### **Lecture 1: -- Objects and Classes: -- JAVA**

# Procedural Programming (POP)

#### Derived from Structural Programming

- ➤ A program is divided into small parts called functions.
- Procedural programming follows top down approach
- Function is more important than data
- Based on unreal world.
- No proper way for hiding data, so it is less secure.
- Adding new data and function is not easy
- Examples: C, FORTRAN, Pascal, Basic etc

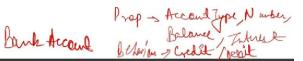
### **Object Oriented Programming (OOPs)**

- OOPs is based on real world.
- Program is divided into small parts called objects.
- Object oriented programming follows bottom up approach.
- Data is given more importance than functions
- Data hiding is possible and hence more secure.
- Adding new data and function is much easier
- Examples: C++, Java, Python, C# etc.

### **❖** What are Objects?

# What are Objects?

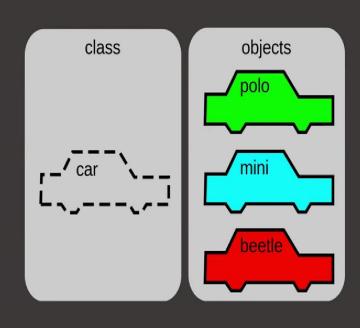
- Anything that has a state and behaviour is known as an object.
- Objects can be: Physical: Car, Laptop, Pen etc.
- Logical: Intangible object, like in some banking system.
- They store data in form of variables and operate on this data using methods/functions.
- An object is a real-world entity.
- An object is an instance of a class.





#### What are Classes?

## What are Classes?



- A class is a group of objects which have common properties.
- A class can be seen as a blueprint from which objects are created.
- For example: A car can be a class and we can have various objects. Each car object has attributes(properties), such as weight and color, and methods (behavior), such as accelerate and brake.

## Classes

#### Classes can contain:

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- Fields
- Methods
- Constructors
- Nested class and interface

Creation of Objects of a class (Instantiation of a class):

- Known as instantiation of a class
- Objects share the attributes and the behavior of the class
- Values of those attributes may be unique for each object
- A class may have any number of instances

