

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
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B.M.S. COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING



DECLARATION

I, AAAA , 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.

KIRTI CHETWANI(1BM20IS067)

Program 1: Develop a C program to convert degree Fahrenheit into degree Celsius.

```
#include<stdio.h>

int main()
{
    float celsius , fahrenheit ;
    clrscr();
    printf("Enter temperature in Fahrenheit : ");
    scanf("%f",&fahrenheit );
    celsius = (fahrenheit - 32) * 5 / 9 ;
    printf("%.2f Fahrenheit = %.2f Celsius " , fahrenheit , celsius);
    getch();
    return 0;
}
```

Output 1:

```
Enter temperature in Fahrenheit : 100
100.00 Fahreneheit = 37.78 Celcius
```

```
Enter temperature in Fahrenheit : 56
56.00 Fahreneheit = 13.33 Celcius
```

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

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

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

```
double trianglearea(double, double, double);
```

```
int main()
```

```
{
```

```
    double a,b,c,area;
```

```
    clrscr();
```

```
    printf("Enter length of side of triangle\n");
```

```
    scanf("%lf %lf %lf", &a, &b, &c);
```

```
    area = trianglearea(a, b, c);
```

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

```
    getch();
```

```
    return 0;
```

```
}
```

```
double trianglearea(double a, double b, double c)
```

```
{
```

```
    double s , ans ;
```

```
s = (a+b+c)/2;  
ans = sqrt(s*(s-a)*(s-b)*(s-c));  
return ans;  
}
```

Output 2:

```
Enter length of side of triangle  
5 4 3  
Area of triangle = 6.00
```

```
Enter length of side of triangle  
5 12 13  
Area of triangle = 30.00  
—
```

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

```
#include<stdio.h>
#include<math.h>
int main()
{
int a,b,c;
clrscr();
printf("Enter a,b,c in the equation ax^2 + bx + c=0 \n");
scanf("%d %d %d", &a, &b, &c);
find_roots(a,b,c);
getch();
return 0;
}
int find_roots(int a,int b ,int c)
{
double root1,root2,real,img;
int d=b*b-4*a*c;
if(d<0)
{
real = -b/(2.0*a);
img = sqrt(-d)/(2.0*a);
```

```

printf("Both roots are complex\n");
printf("First Root = %.2lf + i%.2lf\n", real, img);
printf("Second Root = %.2lf - i%.2lf\n", real, img);
}
else if(d>0)
{
root1 = (-b + sqrt(d))/(2.0*a);
root2 = (-b - sqrt(d))/(2.0*a);
printf("Both Roots are real and different\n");
printf("First Root = %.2lf\n",root1);
printf("Second Root = %.2lf\n",root2);
}
else
{
root1 = -b/(2.0*a);
root2 = root1;
printf("Both Roots are real and same\n");
printf("First Root = %.2lf\n",root1);
printf("Second Root = %.2lf\n",root2);
}
return 0;
}

```

Output 3:

OUTPUT FOR REAL AND DIFFERENT ROOTS.

```
Enter a,b,c in the equation ax^2 + bx + c=0
8 -4 -2
Both Roots are real and different
First Root = 0.81
Second Root = -0.31
```

OUTPUT FOR COMPLEX ROOTS.

```
Enter a,b,c in the equation ax^2 + bx + c=0
1 1 1
Both roots are complex
First Root = -0.50 + i0.87
Second Root = -0.50 - i0.87
```

OUTPUT FOR REAL AND EQUAL ROOTS.

```
Enter a,b,c in the equation ax^2 + bx + c=0
4 -4 1
Both Roots are real and same
First Root = 0.50
Second Root = 0.50
```

