



SYNTAX
TECHNOLOGIES

JAVA

Class 11

Agenda

Object and Class in Java

Method in Java

OOPS Concept in JAVA

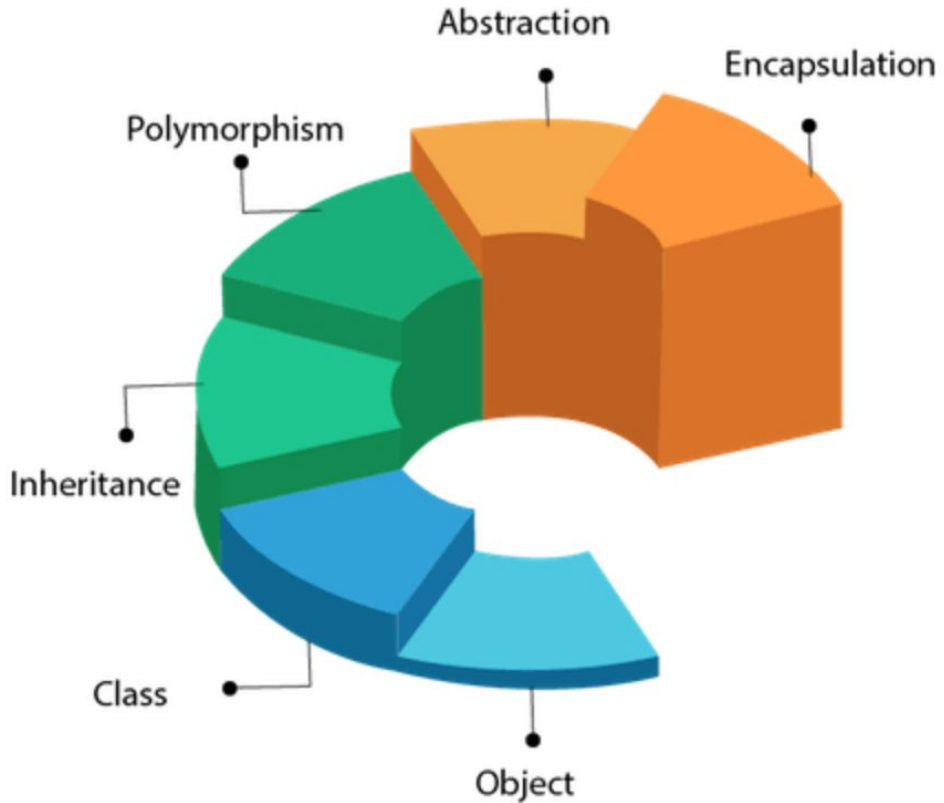
Java is an Object-Oriented Language

The popular object-oriented languages are Java, C#, PHP, Python, C++, etc.

Object-Oriented Programming is a methodology or paradigm to design a program using classes and objects. It simplifies the software development and maintenance

OOPS Concept in JAVA

OOPs (Object-Oriented Programming System)



Class

A class is a user defined blueprint from which objects are created.

