

Inheritance : Reusability



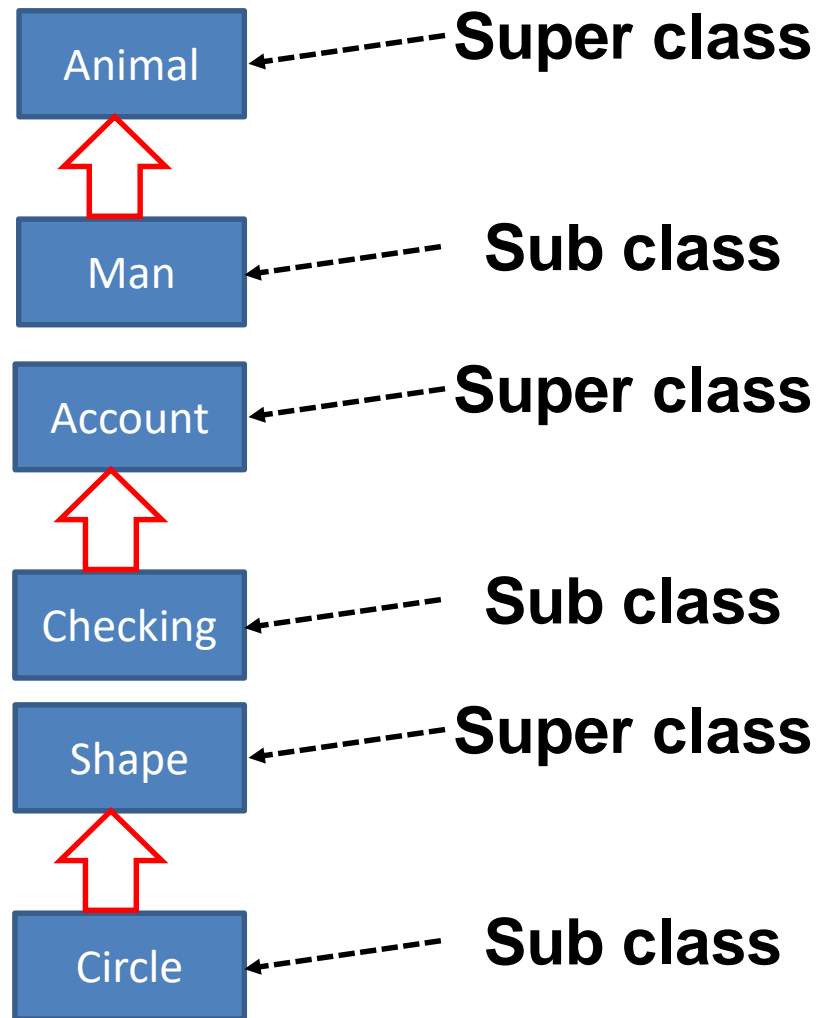
[https://en.wikipedia.org/wiki/Inheritance_\(object-oriented_programming\)](https://en.wikipedia.org/wiki/Inheritance_(object-oriented_programming))

- Process by which an object of one class acquires properties of an object of other class
- Supports Reusability of code and data
- Inheritance Supports isA relationship
- The class whose properties are extended is known as *super class (in Java) or base class (in C++) or parent class.*
- The class which extends the properties of super class is known as *sub class (in Java) or derived class (in C++) or child class*

Inheritance : Some Simple Examples



- Man isA Animal
- Checking isA kind of Account
- Circle isA Type of Shape



Inheritance in Java



```
class Animal
{
```

// Define the Basic Properties of Every Animal

```
} // End of class Animal
```

```
class Man extends Animal
{
```

// Define the properties that are specifically for Man

```
} // End of class Man
```

<<Super Class>>

Animal



Man

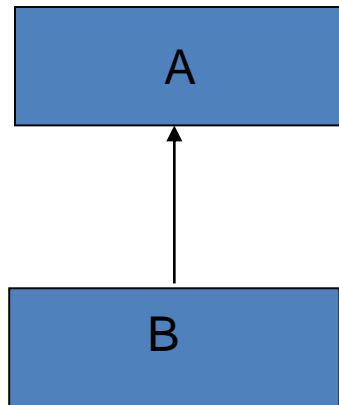
<<Sub Class>>

Types of Inheritance

- Single Level Inheritance
- Hierarchical Inheritance
- Multi-Level Inheritance
- Multiple Inheritance

Types of Inheritance : Single Level

Single Level Inheritance



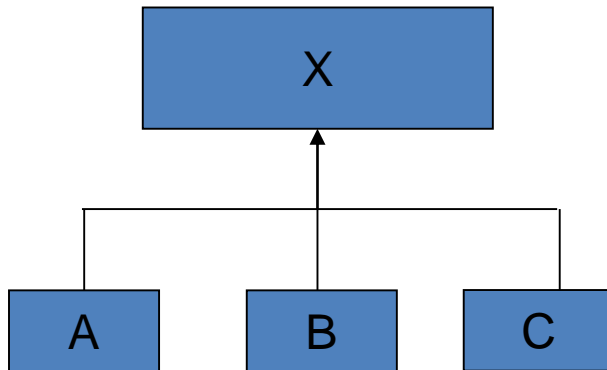
```
class A
{
    ....
} // End of class A

class B extends A
{
    .....
} // End of class B
```



Types of Inheritance : Hierarchical

Hierarchical Level Inheritance



```
class X
{
    ....
} // End of class X
```

```
class A extends X
{
    ....
} // End of class A
```

