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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Chapter-15\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*15.OOP’s \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*:-

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\*\*Python's Object Oriented Programming (OOPs):-\*\*

……………………………………………………………………………………….. What is Class:

⚽ In Python every thing is an object. To create objects we required some Model or Plan or Blue print, which is nothing but class.

⚽ We can write a class to represent properties (attributes) and actions (behaviour) of object.

⚽ Properties can be represented by variables

⚽ Actions can be represented by Methods.

⚽ Hence class contains both variables and methods.

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How to Define a class?

We can define a class by using class keyword.

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Syntax:

class className:

''' documenttation string '''

variables:instance variables,static and local variables methods: instance methods,static methods,class methods

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Documentation string represents description of the class. Within the class doc string is always optional. We can get doc string by using the following 2 ways.

1. print(classname.\_\_doc\_\_)

2. help(classname)

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Example:

1) class Student:

2) ''''' This is student class with required data'''

3) print(Student.\_\_doc\_\_)

4) help(Student)

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Within the Python class we can represent data by using variables.

There are 3 types of variables are allowed.

1. Instance Variables (Object Level Variables)

2. Static Variables (Class Level Variables)

3. Local variables (Method Level Variables)

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Within the Python class, we can represent operations by using methods. The following are various types of allowed methods

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1. Instance Methods

2. Class Methods

3. Static Methods

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Example for class:

1) class Student:

2) '''''Developed by prasanna for python demo'''

3) def \_\_init\_\_(self):

4) self.name='prasanna'

5) self.age=40

6) self.marks=80

7)

8) def talk(self):

9) print("Hello I am :",self.name)

10) print("My Age is:",self.age)

11) print("My Marks are:",self.marks)

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*What is Object:\*\*\*\*\*\*\*\*\*\*\*\*:-

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Pysical existence of a class is nothing but object. We can create any number of objects for a class.

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Syntax to create object: referencevariable = classname()

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Example: s = Student()

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\*\*\*\*\*\*\*\*\*\*\*\*What is Reference Variable: \*\*\*\*\*\*\*\*\*\*\*\*\*\*

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The variable which can be used to refer object is called reference variable. By using reference variable, we can access properties and methods of object.

Program: Write a Python program to create a Student class and Creates an object to it. Call the method talk() to display student details

1) class Student:

2)

3) def \_\_init\_\_(self,name,rollno,marks):

4) self.name=name

5) self.rollno=rollno

6) self.marks=marks

7)

8) def talk(self):

9) print("Hello My Name is:",self.name)

10) print("My Rollno is:",self.rollno)

11) print("My Marks are:",self.marks)

12)

13) s1=Student("prasanna",101,80)

14) s1.talk()

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Output: D:\prasannaclasses>py test.py

Hello My Name is: prasanna

My Rollno is: 101 My Marks are: 80

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\*\*\*\*\*\*\*\*\*\*\*\*Self variable:\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*:-

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self is the default variable which is always pointing to current object (like this keyword in Java)

By using self we can access instance variables and instance methods of object.

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Note:-

1. self should be first parameter inside constructor

def \_\_init\_\_(self):

2. self should be first parameter inside instance methods def talk(self):

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Constructor Concept:-

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☕ Constructor is a special method in python.

☕ The name of the constructor should be \_\_init\_\_(self)

☕ Constructor will be executed automatically at the time of object creation.

☕ The main purpose of constructor is to declare and initialize instance variables.

☕ Per object constructor will be exeucted only once.

☕ Constructor can take atleast one argument(atleast self)

☕ Constructor is optional and if we are not providing any constructor then python will provide default constructor.

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Example:

1) def \_\_init\_\_(self,name,rollno,marks):

2) self.name=name

3) self.rollno=rollno

4) self.marks=marks

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Program to demonistrate constructor will execute only once per object:

1) class Test:

2)

3) def \_\_init\_\_(self):

4) print("Constructor exeuction...")

5)

6) def m1(self):

7) print("Method execution...")

8)

9) t1=Test()

10) t2=Test()

11) t3=Test()

12) t1.m1()

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Output Constructor exeuction...

Constructor exeuction...

Constructor exeuction...

Method execution...

………………………………………………………

Program:

1) class Student:

2)

3) ''''' This is student class with required data'''

4) def \_\_init\_\_(self,x,y,z):

5) self.name=x

6) self.rollno=y

7) self.marks=z

8)

9) def display(self):

10) print("Student Name:{}\nRollno:{} \nMarks:{}".format(self.name,self.rollno,self.marks) )

11)

12) s1=Student("prasanna ",101,80)

13) s1.display()

14) s2=Student("Sunny",102,100)

15) s2.display()

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Output:-

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Student Name: prasanna

Rollno:101

Marks:80

Student Name:Sunny

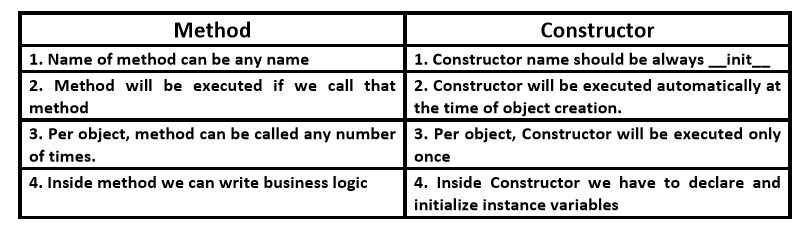
Rollno:102

Marks:100

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\*\*\*\*Differences between Methods and Constructors:\*\*\*:-

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