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**
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Roll No :	**43**

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++

1.2 Implement using Java

Learning Objective:

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

Learning Outcome:

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

Course Outcome:

ECL304.1	Understand object-oriented programming concepts and implement using C++ and Java

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Theory:

Q.1) Difference between procedural and object oriented language

PROCEDURAL ORIENTED PROGRAMMING	OBJECT ORIENTED PROGRAMMING
In procedural programming, program is divided into small parts called functions.	In object oriented programming, program is divided into small parts called objects.
Procedural programming follows top down approach.	Object oriented programming follows bottom up approach.
There is no access specifier in procedural programming.	Object oriented programming have access specifiers like private, public, protected etc.
Adding new data and function is not easy.	Adding new data and function is easy.
Procedural programming does not have any proper way for hiding data so it is *less secure*.	Object oriented programming provides data hiding so it is *more secure*.
In procedural programming, overloading is not possible.	Overloading is possible in object oriented programming.
In procedural programming, function is more important than data.	In object oriented programming, data is more important than function.
Procedural programming is based on unreal world.	Object oriented programming is based on real world.
Examples: C, FORTRAN, Pascal, Basic etc.	Examples: C++, Java, Python, C# etc.

Q.2) Application of object orientation

1. Client-Server Systems

Object-oriented client-server systems provide the IT infrastructure, creating Object-Oriented Client-Server Internet (OCSI) applications. Here, infrastructure refers to operating systems, networks, and hardware. OSCI consist of three major technologies:

- The Client Server
- Object-Oriented Programming
- The Internet

2. Object-Oriented Databases

- These databases try to maintain a direct correspondence between the real-world and database objects in order to let the object retain its identity and integrity. They can then be identified and operated upon.

3. Real-Time System Design

- Real-time systems inherent complexities that make it difficult to build them. Object-oriented techniques make it easier to handle those complexities. These techniques present ways of dealing with these complexities by providing an integrated framework, which includes schedulability analysis and behavioral specifications.

4. Simulation and Modeling System

- It’s difficult to model complex systems due to the varying specification of variables. These are prevalent in medicine and in other areas of natural science, such as ecology, zoology, and agronomic systems. Simulating complex systems requires modeling and understanding interactions explicitly. Object-oriented programming provides an alternative approach for simplifying these complex modeling systems.

5. Hypertext and Hypermedia

- OOP also helps in laying out a framework for hypertext. Basically, hypertext is similar to regular text, as it can be stored, searched, and

edited easily. The only difference is that hypertext is text with pointers to other text as well.

- Hypermedia, on the other hand, is a superset of hypertext. Documents having hypermedia not only contain links to other pieces of text and information but also to numerous other forms of media, ranging from images to sound.

Q3) Brief introduction to C++ and Java

1) C++

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. C++ is a middle-level language rendering it the advantage of programming low-level (drivers, kernels) and even higher-level applications (games, GUI, desktop apps etc.). The basic syntax and code structure of both C and C++ are the same.

Some of the features & key-points to note about the programming language are as follows:

- **Simple**: It is a simple language in the sense that programs can be broken down into logical units and parts, has a rich library support and a variety of data-types.
- **Mid-level language**: It is a mid-level language as we can do both systemsprogramming (drivers, kernels, networking etc.) and build large-scale user applications (Media Players, Photoshop, Game Engines etc.)
- **Object-Oriented**: One of the strongest points of the language which sets it apart from C. Object-Oriented support helps C++ to make maintainable and extensible programs. i.e. Large-scale applications can be built. Procedural code becomes difficult to maintain as code-size grows.
- **Compiled Language**: C++ is a compiled language, contributing to its speed.

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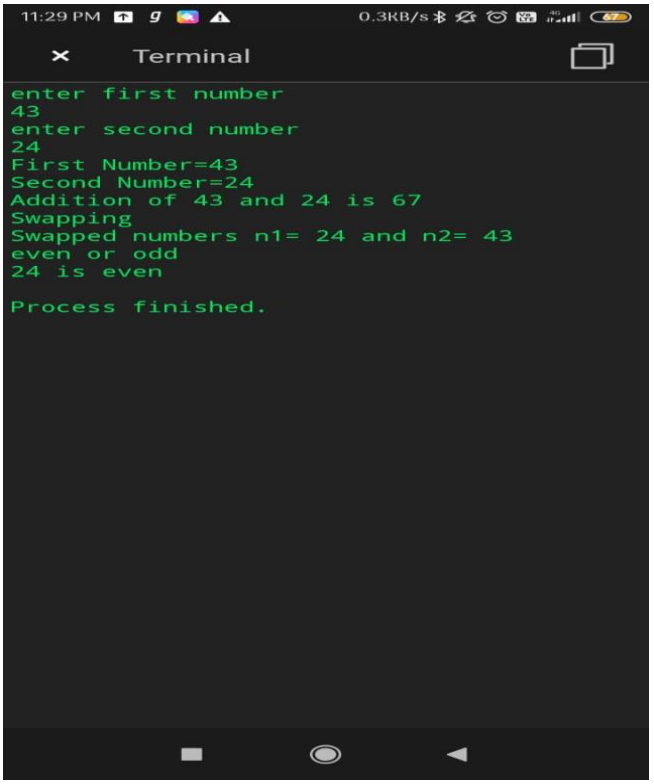
ALGORITHM:

STEP 1: Start
STEP 2: Take input N1 and N2 from user
STEP 3: Addition = N1+N2
STEP 4: Declare temporary variable with name ‘temp’
STEP 5: Temp=N1, N1=N2, N2=Temp
STEP 6: Check N1 divisible by 2, if yes number is even else odd
STEP 7: Print addition of N1 and N2
STEP 8: Print swapped numbers
STEP 9: Stop

PROGRAM: https://github.com/tejasrokade572/Skill-Lab-with-OOPM-/commit/2249481948d7a8c04d87fc2652694541f3c751d6

INPUT VALUE: FIRSTNO :43 SECOND NO :24

OUTPUT:



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