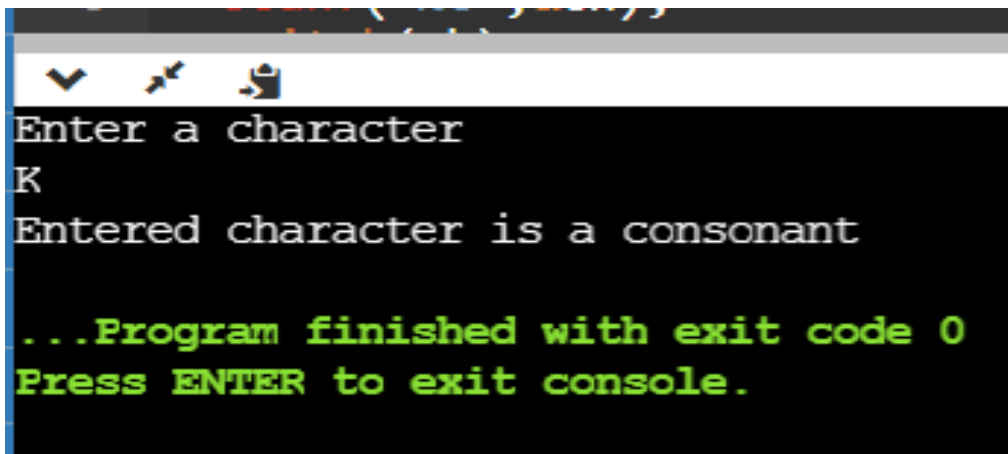

Program 4: Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement.

```
#include<stdio.h>

int main()
{
    char ch;
    clrscr();
    printf("Enter a character \n");
    scanf("%c",&ch);
    switch(ch)
    {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
        case 'u':
    }
    printf("Entered character is a vowel");
```

```
break;
    default:
printf("Entered character is a consonant");
break;
}
getch();
return 0;
}
```

Output 4:

A screenshot of a Windows command prompt window. The title bar shows standard Windows icons. The console has a black background with white text. It displays the prompt "Enter a character", the input "K", and the output "Entered character is a consonant". At the bottom, there is a green message: "...Program finished with exit code 0" and "Press ENTER to exit console.".

```
Enter a character
K
Entered character is a consonant

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

```
Enter a character
A
Entered character is a vowel

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

```
Enter a character
g
Entered character is a consonant

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

```
Enter a character
e
Entered character is a vowel

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

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

```
#include<stdio.h>

int main()
{
    int m,n,i;
    clrscr();
    printf("Enter two numbers \n");
    scanf("%d %d",&m,&n);
    for(i=m;i<=n;i++)
    {
        if(i%2==0)
        {
            printf("%d \n",i);
        }
    }
    getch();
    return 0;
}
```

Output 5:

```
Enter two numbers
```

```
3 34
```

```
4
```

```
6
```

```
8
```

```
10
```

```
12
```

```
14
```

```
16
```

```
18
```

```
20
```

```
22
```

```
24
```

```
26
```

```
28
```

```
30
```

```
32
```

```
34
```

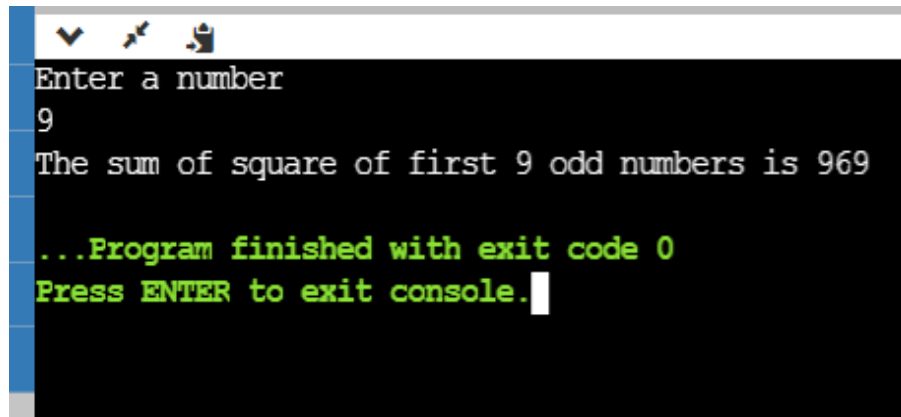
```
...Program finished with exit code 0
```

```
Press ENTER to exit console.
```

