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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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, Vijaya Verma , 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.

VIJAYA VERMA (1BM20CS187)

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

```
#include<stdio.h>
int main()
{
float fahrenheit;
float celsius;
printf("Enter the temperature in Fahrenheit\n");
scanf("%f",&fahrenheit);
celsius=((fahrenheit-32)*5)/9;
printf("Temperature in Celsius :\t %0.2f",celsius);
return 0;
}
```

OUTPUT

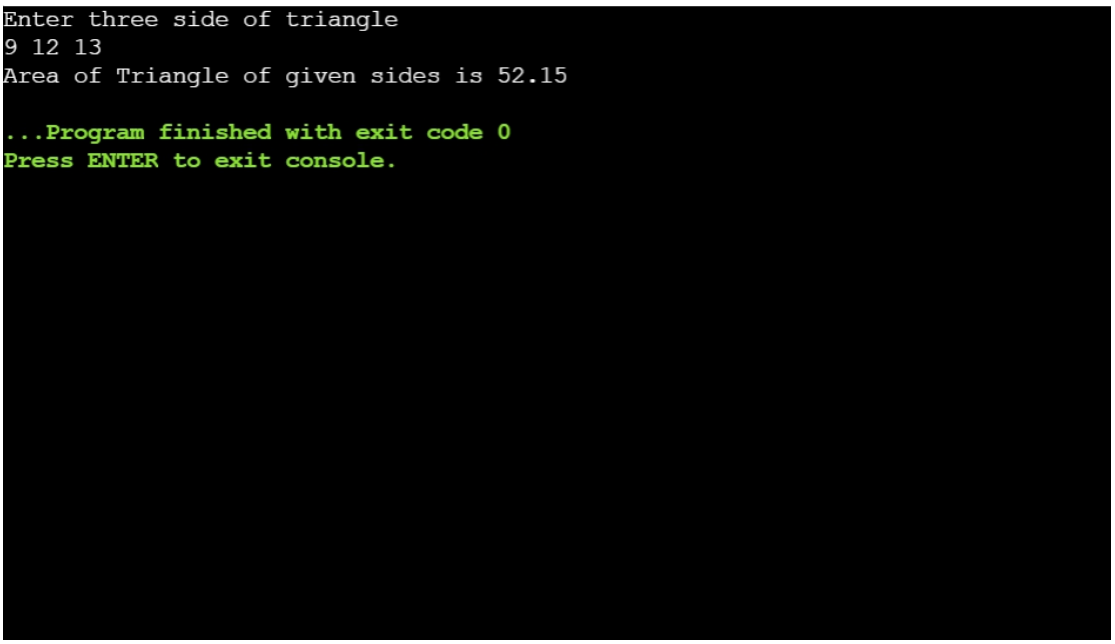
```
Enter the temperature in Fahrenheit
152
Temperature in Celsius :        66.67

...Program finished with exit code 0
Press ENTER to exit console.
```

//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 areacalculate(int a,int b,int c)
{
float s , area , s1;
s1=a+b+c;
s = s1/2;
area = sqrt(s*(s-a)*(s-b)*(s-c));
printf("Area of Triangle of given sides is %0.2f",area);
return 0;
}
int main(){
int a1,b1,c1;
printf("Enter three side of triangle\n");
scanf("%d %d %d",&a1,&b1,&c1);
areacalculate(a1,b1,c1);
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,x1,x2;
     printf("enter values of coefficients a, b and c :\n");
     scanf("%f %f %f",&a,&b,&c);
     D=(b*b - 4*a*c);
     if (D<0)
     {
     printf("The roots are imaginary\n First root is : %f + i%f", -b/(2*a),
 sqrt(-D)/(2*a) );
          printf("Second root is : %f - i%f", -b/(2*a), sqrt(-D)/(2*a) );
     }
     else if(D>0){
         x1=(-b + sqrt(D))/(2*a);
         x2=(-b - sqrt(D))/(2*a);
         printf("The roots are real and distinct\n First root
is : %f\n",x1);
          printf("Second root is :%f\n",x2);
    }
    else{
    x1=-b/(2*a);
    printf("The roots are real and equal\n First root is :%f\n The second
root is :%f",x1,x1);
    }
    return 0;
}
```

OUTPUT

