CLASS AND OBJECT IN JAVA

Velocity Notes

Java Class And Object

- Class is a template or blueprint from which object can be created.

- It represents the set of properties or methods that are common to all objects of one type.

- Object is instance of class.

- Class can only be accessed from outside via its instance.

Why Do we write class?

- If we want to design something in java, then we must do it inside class only because class contains variables and methods.

Built-in classes in java

These are the classes which comes in bundled with in predefined packages of java

Some of the built-in class which we use commonly are

I.   java.lang.String
II.   java.lang.System
III. java.lang.Exception
IV.   java.lang.Object
V.   java.lang.Thread
VI.   java.util.Arrays
VII. java.util.Date
VIII. java.util.HashMap
IX.   java.util.ArraysList
X.   java.util.Iterator

User defined /Custom class

These are the classes which is created by user, and it contains the class members as defined by the user

```
<Access Specifier> class <class_name> {

//class body here.

}
```

```
public class Demo {

//Class Body

}
```

Java class generally consist of following elements

1.Fields: field of class is used to define the properties or state attribute of a class object.

2.Method: Method in java is collection of statement which determines the behavior of class object.

3.Constructor: constructor in Java is a special method that is used to initialize objects

4.Block: A block in Java is a set of code enclosed within curly braces { } within any class, method, or constructor.

5.Nested class: In Java, it is possible to define a class within another class, such classes are known as nested classes.
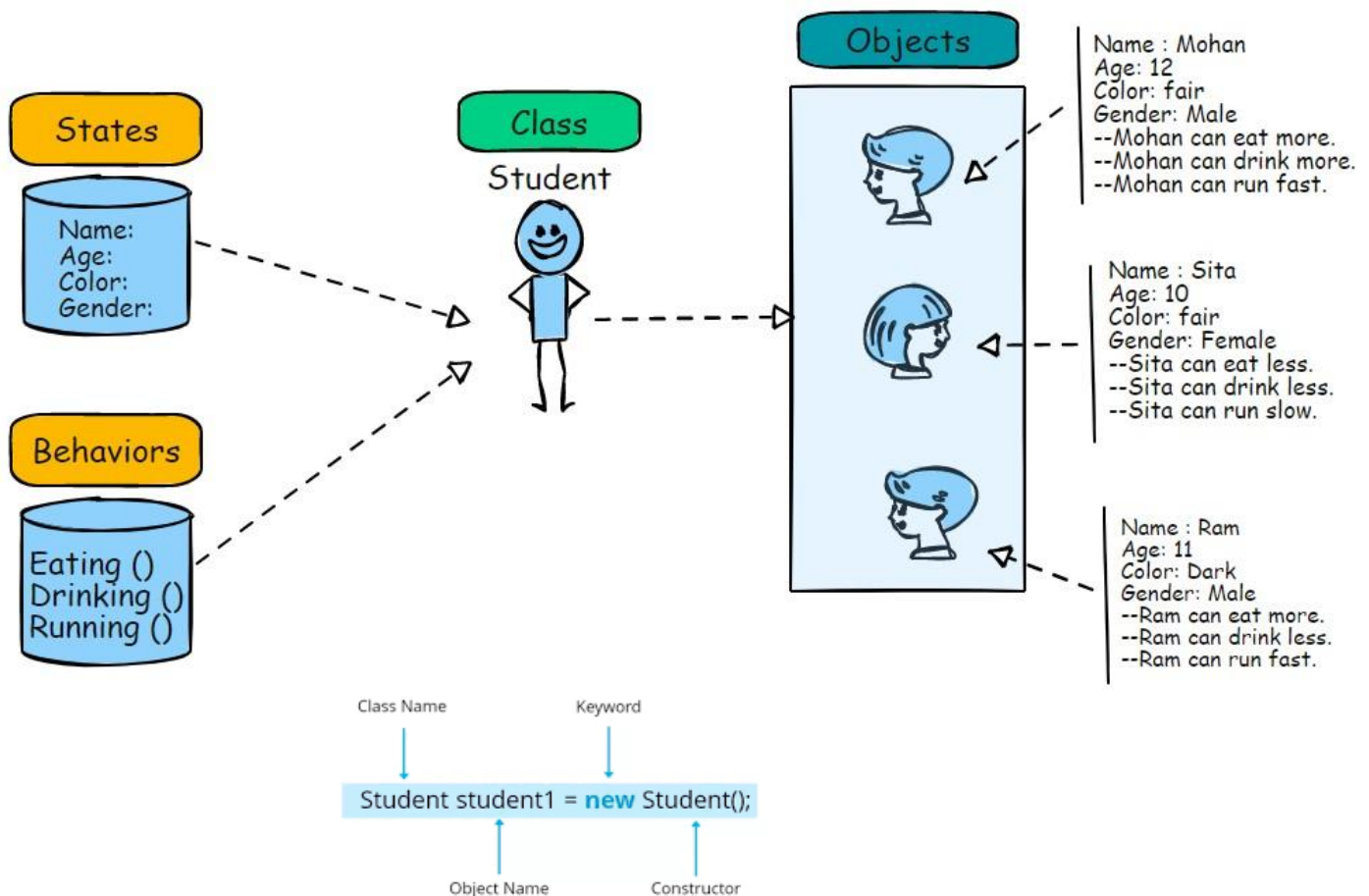
Rules for creating class

1. A java class must have the **class** keyword followed by the **class name**.
2. The **class name must start with a capital letter** and if you are using more than one word to define the class name **every 1st letter of the word must be made capital**.
3. There should not be any spaces or special character used in a class name except "_" And $ sign.
4. Java class can only have **"public"** or **"default"** access specifier.
5. Class members must be always declared with in {}
6. Class containing main method is known as the main class as it will act as the entry point to your program.
7. It can only extend one parent class by default.
8. All classes extend java.lang.Object directly or indirectly.
9. A class can implement any number of interfaces separated by comas.

Java Object

- Object is a real-world entity which has its own state and behavior.
- Were,
  State: is represented by an attribute/ properties of an object.
  Behavior: is represented by the method of an object.
- Java program can have many objects as required.

Diagram to understand class and object

How to create object from class

As mentioned previously, a class provides the blueprints for objects. So basically, an object is created from a class. In Java, the new keyword is used to create new objects.

There are three steps when creating an object from a class −

Declaration − A variable declaration with a variable name with an object type.

Instantiation − The 'new' keyword is used to create the object.

Initialization − The 'new' keyword is followed by a call to a constructor. This call initializes the new object.

Hello world program


```
text file named HelloWorld.java
                    name            main() method
public class HelloWorld
{
    public static void main(String[] args)
    {
        // Prints "Hello, World" in the terminal window.
        System.out.print("Hello, World");
    }                                        statements
}                                                body
```

Command Prompt

```
C:\Users\praveen bhosle\Desktop>javac HelloWorld.java

C:\Users\praveen bhosle\Desktop>java HelloWorld
Hello World

C:\Users\praveen bhosle\Desktop>
```