

Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Lab Number:	1.1
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Title:

To Add Two Numbers, Print Number Entered by User, Swap Two Numbers, Check Whether Number is Even or Odd

1.1 Implement using C++

Learning Objective:

- Students will be able to write C++ program for simple arithmetic operations and take input from user.

Learning Outcome:

- Ability to execute a simple C++ program with and without any inputs to the program.
- Understanding the constructs in C++ .

Course Outcome:

- Understand object-oriented programming concepts and implement using C++ .

Theory:

(1) Difference between procedural and object-oriented language.

=> Object-oriented programming and procedural programming both are used to develop the applications. Both of them are high-level programming languages; and it is also important to know the difference between them.

- **Procedural Language:**

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It is defined as a programming language derived from the structure programming and based on calling procedures. The procedures are the functions, routines, or subroutines that consist of the computational steps required to be carried. As compared to object-oriented programming, procedural programming is less secure. Procedural programming follows a top-down approach during the designing of a program.

It gives importance to the concept of the function and divides the large programs into smaller parts or called as functions. Procedural programming is straightforward. Unlike object-oriented programming, there are no access modifiers introduced in procedural programming. The examples of procedural programming are BASIC, Pascal and C etc.

○ **Object Oriented Programming language:**

In Object oriented programming, program is divided into small parts called objects. Object oriented programming follows bottom-up approach. Object oriented programming have access specifiers like private, public, protected etc. Object oriented programming provides data hiding so it is more secure.

Object oriented programming is based on real world. Overloading is possible in Object oriented programming. Object oriented programming is based on real world. The examples of Object oriented programming (oopm) programming are C++, Java, Python, C# etc.

(2) Application of object orientation programming in C++

=> OOPs stands for **Object-Oriented Programming**. It is about creating objects that contain both data and functions. Object-Oriented programming has several advantages over procedural languages. As OOP is faster and easier to execute it becomes more powerful than procedural languages like C++.

Application of OOPs are:

- User interface design such as windows, menu.
- Real Time Systems
- Simulation and Modelling
- Object oriented databases

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- AI and Expert System
- Neural Networks and parallel programming
- Decision support and office automation systems etc.

With the help of inheritance, we can reuse the existing class to derive a new class such that the redundant code is eliminated and the use of existing class is extended. This saves time and cost of program. With the help of polymorphism, the same function or same operator can be used for different purposes. This helps to manage software complexity easily.

(3) Brief introduction to C++

=> 1. C++ is a general-purpose programming language that was developed as an enhancement of the C language to include object-oriented paradigm. It is an imperative and a compiled language.

2. The name of C++ signifies the evolutionary nature of the changes from C. “++” is the C increment operator. C++ is one of the predominant languages for the development of all kind of technical and commercial software.

3. C++ introduces Object-Oriented Programming, not present in C. Like other things, C++ supports the four primary features of OOP: encapsulation, polymorphism, abstraction, and inheritance.

4. C++ is a cross-platform language that can be used to create high-performance applications. C++ was developed by Bjarne Stroustrup , as an extension to the C language. C++ gives programmers a high level of control over system resources and memory.

5. C++ is one of the world's most popular programming languages. ++ can be found in today's operating systems, Graphical User Interfaces, and embedded systems. C++ is portable and can be used to develop applications that can be adapted to multiple platforms.

6. C++ used in operating systems, game developments, IoT devices, Web browsers, financial tools, telecommunications, movie production etc.

Program 1: To print number entered by user.

Algorithm:

Step 1: START

Step 2: Initialize variables n1, n2 for storing the numbers entered by User.

Step 3: Store numbers entered by user.

Step 4: Display the entered numbers.

