Class Variables

- A class can have its own set of variables.
- These variables can be accessed through the class or via an object of the class
- Accessing a class variable via an object and updating its value will change the value of the variable ONLY for that object and not in the class
- Accessing and updating a class variable via the class will actually change the value of the class variable.
- Class variables can be used as a counter to keep track of objects created.

```
1  class HouseAtHogwarts:
2
3      selectionMethod = 'The Sorting Hat'     #class variable
4      def __init__(self,name,emblem):
5          self.name = name
6          self.emblem = emblem
7          self.head = None
8
9      def getTeacher(self):
10          return 'Professor ' + self.head.upper()
11
12  #Create instances
13  house1 = HouseAtHogwarts('Gryffindor','Lion')
14  house2 = HouseAtHogwarts('Slytherin', 'Snake')
15
16  #Accessing class variables via class
17  print ("The selection method is {} ".format(HouseAtHogwarts.selectionMethod))
18
19  #Accessing class variables via object
20  print ("The selection method is {} ".format(house1.selectionMethod))
21
22  OUTPUT
23  The selection method is The Sorting Hat
24  The selection method is The Sorting Hat
```

- Updating class variable via class vs updating variable via object

```
1  class HouseAtHogwarts:
2
3      selectionMethod = 'The Sorting Hat'     #class variable
4      def __init__(self,name,emblem):
5          self.name = name
6          self.emblem = emblem
7          self.head = None
8
9      def getTeacher(self):
10          return 'Professor ' + self.head.upper()
11
12  #Create instances
13  house1 = HouseAtHogwarts('Gryffindor','Lion')
14  house2 = HouseAtHogwarts('Slytherin', '
15
16
17  #updating the class variable
18
19  #update at object-level
20  house1.selectionMethod = 'RandomSelection'
21
22  #Variable changes only for the particular object
23  print("The selection method is {} ".format(house1.selectionMethod))
24
25  print("The selection method is {} ".format(house2.selectionMethod))
26
27  OUTPUT
28  The selection method is RandomSelection
29  The selection method is The Sorting Hat
```

- How to know if a variable is class var or object variable?

```
1  print(HouseAtHogwarts.__dict__)
2  print(house1.__dict__)
3
4  OUTPUT:
5  {'__module__': '__main__', 'getTeacher': <function getTeacher at 0x0000000002373E48>, '__init__':
6  {'head': None, 'emblem': 'Lion', 'name': 'Gryffindor'}
```

- Using class variable as object counter

```
1  #OOP Code
2
3  class HouseAtHogwarts:
4
5      count_houses = 0                        #class counter variable
6      def __init__(self,name,emblem):
7          self.name = name
8          self.emblem = emblem
9          self.head = None
10         HouseAtHogwarts.count_houses += 1
11
12     def getTeacher(self):
13         return 'Professor ' + self.head.upper()
14
15  #Create instances
16  house1 = HouseAtHogwarts('Gryffindor','Lion')
17  house2 = HouseAtHogwarts('Slytherin', 'Snake')
18  print("Total no. of houses = {}".format(HouseAtHogwarts.count_houses))
19
20  OUTPUT
21  Total no. of houses = 2
```