```
enter values of coefficients a, b and c :
3 -5 -8
The roots are real and distinct
 First root is : 2.666667
Second root is :-1.000000

--------------------------------
Process exited after 64.63 seconds with return value 0
Press any key to continue . . .
```

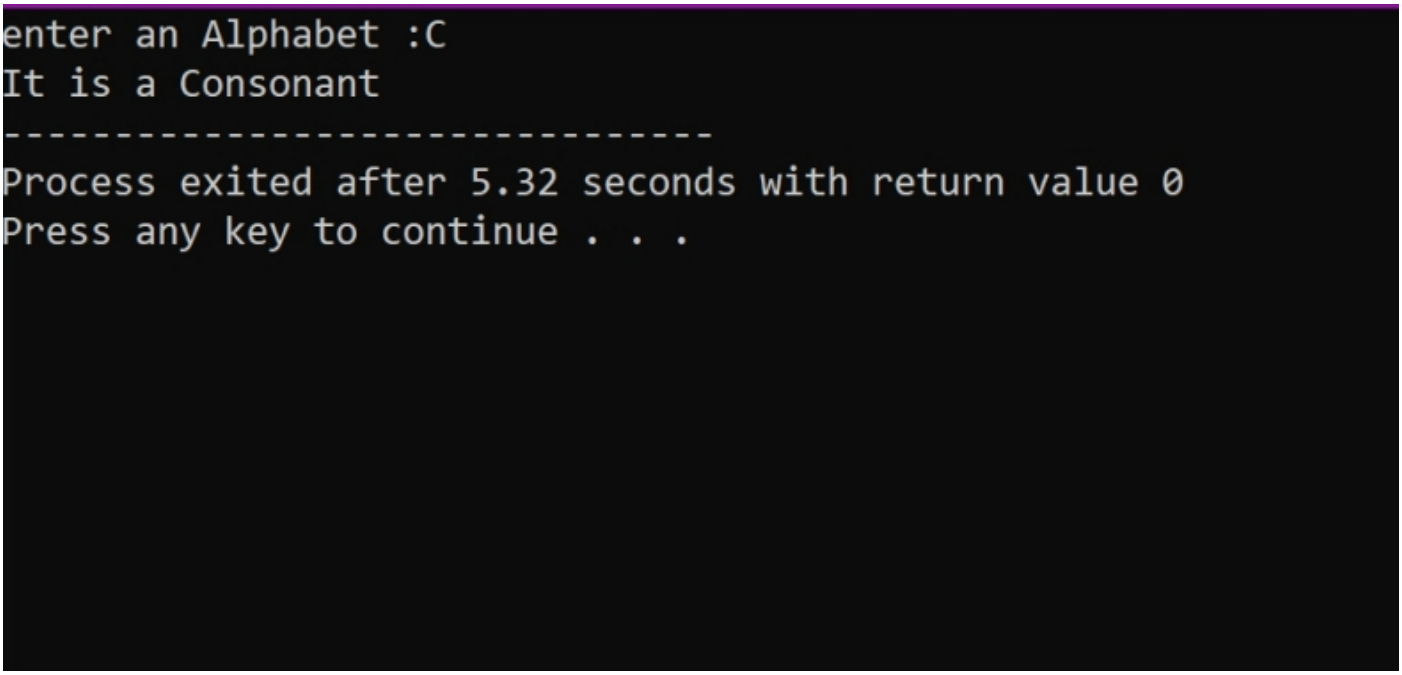
```
enter values of coefficients a, b and c :
1 4 5
The roots are imaginary
 First root is : -2.000000 + i1.000000Second root is : -2.000000 - i1.000000
--------------------------------
Process exited after 21.19 seconds with return value 0
Press any key to continue . . .
```

