

Inheritance

1. Write a Java program to implement the concept of inheritance.
2. Write a Java program to show method overloading.
3. Write a Java program to show method overriding.
4. Write a Java program to show method hiding.
5. Create a general class ThreeDObject and derive the classes Box, Cube, Cylinder and Cone from it. The class ThreeDObject has methods wholeSurfaceArea () and volume (). Override these two methods in each of the derived classes to calculate the volume and whole surface area of each type of three-dimensional objects. The dimensions of the objects are to be taken from the users and passed through the respective constructors of each derived class. Write a main method to test these classes.
6. Write a program to create a class named Vehicle having protected instance variables regnNumber, speed, color, ownerName and a method showData () to show "This is a vehicle class". Inherit the Vehicle class into subclasses named Bus and Car having individual private instance variables routeNumber in Bus and manufacturerName in Car and both of them having showData () method showing all details of Bus and Car respectively with content of the super class's showData () method.
7. An educational institution maintains a database of its employees. The database is divided into a number of classes whose hierarchical relationships are shown below. Write all the classes and define the methods to create the database and retrieve individual information as and when needed.
Write a driver program to test the classes.
Staff (code, name) Teacher (subject, publication) is a Staff
Officer (grade) is a Staff Typist (speed) is a Staff
RegularTypist (remuneration) is a Typist CasualTypist (daily wages) is a Typist.
8. Create a base class Building that stores the number of floors of a building, number of rooms and it's total footage. Create a derived class House that inherits Building and also stores the number of bedrooms and bathrooms. Demonstrate the working of the classes.
9. In the earlier program, create a second derived class Office that inherits Building and stores the number of telephones and tables. Now demonstrate the working of all three classes.
10. Write a Java program which creates a base class Num and contains an integer number along with a method shownum() which displays the number. Now create a derived class HexNum which inherits Num and overrides shownum() which displays the hexadecimal value of the number. Demonstrate the working of the classes.
11. Write a Java program which creates a base class Num and contains an integer number along with a method shownum() which displays the number. Now create a derived class OctNum which inherits Num and overrides shownum() which displays the octal value of the number. Demonstrate the working of the classes.
12. Combine Question number 10 and 11 and have all the three classes together. Now describe the working of all classes.
13. Create a base class Distance which stores the distance between two locations in miles and a method travelTime(). The method prints the time taken to cover the distance when the speed is 60 miles per hour. Now in a derived class DistanceMKS, override

travelTime() so that it prints the time assuming the distance is in kilometers and the speed is 100 km per second. Demonstrate the working of the classes.

14. Create a base class called "vehicle" that stores number of wheels and speed.

Create the following derived classes –

"car" that inherits "vehicle" and also stores number of passengers.

"truck" that inherits "vehicle" and also stores the load limit.

Write a main function to create objects of these two derived classes and display all the information about "car" and "truck". Also compare the speed of these two vehicles - car and truck and display which one is faster.

15. Write a Java program to explain "multilevel inheritance."