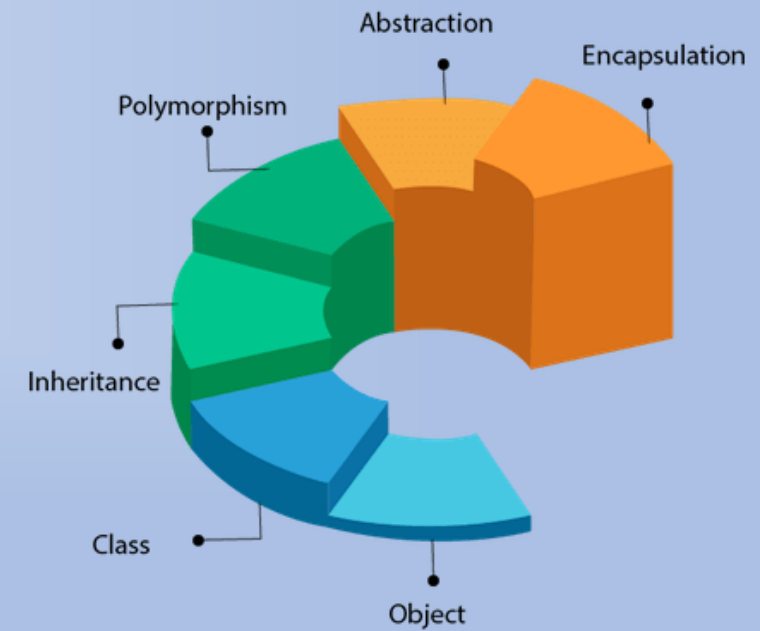


Object Oriented Programming (OOPs) Concepts



What Are OOPs Concepts?

- Object-Oriented Programming is a paradigm that provides many concepts, such as **inheritance**, **polymorphism**, etc.
- **Object** means a real-world entity such as a pen, chair, table, computer, watch, etc.
- **Object-Oriented Programming** is a methodology or paradigm to design a program using classes and objects. It simplifies software development and maintenance by providing some concepts:
 - Abstraction
 - Inheritance
 - Polymorphism
 - Encapsulation

Abstraction

- The act of representing essential features of an object without knowing the background and details is known as **Abstraction**.
- Data **abstraction** is the process of hiding certain details and showing only essential information to the user.
- For example, sending SMS where you type the text and send the message. You don't know the internal processing about the message delivery.
- Abstraction lets you focus on what the object does instead of how it does it.
- There are two ways to achieve abstraction in java
 1. Abstract class (0 to 100%)
 2. Interface (100%)

Encapsulation

- The wrapping up of data and its associated function (data member) into a single unit (called class) is known as **Encapsulation**.
- It is done for security of data members. Its name is obtained from the word 'capsule'.
- The meaning of **Encapsulation**, is to make sure that "sensitive" data is hidden from users.

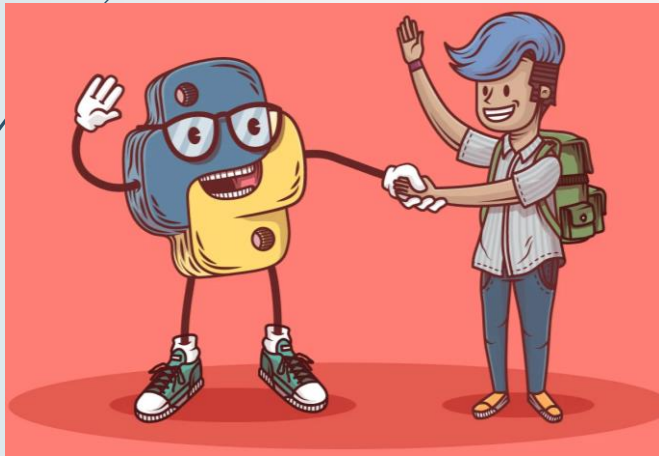
Inheritance

- It is the ability of an object to acquire the properties of another class.
- In Java, it is possible to inherit attributes and methods from one class to another. We group the "inheritance concept" into two categories:
- **Advantages of Inheritance:** -
 - i) It provides reusability of code with additional functionality.
 - ii) It is transitive in nature.
 - iii) It implements real world concepts.
- In Java, it is possible to inherit attributes and methods from one class to another. We group the "inheritance concept" into two categories:
 - **subclass** (child) - the class that inherits from another class
 - **superclass** (parent) - the class being inherited from
- To inherit from a class, use the **extends** keyword.

Polymorphism

- It is made of two words → “poly” means *many* & “morph” means *forms*.
- It is the ability of an object to behave in different ways according to the message conveyed to it.
- Example: Like a TV which may be in different sizes.
- In Java, it is implemented through function overloading.

Happy Learning!!



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