Let's Be Interview Ready With Core CS Concepts

NETWORKING

DBMS OS

SYSTEM DESIGN

OOPS

PART 1

Let's Revisit :

- **OOPS**
- **Class**
- **Object**
- **Inheritence(Important)**

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OBJECT ORIENTED PROGRAMMING

Object-Oriented Programming is a methodology or paradigm to design a program using classes and objects. It simplifies the software development and maintenance by providing some concepts defined below :

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Class

Class is a user-defined data type which defines its properties and its functions.

Class is the only logical representation of the data.

The class does not occupy any memory space till the time an object is instantiated.

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C++ Syntax (for class)

C++ Syntax (for class):

```
class student{
public:
int id; // data member
int mobile;
string name;
int add(int x, int y){ // member functions
return x + y;
}
};
```

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Object

- **Object is a run-time entity. It is an instance of the class. An object can represent a person, place or any other item. An object can operate on both data members and member functions.**

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Inheritance (Important)

- **Inheritance is a process in which one object acquires all the properties and behaviors of its parent object automatically. In such a way, you can reuse, extend or modify the attributes and behaviors which are defined in other classes.**

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Derived vs Base Class

In C++ , the class which inherits the members of another class is called derived class and the class whose members are inherited is called base class.

The derived class is the specialized class for the base class.

Let's Discuss Different Types of Inheritence in Next Slides

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Types of Inheritance :

1. **Single inheritance :** When one class inherits another class, it is known as single level inheritance

2. **Multiple inheritance :** Multiple inheritance is the process of deriving a new class that inherits the attributes from two or more classes.

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Types of Inheritance :

3. Hierarchical inheritance : Hierarchical inheritance is defined as the process of deriving more than one class from a base class.

4. Multilevel inheritance : Multilevel inheritance is a process of deriving a class from another derived class.

5. Hybrid inheritance : Hybrid inheritance is a combination of simple, multiple inheritance and hierarchical inheritance.

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Encapsulation

Encapsulation is the process of combining data and functions into a single unit called class.

In Encapsulation, the data is not accessed directly; it is accessed through the functions present inside the class.

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Encapsulation

In simpler words, attributes of the class are kept private and public getter and setter methods are provided to manipulate these attributes.

Thus, encapsulation makes the concept of data hiding possible.

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