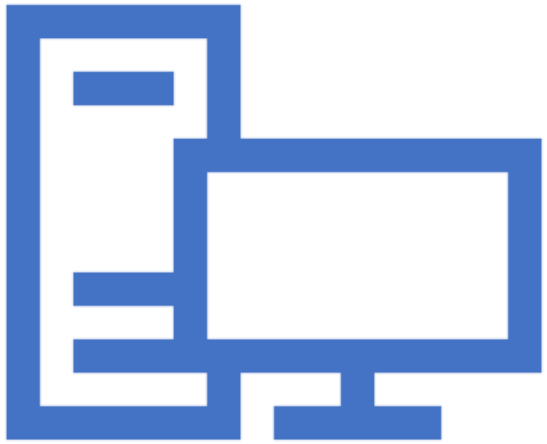
PROGRAMMING SKILLS II

~ ANURUDDHA ABEYSINGHE

Lecture 04

Foundation Certificate in IT – Curtin Batch

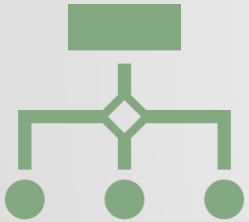


CLASSES AND OBJECTS

LECTURE 04

CONTENT

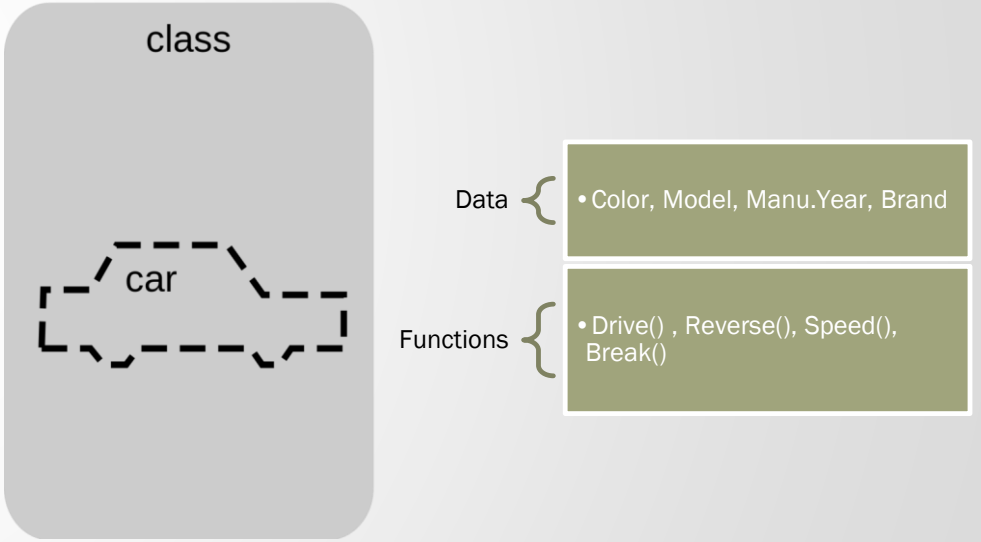
WHAT IS A CLASS?



A data structure that includes both data and functions

A template for objects that share common characteristics.

Simply a ***class is a blueprint that defines the variables and the methods common to all objects of a certain kind.***



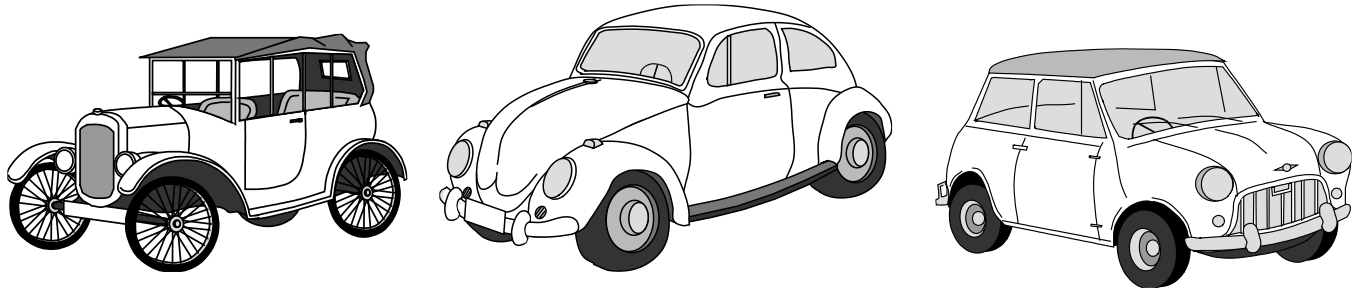
CLASS NOTATION

```
class ClassName
{
   //Fields, operations and properties go here
   ...
}
```

