NAME: - YASH SARANG
DIV: - D1AD
ROLL NO:- 47
TOPIC: - C Programming Lab Assignment 1

Aim: - Write a Program to find areas of rectangle, circle and surface area of cylinder.

Theory: - Computer Works in Binary System.Computer is an electronic device for processing information and performing calculations; follows a program to perform sequences of mathematical and logical operations. Computer can also be defined in terms of functions it can perform. A computer can: -
i) accept data,
ii) store data,
iii) process data as desired, and
iv) retrieve the stored data as and when required and
v) print or store the result in desired format.

1. printf():
    a. The printf function is used to display the value to the output devices It moves data from the computer’s memory to the standard output devices.
    b. Syntax: printf(“format specifier”, arg1, arg2, ….arg n); Format specifier - control string arg1, arg2, arg n - variables or values.
2. scanf():
    a. The scanf function gets data from the standard input device and stores it in the computer memory.
    b. Syntax: scanf (“format specifier”, & arg1, & arg2,…….,& argn) ; Format specifier is the control string to denote the data type of variable & arg1, & arg2,…….,& argn are the variables which stores values.
3. Variables:
    a. A variable is an identifier that is used to represent some specified type of information which is actually a name given to a storage area that our programs can manipulate.
    b. Each variable in C has a specific type, which determines the size and layout of the variable's memory; the range of values that can be stored within that memory; and the set of operations that can be applied to the variable.
    c. A variable definition means to tell the compiler where and how much to create the storage for the variable. A variable definition specifies a data type and contains a list of one or more variables of that type as follows:
    d. Here, type must be a valid C data type including char, w_char, int, float, double, bool or any user-defined object, etc., and variable_list may consist of one or more identifier names separated by commas.
    e. Example, int no1=10, no2;
       float perc;
       char c,
       fname[10];
4. Data types:
    a. Data type can be defined as the type of data type of variable or constant store.
    b. When we use a variable in a program then we have to mention the type of data, this can be handled using data types in C.
    c. C has the following basic built-in data types: a) int b) char c) float d) double.
5. Constants:
    a. The constants refer to fixed values that the program may not alter during its execution.
    b. It is mainly of two kinds primary and secondary
    c. Primary constant further divided into two kinds as Numeric which contains Integer (int) and Real (float) and Nonnumeric (char).
    d. Secondary constant are such as Arrays, Pointer, Structure and Union which are derived constants.

e. Integer Constants is an integer-valued number. Thus it consists of a sequence of digits. Integer constants can be written in three different number system; decimal (base 10), octal (base 8) and hexadecimal (base 16).
f. Example, const int a = 10; // base 10 const int a = 0FF; // base 16
g. A real or floating-point constant is a base-10 number that contains either a decimal point or an exponent (or both). Several valid floating-point constants are shown below,
Example, float a= 0, 1, 45.60, 0.00045, 5000, 314.16009;
h. A character constant is a single character, enclosed in apostrophes (single quotation marks). Several character constants are shown below.

Expressions:

1. Expressions combine variable and constants to create new values.
2. An expression represents a single data item, such as a number or a character. The expression may consist of a single entity, such as a constant, a variable, an array element or a reference to a function.
3. It may also consist of some combination of such entities interconnected by one or more operators.
4. Expressions can also represent logical conditions that are either true or false.
5. Example c = a+b*b;

Algorithm:

Step 1: Start.

Step 2: Define datatypes of variables.

step 3: Input length and breadth of the rectangle.

step 4: Formula for area of rectangle.

Step 5: Area is displayed using output functions.

step 6: Input radius of circle.

Step 7: formula for radius of circle.

Step 8: Area of circle is displayed using output function.

step 9: Input radius and height of the cylinder.

step 10: formula for surface area of cylinder.

step 11: Display surface area using output function.

Step 12: stop.

