Object Oriented Concepts

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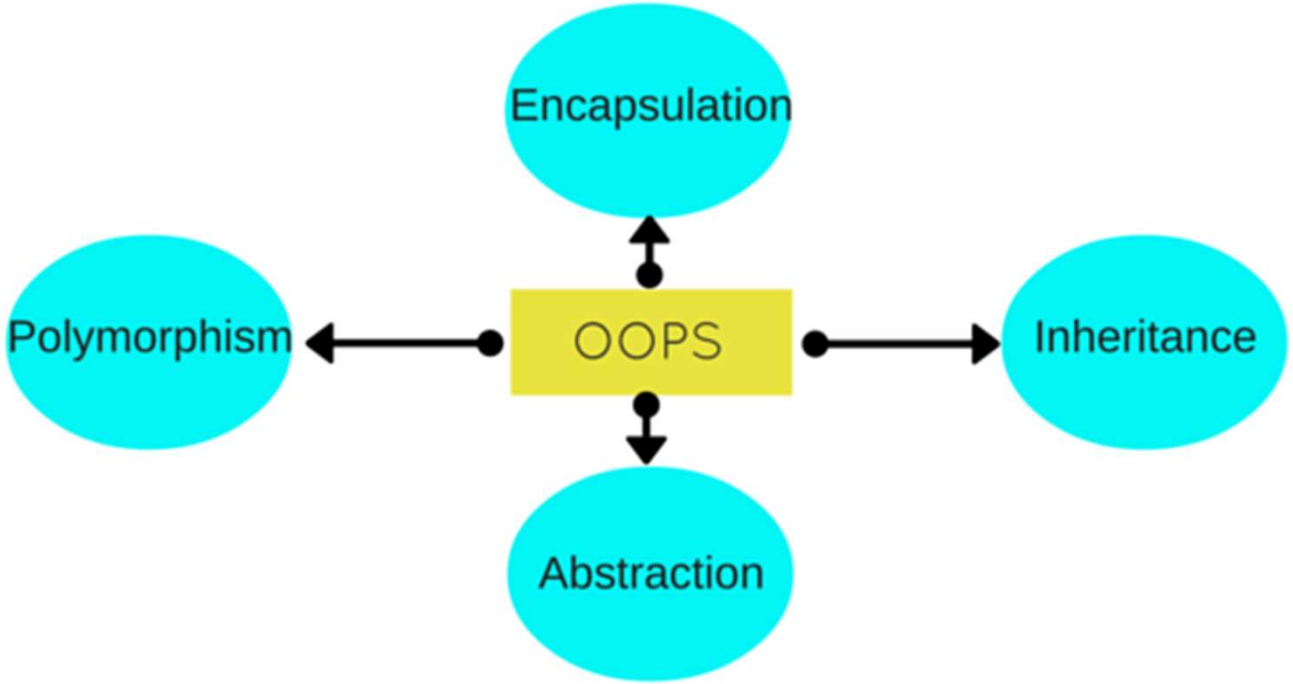


Need Of Object Oriented Approach

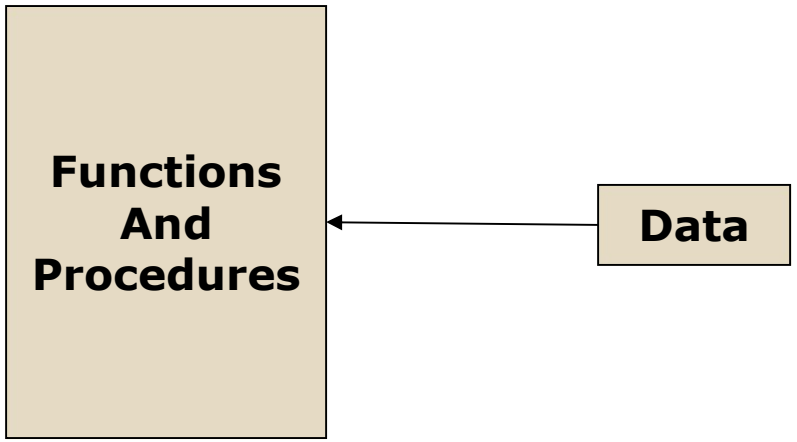
- Software is Inherently Complex
  - Impedance mismatch between user of a system and it's developer.
  - Changing Requirements during development.
  - Difficulty of managing software development process. It's a team effort.
  - Easy User Interface.
  - Clients want systems to be adaptable and Extensible

