Class and Objects:

Class:

- Class is a blueprint or template from which objects are created.
- Object is an instance (i.e. example) of class.

  Why we write a class:
  - Java is an object-oriented programming language.
  - To create an object first, we need to define the properties which that object should have.
  - These properties and behavior which we want to impart to the object are declared in class. Hence class is called as blueprint of objects.

  Coding standard for class name:
  - Usually class are nouns
  - Class name starts with uppercase letter.
  - If using multiple words, then each first letter of word should start in uppercase.

    For ex. class Student, class String, class StringBuffer, class StundentInformation etc.

  Type of classes:
  1) Build in classes
  2) User defined classes

1) Build in classes:

- Java language has provided set of predefined classes within predefined package.
- This classes are required commonly in all type of projects hence they are provided by default in java.
- Majorly used building classes are:
  1. java.lang.String
  2. java.lang.Exception
  3. java.lang.Object
  4. java.lang.Class
  5. java.util.Date
  6. java.util.Scanner
  7. java.util.HashMap
  8. java.util.ArrayList ….etc…

2) **Custom defined classes:**
   - This is user defined classes which are created by user as per their project requirement.

How to declare a class:

Syntax:

<**Access Specifier**> **class** <**Class Name**>{
    //class body here
}

For ex. public class Employee{}

Components of class:

a) Fields:
   - Fields are used to define the properties of the object of class.
   - Fields are declared within class body.
   - Fields also means variables.
     For ex.

```
public class Student{
    private double percent;
    private int rollNum;
}
```

b) Methods:
   - Method is a collection of statement which defines a behavior of class object.

c) Constructor:
   - Consturctors are special type of method which are used for object creation.

d) Blocks:
   - Whenever we want to execute some code during class loading or object creation then we use blocks.
   - There are two blocks in java. Static blocks and instance blocks.

e) Nested / Inner class:
   - A class within a class in called as Inner class.

Rules for class:

i. A java class must have a class keyword.
ii. Class name must start with uppercase and if using more than one word then each starting letter of word should be upper case.
iii. There should not be any space or special character in class name. Only allowed special character are $ and _ (underscore).
iv. Java class can only have public or default access specifier.
v. A class can extend only one parent class. By default all the class in java extends java.lang.Object class directly or indirectly.
vi. Class can implement any number of interfaces separated by commas.
vii. Class containing main method is known as main class and is the entry point of any java program.

Objects:

1) Object is a real world entity which has its own property/state and behavior.
2) So object contains of the following things:
   a) State:
      This is represented by the attribute and properties of object
   b) Behaviour:
      This is defined by the methods of the object.
      For ex.
      Mobile is an object which has :
      State/property such as colour, model number, ram,etc
      Behaviour such as calling, messaging, etc.

How to create an Object:

Syntax:

<Class Name> <object name> = new <Class Name>();

For ex.

If there is a student class then to create object of student class :

Student student = new Student();

Hello World Program:
Open IDE
Select File -> New -> Project -> Under Java select Java Project -> Under Project Name ->Enter any name you wish -> Finish

Right click on project name -> New -> Class -> Under Name enter the class name you wish -> Finish

Program:

```
public class Demo {

	public static void main(String [] args) {
		System.out.println("Hello World");
	}

}
```

Output :
Hello World