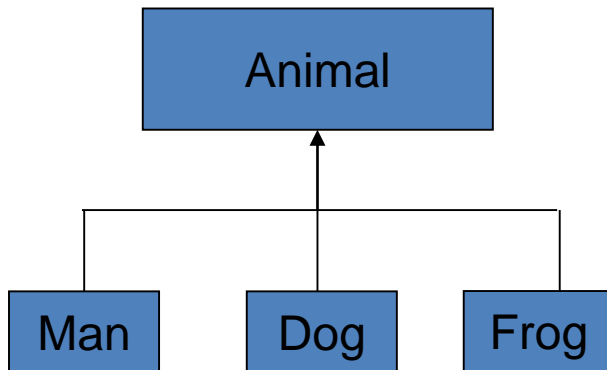
```
class B extends X
{
    ....
} // End of class B
```

```
class C extends X
{
    ....
} // End of class C
```



Types of Inheritance : Hierarchical

Hierarchical Level Inheritance



```
class Animal
{
    ....
} // End of class Animal

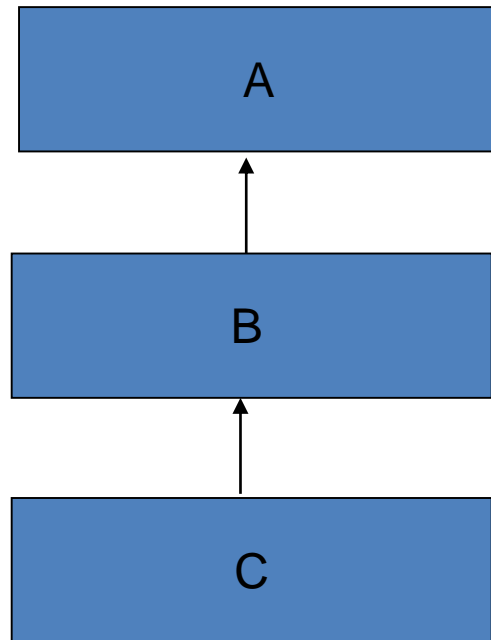
class Man extends Animal
{
    ....
} // End of class Man

class Dog extends Animal
{
    ....
} // End of class Dog

class Frog extends Animal
{
    ....
} // End of class Frog
```

Types of Inheritance : Multi-Level

Multi Level (Tree) Inheritance



```
class A
{
    .....
} // End of class A

class B extends A
{
    .....
} // End of class B

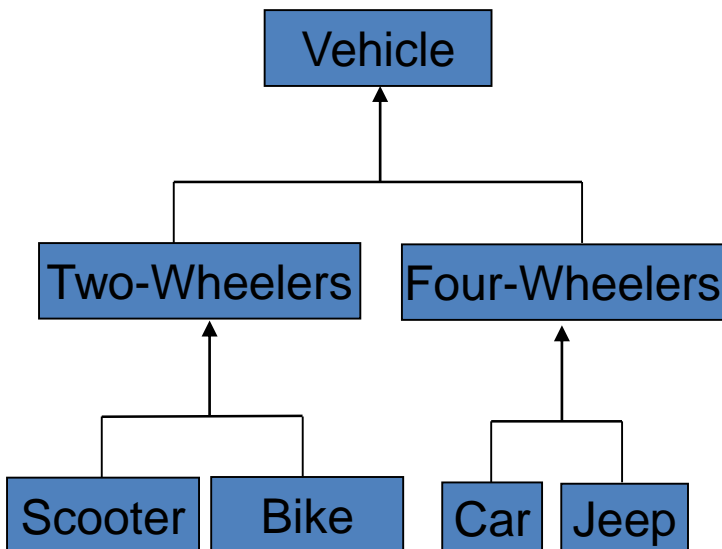
class C extends B
{
    .....
} // End of class C
```



Types of Inheritance : Multi-Level



Multi Level (Tree) Inheritance



```
class Vehicle
{
    .....
}

// End of class Vehicle
class Two-Wheeler extends Vehicle
{
    .....
}

// End of class Two-Wheeler
class Four-Wheeler extends Vehicle
{
    .....
}

// End of class Four-Wheeler
class Scooter extends Two-Wheeler
{
    .....
}

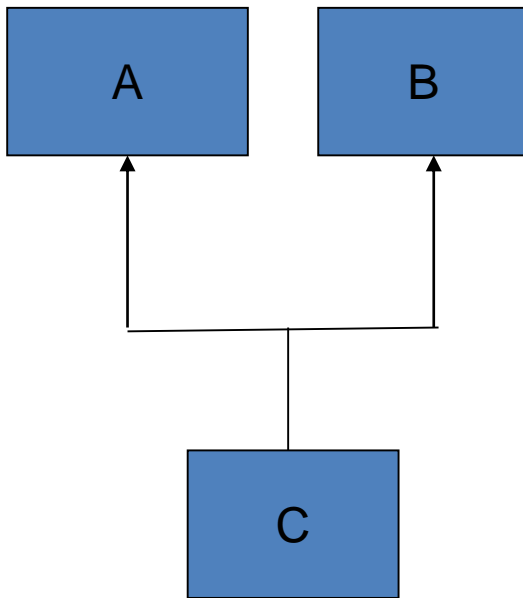
// End of class Scooter

.....
```

Types of Inheritance : Multiple



Multiple Inheritance



**Not Supported in
Java Directly**

```
class A
{
    ....
} // End of class A
class B
{
    ....
} // End of class B
class C extends A, B
{
    ....
} // End of class C
```

**Wrong
Not Allowed in
Java**

Thank You