```
enter values of coefficients a, b and c :
-1 6 -9
The roots are real and equal
 First root is :3.000000
 The second root is :3.000000
--------------------------------
Process exited after 7.846 seconds with return value 0
Press any key to continue . . .
```

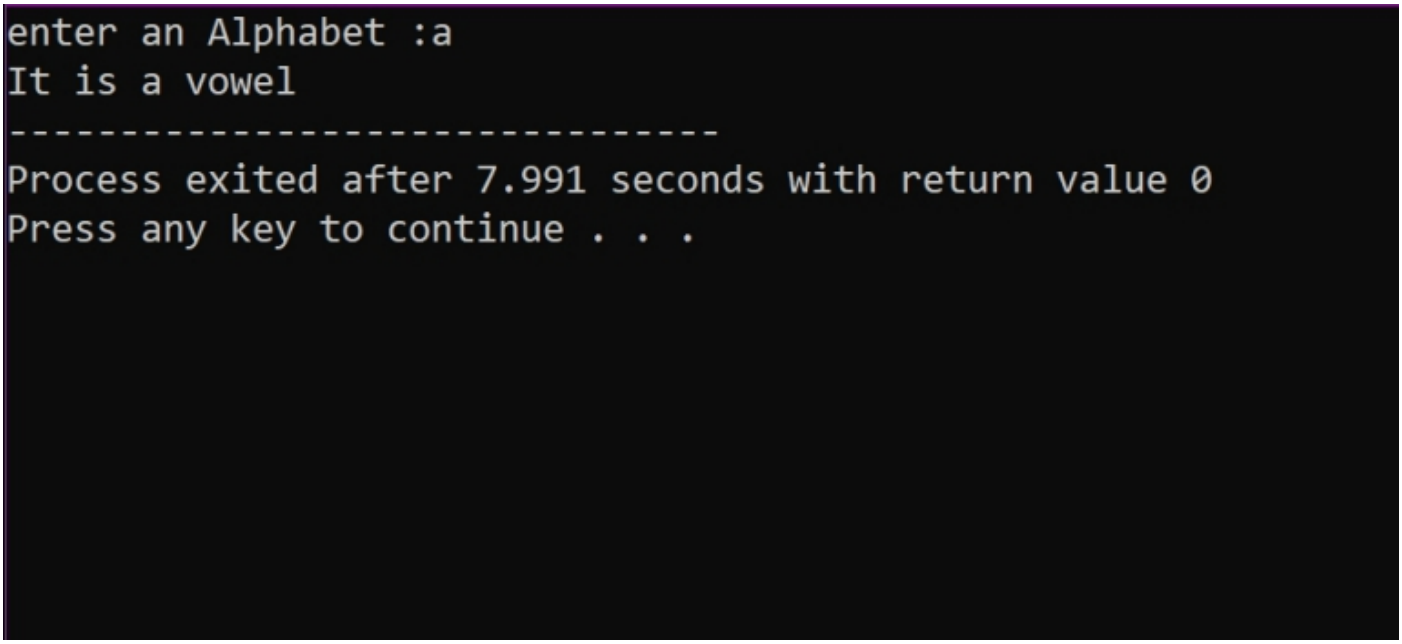
/*4.Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement.

