

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)

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



DECLARATION

I, Mrinali Gowda 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.

Mrinali Gowda(1BM20CS087)

Program 1

//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 degree Fahrenheit\n");
```

```
    scanf("%f",&fahrenheit);
```

```
    celsius=((fahrenheit-32)*5)/9;
```

```
    printf("Temperature in Celsius :\t %0.2f",celsius);
```

```
    return 0;
```

```
}
```

Output of 1st Program:



```
Enter the temperature in degree Fahrenheit
```

```
100
```

```
Temperature in Celsius :          37.78
```

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

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

Program 2

//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");
```

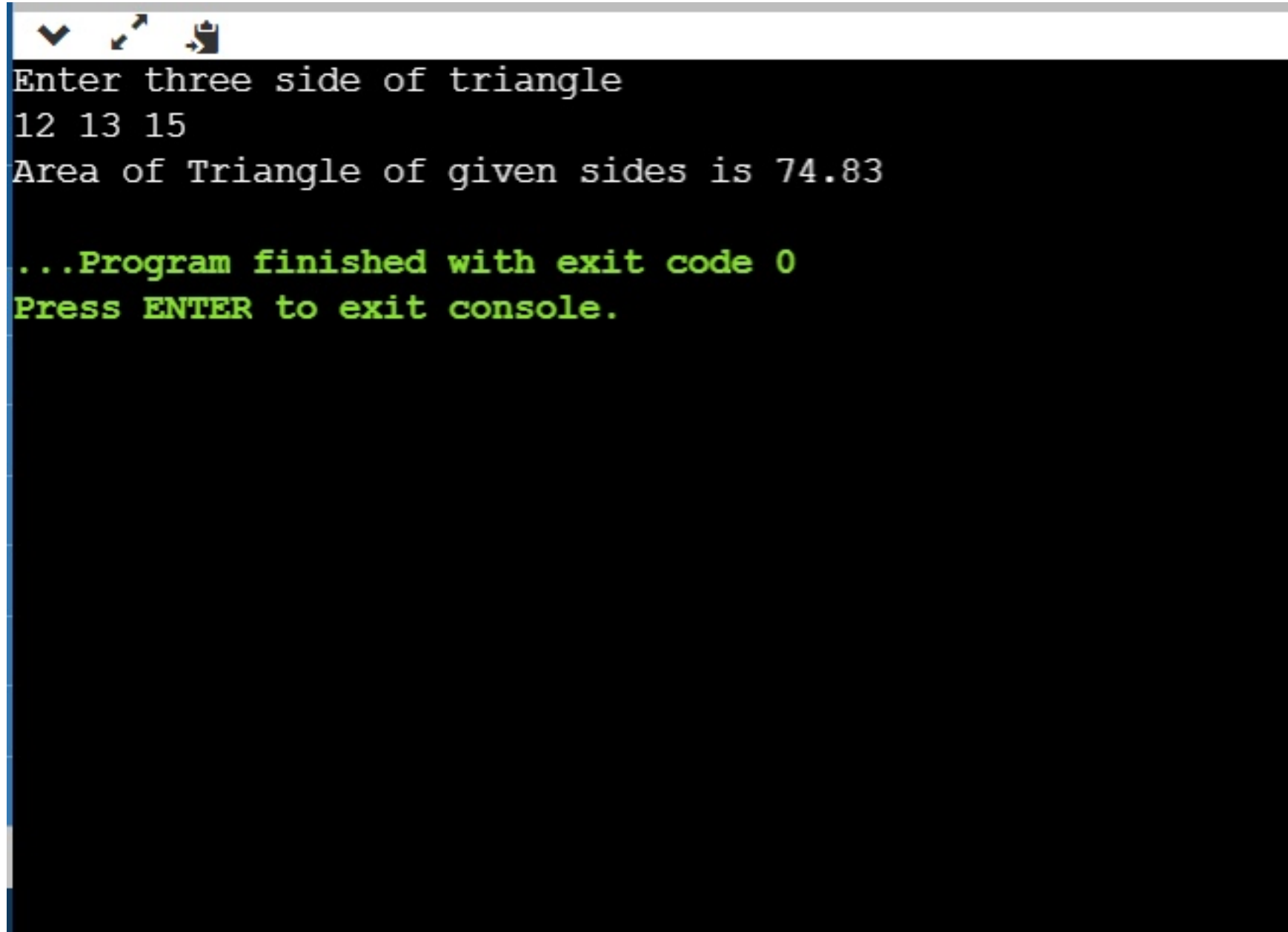
```
    scanf("%d %d %d",&a1,&b1,&c1);
```

```
    areacalculate(a1,b1,c1);
```

```
    return 0;
```

```
}
```