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

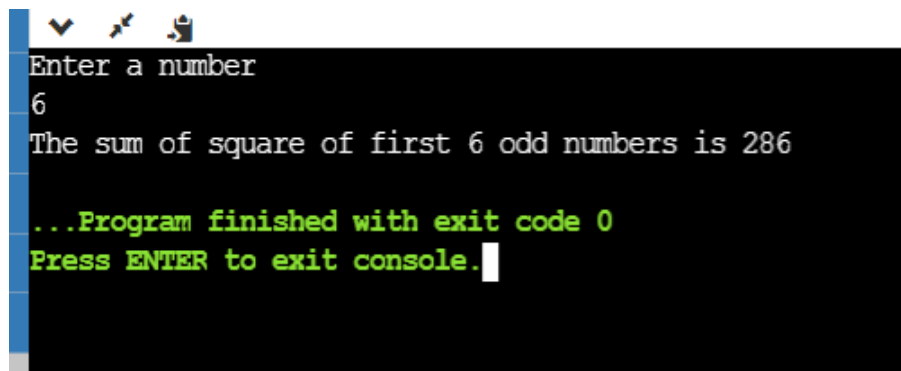
```
#include<stdio.h>
#include<conio.h>
int sum_square(int);
int main()
{
    int n;
    printf("Enter a number \n");
    scanf("%d",&n);
    sum_square(n);
    getch();
    return 0;
}
int sum_square(int n)
{
    int i,sum=0;
    for(i = 1; i<= n; i++)
        sum+=(2*i-1)*(2*i-1);
    printf("The sum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

Output 6:



```
Enter a number
9
The sum of square of first 9 odd numbers is 969

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



```
Enter a number
6
The sum of square of first 6 odd numbers is 286

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

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

```
#include <stdio.h>
#include<stdlib.h>
int main()
{
    int rows1, cols1, rows2, cols2,i, j,rows_sum,cols_sum;
    int mat1[5][5] , mat2[5][5], sum[5][5];
    printf("Enter the number of rows in the first matrix: ");
    scanf("%d", &rows1);
    printf("Enter the number of cols in the first matrix: ");
    scanf("%d", &cols1);
    printf("Enter the number of rows in the second matrix: ");
    scanf("%d", &rows2);
    printf("Enter the number of cols in the second matrix: ");
    scanf("%d", &cols2);
    if(rows1 !=rows2 || cols1 != cols2)
    {
        printf ("The number of rows and cols of both the matrices should be same\n");
        exit(0);
    }
    rows_sum=rows1;
    cols_sum=cols1;
```



```

printf("Elements of first matrix : \n");
for (i = 0; i < rows1; i++)
for (j = 0; j < cols1; j++)
scanf("%d", &mat1[i][j]);
printf("Elements of second matrix : \n");
for (i = 0; i < rows2; i++)
for (j = 0; j < cols2; j++)
scanf("%d", &mat2[i][j]);
for (i = 0; i < rows_sum; i++)
{
for (j = 0; j < cols_sum; j++)
{
sum[i][j] = mat1[i][j] + mat2[i][j];
}
}
printf("Sum of entered matrices : \n");
for (i = 0; i < rows_sum; i++)
{
printf("\n");
for (j = 0; j < cols_sum; j++)
printf("%d\t", sum[i][j]);
}

```

```
return 0;
```

```
}
```

Output 7:

```
0019 Sum 00191,
Enter the number of rows in the first matrix: 2
Enter the number of cols in the first matrix: 2
Enter the number of rows in the second matrix: 2
Enter the number of cols in the second matrix: 2
Elements of first matrix :
4 5
6 7
Elements of second matrix :
2 3
4 5
Sum of entered matrices :
6      8
10     12
...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter the number of rows in the first matrix: 3
Enter the number of cols in the first matrix: 3
Enter the number of rows in the second matrix: 3
Enter the number of cols in the second matrix: 3
Elements of first matrix :
3 4 5
6 7 8
1 2 3
Elements of second matrix :
1 2 3
4 5 6
7 8 9
Sum of entered matrices :
4      6      8
10     12     14
8      10     12
...Program finished with exit code 0
Press ENTER to exit console.
```

Program 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;
```

```
    printf("Enter string 1\n");
```

```
    scanf("%s",str1);
```

```
    printf("Enter string 2\n");
```

```
    scanf("%s",str2);
```