Object Oriented Approach

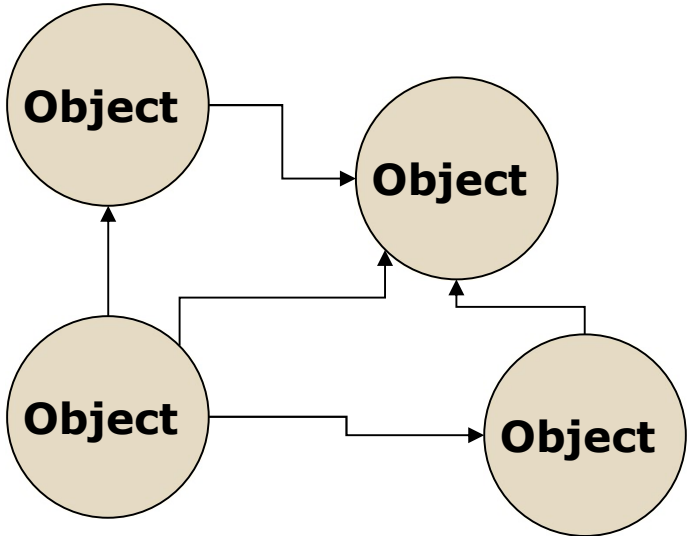
- The Claim
  - Object oriented approach helps to handle the complexity of software development and aids in generation of adaptable and Extensible Systems

Procedural Vs Object Oriented Approach

Procedural Method



Object Oriented Method



Object ?

- An object is an entity that has well defined structure and behavior
- Characteristics of an object
  - State
  - Behavior
  - Identity

State of an Object

Car Attributes

Color
Average
Make
Power
Fuel type

Static

Speed
Fuel level
Tyre pressure
Gear

Dynamic

Values of all attributes at any moment defines the state of the car

Behavior of an Object

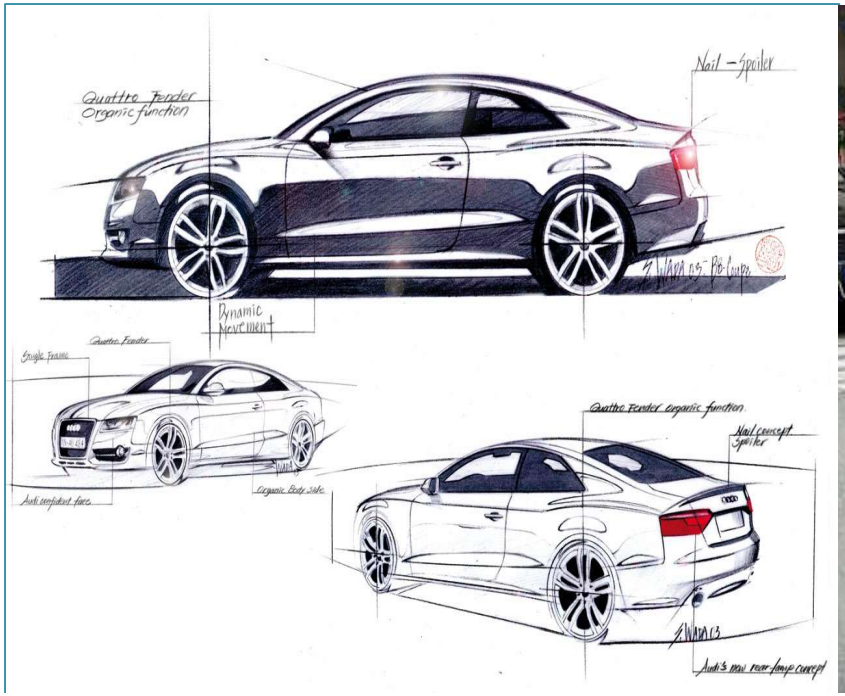
- Behavior is how an object acts or reacts, in terms of its state changes and operations performed upon it

Identity of an Object

- Identity is that property of an object which distinguishes it from all other objects

Class ?

- Class denotes a category of objects and act as a blueprint for creating such objects.
- An object is an instance of a Class.
- Class : Model/Template/Prototype/Blueprint



