What is Object Oriented Programming?

The word object-oriented is the combination of two words i.e. object and oriented. The dictionary meaning of the object is an article or entity that exists in the real world. The meaning of oriented is interested in a particular kind of thing or entity.

In Other word it is a programming pattern that rounds around an object or entity are called object-oriented programming.

The object-oriented programming is basically a computer programming design philosophy or methodology that organizes/ models software design around data, or objects rather than functions and logic.

OOP’s Concept:

1. Object
2. Class
3. Inheritance
4. Polymorphism
5. Abstraction
6. Encapsulation

Object:- An object is a real-world entity that has attributes, behavior, and properties. It is referred to as an instance of the class. It contains member functions, variables that we have defined in the class. It occupies space in the memory. Different objects have different states or attributes, and behaviors.

Class:- A class is a blueprint or template of an object. It is a user-defined data type. Inside a class, we define variables, constants, member functions, and other functionality. it binds data and functions together in a single unit.

Inheritance:- The concept allows us to inherit or acquire the properties of an existing class (parent class) into a newly created class (child class). It is known as inheritance. It provides code reusability.

Polymorphism:- The word polymorphism is derived from the two words i.e. ploy and morphs. Poly means many and morphs means forms. It allows us to create methods with the same name but different method signatures. It allows the developer to create clean, sensible, readable, and resilient code.

Abstraction:- The concept allows us to hide the implementation from the user but shows only essential information to the user.

Encapsulation:- Encapsulation in Java is a process of wrapping code and data together into a single unit, for example, a capsule which is mixed of several medicines.

Advantages :

* We can easily modify, append code without affecting the other code blocs.
* Provides security through encapsulation and data hiding features.
* Debugging is easy.

Disadvantages:

* Not suitable for small problems.
* Takes more time to solve problems.

Applications of OOPs

* Computer graphics applications
* Object-oriented database
* User-interface design such as windows
* Real-time systems
* Simulation and modeling
* Client-Server System
* Artificial Intelligence System
* CAD/CAM Software