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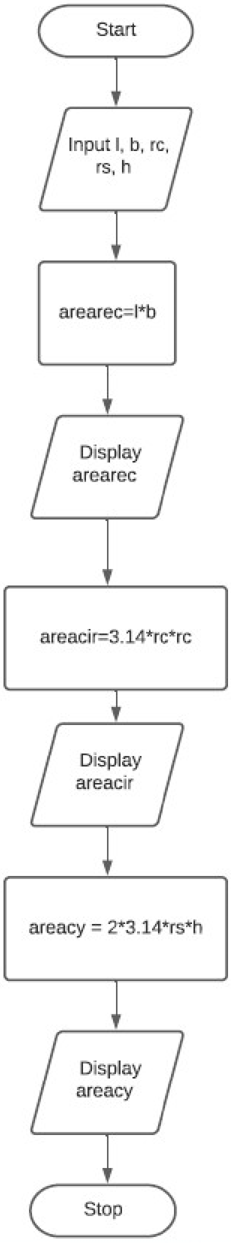
Flow Chart: -



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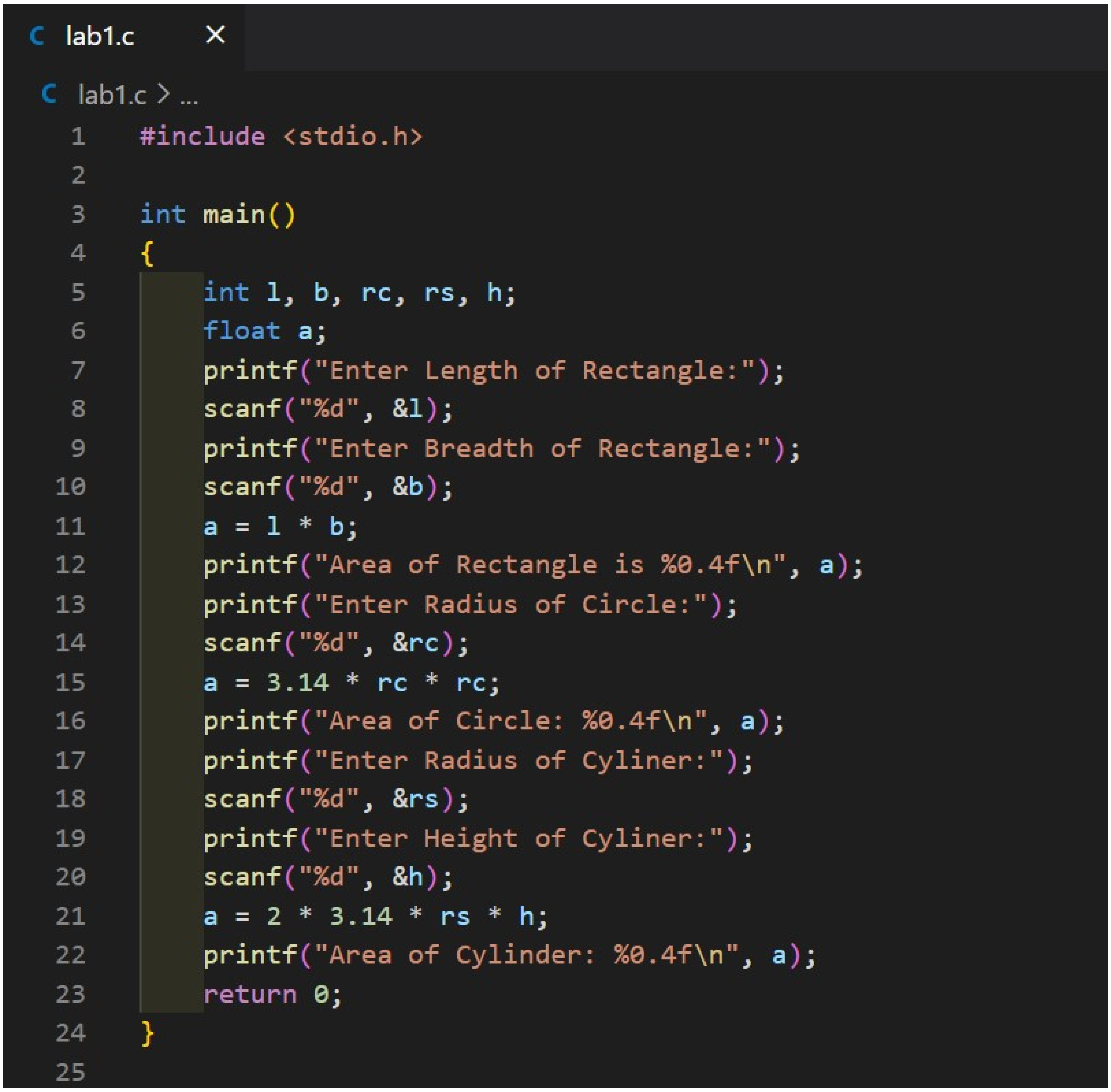
C Program:

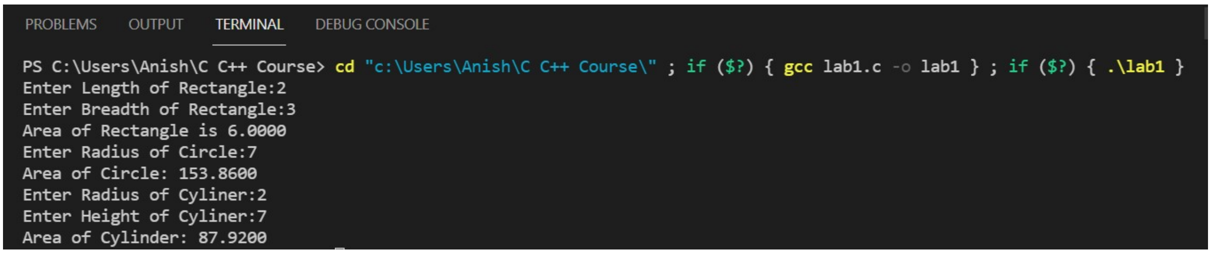


```c
#include <stdio.h>

int main()
{
    int l, b, rc, rs, h;
    float a;
    printf("Enter Length of Rectangle:");
    scanf("%d", &l);
    printf("Enter Breadth of Rectangle:");
    scanf("%d", &b);
    a = l * b;
    printf("Area of Rectangle is %0.4f\n", a);
    printf("Enter Radius of Circle:");
    scanf("%d", &rc);
    a = 3.14 * rc * rc;
    printf("Area of Circle: %0.4f\n", a);
    printf("Enter Radius of Cyliner:");
    scanf("%d", &rs);
    printf("Enter Height of Cyliner:");
    scanf("%d", &h);
    a = 2 * 3.14 * rs * h;
    printf("Area of Cylinder: %0.4f\n", a);
    return 0;
}

```

Output:



```
PS C:\Users\Anish\C C++ Course> cd "c:\Users\Anish\C C++ Course\" ; if ($?) { gcc lab1.c -o lab1 } ; if ($?) { .\lab1 }
Enter Length of Rectangle:2
Enter Breadth of Rectangle:3
Area of Rectangle is 6.0000
Enter Radius of Circle:7
Area of Circle: 153.8600
Enter Radius of Cyliner:2
Enter Height of Cyliner:7
Area of Cylinder: 87.9200
```

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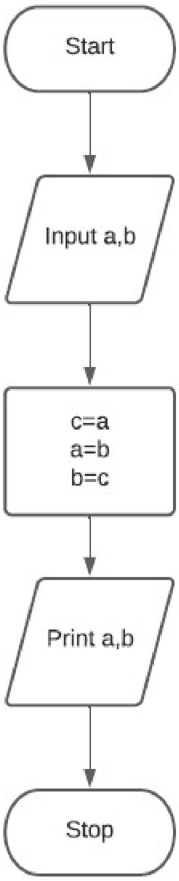
Aim: -Write a program to Swap 2 nos. (i)with temp variable. (ii) without temp variable.

Algorithm: - a) by using a temp variable

```
Step 1: Start

Step 2: Declare 3 variables a, b and t.

Step 3 Assign values to a and busing standard input functions.

Step 4: Assign a to temp variable
        t = a

Step 5: Assign a to b variable
        a = b

Step 6: Assign b to temp variable
        b = t

Step 7: print the values of a and b.

step 8: Stop.
```

