Subject name and code:

Object Oriented programming LAB

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Writer name of books:

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Oop languages name:

Java, C#, Ruby, Python, TypeScript, and PHP

What is codeblocks:

Codeblocks is a free and Fotran IDE built to meet the most demanding needs of its users

that **allows developers to code, debug, build, run and deploy projects**.

Why do we use iostream and namespace:

Ans: #include<iostream>

This directive causes the processor to add the contents of the iostream file to the program. We must include appropriate header files depending on the contents of the program and implementation

Namespace: Namespace is a new concept introduced by the ANCI C++ standard committee.

Namespaces are used **to organize code into logical groups and to prevent name collisions that can occur especially when your code base includes multiple libraries**.

What is std;:

Ans:

std is **an abbreviation of "standard"**. std is the "standard namespace". cout , cin and a lot of other functions are defined within it. The reason for using this: When you don't use the std namespace, the compiler will try to call cout or cin as if they aren't defined in a namespace (like most functions in your codes).

What is oop?

Ans:

Object-oriented programming (OOP) is a computer programming model that organizes software design around data, or objects, rather than functions and logic. An object can be defined as a data field that has unique attributes and behavior.

Pop:

You can define Procedural Programming as **a programming model derived from structural programming**. It follows the concept of the calling procedure. The procedures, also called functions, routines, or subroutines, consist of a series of computational steps that they need to carry out.

Concept of oop:

Object-oriented programming aims to implement real-world entities like inheritance, hiding, polymorphism etc. in programming. The main aim of OOP is to bind together the data and the functions that operate on them so that no other part of the code can access this data except that function.

Class & object:

CLASS: A class is a way to bind the data and its associated functions together. It allows the data (and functions) to be hidden, if necessary, from external use. When defining a class, we are creating a new abstract data type that can be treated like any other built-in data type. Generally, a class specification has two parts:

1. Class declaration

2. Class function definitions

Object:

C++ Objects. When a class is defined, only the specification for the object is defined; no memory or storage is allocated. To use the data and access functions defined in the class, we need to create objects.

Access modifier (public, private, protected):

The access modifiers of C++ are public, private, and protected. One of the main features of object-oriented programming languages such as C++ is data hiding. Data hiding refers to restricting access to data members of a class.

Class details

A class is a blueprint for the object.

We can think of a class as a sketch (prototype) of a house. It contains all the details about the floors, doors, windows, etc. Based on these descriptions we build the house. House is the object.

A class is defined in C++ using keyword class followed by the name of the class.

The body of the class is defined inside the curly brackets and terminated by a semicolon at the end.

Member function

Member functions are operators and functions that are declared as members of a class. Member functions do not include operators and functions declared with the friend specifier. These are called friends of a class. You can declare a member function as static ; this is called a static member function.

Abstract class

An abstract class is a class that is designed to be specifically used as a base class. An abstract class contains at least one pure virtual function. You declare a pure virtual function by using a pure specifier (= 0) in the declaration of a virtual member function in the class declaration

Virtual function

A virtual function in C++ is a base class member function that you can redefine in a derived class to achieve polymorphism. You can declare the function in the base class using the virtual keyword.

Pure virtual function

A pure virtual function (or abstract function) in C++ is a virtual function for which we don't have an implementation, we only declare it. A pure virtual function is declared by assigning 0 in the declaration. These are the concepts of Run-time polymorphism.

What is file and why do we use file

File handling in C++ is a mechanism to store the output of a program in a file and help perform various operations on it. Files help store these data permanently on a storage device. The term “Data” is commonly referred to as known facts or information. In the present era, data plays a vital role.

Function

A function is a block of code which only runs when it is called.

You can pass data, known as parameters, into a function.

Functions are used to perform certain actions, and they are important for reusing code: Define the code once, and use it many times

Types of function

C++ User-defined Function Types

1. Function with no argument and no return value.
2. Function with no argument but return value.
3. Function with argument but no return value.
4. Function with argument and return value

Function overloading

C++ lets you specify more than one function of the same name in the same scope. These functions are called overloaded functions, or overloads. Overloaded functions enable you to supply different semantics for a function, depending on the types and number of its arguments

Function overriding

It redefines a function of the base class inside the derived class, which overrides the base class function. Function overriding is an implementation of the run-time polymorphism. So, it overrides the function at the run-time of the program

Operator overloading

Operator Overloading in C++ In C++, we can make operators work for user-defined classes. This means C++ has the ability to provide the operators with a special meaning for a data type, this ability is known as operator overloading

Why do we use operator overloading

Operator overloading in c++ enables programmers to use notation closer to the target domain. They provide similar support to built-in types of user-defined types. Operator overloading in c++ makes the program easier to understand.

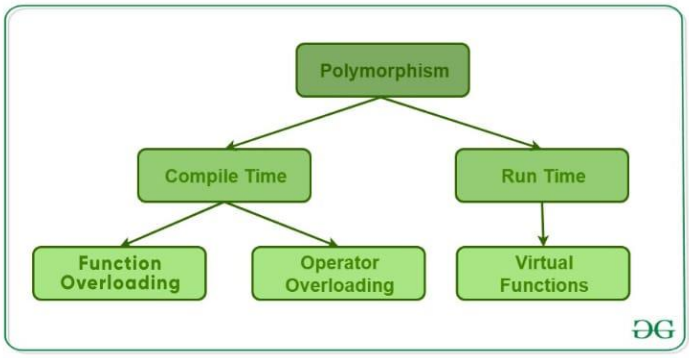
Friend function

A friend function is a special function in C++ which in-spite of not being member function of a class has privilege to access private and protected data of a class. A friend function is a non member function or ordinary function of a class, which is declared as a friend using the keyword “friend” inside the class.

Inheritance

Polymorphism

The word “polymorphism” means having many forms. In simple words, we can define polymorphism as the ability of a message to be displayed in more than one form. A real-life example of polymorphism is a person who at the same time can have different characteristics.



What is java:

Java is a widely-used programming language for coding web applications. It has been a popular choice among developers for over two decades, with millions of Java applications in use today. Java is a multi-platform, object-oriented, and network-centric language that can be used as a platform in itself.

Why do we use java

Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is object-oriented. This allows you to create modular programs and reusable code. Java is platform-independent

Concept of c

Garbage collection

Garbage Collection is process of reclaiming the runtime unused memory automatically. In other words, it is a way to destroy the unused objects

Version of java

JDK, JRE, JVM

The JDK is an abbreviation for Java Development Kit. The JRE is an abbreviation for Java Runtime Environment. The JVM is an abbreviation for Java Virtual Machine.

The JDK is a development environment for building applications, applets, and components using the Java programming language. The JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform.

The Java Runtime Environment (JRE) is **software that Java programs require to run correctly**. Java is a computer language that powers many current web and mobile applications. The JRE is the underlying technology that communicates between the Java program and the operating system.

Java Virtual Machine, or JVM, loads, verifies and executes Java bytecode. It is known as the interpreter or the core of Java programming language because it executes Java programming.

Java import

Import statement in Java is **helpful to take a class or all classes visible for a program specified under a package, with the help of a single statement**. It is pretty beneficial as the programmer do not require to write the entire class definition. Hence, it improves the readability of the program