CS8382

Object Oriented Programming

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Course Overview

Unit 1	INTRODUCTION TO OOP AND JAVA FUNDAMENTALS
Unit 2	INHERITANCE AND INTERFACES
Unit 3	EXCEPTION HANDLING AND I/O
Unit 4	MULTITHREADING AND GENERIC PROGRAMMING
Unit 5	EVENT DRIVEN PROGRAMMING

What you need?

- A computer with java installed.
- A decent internet connection for your reference.
- Text editor of your choice.
- IDE eclipse preferred.
- A book that help’s you when you are in offline.

Object Oriented Programming

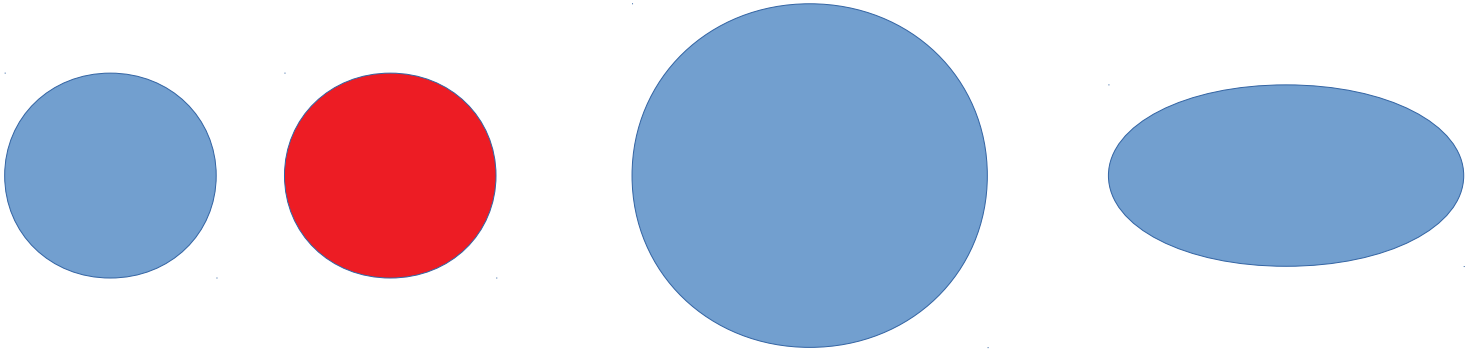
- It is a software design methodology.
- It is a software programming model that constructed based on objects.
- It aims to implement real world entities in programming.

OOP Languages

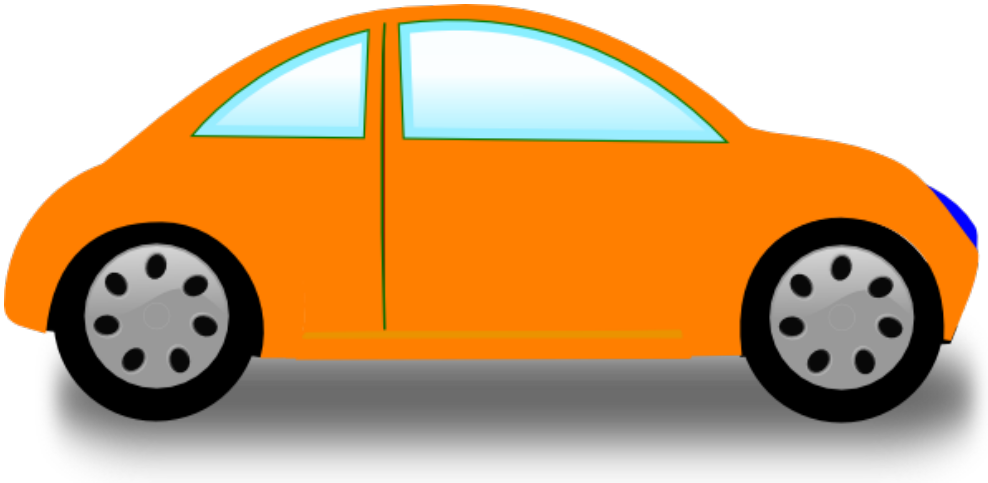
- The programming languages that follows the oops principles is known as object oriented programming languages.
- Keep in mind every programming language is created for a purpose.
- Java is on of the general purpose object oriented programming language.
- Languages that follows oops principles other than java.
  - Simula, C++, Python … etc

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.



