

Classes

- is a blueprint or template for objects.
- It is a group of functions and variables that will be common across all objects of that class.

```
1 class Student:
2     pass
3
4 #2 instances of class Student
5 student1 = A()
6 student2 = A()
7
8 #Assign values to attributes of student1
9 student1.name = 'Fred'
10 student1.grades = 'A'
11 student1.house = 'Gryffindor'
12
13 #Assign values to attributes of student2
14 student2.name = 'Padma'
15 student1.grades = 'A'
16 student1.house = 'Ravencław'
```

- In the above example instead of creating attributes for each object one by one, we can assign the attributes at the SAME time when the object is created.
This can be done using the `__init__` method.
- The init method is like a class constructor. It will create an object for the class and assign attributes at the time of its creation. These attributes SHOULD BE COMMON to all objects of the class.
- Example: If Vehicle is a Class, it can have different objects like cars, bikes or trucks. All these types of vehicles will have some common attributes, ex: 1.registration_number
2.num_of_wheels,
3.amount_of_fuel.
These common attributes can be assigned with the init method.

Attributes that belong to specific types, ex:

1. radio for the car
2. max_load for the truck
cannot be in the init method.

```
1 class HouseAtHogwarts:
2     def __init__(self,name,emblem):
3         self.name = name
4         self.emblem = emblem
5         self.head = None
6
7     def getTeacher(self):
8         return 'Professor ' + self.head.upper()
9
10 #create 2 instances
11 house1 = HouseAtHogwarts('Gryffindor','Lion')
12 house1.head = "Mcgonagall"
13
14 house2 = HouseAtHogwarts('Slytherin','Snake')
15 house1.head = "Snape"
16
17 for house in house1,house2:
18     print("{} house has an emblem of a {} and is headed by {}".format(house.name,house.emblem,hou
19
20 #the getTeacher method can be called in 2 ways
21
22 #className.methodName(objectName)
23 print(HouseAtHogwarts.getTeacher(house1))
24
25 #objectName.methodname - > in this case the object is passed implicitly to the method
26 print(house1.getTeacher())
27
28 OUTPUT
29 Gryffindor house has an emblem of a Lion and is headed by Snape
30 Slytherin house has an emblem of a Snake and is headed by None
31 Professor MCGONAGALL
32 Professor MCGONAGALL
```