



**Vidyavardhini's College of Engineering and Technology**

**Department of Artificial Intelligence & Data Science**

Experiment No. 8
Implement a program on Single Inheritance.
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**Aim:** To implement the concept of single inheritance.

**Objective:** Ability to design a base and child class relationship to increase reusability.

### Theory:

Single inheritance can be defined as a derived class to inherit the basic methods (data members and variables) and behavior from a superclass. It's a basic is-a relationship concept exists here. Basically, java only uses a single inheritance as a subclass cannot extend more superclass.

Inheritance is the basic properties of object-oriented programming. Inheritance tends to make use of the properties of a class object into another object. Java uses inheritance for the purpose of code-reusability to reduce time by then enhancing reliability and to achieve run time polymorphism. As the codes are reused it makes less development cost and maintenance. Java has different types of inheritance namely single inheritance, multilevel, multiple, hybrid. In this article, we shall go through a basic understanding of single inheritance concept briefly in java with a programming example. Here we shall have a complete implementation in java.

### Syntax:

The general syntax for this is given below. The inheritance concepts use the keyword 'extend' to inherit a specific class. Here you will learn how to make use of extending keyword to derive a class. An extend keyword is declared after the class name followed by another class name. Syntax is,

```
class base class
{.... methods
}
class derived class name extends base class
{
methods ... along with this additional feature
}
```

Java uses a keyword 'extends' to make a new class that is derived from the existing class. The inherited class is termed as a base class or superclass, and the newly created class is called derived or subclass.



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The class which gives data members and methods is known as the base class and the class which takes the methods is known as child class.

### Code:

```
class Vehicle {
    void start() {
        System.out.println("The vehicle starts.");
    }

    void stop() {
        System.out.println("The vehicle stops.");
    }
}

class Car extends Vehicle {
    void honk() {
        System.out.println("The car honks: Beep Beep!");
    }
}

public class SingleInheritanceExample {
    public static void main(String[] args) {
        Car myCar = new Car();
        myCar.start();
        myCar.honk();
        myCar.stop();
    }
}
```

### OUTPUT:

```
The vehicle starts.
The car honks: Beep Beep!
The vehicle stops.
```

### Conclusion:

The program of single inheritance in Java demonstrates how a subclass can extend the functionality of a superclass while maintaining a clear and organized structure. By creating a base class that defines common attributes and behaviors, and a derived class that inherits and builds upon those characteristics, we can promote code reuse and enhance maintainability. This concept not only simplifies code management but also facilitates a better understanding of relationships between classes. Overall, single inheritance is a fundamental aspect of object-oriented programming in Java, laying the groundwork for more complex design patterns and structures.