

Chapter 10 - Object Oriented Programming

Solving a problem by creating objects is one of the most popular approaches in programming. This is called Object oriented programming.

This concept focuses on using reusable code.

↳ Implements DRY principle

Class

A class is a blueprint for creating objects.

Contains info to
create a valid
Application

Blank
Form

⇒ Filled by an student

Application
of the
Student

class

⇒ object instantiation

Object

Contains info to
create a valid
object

The syntax of a class looks like this :

Class Employee:
methods & variables

[Classname is written in Pascalcase]

Object

An Object is an instantiation of a class. When class is defined, a template (info) is defined. Memory is allocated only after object instantiation.

Objects of a given class can invoke the methods available to it without revealing the implementation details to the user.

→ Abstraction & Encapsulation!

Modelling a problem in OOPs

We identify the following in our problem

Noun → Class → Employee
Adjective → Attributes → name, age, salary
Verbs → Methods → getSalary(), increment()

Class Attributes

An attribute that belongs to the class rather than a particular object.

Example :

Class Employee :

company = "Google" → [specific to each class]

harry = Employee()

→ object instantiation

harry.company

Employee.company = "YouTube" → changing class attribute

Instance Attributes

An attribute that belongs to the Instance (object)

Assuming the class from the previous example :

harry.name = "Harry"

harry.salary = "30K"

⇒ Adding instance attributes

Note : Instance attributes take preference over class attributes during assignment & retrieval

harry.attribute1 → ① Is attribute1 present in object?
② Is attribute1 present in class?

'self' parameter

self refers to the instance of the class
It is automatically passed with a function call from an object

harry.getSalary() → here self is harry
→ equivalent to Employee.getSalary(harry)

The function getsalary is defined as:

```
class Employee:
    company = "Google"
    def getSalary(self):
        print("Salary is not there")
```

Static method

Sometimes we need a function that doesn't use the self parameter. We can define a static method like this:

```
@staticmethod
def greet():
    print("Hello user")
```

→ decorator to mark greet as a static method

--init--() Constructor

--init--() is a special method which is first run as soon as the object is created.

--init--() method is also known as constructor

It takes self argument and can also take further arguments

For Example:

```
class Employee:  
    def __init__(self, name):  
        self.name = name
```

```
    def getSalary(self):  
        ...
```

```
harry = Employee("Harry")
```

→ Object can be instantiated
using constructor like this!