Output of 2nd Program:

A terminal window with a dark background and a light gray title bar. The title bar contains three icons: a checkmark, a magnifying glass, and a document. The terminal displays the following text in a monospaced font: "Enter three side of triangle", "12 13 15", "Area of Triangle of given sides is 74.83", "...Program finished with exit code 0", and "Press ENTER to exit console." in green. The text is left-aligned and occupies the first few lines of the terminal.

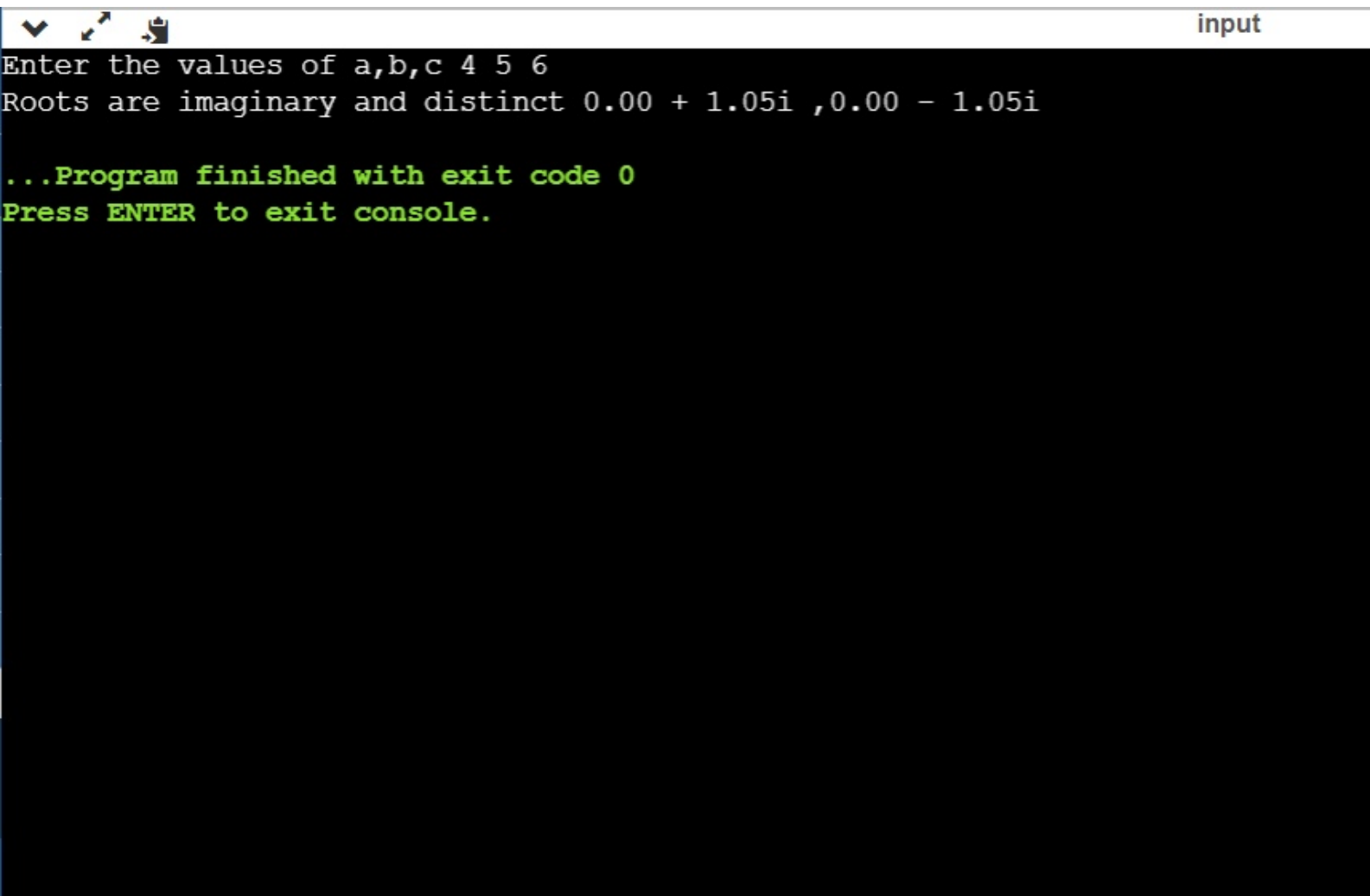
```
Enter three side of triangle
12 13 15
Area of Triangle of given sides is 74.83

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

Program 3

