Object Oriented Programming

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Object Oriented Programming

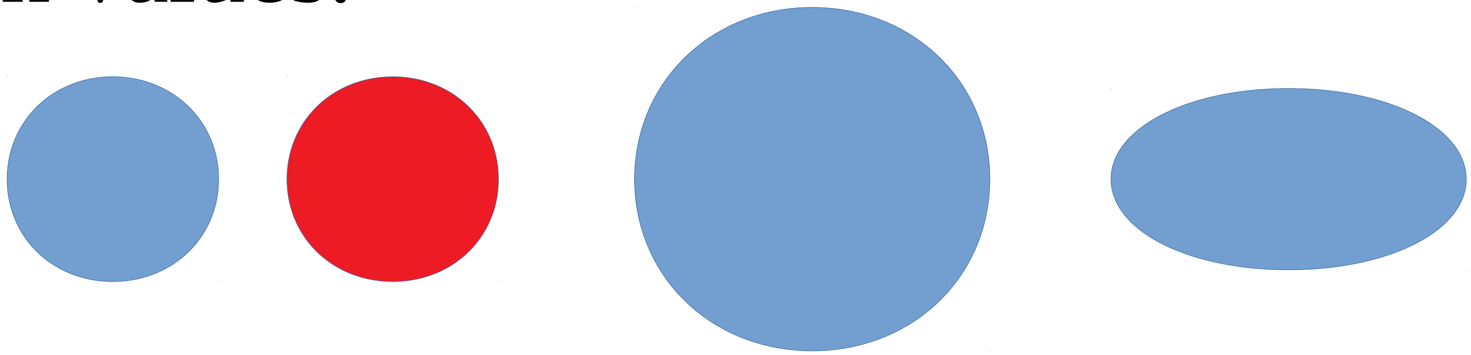
- It is a software design methodology.
- It is a software programming model that constructed around objects.
- It aims to implement real world entities in programming.

OOP Languages

- The programming languages that follows the oops principles is known as object oriented programming languages.
- Examples
  - Simula, C++, Python, JAVA.

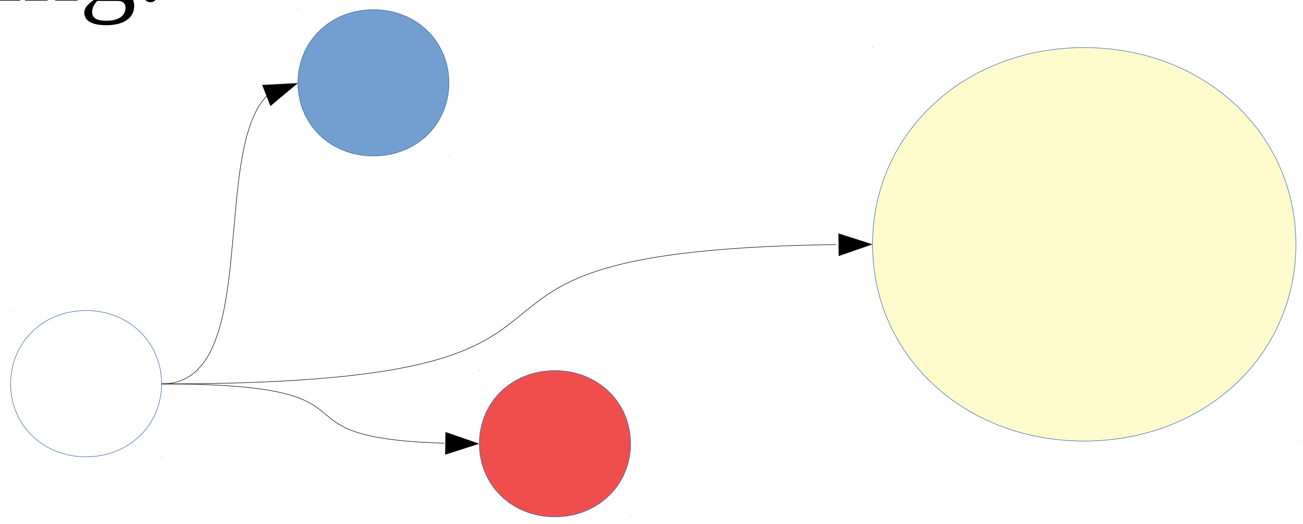
OBJECT

- Object is specific instance of a class.
- It is often referred as a “Real world Entity”.
- It lives in computer memory.
- It has real values.
- Objects of the same class need not be a same.
- Shares similarity with attributes but differs with values.



CLASS

- It is template definitions of methods and variable.
- Class is blue print of Object.
- Class should be instantiated before using.



