

# Class and Objects in Java

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## 1. Class in Java

### Definition:

A class is a blueprint or template for creating objects. It defines the structure (variables) and behavior (methods) that the objects created from it will have.

### Syntax:

```
class ClassName {  
    // Fields (variables)  
    dataType variableName;  
  
    // Methods  
    returnType methodName() {  
        // code  
    }  
}
```

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### Relatable Program (Example):

```
class Car {  
    String color;  
    int speed;  
  
    void start() {  
        System.out.println("Car is starting...");  
    }  
  
    void stop() {  
        System.out.println("Car is stopping...");  
    }  
}
```

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## 2. Object in Java

### Definition:

An object is an instance of a class. It represents a real-world entity and holds actual values defined by the class structure.

Syntax:

```
ClassName objectName = new ClassName();
```

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Relatable Program (Example using above class):

```
public class Main {  
    public static void main(String[] args) {  
        Car myCar = new Car(); // Creating an object  
        myCar.color = "Red";  
        myCar.speed = 100;  
  
        System.out.println("Car Color: " + myCar.color);  
        System.out.println("Car Speed: " + myCar.speed);  
        myCar.start();  
        myCar.stop();  
    }  
}
```

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### 3. Difference Between Class and Object

Class	Object
A blueprint or template	A real-world instance of the class
Does not occupy memory	Occupies memory when created
Declared using `class` keyword	Created using `new` keyword
Describes properties and behaviors	Has actual properties and behaviors
Example: class Car {}	Example: Car myCar = new Car();