Java Inheritance

Topics : JAVA
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Java inheritance is a mechanism that allows a class to inherit properties and behaviors from another class. Inheritance is one of the fundamental concepts of object-oriented programming and is used to create hierarchical relationships between classes.

In Java, a class can inherit from one (and only one) superclass using the `extends` keyword. The superclass is the class being inherited from, and the subclass is the class that inherits from it.

Here's an example of a simple `Vehicle` class and a `Car` subclass that inherits from it:

```java
public class Vehicle {
    protected String make;
    protected String model;

    public Vehicle(String make, String model) {
        this.make = make;
        this.model = model;
    }

    public void start() {
        System.out.println("Starting the vehicle...");
    }

    public void stop() {
        System.out.println("Stopping the vehicle...");
    }
}

public class Car extends Vehicle {
    private int numDoors;

    public Car(String make, String model, int numDoors) {
        super(make, model);
        this.numDoors = numDoors;
    }

    public void drive() {
        System.out.println("Driving the car...");
    }
}
```

```
}
```

In this example, the `Vehicle` class has two instance variables (`make` and `model`) and two methods (`start()` and `stop()`). The `Car` class extends `Vehicle` using the `extends` keyword and adds a new instance variable (`numDoors`) and a new method (`drive()`).

Note that the `Car` class calls the `super()` method in its constructor to call the `Vehicle` constructor and pass in the `make` and `model` parameters. This is necessary because the `make` and `model` instance variables are declared as `protected` in the `Vehicle` class, which means they can only be accessed by subclasses.

Now, we can create instances of the `Car` class and call its methods:

```
Car myCar = new Car("Toyota", "Corolla", 4);
myCar.start();
myCar.drive();
myCar.stop();
```

This code creates a new `Car` object with the make "Toyota", model "Corolla", and 4 doors. We can call the `start()`, `drive()`, and `stop()` methods on this object, which will call the corresponding methods in the `Vehicle` class.

In summary, inheritance is a mechanism in Java that allows a subclass to inherit properties and behaviors from a superclass. The subclass can add new properties and behaviors and override or extend the ones inherited from the superclass.