1.package day4\_assignment;

class Bank {

public double getInterestRate() {

return 0.0; // default rate

}

}

class SBI extends Bank {

*@Override*

public double getInterestRate() {

return 6.7;

}

}

class ICICI extends Bank {

*@Override*

public double getInterestRate() {

return 7.0;

}

}

class HDFC extends Bank {

*@Override*

public double getInterestRate() {

return 7.5;

}

}

public class BankDemo {

public static void main(String[] args) {

Bank sbi = new SBI();

Bank icici = new ICICI();

Bank hdfc = new HDFC();

System.***out***.println("SBI Interest Rate: " + sbi.getInterestRate() + "%");

System.***out***.println("ICICI Interest Rate: " + icici.getInterestRate() + "%");

System.***out***.println("HDFC Interest Rate: " + hdfc.getInterestRate() + "%");

}

}

2. package day4\_assignment;

class Calculator {

public int add(int a, int b) {

return a + b;

}

public int add(int a, int b, int c) {

return a + b + c;

}

public double add(double a, double b) {

return a + b;

}

public static void main(String[] args) {

Calculator calc = new Calculator();

System.***out***.println("add(2, 3) = " + calc.add(2, 3));

System.***out***.println("add(1, 2, 3) = " + calc.add(1, 2, 3));

System.***out***.println("add(2.5, 3.7) = " + calc.add(2.5, 3.7));

}

}

3. package day4\_assignment;

class After12th { //hierarchical inheritance

void show() {

System.out.println("This is after 12th courses.");

}

}

// Child class 1

class Engineering extends After12th {

void show() {

System.out.println("Engineering stream.");

}

}

// Engineering subclasses

class IT extends Engineering {

void show() {

System.out.println("Engineering -> IT branch.");

}

}

class Mechanical extends Engineering {

void show() {

System.out.println("Engineering -> Mechanical branch.");

}

}

class CS extends Engineering {

void show() {

System.out.println("Engineering -> CS branch.");

}

}

// Child class 2

class Medical extends After12th {

void show() {

System.out.println("Medical stream.");

}

}

// Medical subclasses

class MBBS extends Medical {

void show() {

System.out.println("Medical -> MBBS course.");

}

}

class BDS extends Medical {

void show() {

System.out.println("Medical -> BDS course.");

}

}

// Child class 3

class OtherCourses extends After12th {

void show() {

System.out.println("Other courses stream.");

}

}

// OtherCourses subclasses

class BCA extends OtherCourses {

void show() {

System.out.println("Other courses -> BCA course.");

}

}

class BBA extends OtherCourses {

void show() {

System.out.println("Other courses -> BBA course.");

}

}

public class Hierarchical\_inheritance {

public static void main(String[] args) {

// Parent class reference can refer to any child

After12th course1 = new IT();

course1.show(); // Output: Engineering -> IT branch.

After12th course2 = new MBBS();

course2.show(); // Output: Medical -> MBBS course.

After12th course3 = new BBA();

course3.show(); // Output: Other courses -> BBA course.

// Directly using parent and child classes

After12th parent = new After12th();

parent.show(); // Output: This is after 12th courses.

}

}

4. package day4\_assignment;

// Superclass

class Hospital {

String hospitalName = "City Care Hospital";

String location = "Downtown";

void showHospitalInfo() {

System.***out***.println("Hospital Name: " + hospitalName);

System.***out***.println("Location: " + location);

}

}

// Subclass

class Patient extends Hospital {

String patientName;

int age;

Patient(String patientName, int age) {

this.patientName = patientName;

this.age = age;

}

void showPatientDetails() {

System.***out***.println("Patient Name: " + patientName);

System.***out***.println("Age: " + age);

System.***out***.println("Hospital Info from Superclass:");

super.showHospitalInfo(); // Accessing method from Hospital class

System.***out***.println("Hospital Name from Superclass variable: " + super.hospitalName);

}

}

public class Hospitaldemo {

public static void main(String[] args) {

Patient patient1 = new Patient("Alice", 30);

patient1.showPatientDetails();

}

}

5. package day4\_assignment;

// Base class

class Vehicle {

void start() {

System.***out***.println("Vehicle is starting...");

}

}

// Level 2

class Four\_wheeler extends Vehicle {

void fourWheelerInfo() {

System.***out***.println("This vehicle has four wheels.");

}

}

// Level 3

class Petrol\_Four\_Wheeler extends Four\_wheeler {

void fuelType() {

System.***out***.println("This four-wheeler runs on petrol.");

}

}

// Level 4

class FiveSeater\_Petrol\_Four\_Wheeler extends Petrol\_Four\_Wheeler {

void seatingCapacity() {

System.***out***.println("This vehicle has 5 seats.");

}

}

// Level 5

class Baleno\_FiveSeater\_Petrol\_Four\_Wheeler extends FiveSeater\_Petrol\_Four\_Wheeler {

void modelName() {

System.***out***.println("Model: Baleno");

}

}

public class Multilevel\_inheritance {

public static void main(String[] args) {

Baleno\_FiveSeater\_Petrol\_Four\_Wheeler baleno = new Baleno\_FiveSeater\_Petrol\_Four\_Wheeler();

baleno.start(); // From Vehicle

baleno.fourWheelerInfo(); // From Four\_wheeler

baleno.fuelType(); // From Petrol\_Four\_Wheeler

baleno.seatingCapacity(); // From FiveSeater\_Petrol\_Four\_Wheeler

baleno.modelName(); // From Baleno\_FiveSeater\_Petrol\_Four\_Wheeler

}

}

6. package day4\_assignment;

// Parent class

class Vehicle {

String type = "Generic Vehicle";

Vehicle() {

System.***out***.println("Vehicle constructor called");

}

void showType() {

System.***out***.println("Vehicle type: " + type);

}

}

// Child class

class Car extends Vehicle {

String type = "Car";

Car() {

super();

System.***out***.println("Car constructor called");

}

void showDetails() {

super.showType();

System.***out***.println("Car type: " + type);

System.***out***.println("Parent type via super: " + super.type);

}

}

public class Super\_Keyword {

public static void main(String[] args) {

Car myCar = new Car();

myCar.showDetails();

}

}

7. package day4\_assignment;

//Base class Vehicle

class Vehicle {

Vehicle() {

System.***out***.println("Vehicle Created");

}

void display() {

System.***out***.println("This is a Vehicle");

}

}

//Subclass Bike

class Bike extends Vehicle {

Bike() {

super();

System.***out***.println("Bike Created");

}

*@Override*

void display() {

System.***out***.println("This is a Bike");

}

}

public class VehicleDemo {

public static void main(String[] args) {

Vehicle v = new Vehicle(); // prints "Vehicle Created"

System.***out***.println();

Bike b = new Bike();

Vehicle polyBike = new Bike();

polyBike.display(); // calls Bike's display()

}

}