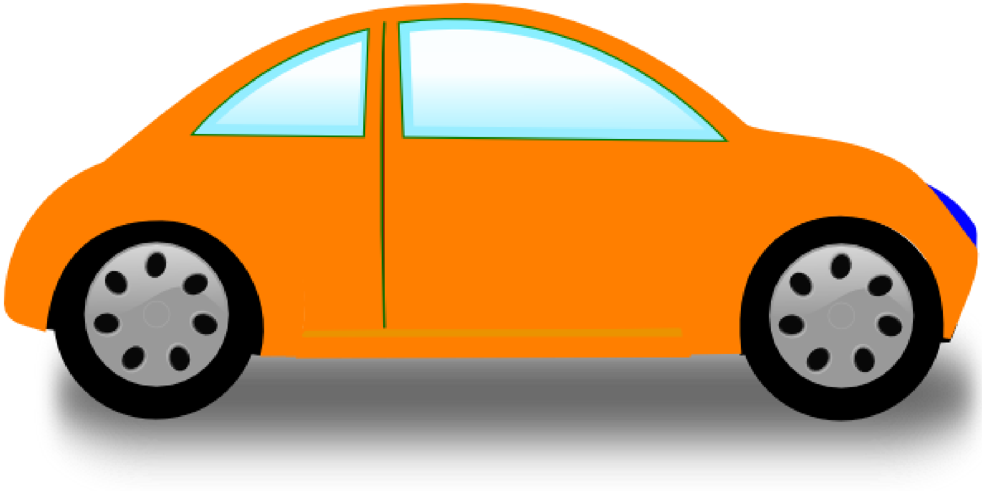
4 Principles of OOP

- Abstraction.
- Encapsulation.
- Inheritance.
- Polymorphism.

Basic Terminologies

- **Object**
  - A real world entity.
  - It is a instance of a “class”.
  - It contains a attributes [properties] and functions [methods].

Example of an Object



Properties	Methods
Colour	Start, Stop
Transmission Type	Accelerate
Max Speed	Change Transmission

Basic Terminologies

- **Class**
  - It is a template for an object.
  - It is used to describe more than one object.
  - A class is an extensible program-code-template for creating objects.
  - Classes are help us to create multiple objects from them.

Car Class

- What are the fundamental differences between cars.

Abstraction

- It is used to manage the complexity of the program.
- Hiding unwanted information from users.
- Hiding internal working mechanism from user.

Abstract Car

- How much user must know about the car for safe operations?

Basic Terminologies

- **Encapsulation**
  - It is containment of code and data together.
  - It is used to protect the unnecessary external access of code and data from other source.
  - Parts of the program wrapped individually without affecting each other.

Encapsulated Car

- Individual System’s in a typical car.
- The Transmission System and Music System is independent to each other.
  - Transmission System.
    - Engine Speed
    - Gear Ratio Change.
    - Clutch On/Off.
  - Music System.
    - Play/Stop
    - Album Change
    - Source Change [AUX/CD/USB]

Basic Terminologies

- **Inheritance**
  - Reuse the code.
  - Sharing the characteristics or properties among the objects.
  - Parent and Child Relation
  - Support the Hierarchical classification

Inherited Car

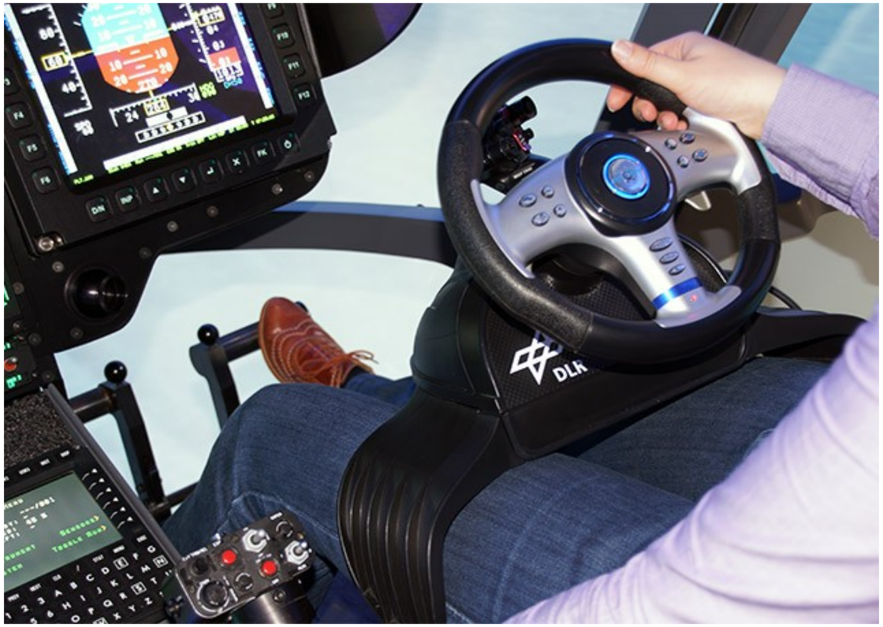
TAXI
POLICE

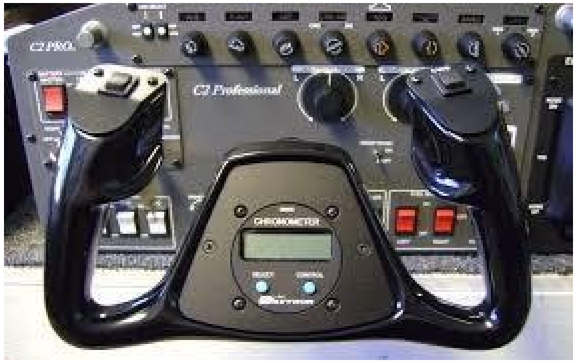
- Think about similarities and differences.

Basic Terminologies

- **Polymorphism**
  - Taking more than one form.
  - it describes the concept that objects of different types can be accessed through the same interface.

Polymorphic Steer Wheel
[Car vs Aircraft]





Thank You !!!

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