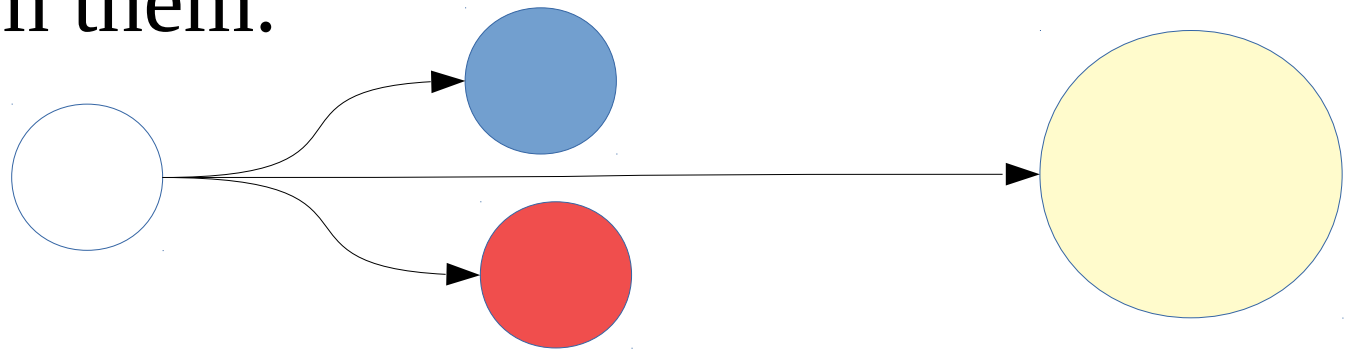
Example of an Object



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

CLASS

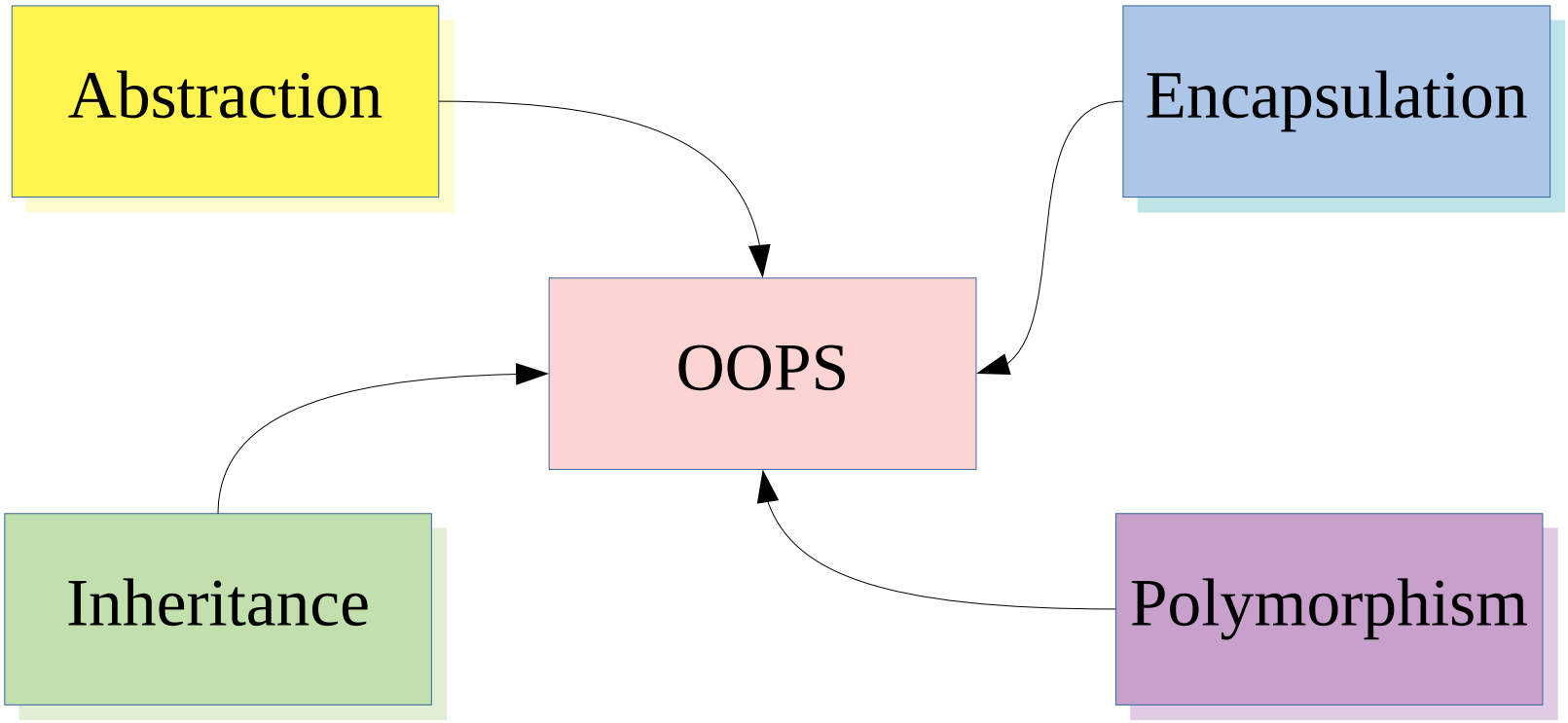
- It is template definitions of methods and variable.
- Class is blue print of Object.
- Class should be instantiated before using.
- It is used to describe more than one object.
- A class is an extensible program-code-template for creating objects.
- Classes are help us to create multiple objects from them.



Car Class

- List the differences between above cars.

4 Principles of OOP



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?

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

- Ex : 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]

INHERITANCE

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

Inherited Car

- Think about similarities and differences.

POLYMORPHISM

- Taking more than one form.
- it describes the concept that objects of different types can be accessed through the same interface.
- Same object act’s differently according to the situation.

Polymorphic Steer Wheel
[Car vs Aircraft]

Thank You !!!

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