Classes1

What is Object Oriented Programming ?

is a computer programming paradigm / model that organizes the code around data , i.e. objects .

Benefits of OOP:

1. **Modularity**:
   - Code is organized into classes, which makes it easier to manage and understand. Each class has a specific responsibility.
2. **Reusability**:
   - Classes can be reused across different programs. Inheritance and polymorphism further enhance the reusability of code.
3. **Maintainability**:
   - Code is easier to maintain and update. Encapsulation ensures that changes in one part of the code do not affect other parts.
4. **Scalability**:
   - OOP makes it easier to manage larger programs by breaking them down into manageable, interacting objects.

What is the structure of an object oriented programming ?

- Classes

It is a blueprint for an object. inside a class we define the object properties / methods.

- Objects / instances

creating a new instance from a class.

- Attributes / properties (i.e. variables)

represent the state of the class .

- Methods (i.e. functions)

represent the behavior .

What are the main principles of Object-Oriented Programming ?

- Encapsulation.

hide the state (attributes / properties) from explicit / direct public access / external access.

this helps keep the integrity / protect it from corruption.

- Abstraction.

reveal only the relevant behavior / methods to the user , and hide the implementation (internal processes).

- Inheritance.

to inherit properties/ methods from a general / parent calss.

- Polymorphism.

the ability of a subclass / child to extend / morph the functionality of the parent class.