BCA – 401: Java Programming

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In today's Class we have discussed on Types of Inheritance in Java.

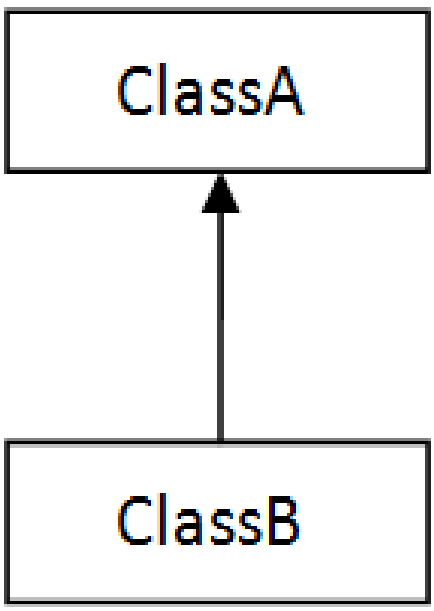
Types of inheritance in java:-

On the basis of class, there can be three types of inheritance in java: single, multilevel and hierarchical.

In java programming, multiple and hybrid inheritance is supported through interface only. We will learn about interfaces later.

Single Inheritance:-

When a class inherits another class, it is known as a single inheritance.



1) Single

Example:-

In the example given below, Dog class inherits the Animal class, so there is the single inheritance.

```
class Animal
{
void eat()
{
System.out.println("eating...");
}
}
class Dog extends Animal
{
void bark()
{
System.out.println("barking...");
}
}
class TestInheritance
{
public static void main(String args[])
{
```

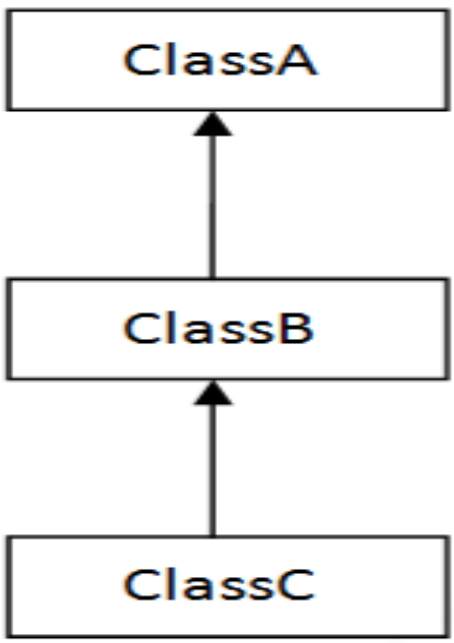
```
Dog d=new Dog();
d.bark();
d.eat();
}
}
```

Output:-

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

Multilevel Inheritance:-

When there is a chain of inheritance, it is known as multilevel inheritance.



2) Multilevel

Example:-

As you can see in the example given below, BabyDog class inherits the Dog class which again inherits the Animal class, so there is a multilevel inheritance.

```
class Animal
{
void eat()
{
System.out.println("eating...");
}
}
class Dog extends Animal
{
void bark()
{
System.out.println("barking...");
}
}
class BabyDog extends Dog
{
void weep(){System.out.println("weeping...");
```

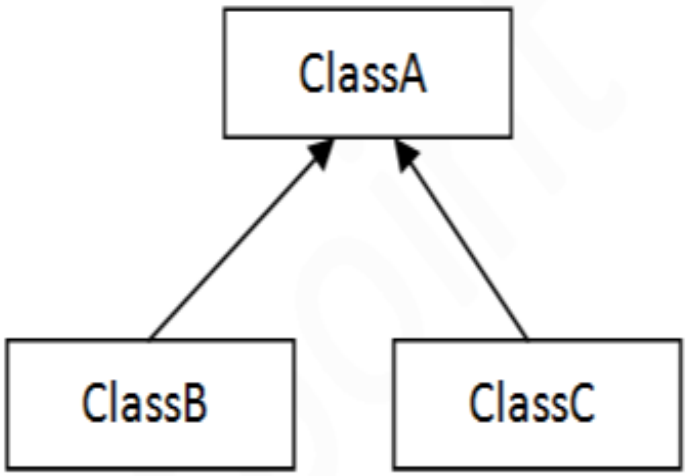
```
}
}
class TestInheritance2
{
public static void main(String args[])
{
BabyDog d=new BabyDog();
d.weep();
d.bark();
d.eat();
}
}
```

Output:-

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

Hierarchical Inheritance:-

When two or more classes inherits a single class, it is known as hierarchical inheritance.



3) Hierarchical

Example:-

In the example given below, Dog and Cat classes inherits the Animal class, so there is hierarchical inheritance.

```
class Animal
{
void eat()
{
System.out.println("eating...");
}
}
class Dog extends Animal
{
```

```
void bark()
{
System.out.println("barking...");
}
}
class Cat extends Animal
{
void meow()
{
System.out.println("meowing...");
}
}
class TestInheritance3
{
public static void main(String args[])
{
Cat c=new Cat();
c.meow();
c.eat();
//c.bark();          //C.T.Error
```

}

}

Output:-

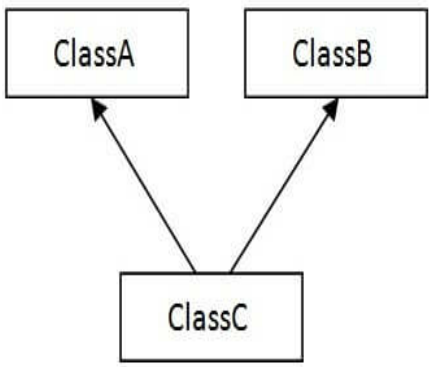
meowing...

eating...

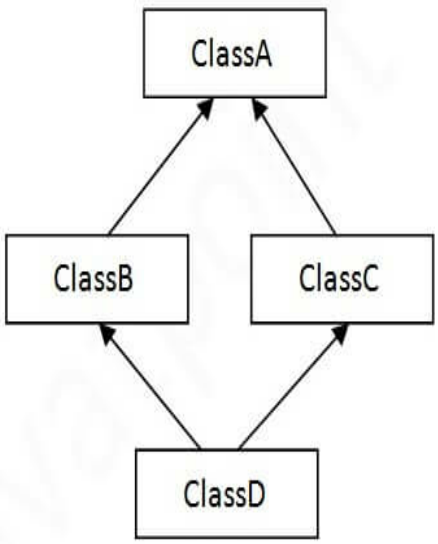
Why multiple inheritance is not supported in java?

To reduce the complexity and simplify the language, multiple inheritance is not supported in java.

Consider a scenario where A, B, and C are three classes. The C class inherits A and B classes. If A and B classes have the same method and you call it from child class object, there will be ambiguity to call the method of A or B class.



4) Multiple



5) Hybrid

Since compile-time errors are better than runtime errors, Java renders compile-time error if you inherit 2 classes. So whether you have same method or different, there will be compile time error.

Example:-

```
class A
{
void msg()
{
System.out.println("Hello");
}
}
class B
{
void msg()
{
System.out.println("Welcome");
}
}
class C extends A,B
{
```

```
//suppose if it were
 public static void main(String args[])
{
   C obj=new C();
   obj.msg();   //Now which msg() method would be invoked?
}
}
```

Output:-

Compile Time Error