```
//3. Develop a C program to find all possible roots of a quadratic
equation.
#include<stdio.h>
#include<math.h>
int roots(int a, int b,int c)
{
    float d,r1,r2,img;
    d=(b*b)-(4*a*c);
    if(d>0){
        r1=(-b + sqrt(d))/(2*a);
        r2=(-b - sqrt(d))/(2*a);
        printf("Roots are real and distinct %0.2f,%0.2f",r1,r1);
    }
    else if(d==0){
        r1 = ((-b)/(2*a));
        printf("Roots are real and equal %0.2f,%0.2f",r1,r1);
    }
    else if(d<0){
        r1=(-b)/(2*a);
        img= sqrt(-d)/(2*a);
        printf("Roots are imaginary and distinct %0.2f + %0.2fi ,
%0.2f - %0.2fi",r1,img,r1,img);
    }
    return 0;
}
int main()
{
    int a,b,c;
    printf("Enter the values of a,b,c");
    scanf("%d %d %d",&a,&b,&c);
    roots(a,b,c);
}
```

Output of 3rd Program:

A terminal window with a black background and white text. The title bar at the top is light gray and contains three icons on the left (a downward arrow, a magnifying glass, and a document) and the word "input" on the right. The terminal text shows a program execution where the user enters "4 5 6" for variables a, b, and c. The program outputs that the roots are imaginary and distinct, specifically $0.00 + 1.05i$ and $0.00 - 1.05i$. It then displays a green message indicating the program finished with exit code 0 and prompts the user to press ENTER to exit the console.

```
input
Enter the values of a,b,c 4 5 6
Roots are imaginary and distinct 0.00 + 1.05i ,0.00 - 1.05i

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


Program 4

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

```
#include<stdio.h>
int vowel(char c)
{
    switch(c)
    {
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
            printf("Entered Character is Vowel");
            break;
        default:
            printf("Entered character is Consonent");
            break;
    }
    return 0;
}
int main()
{
    char c;
    printf("Enter the alphabets to be verified \n");
    scanf("%c",&c);
    vowel(c);
    return 0;
}
```

Output of 4th program:



input

```
Enter the alphabets to be verified
```

```
f
```

```
Entered character is Consonent
```

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

```
Press ENTER to exit console.█
```

Program 5

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

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

```
int evenr(int m,int n)
```

```
{
```

```
    int i;
```

```
    printf("Even Numbers from range %d-%d is: \n",m,n);
```

```
    if(m%2!=0)
```

```
    {
```

```
        m=2*m;
```

```
    }
```

```
    for(i=m;i<=n;i=i+2)
```

```
    {
```

```
        printf("%d",i);
```

```
        printf("\n");
```

```
    }
```

```
    return 0;
```

```
}
```

```
int main()
```

```
{
```

```
    int m,n;
```

```
    printf("Enter the Range M-N to print even numbers\n");
```