Major concepts of OOPS

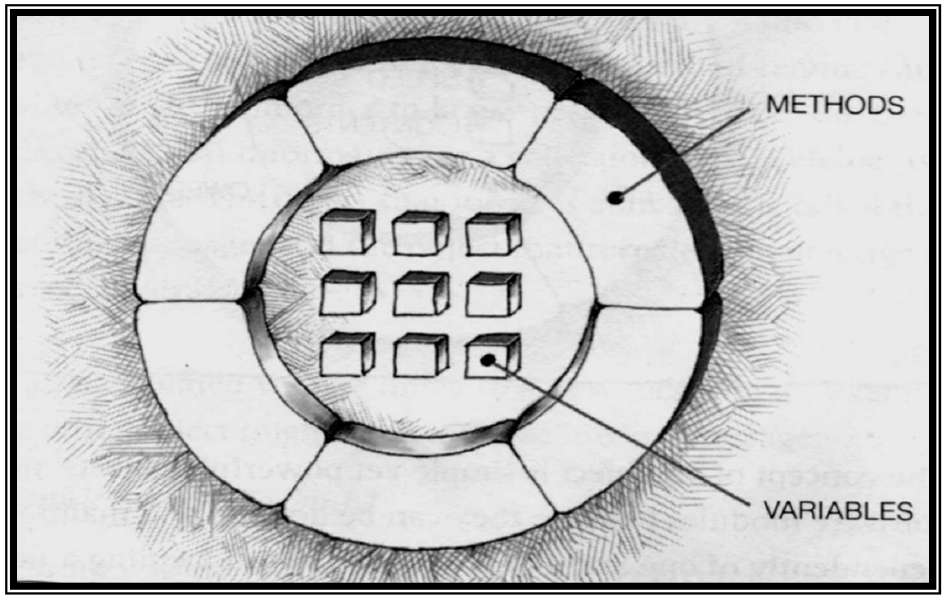
- Abstraction
- Encapsulation
- Inheritance (IS –A)
- Polymorphism

Abstraction

- Abstraction is the process of identifying the key aspects of an entity and ignoring the rest
- We select only those aspects which are important to us
- Only Domain Expertise can do right abstraction

Encapsulation

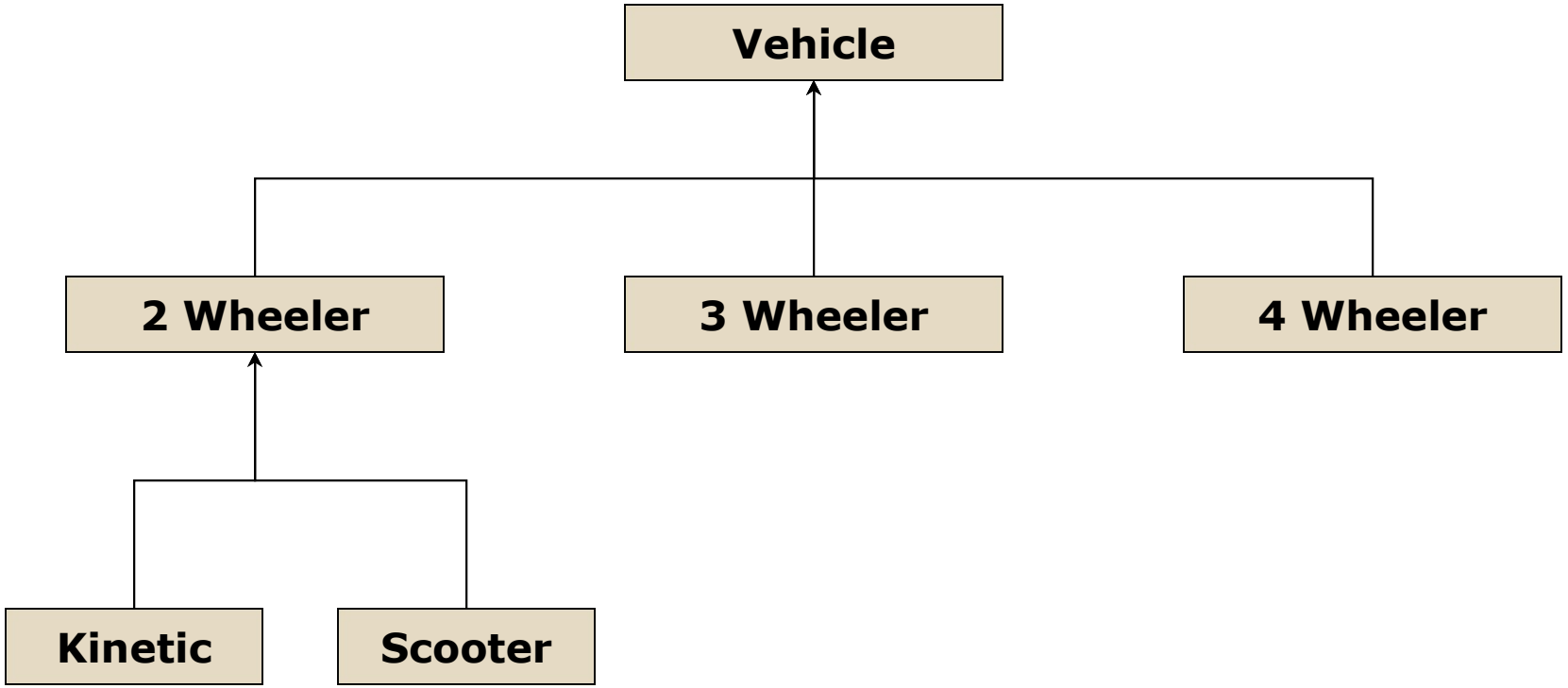
- Binding state of the object with its behavior
- Encapsulation ensures that data within an object is protected; it can be accessed only by its methods



Inheritance

Creating new things from existing one.

