There are four types of programming languages

1. Structural
2. Procedural
3. Object oriented
4. Event driven

OOPS:

1. Abstraction
   1. Class instance creating new datatypes
2. Encapsulation
   1. Access modifiers security
3. Inheritance
   1. Extends implements
   2. Reusability
   3. Python’s default parent class is object
4. Polymorphism
   1. Overloading Overriding

Python is an object-oriented mechanism

1. Class is a collection of member variables and member functions
2. Types of variables in class:
   1. Class members/ variables
   2. Instance members/ variables
3. Types of methods
   1. Class methods
   2. Instance methods
   3. Static methods

**In python variables can be accessed through properties**

Properties or attributes are used to provide security

There are three types of properties

1. Setter property
2. Getter property
3. Deleter property

**Decorator:** It is a function which will be added to the existing function or method. It is similar to annotations in java.

**Magic methods:** In python the method names start with ‘\_\_’ (double underscores). Magic methods are applied on objects

**Constructor:** in python \_\_init\_\_ is a method which acts like a constructor

\_\_init\_\_ is used for initializing the member variables

@setter is a decorator used to create a method which h will assign a value to the variable

@getter is a decorator used to return a value.

@deleter deletes the property of a variable by assigning ‘none’

Magic methods is used to apply

**Instance** is a working model and it occupies the working memory for a class

**Class** is logical whereas **Instance** is physical

Access permissions in python are categorized into three

1. public
2. \_\_private\_\_
3. \_\_protected\_\_

* In python inheritance is achieved through extending object or parent class
* Java supports multiple inheritance with interfaces
* **Multiple inheritance is possible in python**
* The inheritance of the classes is followed from left to right
* **Interfaces** are abstraction of methods in class without implementation. in python
* Python by nature follows overloading and over-riding
* **Python is both object oriented as well as object based**

An object which cannot be divided further and related to another object we call them object base

An object which can exchange data and values between one another is called object oriented

A variable whose value is common for all instances of that class is known as class variables

The variable value is specific to the instance in knows as instance variable

Static method is a method is not common for instances or specific to an instance. Class methods is a method which is common for all instances

1. The class method first method must be ‘cls’
2. The class method must be surrounded by a decorator ‘@class method’
3. Instance method is a method which is specific to instance
4. ‘slf; is a keyword
5. No decorator

* Instance method
* specific to instance
* 'self' is a keyword
* no decorator
* static methods
* Not common for instances or specific to instances
* no arguments
* decorator "@static method'