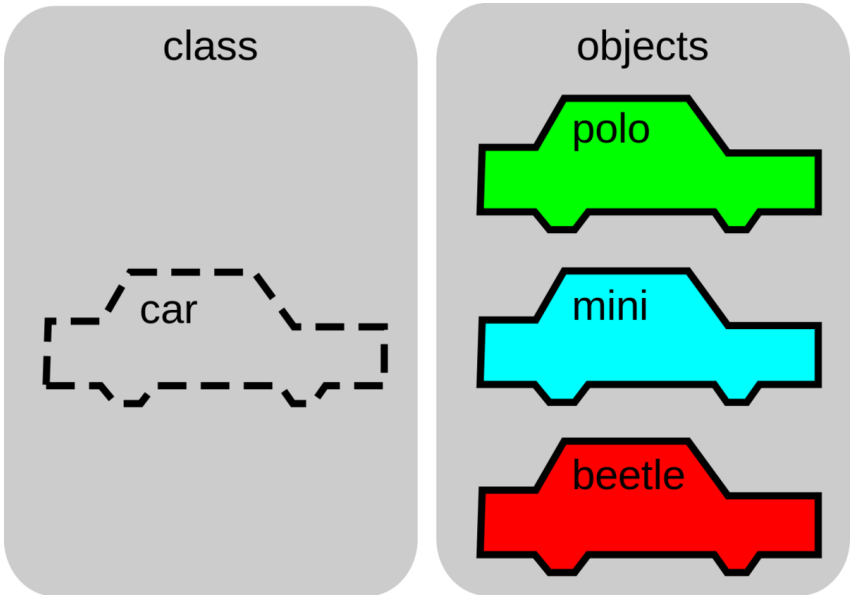
EXAMPLE:

```
class Car
{
   string color, model, brand;
   int year;

   void drive();
   void speed();

}
```

WHAT IS AN OBJECT?

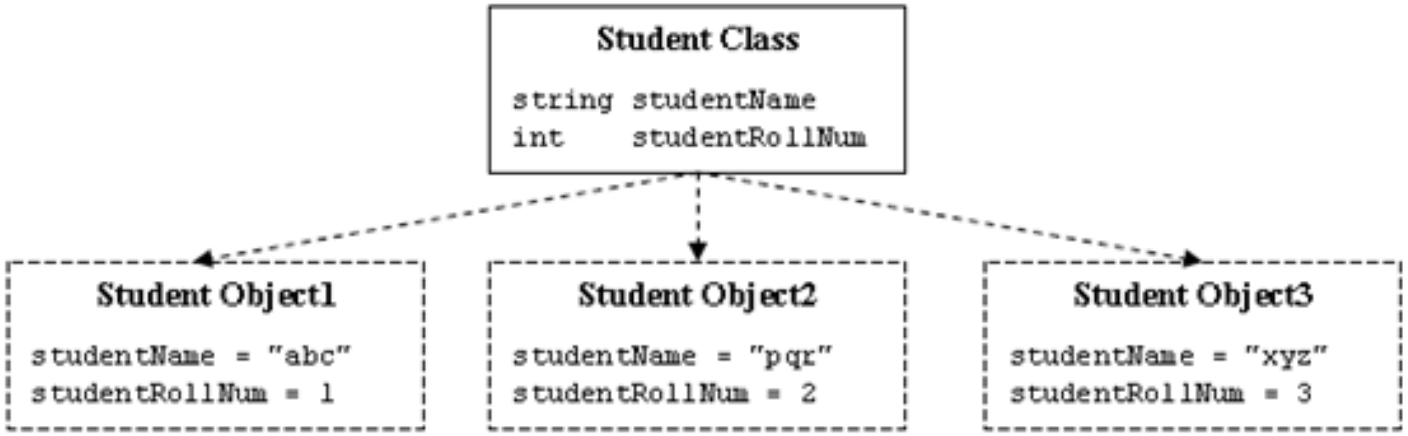


- An object is an instance of a class
- When a program is executed, the objects interact by sending messages to one another
- Objects exhibit:
  - Identity: Objects are distinguishable from one another
  - Behaviour: Objects can perform tasks
  - State: Objects store information



OBJECTS

- An object is created in the memory using the keyword ’new’ and is referenced by an identifier called a "reference".



