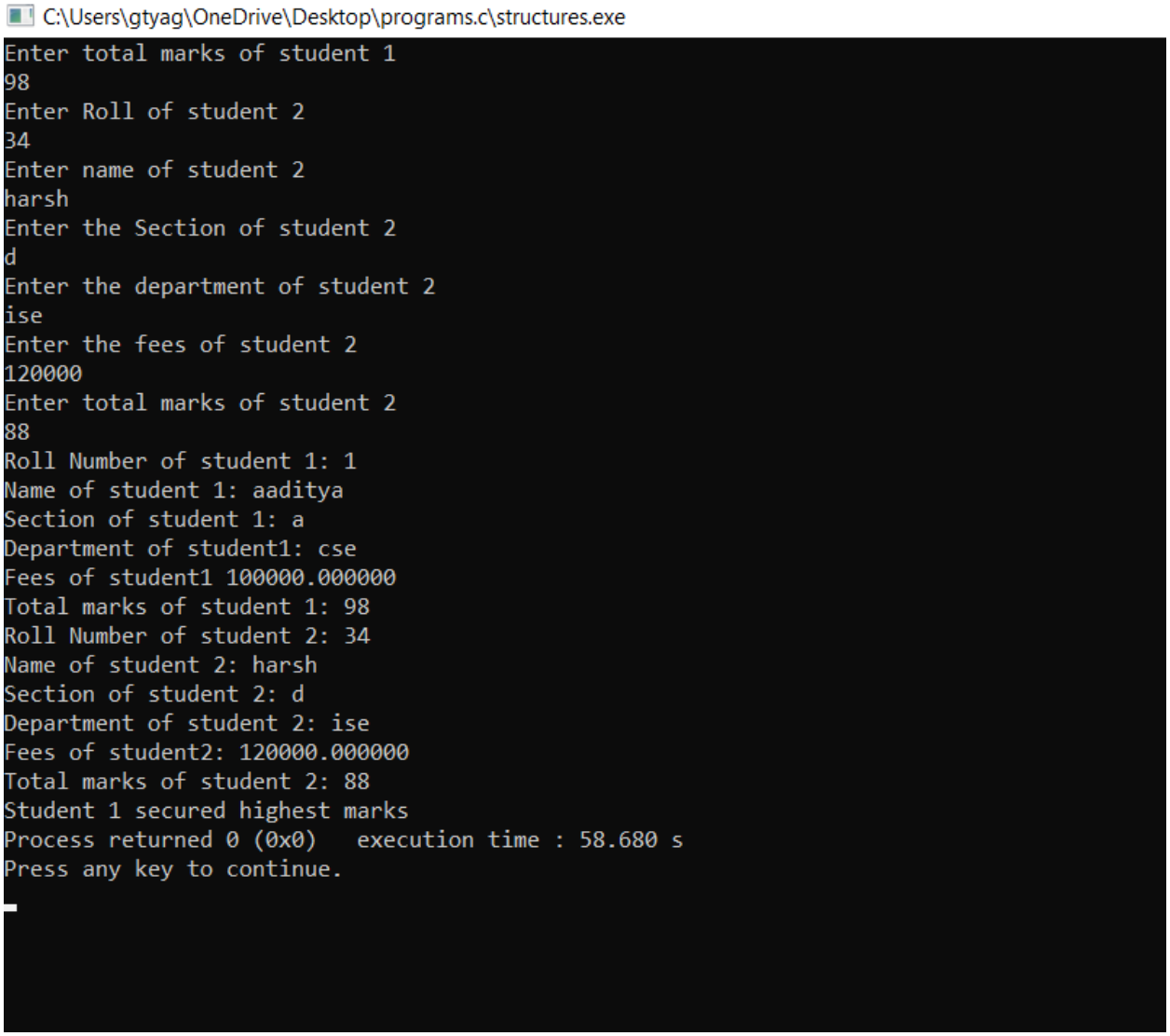
9.Develop a C program to create student structure, read two student details(Student roll number, name,section, department, fees, and results i.e., total marks obtained) and print the student details who has scored the highest:

```c
#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 of student 1\n");

    scanf("%d",&stud1.rollnumber);

    printf("Enter name of student 1\n");

    scanf("%s",stud1.name);

    printf("Enter the Section of student 1\n");

    scanf("%s",stud1.section);

    printf("Enter the department of student 1\n");

    scanf("%s",stud1.dept);

    printf("Enter the fees of student 1\n");

    scanf("%f",&stud1.fees);
```

```
    printf("Enter total marks of student 1\n");
    scanf("%d",&stud1.totalmarks);
    printf("Enter Roll of student 2\n");
    scanf("%d",&stud2.rollnumber);
    printf("Enter name of student 2\n");
    scanf("%s",stud2.name);
    printf("Enter the Section of student 2\n");
    scanf("%s",stud2.section);
    printf("Enter the department of student 2\n");
    scanf("%s",stud2.dept);
    printf("Enter the fees of student 2\n");
    scanf("%f",&stud2.fees);
    printf("Enter total marks of student 2\n");
    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 student1: %s\n",stud1.dept);
    printf("Fees of student1 %f\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 student2: %f\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 9:


C:\Users\gtyag\OneDrive\Desktop\programs.c\structures.exe
Enter total marks of student 1
98
Enter Roll of student 2
34
Enter name of student 2
harsh
Enter the Section of student 2
d
Enter the department of student 2
ise
Enter the fees of student 2
120000
Enter total marks of student 2
88
Roll Number of student 1: 1
Name of student 1: aaditya
Section of student 1: a
Department of student1: cse
Fees of student1 100000.000000
Total marks of student 1: 98
Roll Number of student 2: 34
Name of student 2: harsh
Section of student 2: d
Department of student 2: ise
Fees of student2: 120000.000000
Total marks of student 2: 88
Student 1 secured highest marks
Process returned 0 (0x0) execution time : 58.680 s
Press any key to continue.

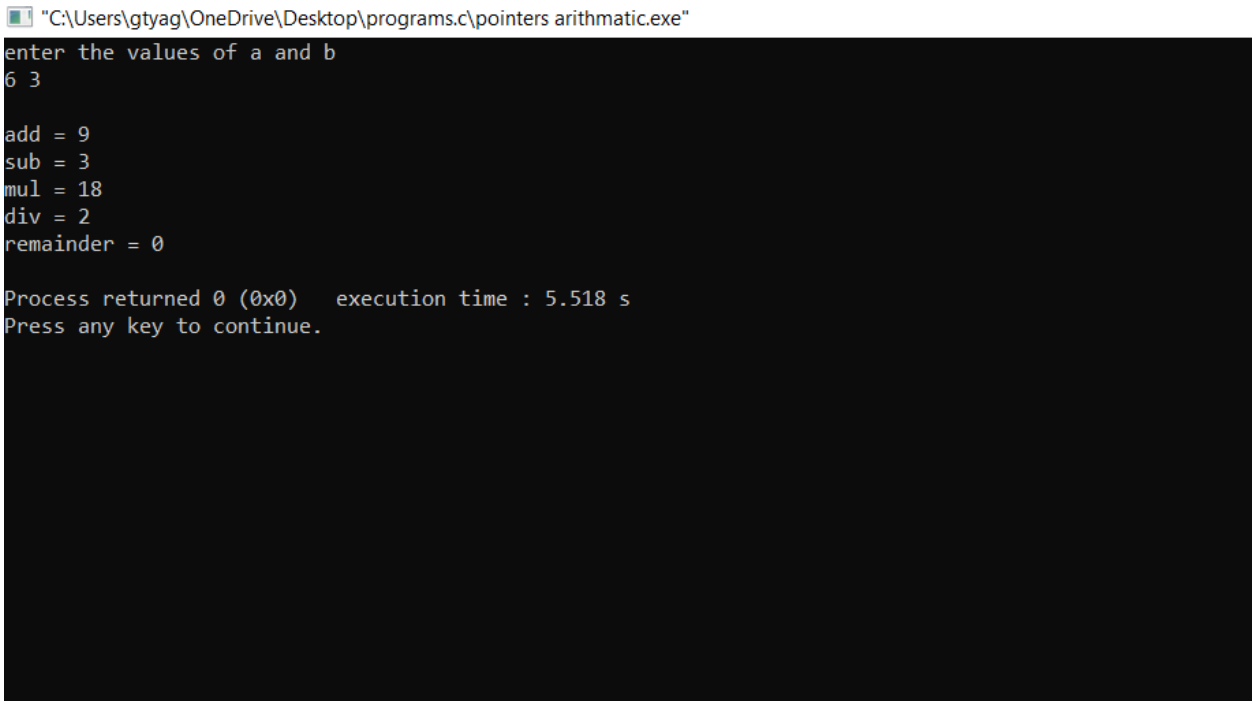
10.Develop a C program to perform arithmetic operations (addition, subtraction, multiplication, division and remainder) on two integers using pointers :