Step 5: STOP


PROGRAM:

//To print number entered by user

```
#include<iostream>
using namespace std;
int main()
{
    int n1,n2;
    cout <<"enter first number:"<< endl;
    cin >> n1;
    cout <<"enter second number:"<<endl;
    cin >> n2;
    cout<<"Numbers entered by user"<< endl;
    cout <<"First Number="<<n1<<endl<<"Second Number="<<n2<<endl;
    return 0;
}
```

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OUTPUT:

 C:\CP Clg Programs\Print_entered_numbers_by_user.exe

```
Enter first number:
154
Enter second number:
28
Numbers entered by user
First Number=154
Second Number=28

-----
Process exited after 5.42 seconds with return value 0
Press any key to continue . . .
```

Program 2: To add two numbers entered by user.

Algorithm:

Step 1: START

Step 2: Initialize variables **n1**, **n2**, **add** for storing the numbers entered by user and storing the addition value of **n1** and **n2** in **add** variable.

Step 3: Store numbers entered by user in **n1**, **n2**.

Step 4: Display the addition of numbers entered by user.

Step 5: STOP

PROGRAM:

```
//To Add Two Numbers entered by user
```

```
#include<iostream>
using namespace std;
int main()
{
```

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```
int n1,n2,add;
cout << "Enter first number:" << endl;
cin >> n1;
cout << "Enter second number:" << endl;
cin >> n2;
add=n1+n2;
cout << "Addition of "<<n1<<" and "<<n2<<" is: "<<add;
return 0;
}
```

OUTPUT:

 C:\CP Clg Programs\add2numbers.exe

```
Enter first number:
24
Enter second number:
59
Addition of 24 and 59 is: 83
-----
Process exited after 19.25 seconds with return value 0
Press any key to continue . . .
```

Program 3: Swapping two numbers entered by user.

Algorithm:

Step 1: START

Step 2: Initialize variables **n1**, **n2**, **temp** for storing the numbers entered by user.

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Step 3: Store numbers entered by user in n1, n2 and replacing the value of n1 in temp and n2 in n1 and then replacing the n2 value by temp value.

Step 4: Display the numbers before swapping.

Step 5: Display the numbers after swapping .

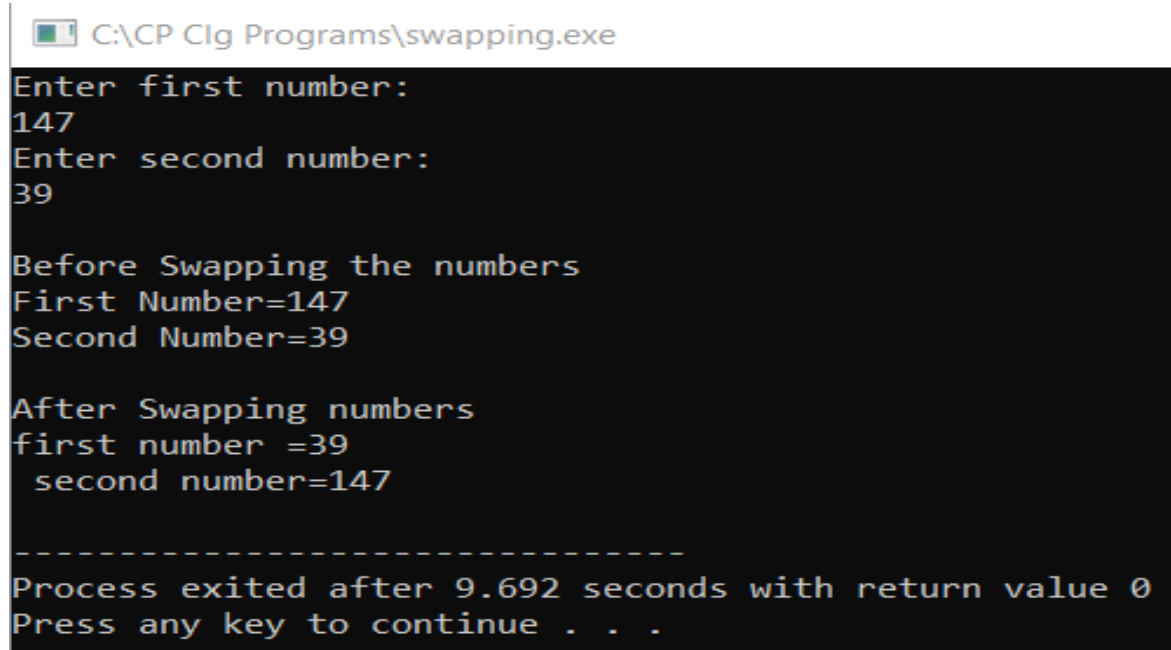
Step 6: STOP

PROGRAM:

```
// To swapping two numbers entered by user
#include<iostream>
using namespace std;
int main()
{
    int n1,n2,temp;
    cout << "Enter first number:" << endl;
    cin >> n1;
    cout << "Enter second number:" << endl;
    cin >> n2;
    cout<<"\nBefore Swapping the numbers \n";
    cout <<"First Number="<<n1<<endl<<"Second Number="<<n2<<endl;
    temp=n1;
    n1=n2;
    n2=temp;
    cout<<endl;
    cout<<"After Swapping numbers"<<endl<<"first number ="<<n1<<endl<<"
second number="<<n2<<endl;
    return 0;
}
```

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OUTPUT:



```
C:\CP Clg Programs\swapping.exe
Enter first number:
147
Enter second number:
39

Before Swapping the numbers
First Number=147
Second Number=39

After Swapping numbers
first number =39
second number=147

-----
Process exited after 9.692 seconds with return value 0
Press any key to continue . . .
```

Program 4: Check whether the entered number is even or odd no.

Algorithm:

Step1: START

Step 2: Enter the number (num).

Step 3: By using If-else condition number is divide by 2; if remainder is 0 then even number or it will be odd number.

Step 4: Display that the number is even or odd.

Step 5: STOP

PROGRAM:

```
// Entered the number to check it is even or odd
#include<iostream>
```

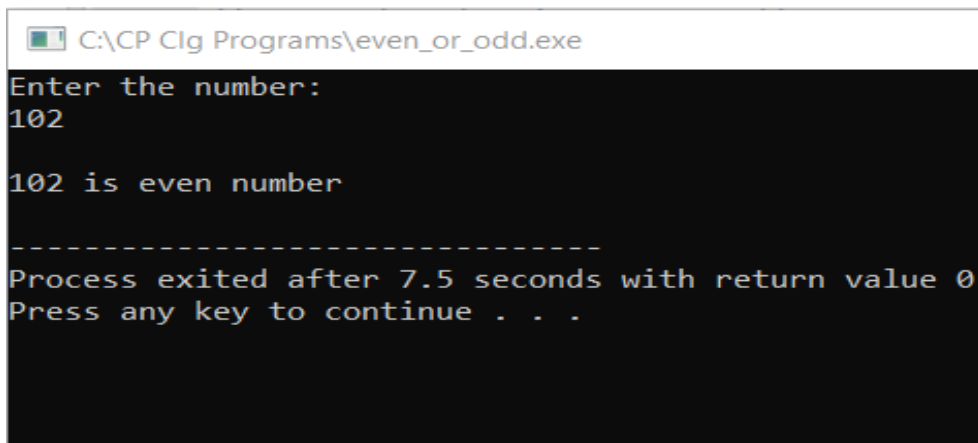

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```
using namespace std;

int main()
{
    int num;
    cout << "Enter the number:" << endl;
    cin >> num;
    cout<<endl;
    if(num%2==0)
        cout<<num<<" is even number \n";
    else
        cout<<num<<" is odd number \n";

    return 0;
}
```

OUTPUT:



```
C:\CP Clg Programs\even_or_odd.exe
Enter the number:
102

102 is even number

-----
Process exited after 7.5 seconds with return value 0
Press any key to continue . . .
```