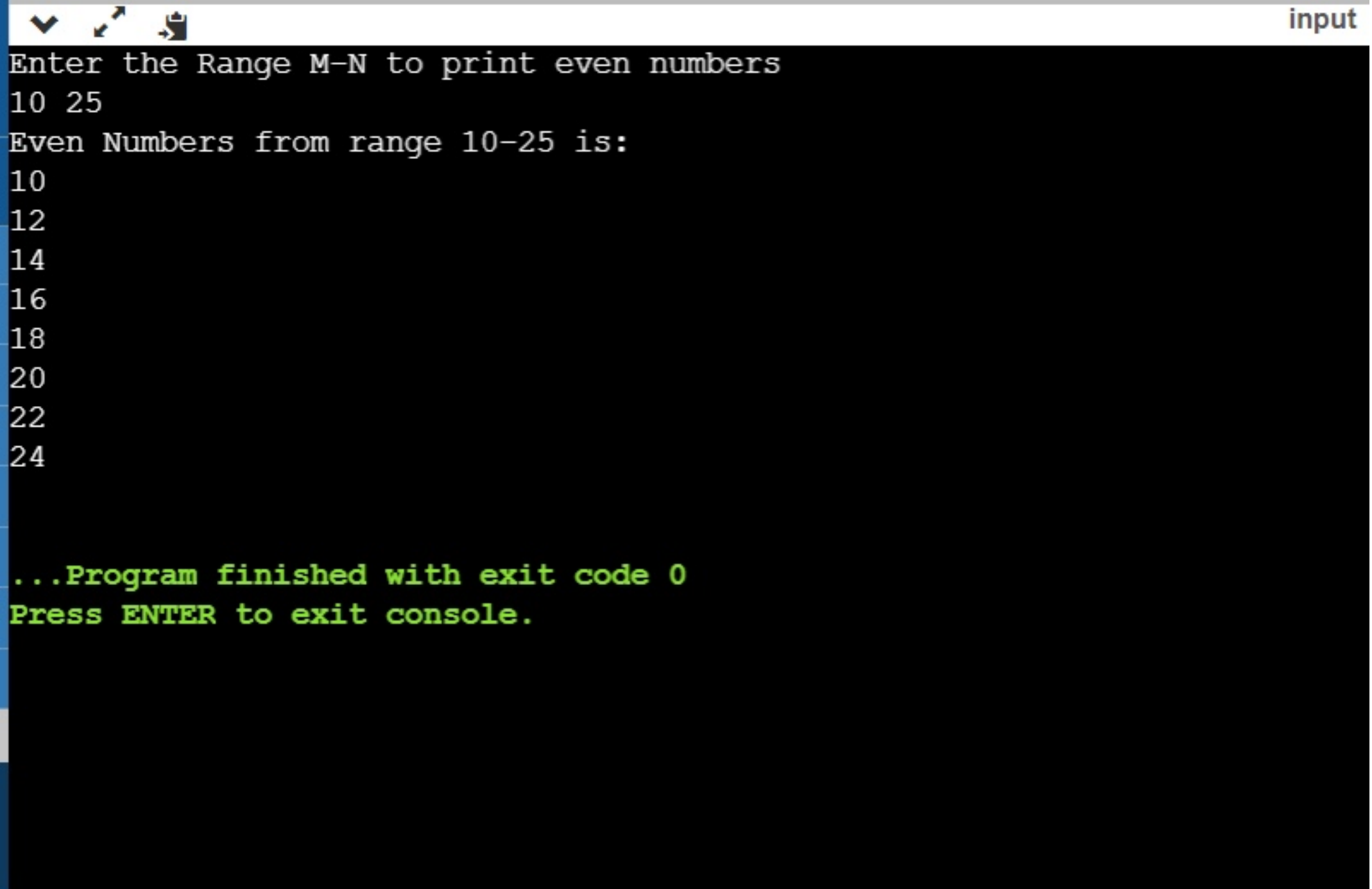
```
    scanf("%d %d",&m,&n);
```

```
    evenr(m,n);
```

```
    return 0;
```

```
}
```

