Python - Inheritance

Inheritance enables a class to inherit the properties and methods from another class. The class which is being inherited is called base class or parent class. The class which inherits from another class is called derived class or child class. Inheritance provides re usability of a code and adds more features to a class without modifying it.

**Create derived Class**

To create a derived class, it is must to specify the base class when it is created. See the syntax below:

Syntax

**#Base class**

class base\_class:

statements

**#Derived class**

class derived\_class(base\_class):

statements

**Example:**

In the example below, a base class called polygon is created which has two properties called length and breadth. rectangle, a derived class of polygon is also created. The derived class rectangle inherits all properties of base the class polygon.

class polygon:

def \_\_init\_\_(self, length, breadth):

self.length = length

self.breadth = breadth

class rectangle(polygon):

pass

MyRectangle = rectangle(3, 5)

print(MyRectangle.length)

print(MyRectangle.breadth)

The output of the above code will be:

3

5

\_\_init\_\_() function of derived class

In last example, the derived class inherited the object initialization method from its base class. But it can be defined in derived class also. In such situation, \_\_init\_\_() function of derived class will override the \_\_init\_\_() function of base class when a object of derived class is created.

Example:

In the example below, \_\_init\_\_() function of the base class polygon and derived class square are different. polygon class requires two properties to initiate an object: length and breadth. While square class requires one property to initiate an object: side.

The \_\_init\_\_() function of base class polygon is overridden by \_\_init\_\_() function of derived class square. Due to this, object of square class requires one parameter to initialize. In order to inherit the properties and methods of class polygon, it is called inside derived class square to initialize polygon object.

class polygon:

def \_\_init\_\_(self, length, breadth):

self.length = length

self.breadth = breadth

def area(self):

return self.length \* self.breadth

class square(polygon):

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

polygon.\_\_init\_\_(self, side, side)

MySquare = square(3)

print(MySquare.area())

**The output** of the above code will be:

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