Class and Object

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1. **Understand the Python Class**

https://www.learnpython.org/en/Classes_and_Objects

```python
class MyClass:
   variable = "blah"

   def function(self):
      print("This is a message inside the class.")
```

```python
MyClass.variable  //blah

myObj=MyClass()

myObj.variable  //blah

myObj.variable="new data"

myObj.variable  // new data

myObj2=MyClass()
myObj2.variable="data 2"

MyClass.variable  //blah
myObj.variable  //new data
myObj2.variable  // data2
```

2. **Init a Object with value:**
    Below is a class with **constructor**:

```python
class ComplexNumber:
   def __init__(self,r = 0,i = 0):
      self.real = r
      self.imag = i

   def getData(self):
      print("{0}+{1}j".format(self.real,self.imag))

# Create a new ComplexNumber object
c1 = ComplexNumber(2,3)

# Call getData() function
# Output: 2+3j
c1.getData()

# Create another ComplexNumber object
```

```
# and create a new attribute 'attr'
c2 = ComplexNumber(5)
c2.attr = 10

# Output: (5, 0, 10)
print((c2.real, c2.imag, c2.attr))

# but c1 object doesn't have attribute 'attr'
# AttributeError: 'ComplexNumber' object has no attribute 'attr'
c1.attr
```

3. Excises

Calculate area and perimeter of a rectangle:

```python
class Rectangle:
    def __init__(self, width: int= 0, height: int=  0) -> object:
        self.width = width
        self.height = height

    def getArea(self):
        return self.width * self.height
    def getPerimeter(self):
        return  2*(self.width+self.height)
    def printInfo(self):
        print("Rectangle:width="+str(self.width)+";height="+str(self.height))
        print ("Area=", self.getArea())
        print("Perimeter",self.getPerimeter())
```