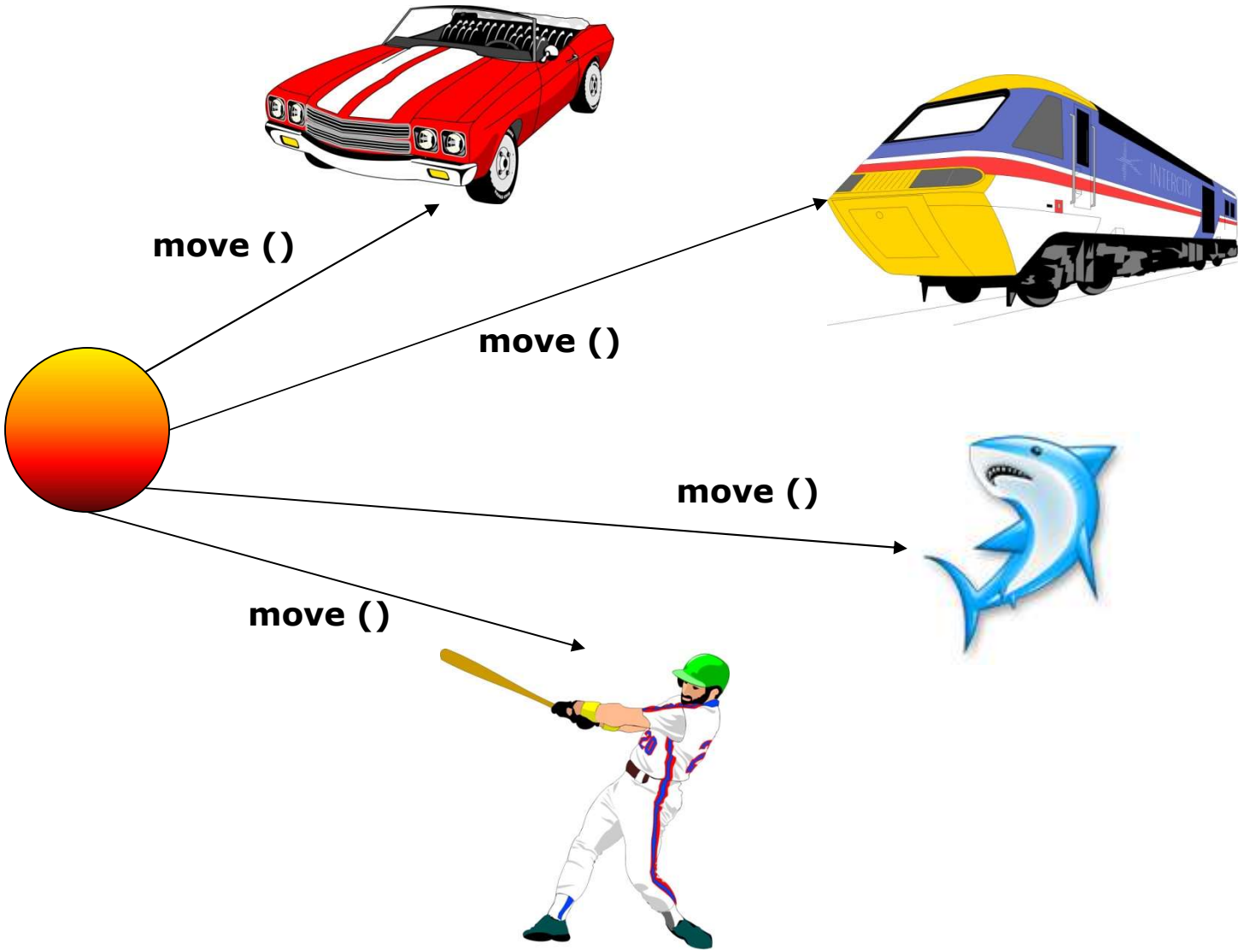
'is-a' kind of hierarchy



Polymorphism

- The ability of different objects to respond to the same message in different ways is called polymorphism
- Polymorphism helps us to :
  - Design extensible software as we can add new objects to the design without rewriting existing procedures

Polymorphism




Q.A