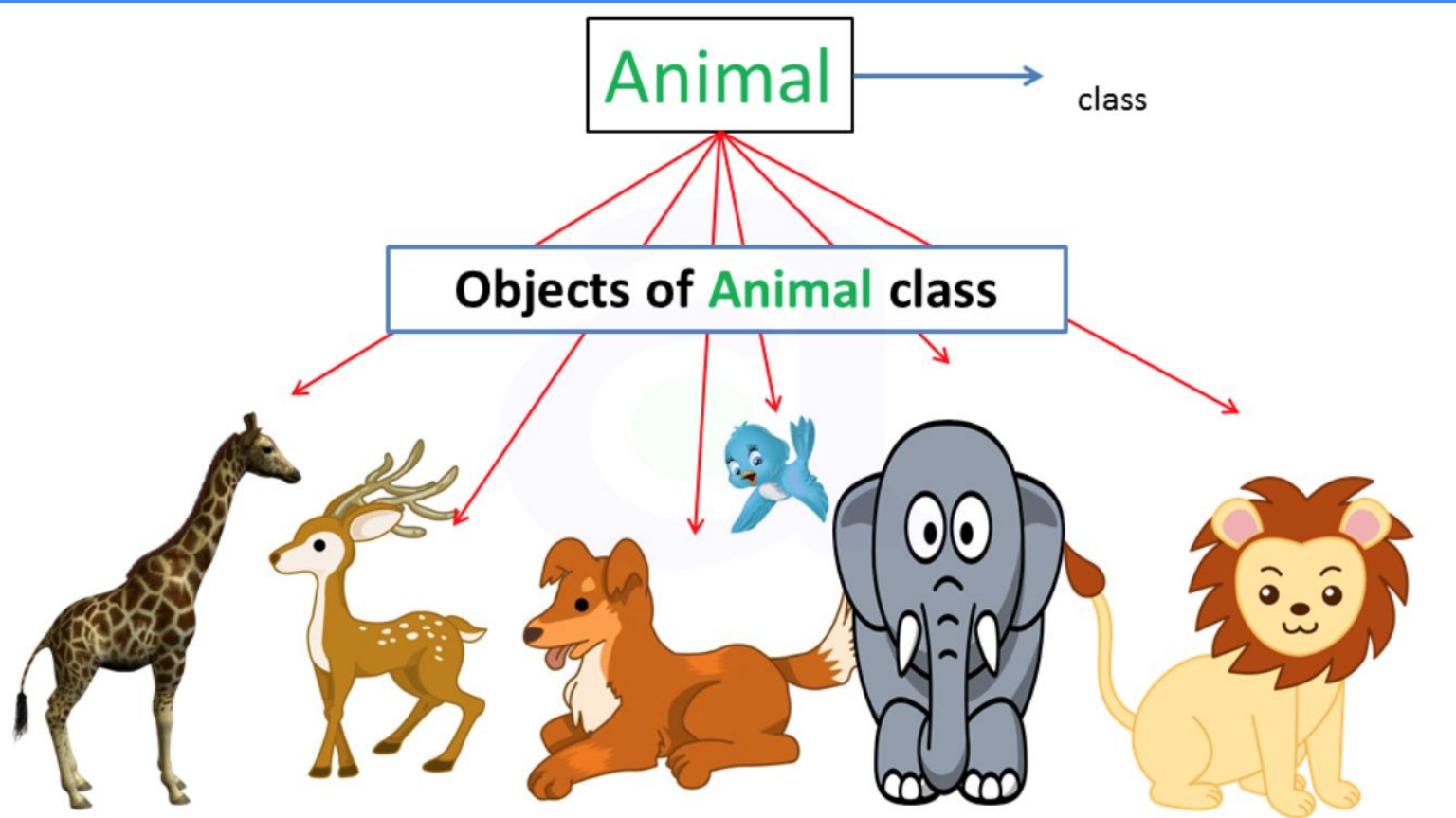
Class is template for creating different objects which defines its features and behaviours.

