Inheritance in JAVA

Inheritance is a mechanism wherein a new class is derived from an existing class. In Java, classes may inherit or acquire the properties and methods of other classes.

A class derived from another class is called a subclass, whereas the class from which a subclass is derived is called a superclass. A subclass can have only one superclass, whereas a superclass may have one or more subclasses.

Inheritance is the process wherein characteristics are inherited from ancestors. Similarly, in Java, a subclass inherits the characteristics (properties and methods) of its superclass (ancestor).

For example, a vehicle is a superclass and a car is a subclass. The car (subclass) inherits all of the vehicle’s properties. The inheritance mechanism is very useful in code reuse.

The following are some limitations of Java class inheritance:

1. A subclass cannot inherit private members of its superclass.
2. Constructor and initializer blocks cannot be inherited by a subclass.
3. A subclass can have only one superclass.

The keyword “extends” is used to derive a subclass from the superclass, as illustrated by the following syntax:

**Class Name\_of\_subclass extends Name\_of superclass** **{ //new fields and methods that would define the subclass go here }**

If you want to derive a subclass Rectangle from a superclass Shapes, you can do it as follows: **class Rectangle extends Shapes { …. }**

Program 1: - Inheritance Simple Example

1. Parent class is the super class of child class.
2. Child class is the sub-class of Parent class.
3. So child class extends the methods of Parent class.

**public** **class** Parent

{

**public** **void** P1()

{

System.*out*.println("This is parent class output");

}

}

**public** **class** Child **extends** Parent

{

**public** **void** C1()

{

System.*out*.println("This is child class output");

}

**public** **static** **void** main(String[] args)

{

Child CObj = **new** Child();

CObj.P1();

CObj.C1();

}

}

Result:-

This is parent class output

This is child class output

Program 2: - Inheritance Simple Example

* Animal is the superclass of Bird class.
* Animal is the superclass of Dog class.
* Bird and Dog are subclasses of Animal class.

**public** **class** Animal

{

**public** **void** animalsleep() {

System.*out*.println("An animal sleeps...");

}

**public** **void** animaleat() {

System.*out*.println("An animal eats...");

}

}

**public** **class** Bird **extends** Animal

{

**public** **void** birdsleep() {

System.*out*.println("A bird sleeps...");

}

**public** **void** birdeat() {

System.*out*.println("A bird eats...");

}

}

**public** **class** Dog **extends** Animal

{

**public** **void** dogsleep() {

System.*out*.println("A dog sleeps...");

}

**public** **void** dogeat() {

System.*out*.println("A dog eats...");

}

}

**public** **class** MainClass

{

**public** **static** **void** main(String[] args)

{

Animal animal = **new** Animal();

Bird bird = **new** Bird();

Dog dog = **new** Dog();

System.*out*.println();

animal.animalsleep();

animal.animaleat();

bird.birdsleep();

bird.birdeat();

dog.dogsleep();

dog.dogeat();

}

}

**Result:-**

An animal sleeps...

An animal eats...

A bird sleeps...

A bird eats...

A dog sleeps...

A dog eats...

Program 3: - Inheritance Simple Example

**public** **class** InheritanceParent

{

**public** String abc=**null**;

**public** String xyz=**null**;

**public** **void** parentMethod()

{

System.*out*.println("Output of Inheritance :"+abc);

System.*out*.println("Output of Second Inheritance :"+xyz);

}

}

**public** **class** InheritanceChild **extends** InheritanceParent

{

**public** **void** childMethod()

{

abc="This is inheritance java program";

xyz="This is child class where extends used";

System.*out*.println("This is child method");

parentMethod();

}

**public** **static** **void** main(String[] args)

{

InheritanceChild ic=**new** InheritanceChild();

ic.childMethod();

}

}

**Result:-**

This is child method

Output of Inheritance :This is inheritance java program

Output of Second Inheritance :This is child class where extends used