```
#include<stdio.h>
int main()
{
     char alphabet;
     printf("enter an Alphabet :");
     scanf("%c",&alphabet);
     switch(alphabet)
     {
          case 'a':
          case 'e':
          case 'i':
          case 'o':
          case 'u':
          case 'A':
          case 'E':
          case 'I':
          case 'O':
          case 'U':
          printf("It is a vowel");
          break;
          default:
          printf("It is a Consonant");
     }
     return 0;
}
```

OUTPUT


enter an Alphabet :C
It is a Consonant

Process exited after 5.32 seconds with return value 0
Press any key to continue . . .

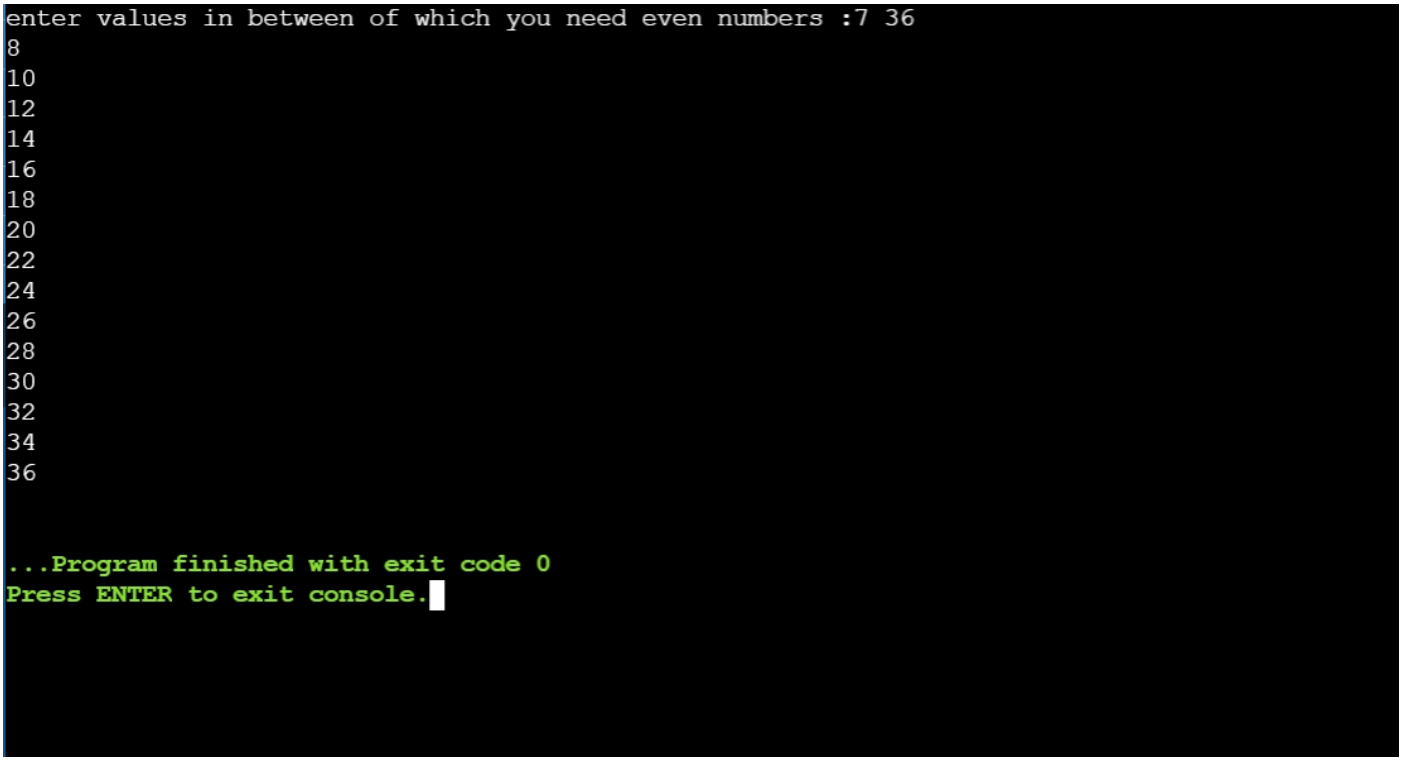

enter an Alphabet :a
It is a vowel

Process exited after 7.991 seconds with return value 0
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 values in between of which you need even numbers :");
     scanf("%d %d",&M,&N);
        for(i=M; i<=N; i++)
        {
          if(i%2==0)
          printf("%d\n",i);
       }
    return 0;
}
```