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

```
    {
```

```
        str2[i] = str1[i];
```

```
    }
```

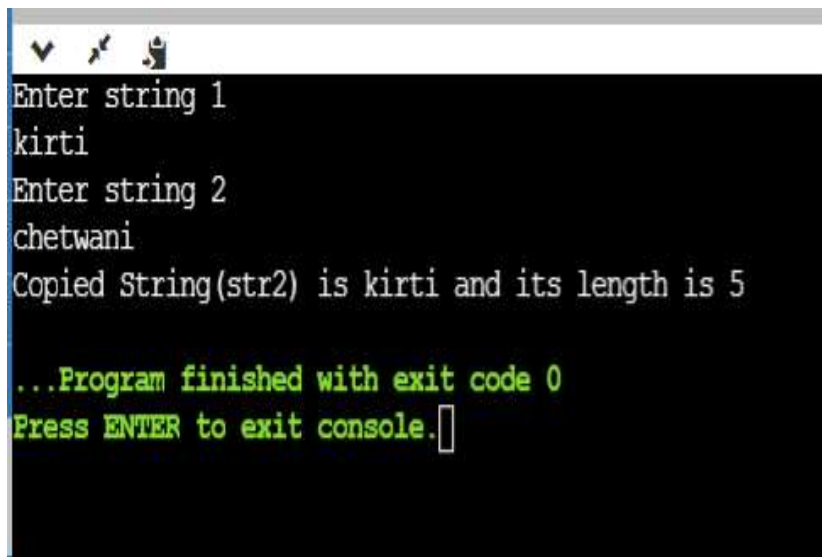
```
    str2[i]='\0';
```

```
    printf("Copied String(str2) is %s and its length is %d",str2,i);
```

```
    return 0;
```

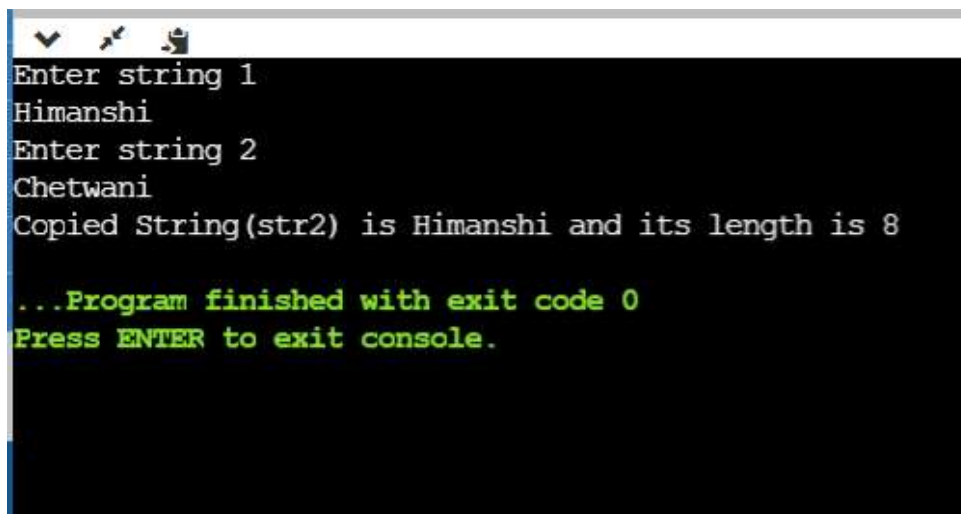
```
}
```

Output 8:



```
Enter string 1
kirti
Enter string 2
chetwani
Copied String(str2) is kirti and its length is 5

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



```
Enter string 1
Himanshi
Enter string 2
Chetwani
Copied String(str2) is Himanshi and its length is 8

