Real World Class Modeling

Object-oriented programming (OOPs) is a programming paradigm based on objects. Objects that are real-world entities like cars, mobile, trees, etc.

In OOPs, there are generally four pillars that are as follows

1. Polymorphism
2. Inheritance
3. Encapsulation
4. Abstraction

In the following part, you can see how OOPs connect with real-world examples.

Polymorphism

For Polymorphism, let us consider a girl. The girl can be many things. She can be Mother, Sister, and Student, etc. The same person can have different roles.

As per the Polymorphism definition in Python, Polymorphism lets us define methods in the child class with the same name as the methods in the parent class.

Inheritance

For Inheritance, let us consider dogs. The dogs can have the same color, name, size, etc., but they are not the same dog.

As per the Inheritance definition in Python, it is a concept in OOPs where a new class can modify existing classes.

Encapsulation

For Encapsulation, let us consider a company. A company can have several departments like the Production Department, HR Department, Marketing Department, etc. All these departments are necessary to make up a company.

As per the Encapsulation definition in Python, It is wrapping up variables and methods into a single entity.

Abstraction

For Abstraction, Let us consider a Mobile Phone. We can do many things on a mobile phone like making a call, taking pictures and playing games, etc. It doesn’t show the inside process of how it is doing things.

As per the Abstraction definition in Python, It is a process of hiding the actual implementation of the method by only showing a method signature.

Why Real-World Modelling is Needed

- To make the development and maintenance of projects more effortless.
- To provide the feature of data hiding that is good for security concerns.
- We can solve real-world problems if we are using object-oriented programming.
- It ensures code reusability.
- It lets us write generic code: which will work with a range of data, so we don't have to register basic stuff over and over again.