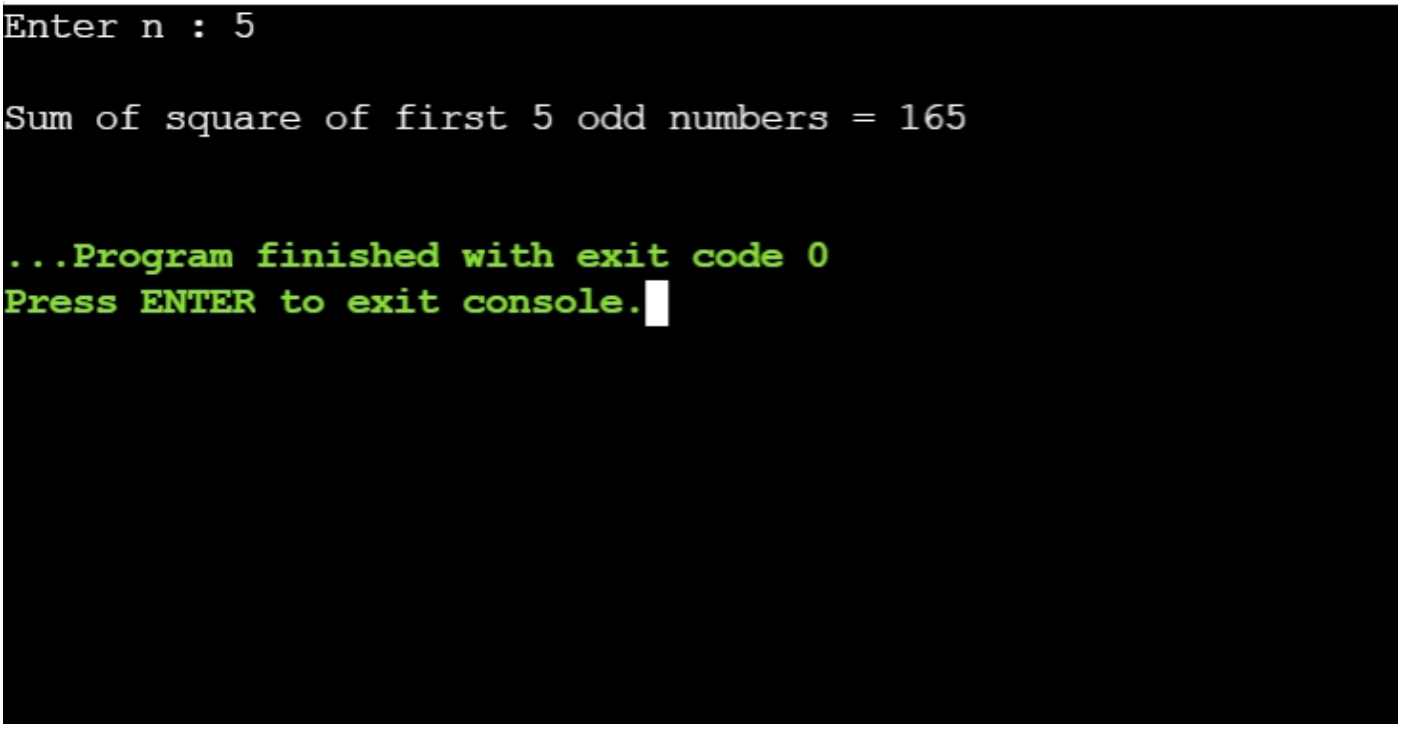
OUTPUT



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

```
#include<stdio.h>
int main()
{
    int n;
    printf("Enter n : ");
    scanf("%d",&n);
    int s=0;
    for(int i=0;i<(2*n);i++)
     {
        if(i%2!=0)
        s+=(i*i);
    }
    printf("\nSum of square of first %d odd numbers = %d\n",n,s);
}
```