In order to create an object you need a class

A class contains variables , methods, constructors etc

You can have multiple objects for the same class

Class



Class

Furniture

Furniture is class

These are Objects
Of **furniture** class

1. Chair
2. Table
3. Bed
4. Etc.

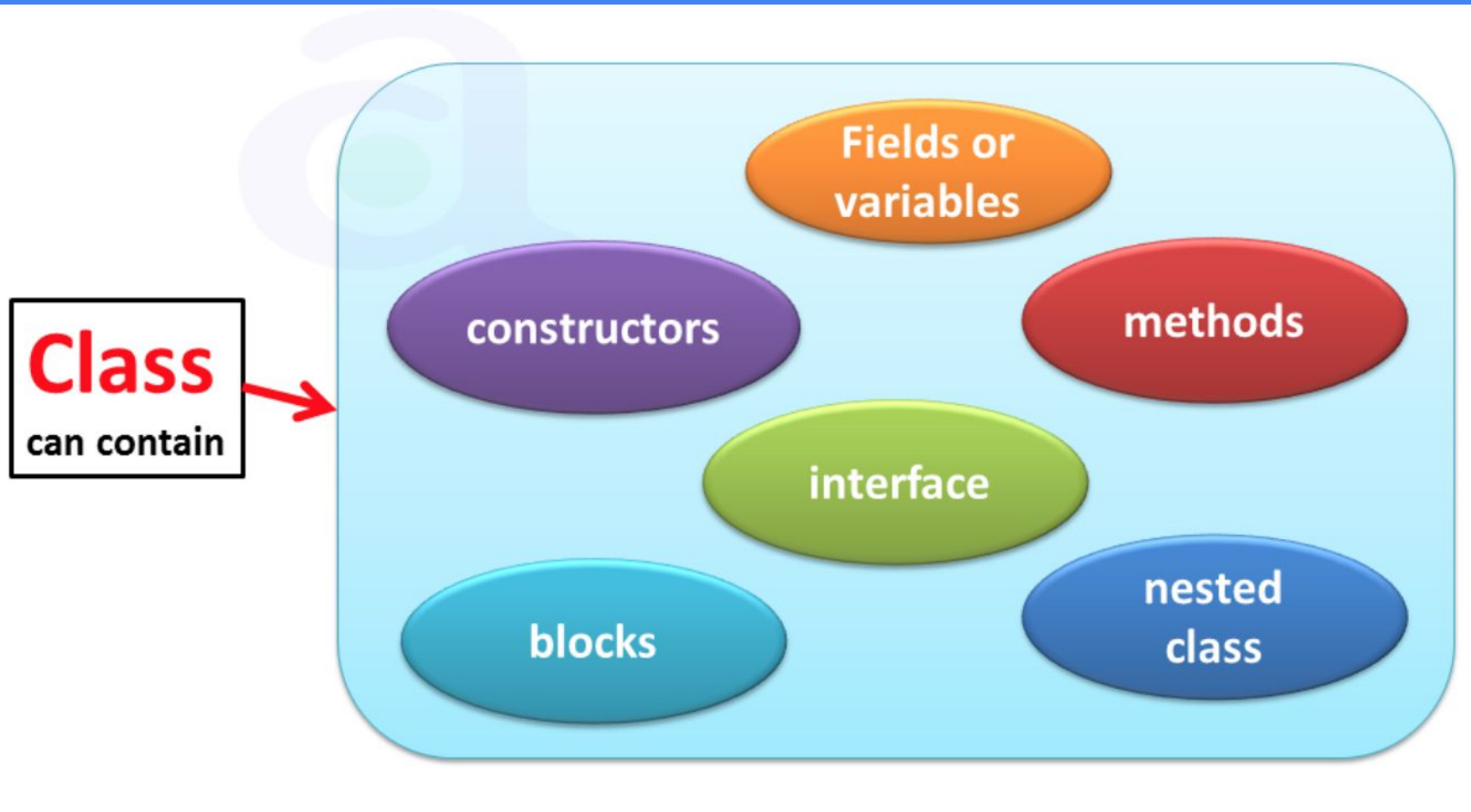
Class

```
class Class_name {  
    field or variable ;  
    method like main() and others ;  
}
```

A class in Java can contain:

