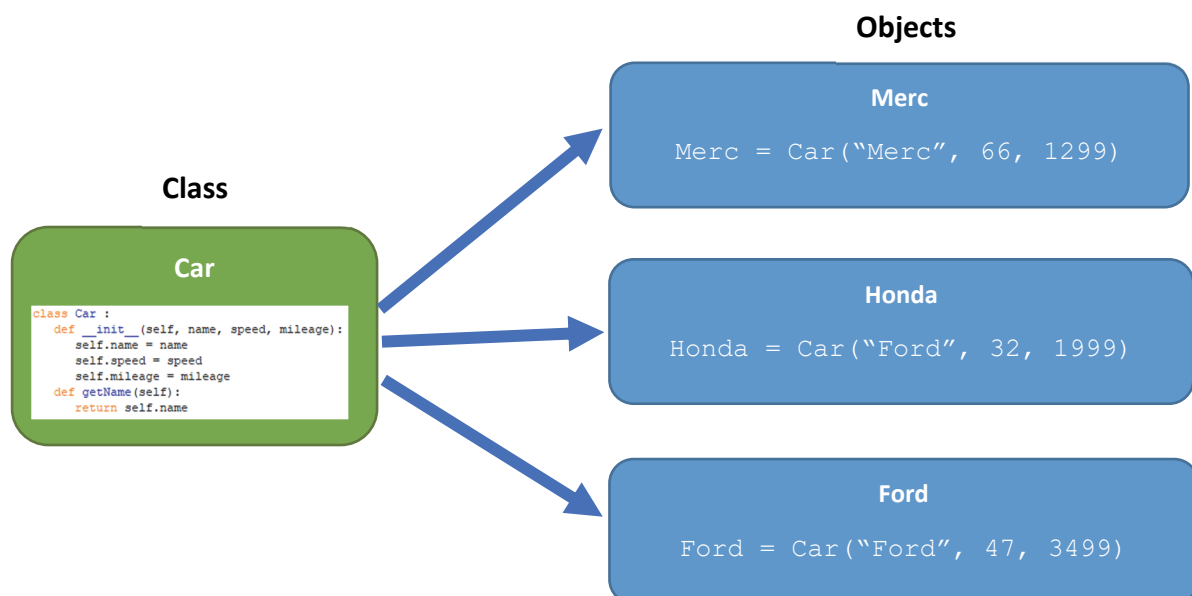# Classes and Objects

A class is a user-defined blueprint or template that defines the attributes (variables) and methods (functions), and contains them all in a single unit called a class. For example, `Car`.

```python
class Car :
    def __init__(self, name, speed, mileage):
        self.name = name
        self.speed = speed
        self.mileage = mileage
    def getName(self):
        return self.name
```

An object is an instance of a class.  So, for example you could use the `Car` class to create some objects such as `Merc`, `Honda`, and `Ford`.

**Merc** = Car("Merc", 66, 1299)

**Objects**

**Class**

**Car**
```python
class Car :
    def __init__(self, name, speed, mileage):
        self.name = name
        self.speed = speed
        self.mileage = mileage
    def getName(self):
        return self.name
```

**Merc**

Merc = Car("Merc", 66, 1299)

**Honda**

Honda = Car("Ford", 32, 1999)

**Ford**

Ford = Car("Ford", 47, 3499)

When an object is created, the Python interpreter automatically calls the __init__() method. This method is called a constructor and is used to initialise the object.

def __init__(self, name, speed, mileage):

Within the __init__() method, we initialise the attributes.

```python
    self.name = name
    self.speed = speed
    self.mileage = mileage
```

Let's take a look at what is happening. In the `__init__()` method, `Self` refers to the instance of the object itself and is automatically passed. Here at the bottom of the diagram below, when we create an object (Merc) from the Car class, we pass some data `name, speed, mileage.`

```
class Car :
    def __init__(self, name, speed, mileage):

        self.name = name

        self.speed = speed

        self.mileage = mileage



Merc = Car('Merc', 66, 1299)
```
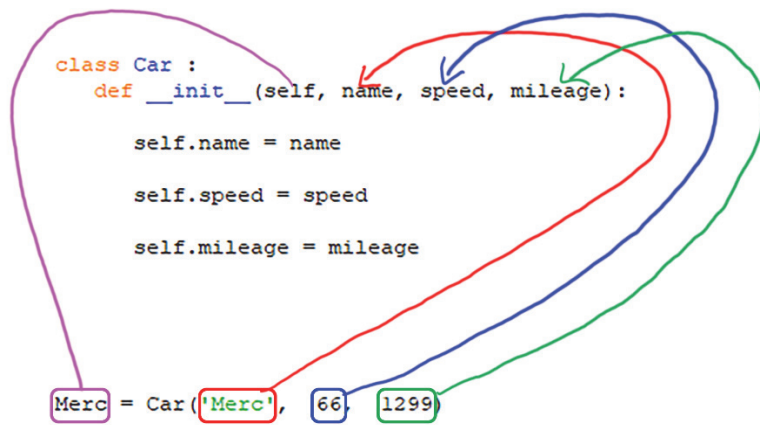
Next we assign the attributes passed to the `__init__()` method to the attribute of the object.

```
class Car :
    def __init__(self, name, speed, mileage):

        self.name = name

        self.speed = speed

        self.mileage = mileage
```

We can use the object of a class to perform actions. For example:

`Ford.getName()`

or

`Ford.speed = 66`