Flow Chart: -



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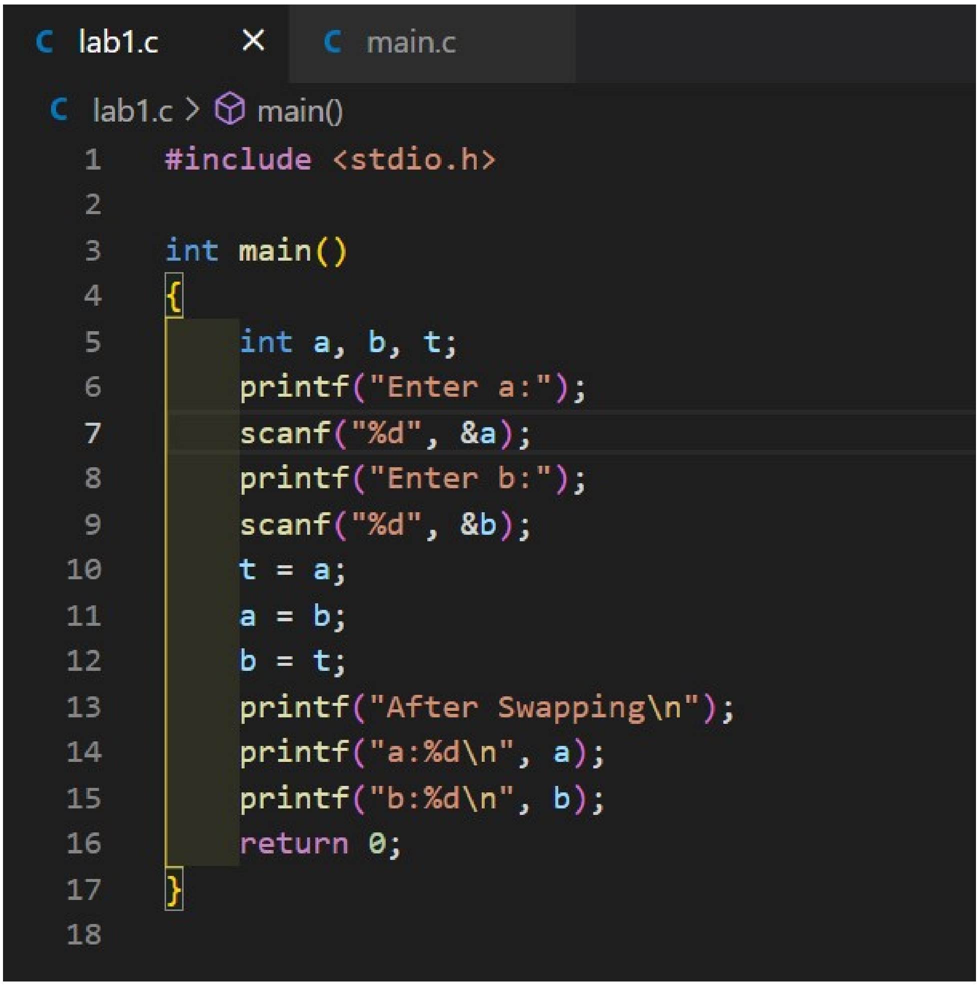
C Program: -

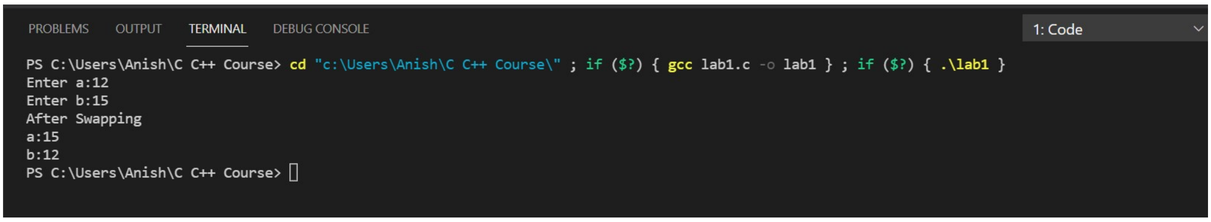


```c
#include <stdio.h>

int main()
{
    int a, b, t;
    printf("Enter a:");
    scanf("%d", &a);
    printf("Enter b:");
    scanf("%d", &b);
    t = a;
    a = b;
    b = t;
    printf("After Swapping\n");
    printf("a:%d\n", a);
    printf("b:%d\n", b);
    return 0;
}

```

Output: -



```
PS C:\Users\Anish\C C++ Course> cd "c:\Users\Anish\C C++ Course\" ; if ($?) { gcc lab1.c -o lab1 } ; if ($?) { .\lab1 }
Enter a:12
Enter b:15
After Swapping
a:15
b:12
PS C:\Users\Anish\C C++ Course> 
```

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Algorithm: - b) Without Using Temp Variable

Step1: Start.

Step 2: enter a and b.

Step 3: a=a + b

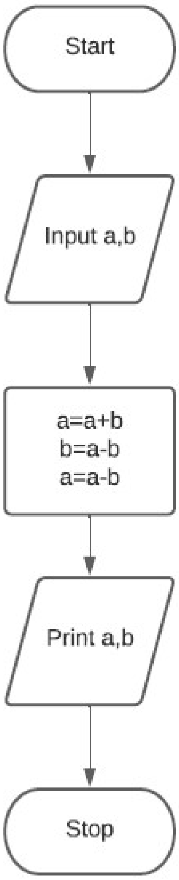
Step 4: b= a-b.