Output of 5rd Program:

A terminal window with a dark background and light gray text. The window has a title bar at the top with three icons on the left and the word "input" on the right. The text inside the terminal shows a program that prompts for a range M-N, takes the input "10 25", and prints even numbers from 10 to 24. It then displays a green message indicating the program finished with exit code 0 and prompts to press ENTER to exit the console.

```
input
Enter the Range M-N to print even numbers
10 25
Even Numbers from range 10-25 is:
10
12
14
16
18
20
22
24

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

Program 6

```
//6.Develop a program to calculate the sum of squares of first n odd numbers.
#include<stdio.h>
int square(int a)
{
    return (a*a);
}
int squareodd(int n)
{
    int sumo=0;
    for(int i=1;i<=2*n;i++)
    {
        if(i%2!=0)
        {
            sumo=sumo+square(i);
        }
    }
    return sumo;
}
int main()
{
    int n,sumo;
    printf("Enter the value of N for which squares to be calculated");
    scanf("%d",&n);
    sumo=squareodd(n);
    printf("Sum of squares of first  %d odd numbers :%d ",n,sumo);
    return 0;
}
```

Output of 6th program:

```
Enter the value of N for which squares to be calculated 25
Sum of squares of first 25 odd numbers :20825


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

Program 7

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

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int mat1[10][10],mat2[10][10],mat3[10][10]={0},n1,m1,n2,m2,n3,m3;
    printf("Enter number of Rows in 1st matrix\n");
    scanf("%d",&n1);
    printf("Enter Number of columns in 1st matrix\n");
    scanf("%d",&m1);
    printf("Enter number of Rows in 2nd matrix\n");
    scanf("%d",&n2);
    printf("Enter Number of columns in 2nd matrix\n");
    scanf("%d",&m2);
    if(n1!=n2 && m1!=m2)
    {
        printf("Enter correct number of rows and columns");
        exit(0);
    }
    printf("Enter the elements of the matrix1\n");
    for(int i=0;i<n1;i++)
    {
        for(int j=0;j<m1;j++)
        {
            scanf("%d",&mat1[i][j]);
        }
    }
    printf("Enter the elements of the matrix2\n");
    for(int i=0;i<n2;i++)
    {
        for(int j=0;j<m2;j++)
        {
            scanf("%d",&mat2[i][j]);
        }
    }
    if(n1==n2 && m1==m2)
    {
        n3=n1;
        m3=m1;
        for(int i=0;i<n3;i++)
        {
            for(int j=0;j<m3;j++)
            {
                mat3[i][j]=mat1[i][j]+mat2[i][j];
            }
        }
        printf("Matrices sum is \n");
        for(int i=0;i<n3;i++)
        {
            printf("\n");
            for(int j=0;j<m3;j++)
            {
                printf("%d\t",mat3[i][j]);
            }
        }
    }
    return 0;
}
```

Output of 6th program:



input

```
Enter number of Rows in 1st matrix
3
Enter Number of columns in 1st matrix
3
Enter number of Rows in 2nd matrix
3
Enter Number of columns in 2nd matrix
3
Enter the elements of the matrix1
1 2 3 4 5 6 7 8 9
Enter the elements of the matrix2
10 11 12 13 14 15 16 17 18
Matrices sum is

