

Inheritance in Java

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Inheritance in java is a mechanism in which one object acquires all the properties and behaviors of parent object.

The idea behind inheritance in java is that you can create new classes that are built upon existing classes. When you inherit from an existing class, you can reuse methods and fields of parent class, and you can add new methods and fields also.

Inheritance represents the **IS-A relationship**, also known as *parent-child* relationship.

Why use inheritance in java

- For Method Overriding (so runtime polymorphism can be achieved).
- For Code Reusability.

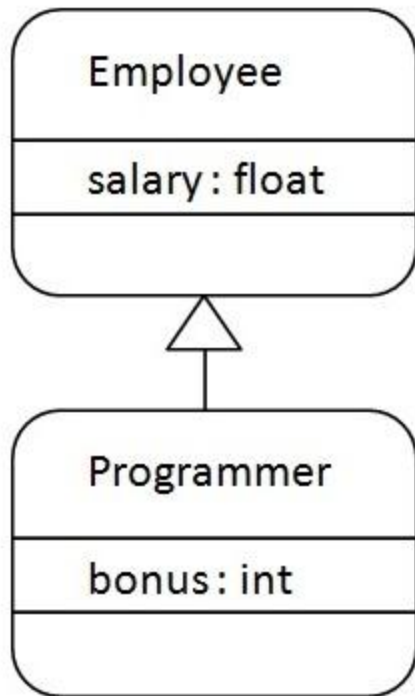
Syntax of Java Inheritance

1. **class** Subclass-name **extends** Superclass-name
2. {
3. //methods and fields
4. }

The **extends keyword** indicates that you are making a new class that derives from an existing class. The meaning of "extends" is to increase the functionality.

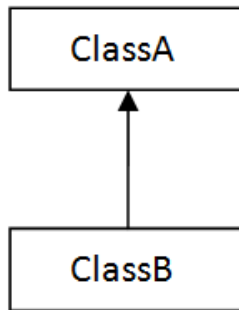
In the terminology of Java, a class which is inherited is called parent or super class and the new class is called child or subclass.

Java Inheritance Example

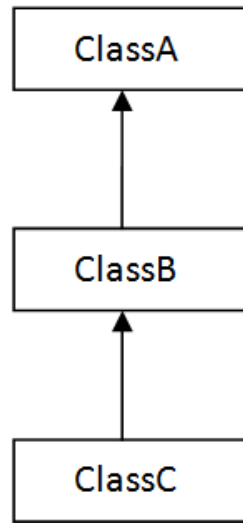


```
1. class Employee{
2.   float salary=40000;
3. }
4. class Programmer extends Employee{
5.   int bonus=10000;
6.   public static void main(String args[]){
7.     Programmer p=new Programmer();
8.     System.out.println("Programmer salary is:"+p.salary);
9.     System.out.println("Bonus of Programmer is:"+p.bonus);
10.    }
11.    }
```

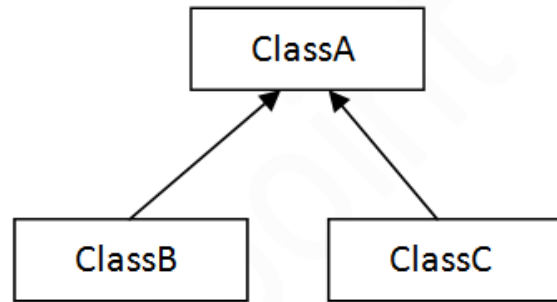
Types of Inheritance



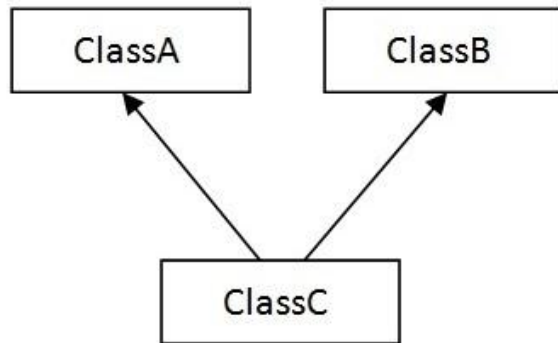
1) Single



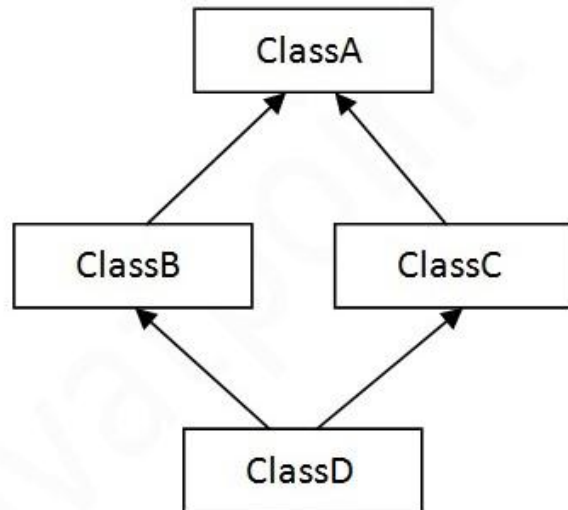
2) Multilevel



3) Hierarchical



4) Multiple



5) Hybrid

Single Inheritance Example

File: TestInheritance.java

```
1. class Animal{
2.   void eat(){System.out.println("eating...");}
3. }
4. class Dog extends Animal{
5.   void bark(){System.out.println("barking...");}
6. }
7. class TestInheritance{
8.   public static void main(String args[]){
9.     Dog d=new Dog();
10.    d.bark();
11.    d.eat();
12. }}
```

Output:

```
barking...
eating...
```

Multilevel Inheritance Example

File: TestInheritance2.java

```
1. class Animal{
2. void eat(){System.out.println("eating...");}
3. }
4. class Dog extends Animal{
5. void bark(){System.out.println("barking...");}
6. }
7. class BabyDog extends Dog{
8. void weep(){System.out.println("weeping...");}
9. }
10. class TestInheritance2{
11. public static void main(String args[]){
12. BabyDog d=new BabyDog();
13. d.weep();
14. d.bark();
15. d.eat();
16. }}
```

Output:

```
weeping...
barking...
eating...
```