Object Oriented Programming (OOP)

Python is a multi paradigm programming language; it allows writing programs using various programming paradigms.

1. Procedural Oriented Programming (POP) Functions
2. Modular Oriented Programming (MOP) Modules
3. Object Oriented Programming (OOP) UDT

Objective of learning object oriented programming is creating or developing user defined data types.
Object oriented programming is not language; it is a programming paradigm which defines set of rules and regulations for organizing of data and instructions.

Predefined Data types

1. Int
2. Float
3. Complex
4. Bool
5. NoneType
6. List
7. Tuple
8. Range
9. Str
10. Bytes
11. Bytearray
12. Set
13. Frozenset
14. dictionary

In order to build application specific data types or user defined data type programmer uses object oriented programming concepts.

UDT Example:

1. Employee
2. Student
3. Date
4. Time
5. Customer

Object Oriented Concepts

1. Encapsulation
2. Polymorphism
3. Inheritance
4. Class
5. Object
6. Abstraction

Object

In object oriented programming data is represented as objects.
An object is real word entity.
Every object is having two characteristics

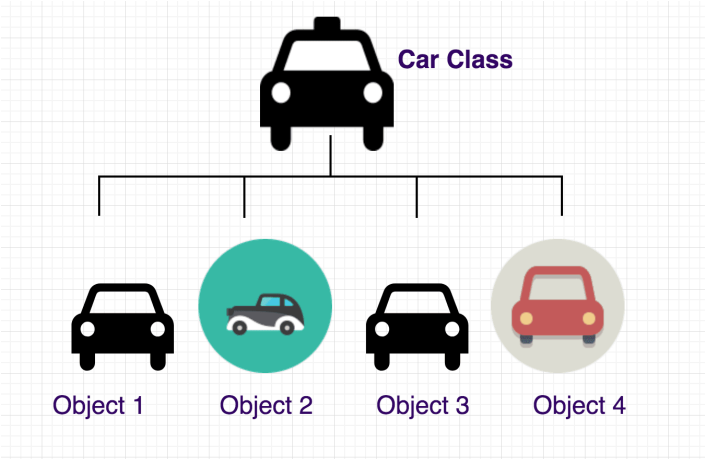
1. Properties
2. Behavior

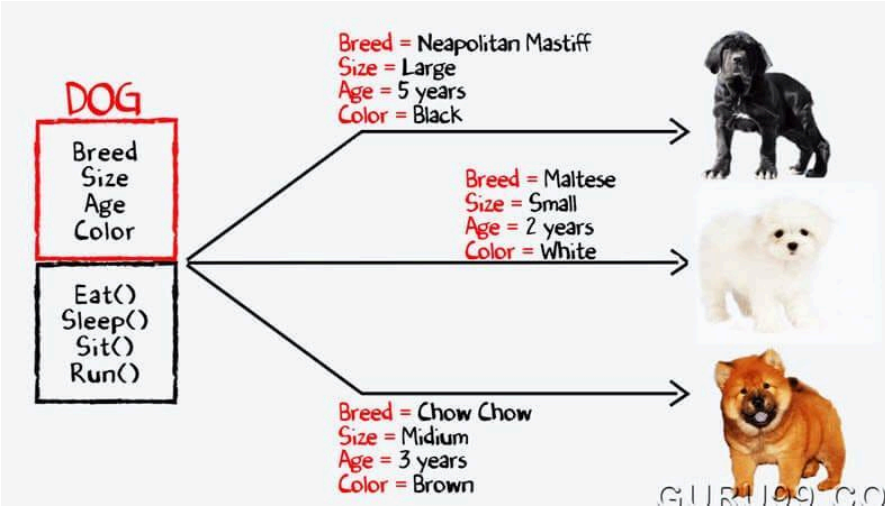
Properties define the state of the object.
Data or information hold by object is defined using properties.
Behavior defines the functionality of the object.

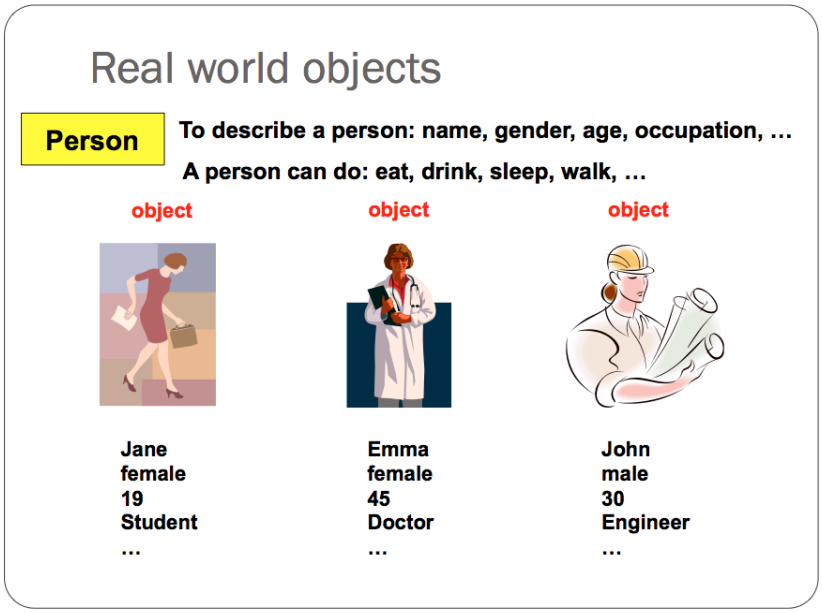
Object is an implementation of class (OR) object is an instance of class.
Class allocates memory for object.