Step 5: a=a-b.

Step 6: Print a and b.

Step 7: Stop.

Flow Chart: -



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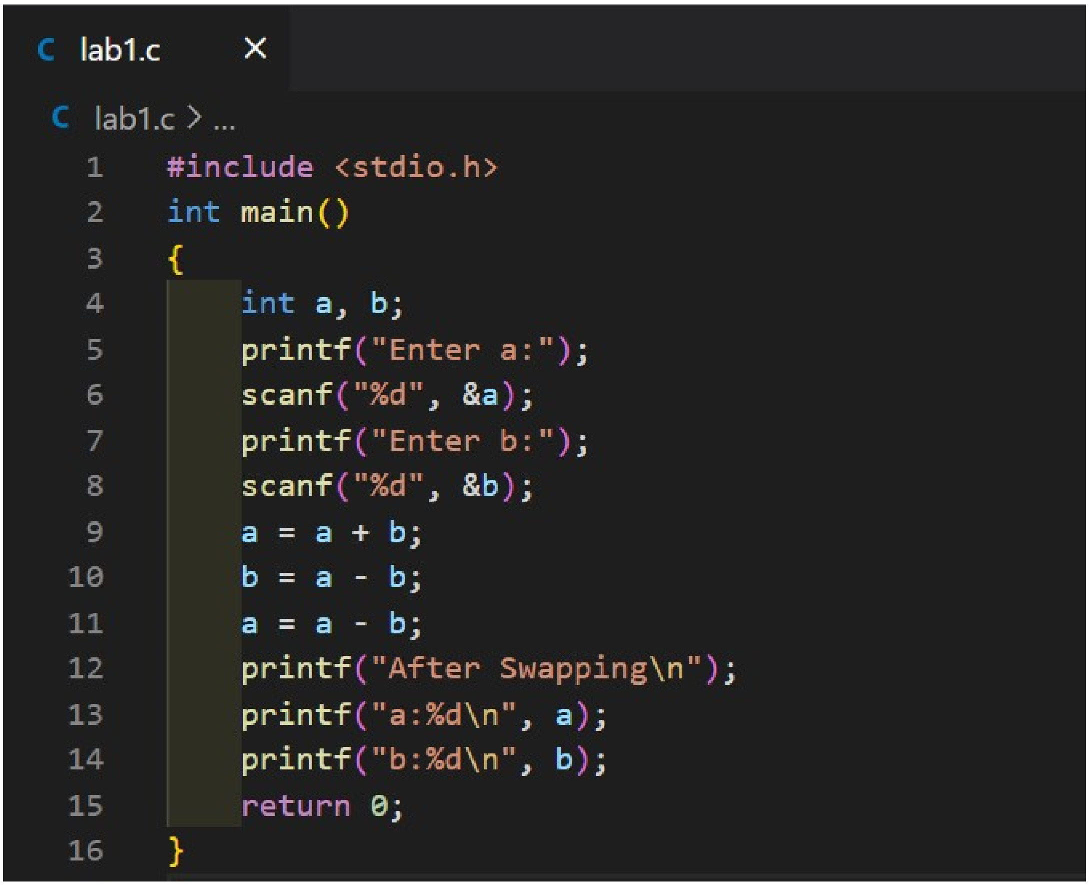
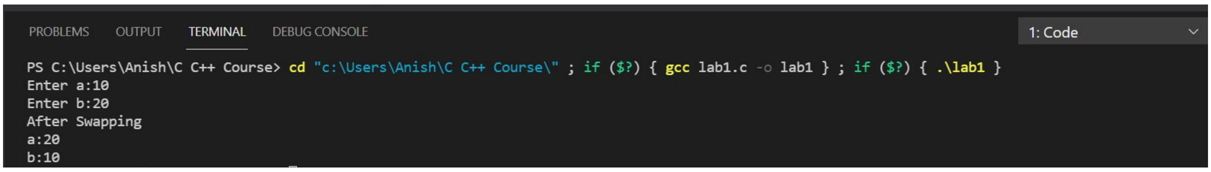
C Program: -



```c
#include <stdio.h>
int main()
{
    int a, b;
    printf("Enter a:");
    scanf("%d", &a);
    printf("Enter b:");
    scanf("%d", &b);
    a = a + b;
    b = a - b;
    a = a - b;
    printf("After Swapping\n");
    printf("a:%d\n", a);
    printf("b:%d\n", b);
    return 0;
}
```

Output: -



```
PS C:\Users\Anish\C C++ Course> cd "c:\Users\Anish\C C++ Course\" ; if ($?) { gcc lab1.c -o lab1 } ; if ($?) { .\lab1 }
Enter a:10
Enter b:20
After Swapping
a:20
b:10
```

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Aim: - Write a C Program to Find ASCII Value of a Character.