- variables
- methods
- constructors
- blocks
- nested class and interface

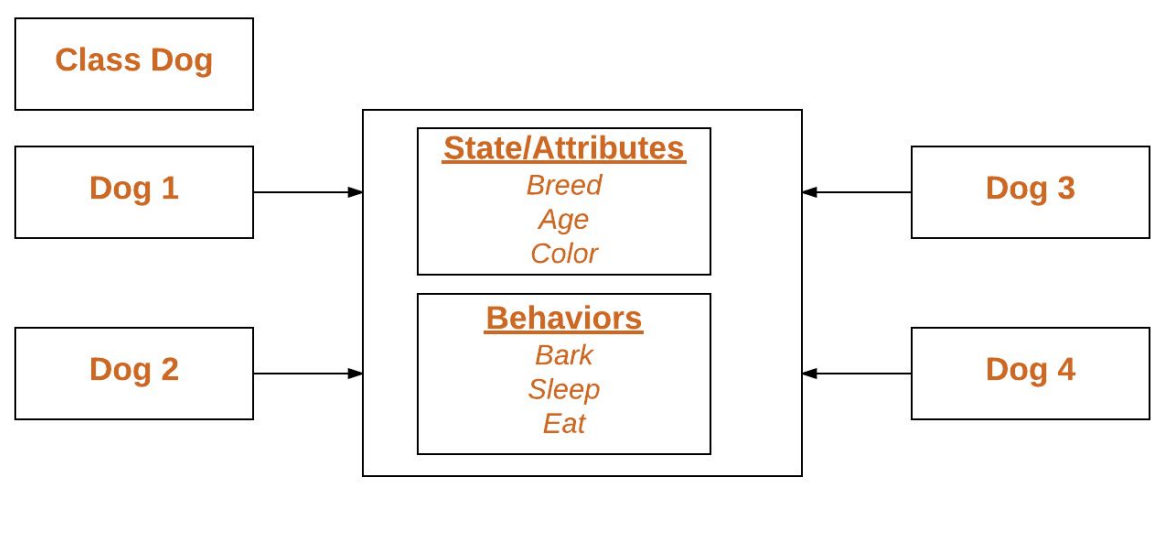
Class



Class

Declaring Objects (Also called instantiating a class)

When an object of a class is created, the class is said to be instantiated. All the instances share the attributes and the behavior of the class



Object

Object is a basic unit of Object Oriented Programming and represents the real life entities.

An object consists of :

State: It is represented by attributes of an object. It also reflects the properties of an object.

Behavior: It is represented by methods of an object. It also reflects the response of an object with other objects.

Identity: It gives a unique name to an object and enables one object to interact with other objects.

Example of an object : chair, pen, table, keyboard, bike, etc

Object

Any entity that has state and behavior is known as an object

They have **states** and **behaviors**.

Examples of states and behaviors

Example 1:

Object: House

State: Address, Color, Area

Behavior: Open door, close door

Example 2:

Object: dog

State: like color, name, breed,

Behavior: wagging the tail, barking, eating, etc.

Object

Software objects and a real-world objects have very similar characteristics.

Software objects also have a state and a behavior. A software object's state is stored in variables and behavior is shown via methods.

So in software development, methods operate on the internal state of an object and the object-to-object communication is done via methods.



Breed: Bulldog
Size: large
Colour: light gray
Age: 5 years

Dog1Object



Breed: Beagle
Size: large
Colour: orange
Age: 6 years

Dog2Object



Breed: German Shepherd
Size: large
Colour: white & orange
Age: 6 years

Dog3Object

Dog

Fields

Breed
Size
Colour
Age

Methods

Eat()
Run()
Sleep()
Name()

Example

```
public class Dog {  
  
    // instance variable  
    String breed;  
    String size;  
    String color;  
    int age;  
  
    public static void main(String[] args) {  
        // create object here  
        Dog Dog1Object = new Dog();  
        Dog Dog2Object = new Dog();  
        Dog Dog3Object = new Dog();  
  
        // Data input for Dog Object 1  
        Dog1Object.breed = "Beagle";  
        Dog1Object.size = "Large";  
        Dog1Object.color = "Light Gray";  
        Dog1Object.age = 5;  
  
        // Data input for Dog Object 2  
        Dog2Object.breed = "Bulldog";  
        Dog2Object.size = "Large";  
        Dog2Object.color = "Orange";  
        Dog2Object.age = 6;  
  
        // Data input for Dog Object 3  
        Dog3Object.breed = "German Shepherd";  
        Dog3Object.size = "large";  
        Dog3Object.color = "white and Orange";  
        Dog3Object.age = 6;  
    }  
}
```

Method in Java

- A Java method is a collection of statements that are grouped together to perform an operation
- Method describes behavior of an object
- Method contains a block of code
- You can say a method is a subprogram that acts on data and often returns a value.
- **Java methods must be located inside a Java class.**

Task

1. Create a Class “Phone”. Create 3 Objects of it: iPhone, Android, Nokia with specific attributes and behaviors.
2. Create a Dog Class and create 3 different objects of it: Husky, Bulldog, Labrador with specific attributes and behaviors.