OUTPUT



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

```
#include <stdio.h>
int main()
{
  int r,c,i,j;
  printf("Enter number of rows : ");
  scanf("%d",&r);
  printf("Enter number of columns : ");
  scanf("%d",&c);
  int arr1[r][c],arr2[r][c],arr3[r][c];
  printf("Enter matrix 1 : \n");
  for(i=0;i<r;i++)
  {
       for(j=0;j<c;j++)
       {
          //printf("Enter element [%d][%d] - ",i+1,j+1);
          scanf("%d",&arr1[i][j]);
       }
  }
  printf("Enter matrix 2 : \n");
  for(i=0;i<r;i++)
  {
       for(j=0;j<c;j++)
       {
          //printf("Enter element [%d][%d] - ",i+1,j+1);
          scanf("%d",&arr2[i][j]);
       }
  }
  printf("Addition of matrices : \n");
  for(i=0;i<r;i++){
      for(j=0;j<c;j++){
          arr3[i][j]=arr1[i][j]+arr2[i][j];
      }
  }
  for(i=0;i<r;i++)
  {
      for(j=0;j<c;j++)
      {
          printf("%d\t",arr3[i][j]);
      }
      printf("\n");
   }
}
```

OUTPUT

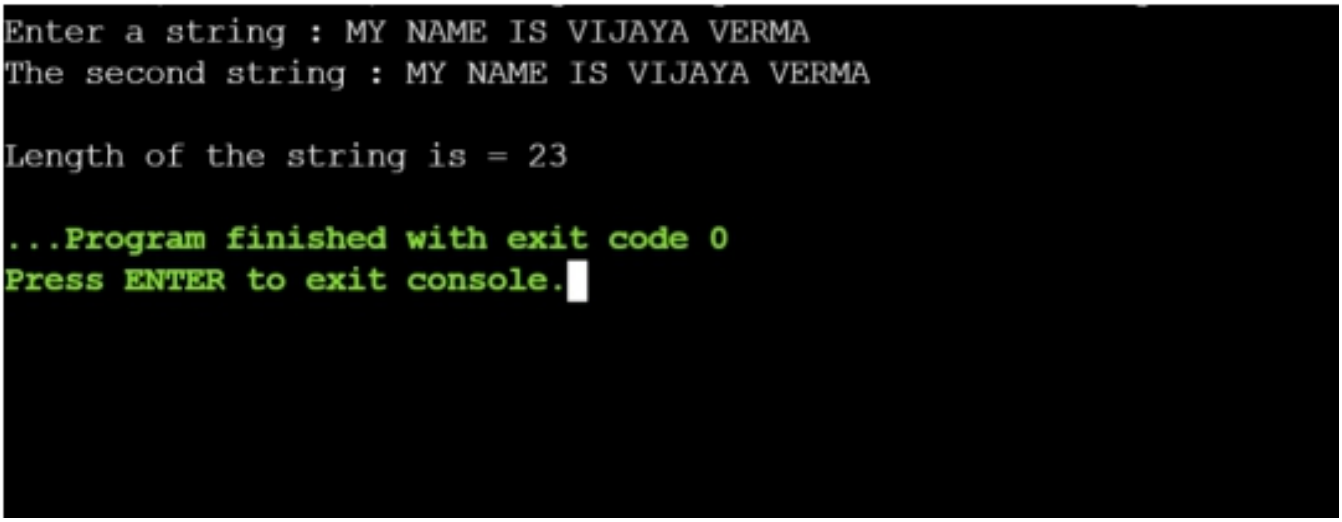
```
Enter number of rows : 2
Enter number of columns : 2
Enter matrix 1 :
10 12
15 18
Enter matrix 2 :
20 11
21 22
Addition of matrices :
30      23
36      40

--------------------------------
Process exited after 40.59 seconds with return value 2
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 main()
{
    char str1[100],str2[100];
    int i=0,length;
    printf("Enter a string : ");
    gets(str1);
    for(int i=0;i<100;i++)
    {
        str2[i]=str1[i];
    }
    while(str2[i]!='\0')
    {
        i++;
    }
    length = i;
    printf("The second string : ");
    puts(str2);
    printf("\nLength of the string is = %d",length);
}
```