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

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

```
#include <stdio.h>

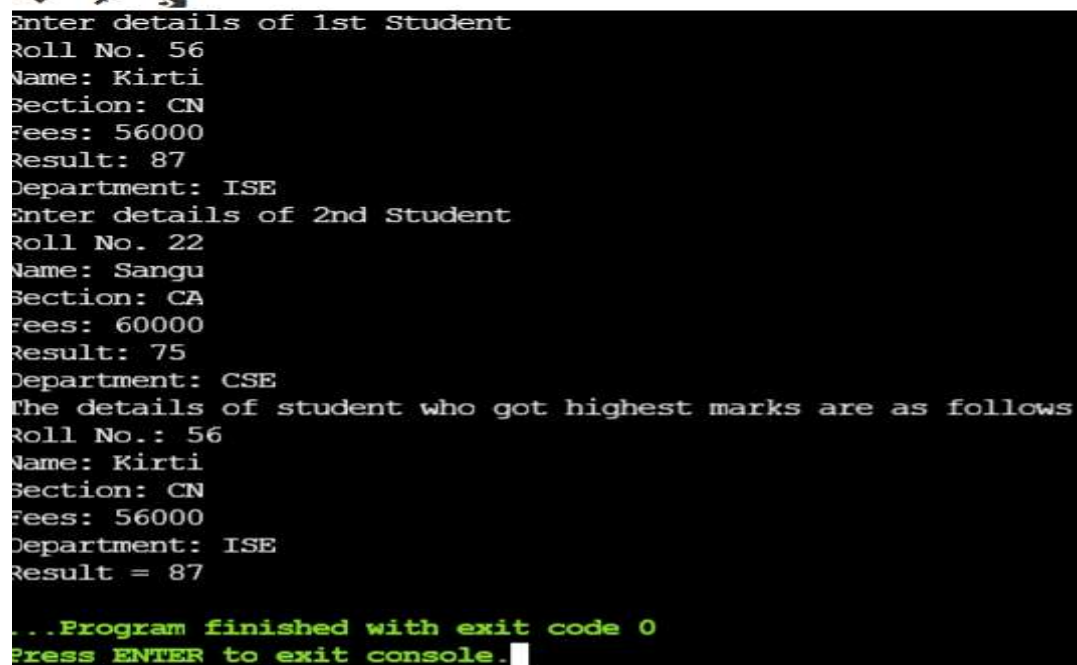
struct student{
    int rollno;
    char name[20];
    char sec[2];
    int fees;
    char dep[4];
    int result;
};

struct student getinfo();
void print(struct student s1);
int main() {
    struct student s1,s2;
    printf("Enter details of 1st Student\n");
    s1 = getinfo();
    printf("Enter details of 2nd Student\n");
    s2 = getinfo();
    if(s1.result>s2.result){
        print(s1);
    }
}
```

```
    }  
    else{  
        print(s2);  
    }  
    return 0;  
}  
struct student getinfo(){  
    struct student s1;  
    printf("Roll No. ");  
    scanf("%d",&s1.rollno);  
    printf("Name: ");  
    scanf("%s",s1.name);  
    printf("Section: ");  
    scanf("%s",s1.sec);  
    printf("Fees: ");  
    scanf("%d",&s1.fees);  
    printf("Result: ");  
    scanf("%d",&s1.result);  
    printf("Department: ");  
    scanf("%s",s1.dep);  
    return s1;  
}
```

```
void print(struct student s1){  
    printf("The details of student who got highest marks are as follows\n");  
    printf("Roll No.: %d\n",s1.rollno);  
    printf("Name: %s\n",s1.name);  
    printf("Section: %s\n",s1.sec);  
    printf("Fees: %d\n",s1.fees);  
    printf("Department: %s\n",s1.dep);  
    printf("Result = %d",s1.result);  
}
```

Output 9:



```
Enter details of 1st Student  
Roll No. 56  
Name: Kirti  
Section: CN  
Fees: 56000  
Result: 87  
Department: ISE  
Enter details of 2nd Student  
Roll No. 22  
Name: Sangu  
Section: CA  
Fees: 60000  
Result: 75  
Department: CSE  
The details of student who got highest marks are as follows  
Roll No.: 56  
Name: Kirti  
Section: CN  
Fees: 56000  
Department: ISE  
Result = 87  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Program 10: Develop a C program to perform arithmetic operation; (addition, subtraction, multiplication, division and remainder) on two integer; using pointer