```c
#include<stdio.h>
 void add(int *a,int *b,int *ans){


    *ans = *a + *b;
 }


 void sub(int *a,int *b,int *ans){


     *ans = *a - *b;


 }


void mul(int *a,int *b,int *ans){


     *ans = (*a) * (*b);


 }


void div(int *a,int *b,int *ans){


     *ans = (*a)/(*b);


 }
```

```c
void remainder(int *a,int *b,int *ans){

    *ans = (*a)%(*b);

}

int main(){

int a,b,ans1,ans2,ans3,ans4,ans5;
;

printf("enter the values of a and b\n");

scanf("%d %d",&a,&b);

add(&a,&b,&ans1);
sub(&a,&b,&ans2);
mul(&a,&b,&ans3);
div(&a,&b,&ans4);
remainder(&a,&b,&ans5);

printf("\nadd = %d\n",ans1);
printf("sub = %d\n",ans2);
printf("mul = %d\n",ans3);
printf("div = %d\n",ans4);
printf("remainder = %d\n",ans5);
```

```
}
```

OUTPUT 10:


"C:\Users\gtyag\OneDrive\Desktop\programs.c\pointers arithmatic.exe"
enter the values of a and b
6 3
add = 9
sub = 3
mul = 18
div = 2
remainder = 0
Process returned 0 (0x0)   execution time : 5.518 s
Press any key to continue.