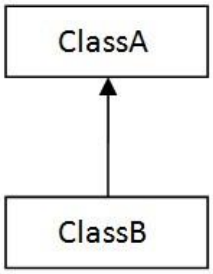
Types Of Inheritance

There are five types of inheritance;

1. Single Inheritance

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

Diagram:-



1) Single

Example Code:-

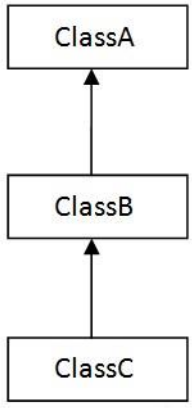
```
class Animal {
    public void eat() {
        System.out.println(“eating...”);
    }
}

class Dog extends Animal {
    public void bark() {
        System.out.println(“barking...”);
    }
}

class TestingInheritance {
    public static void main(String args[]) {
        Dog bzzo = new Dog();
```

```
        buzzo.eat();
        buzzo.bark();
    }
}
```

2. Multilevel Inheritance

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

Diagram:-



2) Multilevel

Example Code:-

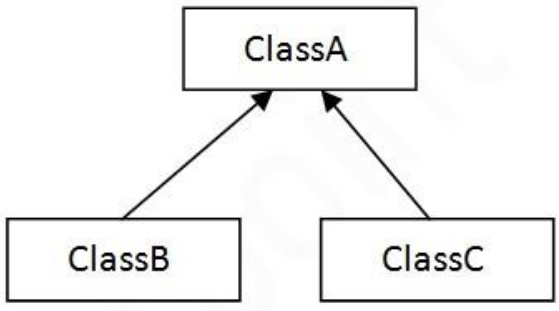
```
class Animal {
    public void eat() {
        System.out.println(“eating...”);
    }
}

class Dog extends Animal {
    public void bark() {
        System.out.println(“barking...”);
    }
```

```
}

class BabyDog extends Dog {
    public void weep() {
        System.out.println(“weeping...”);
    }
}

class TestingInheritance {
    public static void main(String args[]) {
        BabyDog bzzo = new BabyDog();

        buzzo.eat();
        buzzo.bark();
        buzoo.weep();
    }
}
```

3. Hierarchical Inheritance

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

Diagram:-



3) Hierarchical

Example Code:-

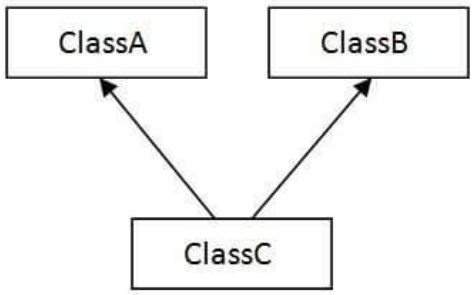
```
class Animal {
    public void eat() {
        System.out.println(“eating...”);
    }
}

class Dog extends Animal {
    public void bark() {
        System.out.println(“barking...”);
    }
}

class Cat extends Animal {
    public void meow() {
        System.out.println(“meowing...”);
    }
}

class TestingInheritance {
    public static void main(String args[]) {
//      Object of Dog – Child class
        Dog bzzo = new Dog();
        buzzo.eat();
        buzzo.bark();

//      Object of Cat – Child class
        Cat manno = new Cat();
        manno.eat();
        manno.meow();
    }
```

```
}
```

4. Multiple Inheritance

When one class extends more than one classes then this is called multiple inheritance. For example: Class C extends class A and B then this type of inheritance is known as multiple inheritance. This inheritance is not supported by .NET Languages like C#, F#, etc., and Java Language.

Diagram:-



4) Multiple

Q: Why Java can't support Multiple inheritance?

Java doesn't allow multiple inheritance to avoid the ambiguity caused by it, to reduce the complexity and simplify the language.

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 e.g., Diamond problem.

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.

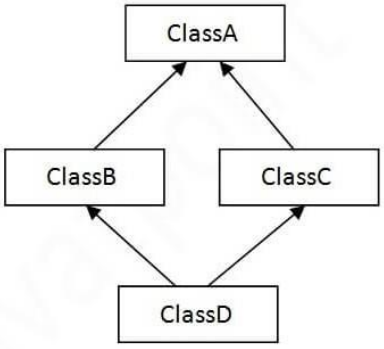
Q: What is the difference between Multilevel and Multiple inheritance?

Multiple Inheritance	Multilevel Inheritance
Definitions	
Multiple Inheritance is an Inheritance type where a class inherits from more than one base class.	Multilevel Inheritance is an Inheritance type that inherits from a derived class, making that derived class a base class for a new class.
Usage	
Multiple Inheritance is not widely used because it makes the system more complex.	Multilevel Inheritance is widely used.
Class Level	
Multiple Inheritance has two class levels namely, base class and derived class.	Multilevel Inheritance has three class levels namely, base class, intermediate class and derived class.

5. Hybrid Inheritance

This is a combination of more than one inheritance. This inheritance is also not supported by .NET Languages like C#, F#, etc., and Java Language.

Diagram:-



5) Hybrid