11      13      15
17      19      21
23      25      27

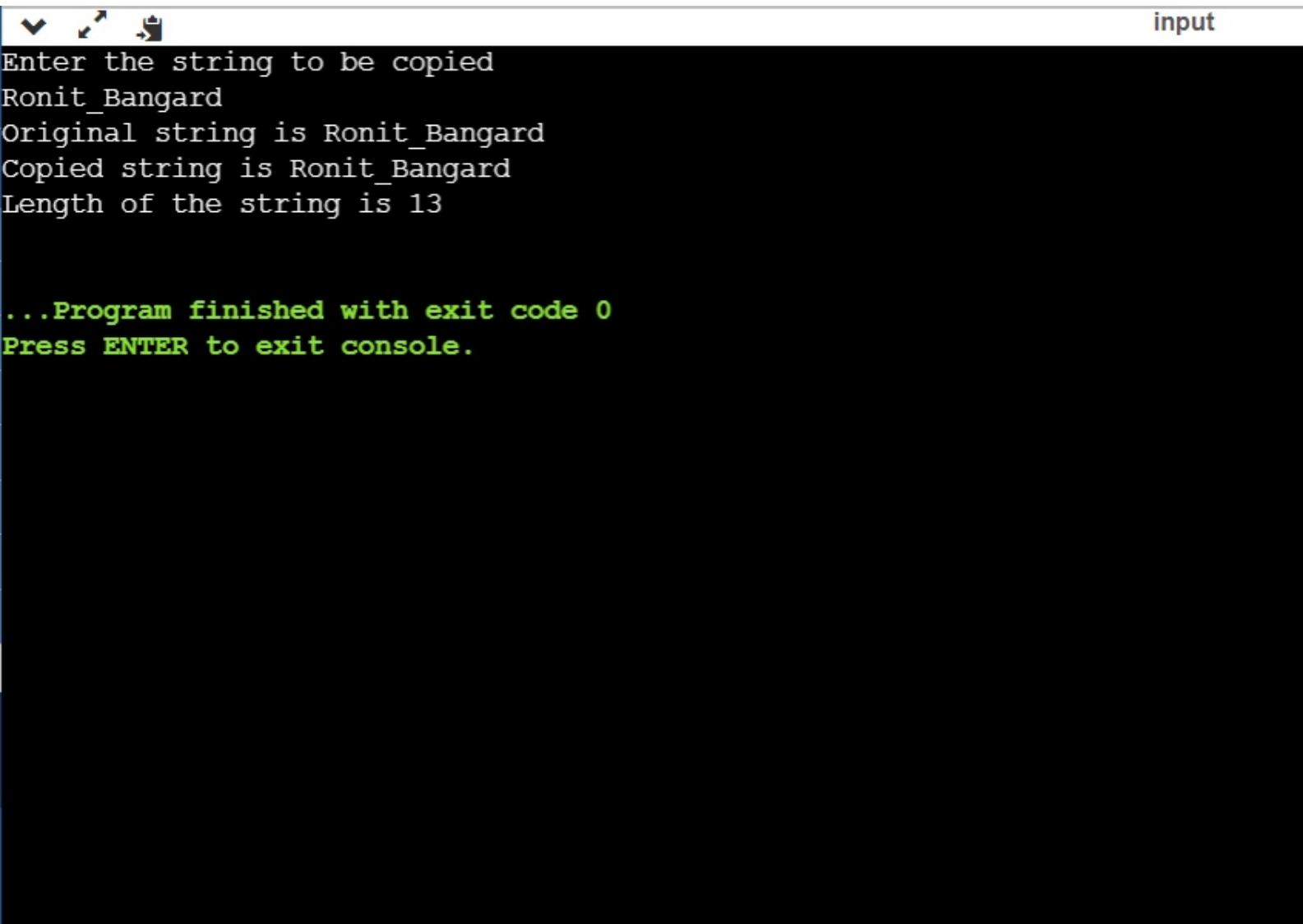
...Program finished with exit code 0
Press ENTER to exit console.
```


Program 8

//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 to be copied\n");
    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 of 8th program:

A terminal window with a dark background and light green text. The window has a title bar with three icons on the left and the word 'input' on the right. The text inside the terminal shows the execution of a program that takes a string input, copies it, and prints its length. The program ends with a message to press ENTER to exit the console.