Algorithm: -

Step1: Start.

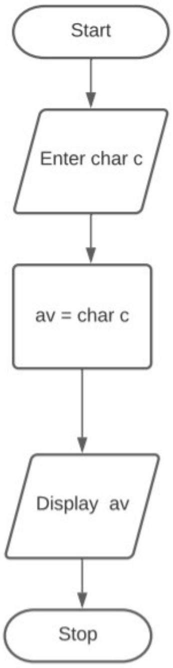
Step 2: Input any character.

Step 3 Find the ASCII value of the character.

Step 4: Print the ASCII value of the character.

Step 5: Stop.

Flowchart: -



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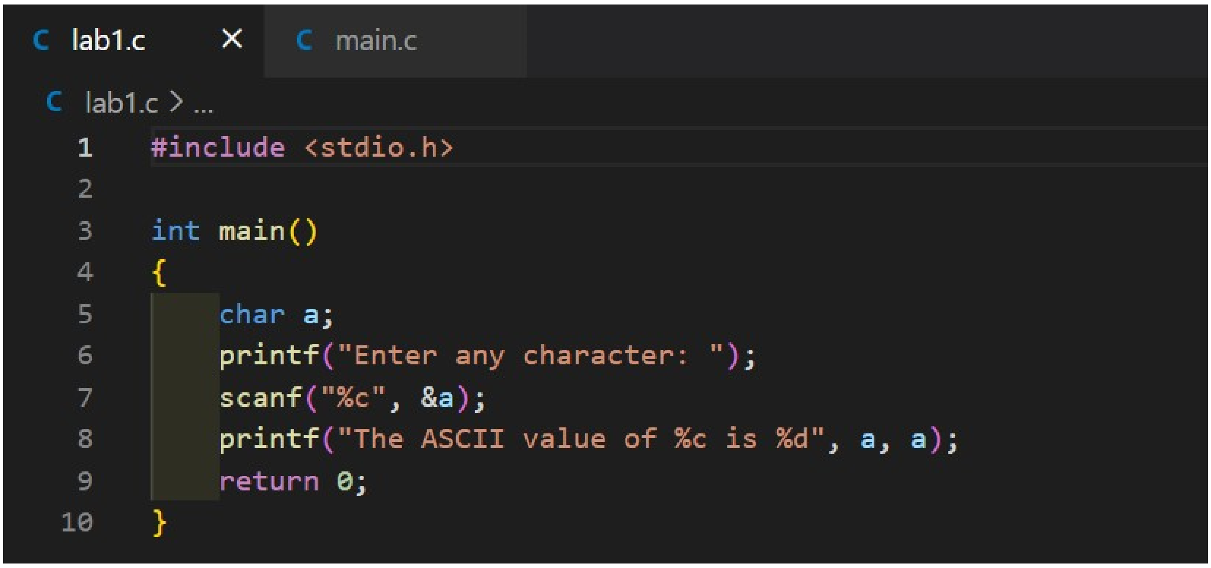
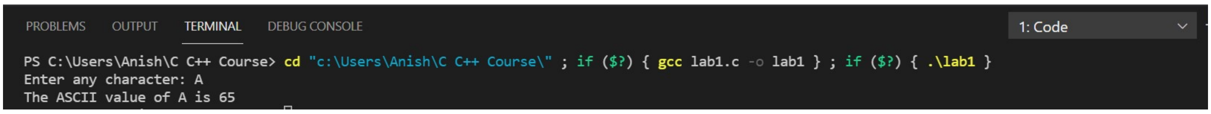
C Program: -



```c
#include <stdio.h>

int main()
{
    char a;
    printf("Enter any character: ");
    scanf("%c", &a);
    printf("The ASCII value of %c is %d", a, a);
    return 0;
}
```

Output: -



```
PS C:\Users\Anish\C C++ Course> cd "c:\Users\Anish\C C++ Course\" ; if ($?) { gcc lab1.c -o lab1 } ; if ($?) { .\lab1 }
Enter any character: A
The ASCII value of A is 65
```