```
#include<stdio.h>

int operations(int *, int *, int *, int *, int*, float*, int *);

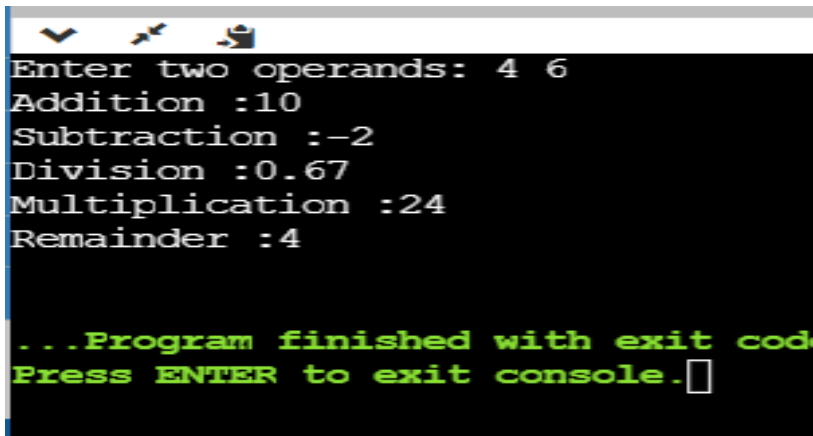
int main()
{
    int a,b;
    int add,sub,multiplication,rem;
    float division;
    printf("Enter two operands: ");
    scanf("%d %d",&a,&b);
    operations(&a, &b, &add, &sub, &multiplication,&division, &rem);
    printf("Addition :%d\n",add);
    printf("Subtraction :%d\n",sub);
    printf("Division :%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)
{
```

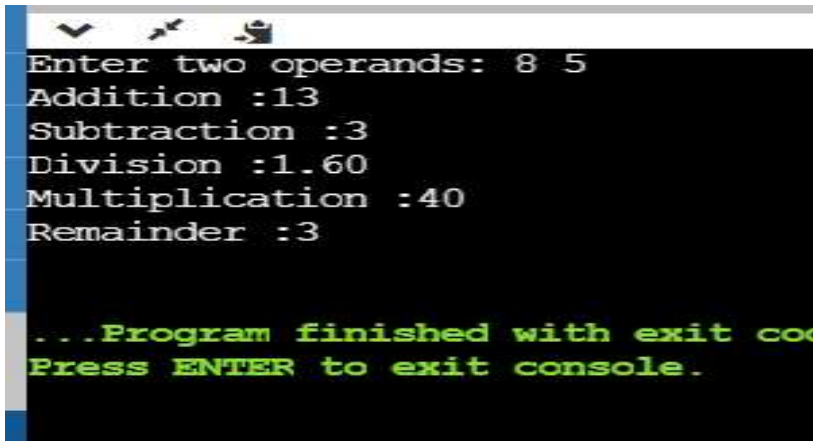


```
*add=*a+*b;
*sub=*a-*b;
*multiplication=*a**b;
*division=(float)(*a)/(*b);
*rem=(*a)%(*b);
return 0;
}
```

Output 10:



A screenshot of a console window with a black background and white text. At the top, there are three small icons: a downward arrow, a leftward arrow, and a document icon. The text in the console reads: "Enter two operands: 4 6", "Addition :10", "Subtraction :-2", "Division :0.67", "Multiplication :24", "Remainder :4". Below this, in green text, it says "...Program finished with exit code 0" and "Press ENTER to exit console." followed by a white cursor box.



A screenshot of a console window with a black background and white text. At the top, there are three small icons: a downward arrow, a leftward arrow, and a document icon. The text in the console reads: "Enter two operands: 8 5", "Addition :13", "Subtraction :3", "Division :1.60", "Multiplication :40", "Remainder :3". Below this, in green text, it says "...Program finished with exit code 0" and "Press ENTER to exit console." followed by a white cursor box.