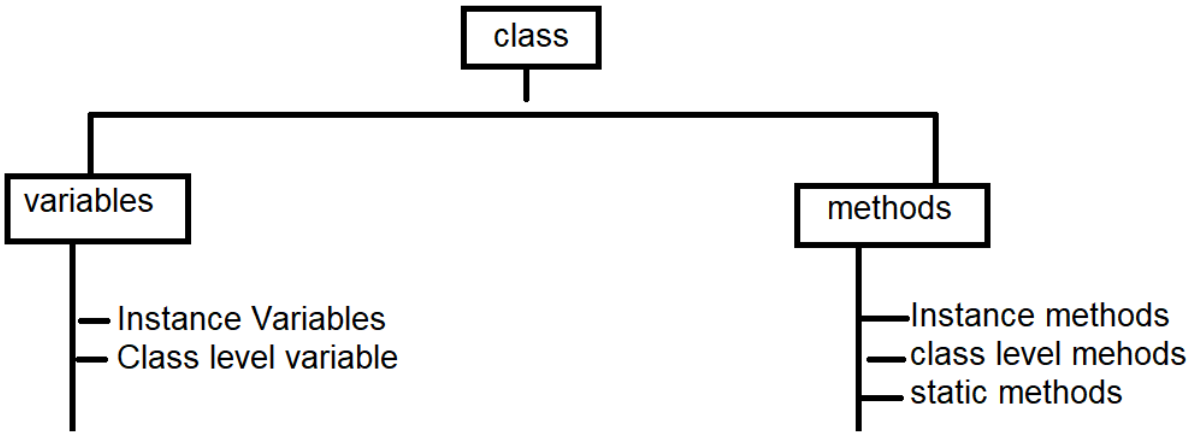
Class

In object oriented programming a class represents data type.
Class is a blueprint of object.
Class defines the properties and behavior of object.
Class is encapsulated with properties and behavior of object.
Class is a collection of variables and methods.









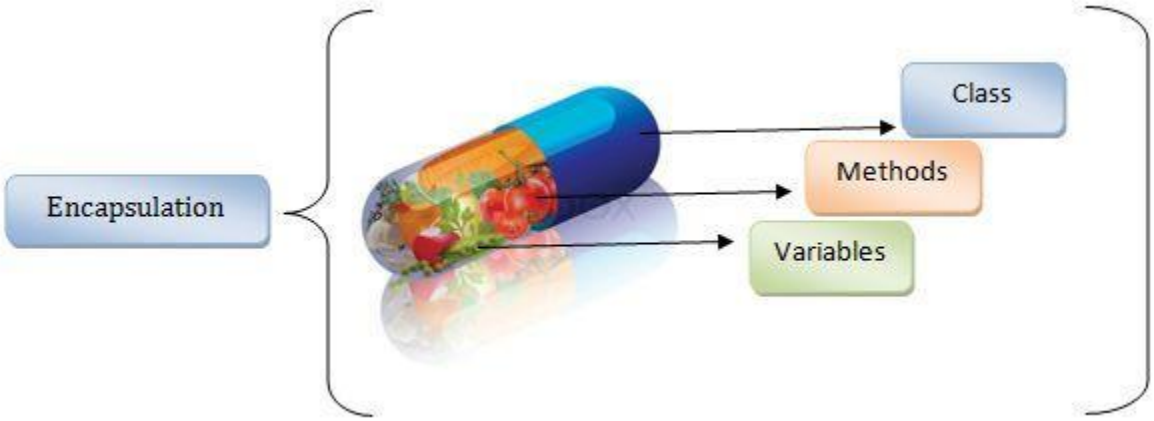
Properties are represented by creating variables within class
Behavior is represented by writing functions/method within class

Encapsulation

Encapsulation is process of grouping variables and methods of object within single entity (class).

Binding data with related operations is called encapsulation.

Encapsulation is one of the core concepts in object-oriented programming and describes the bundling of data and methods operating on this data into one unit.



Advantage of encapsulation

1. Data Hiding
2. Binding

Data Hiding

Preventing data access from unrelated operations or outside functions is called data hiding. This allows developing secured applications.

Binding

Linking data with related operations is called binding.