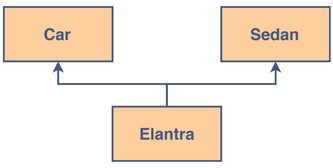
What Is Multiple Inheritance?

When a class is derived from more than a single base class, i.e. when a class has more than one immediate parent classes, it is an instance of **Multiple Inheritance**. **Example:**

- A Hyundai `Elantra` **IS A** `Car`
- A Hyundai `Elantra` **IS A** `Sedan` as well



How to Implement

As mentioned earlier, in Java, a class can't extend from more than one class. So the question arises, "*how can we implement multiple inheritance?*"

The answer to the above question is ***Interfaces***. In Java, *multiple inheritance* can be implemented using interfaces.

> A class can `implement` more than one interfaces and an interface can `extend` from more than one interfaces.

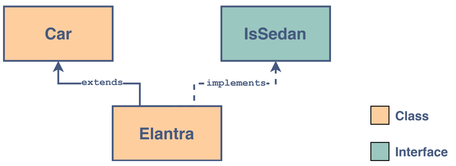
So in this way, we can achieve multiple inheritance in Java.

An Example

Let's implement the example of Elantra given at the start of the lesson. This example can be implemented using:

- A base *class* named `Car`
- An *interface* named `IsSedan`
- An `Elantra` class derived from `Car` and implementing `IsSedan`

The above illustration then becomes:



Below is the implementation:

```
class Car {  // Base class

  private int model;  // Common features of all cars
  private String manufacturer;

  public Car(int model, String manufacturer) {  // Constructor
    this.model = model;
    this.manufacturer = manufacturer;
  }

  public void printDetails() {

    System.out.println("The model of " + getClass().getSimpleName() + " is: " + model);
    System.out.println("The manufacturer of " + getClass().getSimpleName() + " is: " + manufacturer);
  }

}  // End of Car class

interface IsSedan {  // Interface for sedans

  int bootSpace = 420;  // Sedans have boot space

  void bootSpace();    // Every sedan must implement this

}  // End of IsSedan interface

class Elantra extends Car implements IsSedan {  // Elantra is a Car and is a Sedan also

```

Run Save Reset

Now that we've implemented multiple inheritance, let's take a look at the differences between an interface and an abstract class.

Interface vs Abstract Class

Interfaces and abstract classes are both used to achieve abstraction but with some of the key differences:

Interfaces	Abstract Classes
Support multiple inheritance	Don't support multiple inheritance
All members are `public`	Can have `private`, `protected` and `public` members
All data members are `static` and `final`	Can have non-static and non-final members too
Can't have constructors	Constructors can be defined