```
Enter the string to be copied
Ronit_Bangard
Original string is Ronit_Bangard
Copied string is Ronit_Bangard
Length of the string is 13

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

Program 9

//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 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 %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 student2 %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 of 6th program:

input

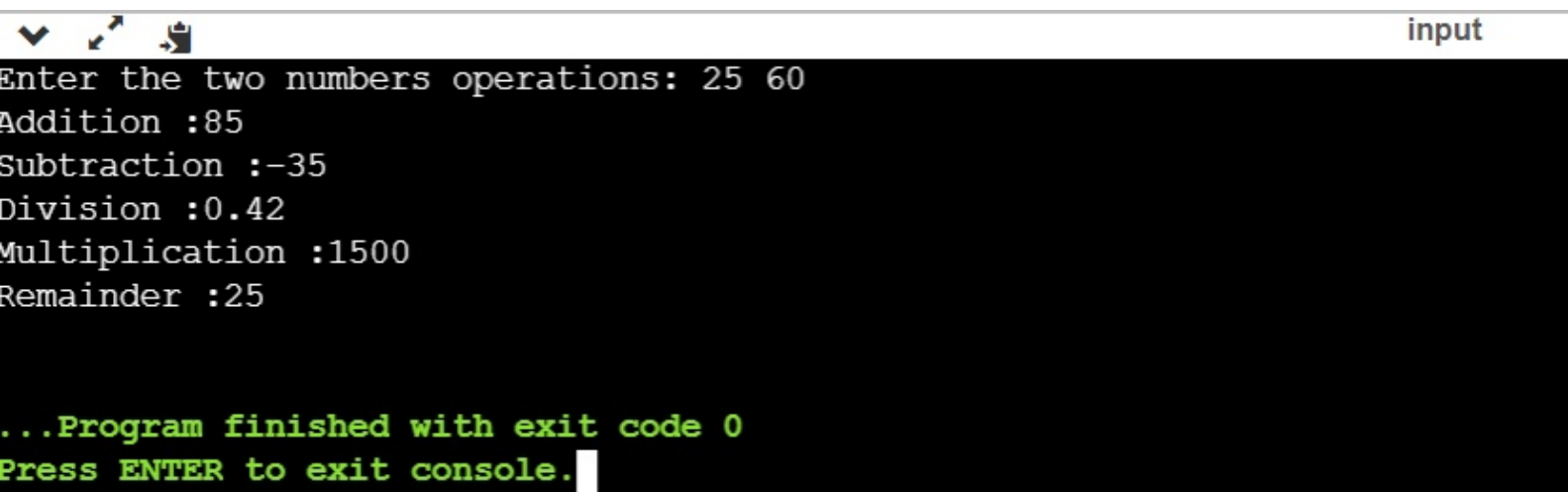
```
Ronit
Enter the Section of student 1
C
Enter the department of student 1
CSE
Enter the fees of student 1
200000
Enter total marks of student 1
485
Enter Roll of student 2
32
Enter name of student 2
Akshat
Enter the Section of student 2
C
Enter the department of student 2
CSE
Enter the fees of student 2
200000
Enter total marks of student 2
490
Roll Number of student 1 30
Name of student 1 Ronit
Section of student 1 C
Department of student1 CSE
Fees of student1 200000.00
Total marks of student 1 485
Roll Number of student 2 32
Name of student 2 Akshat
Section of student 2 C
Department of student 2 CSE
Fees of student2 200000.00
Total marks of student 2 490
Student 2 secured highest marks

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

Program 10

```
/*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, &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 of 10th program:

A terminal window with a dark background. The title bar at the top shows three icons on the left (a checkmark, a double arrow, and a document) and the word "input" on the right. The terminal text is as follows:

```
Enter the two numbers operations: 25 60
Addition :85
Subtraction :-35
Division :0.42
Multiplication :1500
Remainder :25

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