Define OOPS

OOPs stands for Object Oriented Programming.

What are the main features of OOPs

- ✓ Inheritance
- ✓ Polymorphism
- ✓ Encapsulation
- ✓ Abstraction

What are the major components of OOPs

- ✓ Object
- ✓ Class

Benefits of OOPs

Models the real world
Allows code reusability

Benefits of Class

We can work with class objects by performing the following two types of operation.

- ✓ Creating attribute reference
- ✓ Creating an instance of a Class

Attributes

A class attribute is an element of a class
The class attributes belong to the class in which they are defined
The class attributes are following two types.

- ✓ Data attributes
- ✓ Functional attributes

Data attributes are commonly known as **static members or class variables**
Functional attributes or Method Class attributes are the class methods
Methods can be invoked only by using instance of the class to which they belong

__init__()

The __init__() is a constructor or a special method that can be defined in a class to create objects in the initial state
__init__() special methods has self as the first argument like any other function or method defined in python

In how many ways class can be implemented

There are two types
1. Composition
2. Derivation

In **Composition**, classes are combined to create a code that provides better functionality
Derivation provides a powerful features of OOPs, which allows for the use of the features and behavior of class by another class without disturbing the rest of the program

---

Variables

There are three different types of variables in OOPs in python.

- ✓ Instance variable (Object level variable)
- ✓ Static variable (Class level variable)
- ✓ Local variable (Method level variable)

Methods

Three different types of Methods in OOPs in python.

- ✓ Instance method
- ✓ Static method
- ✓ Class method

Reference variable:

This variable is a reference or a pointer to an object to perform operations on that object.
Reference variables always points to an object.