## Class and Objects

Class:

Class creates a user-defined data structure, which holds its own data members and member functions, which can be accessed and used by creating an instance of that class. A class is like a blueprint for an object.

* Classes are created by keyword **class**.
* Attributes are the variables that belong to a class.
* Attributes are always public and can be accessed using the dot (.) operator. Eg.: Myclass.Myattribute

Object:

An Object is an instance of a Class. Instance is a copy of the class with *actual values*. All the instances share the attributes and the behavior of the class. But the values of those attributes are unique for each object.

## Create a class with an attribute

Create a class named MyClass, with a property named x by assigning value 5

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## Create/Declare an object or instantiating a class

Create an object named p1, and print the value of x

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## The self

* Class methods must have an extra first parameter in the method definition named “self” which implies that the method is belong to the class. We do not give a value for this parameter when we call the method, Python provides it.
* If we have a method that takes no arguments, then we still have to have one argument called self.
* This is similar to this pointer in C++ and this reference in Java.
* When we call a method of this object as myobject.method(arg1, arg2), this is automatically converted by Python into MyClass.method(myobject, arg1, arg2) – this is all the special self is about.

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Output:

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## Instance Method and Static Method

Instance Method is a method that is created inside the class, by default and method does contain “self“ keyword. In order to call this method, require creating an instance of an object .

Static Method is a method that is created inside the class. But before creating the static method, require defining with a decorator called “@staticmethod” and method does not contain “self“ keyword otherwise it is considered as an argument when calling. Static method can call through without creating an object.

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## Declaring variables/properties within the class

Class variables — declare within the class and call with self-keyword.

Local variable — declare local variable within the class method as parameters and can access by passing the arguments.

Global variable — declare outside the class and can directly call them at anywhere.

**When the variables are different:**

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**Output:**

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**When the variables are exactly same:**

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## Creating muliple objects

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## Named Object and Nameless object

Named Object — creates an object by referring a class to access the class methods.

Nameless Object —directly use class to access the class methods.

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## The \_\_init\_\_() Function

This method is always executed when the class is being initiated. Use this method to assign values to object properties or other operations that are necessary to do when the object is being created.

Constructors are used to initializing the object’s state. Like methods, a constructor also contains a collection of statements(i.e. instructions) that are executed at the time of Object creation. It runs as soon as an object of a class is instantiated. The method is useful to do any initialization you want to do with your object.

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**Converting Local Variable into Class Variables**

Local variable can be converted to class variable using “self” keyword.

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Using \_\_init\_\_ constructor, this can be executed. But the arguments have to passed inside the object.

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## How to call current class method in another method

When calling the class method, another class method also requires calling. Therefore, the class method that is going to call through current class method should be defined through “self” keyword. When calling the current class, both methods are executing.

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## Constructor with arguments

After passing the parameter within a constructor, should pass argument within the object to get the result of the constructor.

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* s%—placeholder for string
* d%— placeholder for number(digit)
* f%— placeholder for float
* g%— placeholder for generic number

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## --str-- constructor

Executes automatically when you print reference variable and return only strings

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## --delete-- constructor

This constructor will discard the object when creating an object.

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