OUTPUT



//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 roll_number;
    char name[20];
    char section[10];
    char dept[10];
    float fees;
    float results;
};
int main()
{
    int i;
    struct student S1,S2;
    printf("enter roll number of 1st student : ");
    scanf("%d",&S1.roll_number);
    printf("enter name of 1st student : ");
    scanf("%s",S1.name);
    printf("enter section of 1st student : ");
    scanf("%s",S1.section);
    printf("enter the department of 1st student : ");
    scanf("%s",S1.dept);
    printf("enter fees of 1st student : ");
    scanf("%f",&S1.fees);
    printf("enter results of 1st student : ");
    scanf("%f",&S1.results);
    printf("enter roll number of 2nd student : ");
    scanf("%d",&S2.roll_number);
    printf("enter name of 2nd student : ");
    scanf("%s",S2.name);
    printf("enter section of 2nd student : ");
    scanf("%s",S2.section);
    printf("enter the department of 2nd student : ");
    scanf("%s",S2.dept);
    printf("enter fees of 2nd student : ");
    scanf("%f",&S2.fees);
    printf("enter results of 2nd student : ");
```

```
    scanf("%f",&S2.results);
    if(S1.results>S2.results)
    {
        printf("student 1 has secured highest marks");
        printf("Roll number : %d\n",S1.roll_number);
        printf("Name :%s\n",S1.name);
        printf("Section : %s\n",S1.section);
        printf("Department : %s\n",S1.dept);
        printf("Fees : %f\n",S1.fees);
        printf("Results : %f\n",S1.results);
    }
    else if(S1.results==S2.results)
    {
        printf("Student 1 and Student 2 have the same marks");
    }
    else
    {
        printf("student 2 has secured the highest marks\n");
        printf("Roll number: %d\n",S2.roll_number);
        printf("Name: %s\n",S2.name);