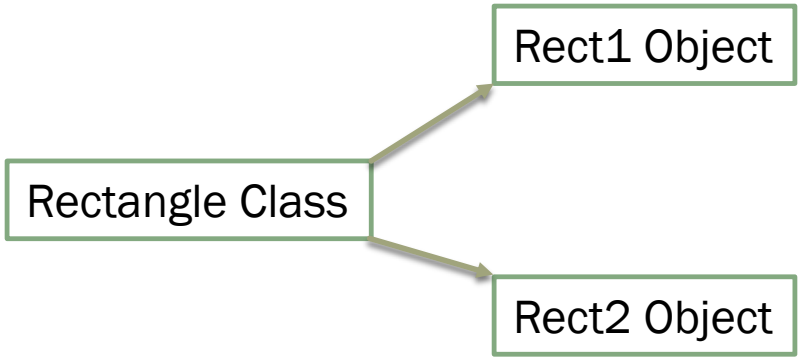
Example: Student Object1 = new Student();
Student Object2 = new Student();
Student Object3 = new Student();

EXERCISE :

- Create a class called “Rectangle”. Then create 2 variables as height and width to hold height and with length.
- Create 2 Objects naming *rect1* and *rect2*, and assign the values as follows.

	Height	width
rect1	10	15
rect2	8	6

ASSIGNING VALUES TO VARIABLES USING METHODS



//Creating an object

Rectangle rect1 = new Rectangle();

//Calling the method using the object

rect1.height = 15;

rect1.setData(15,10);

CONSTRUCTOR

Purpose of a constructor is to assign values to the instance variables at the runtime.

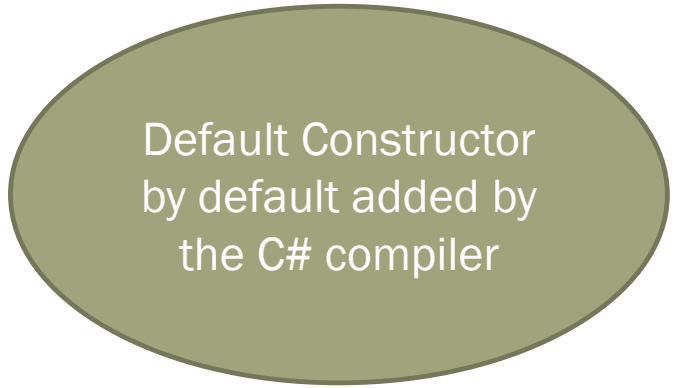
- ✓ Constructor has the same name as the class
- ✓ No return type

- C# has two constructors
  1. Default constructor
  2. Parameterized constructor.

C# DEFAULT CONSTRUCTOR

- constructor which has no argument is known as default constructor. It is invoked at the time of creating object.

```
public class Car {
   int modelYear;
   String modelName;

   public Car() {

    }
}
```



PARAMETERIZED CONSTRUCTOR.

```
public class Car {
  int modelYear;
  String modelName;

  public Car(int year, String name) {
    modelYear = year;
    modelName = name;
  }
```

Purpose of a constructor is to assign values to the instance variables at the runtime

Part A

Write a C# class called PowerBank which contain the following attributes and methods.

Attributes:

- MaH– float type
- USBType – string type
- Brand-string type

Constructor Method:

Create a constructor method to assign the values to the attributes.

Methods:

- double getMiliAmp(double mval)

returns the calculated answer of the following formula as a double value

$$\text{Milli Amp Hours} = \text{MaH}^{mVal}$$

Hint : Power Can be Taken from Math.Pow(a.b) function

Part B

i. Write a C# code segment in the main() method to create an object from the PowerBank class by passing the attributes to the constructor from the user inputs.

ii. Call getMiliAmp() method from the main() method by passing appropriate value that your prefer from the user input.

Final Exam Pass Paper Questioncv

Let's Discuss this at the Labs

THANK YOU

SEE YOU ON

NEXT WEEK..!!