        printf("Section: %s\n",S2.section);
        printf("Department: %s\n",S2.dept);
        printf("Fees: %f\n",S2.fees);
        printf("Results: %f\n",S2.results);
    }
    return 0;
}
```

OUTPUT

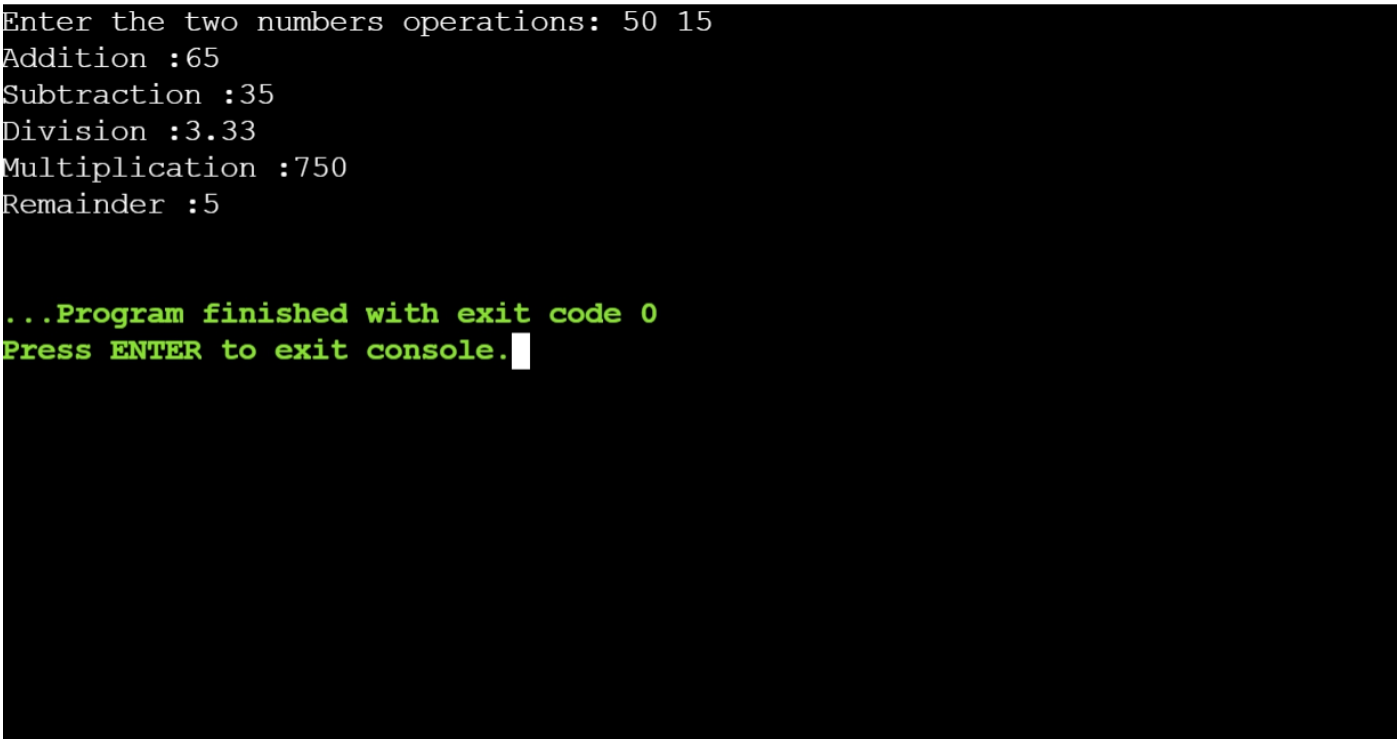
```
enter roll number of 1st student : 40
enter name of 1st student : Vijaya
enter section of 1st student : A
enter the department of 1st student : CSE
enter fees of 1st student : 50000
enter results of 1st student : 94
enter roll number of 2nd student : 10
enter name of 2nd student : Ashu
enter section of 2nd student : A
enter the department of 2nd student : CSE
enter fees of 2nd student : 48000
enter results of 2nd student : 98
student 2 has secured the highest marks
Roll number: 10
Name: Ashu
Section: A
Department: CSE
Fees: 48000.000000
Results: 98.000000


...Program finished with exit code 0
Press ENTER to exit console.
```

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

```
#include<stdio.h>
int operations(int *, int *, int *, int *, int*, float
*, int *);
int main()
{
int a,b;
int add,sub,multiplication,rem;
float division;
printf("Enter the two numbers operations: ");
scanf("%d %d",&a,&b);
operations(&a, &b, &add, ⊂, &multiplication,
&division, &rem);
printf("Addition :%d\n",add);
printf("Subtraction :%d\n",sub);
printf("Division :%0.2f\n",division);
printf("Multiplication :%d\n",multiplication);
printf("Remainder :%d\n",rem);
return 0;
}
int operations(int *a, int *b, int *add, int *sub, int
*multiplication, float *division, int *rem)
{
*add=*a+*b;
*sub=*a-*b;
*multiplication=*a**b;
*division=(float)(*a)/(*b);
*rem=(*a)%(*b);
return 0;
}
```

OUTPUT


Enter the two numbers operations: 50 15
Addition :65
Subtraction :35
Division :3.33
Multiplication :750
Remainder :5
...Program finished with exit code 0
Press ENTER to exit console.