PARVATHAM RAM CHARAN

Assignment 7

1. Create class Box and Box3d. Box3d is extended class of Box. The above two classes going to fulfill the following requirement. Include constructor, set value of length, breadth, height. Find out area and volume.

Driver.class:

```
package problem1;
public class Driver {
  public static void main(String[] args) {
            Box b1 = new Box(10,20);
            Box3d b2 = new Box3d(5,10,15);

            b1.calArea();   // area : 200
            b2.calVol();    // volume : 750
            b2.calArea();  // area : 50
}
}
```

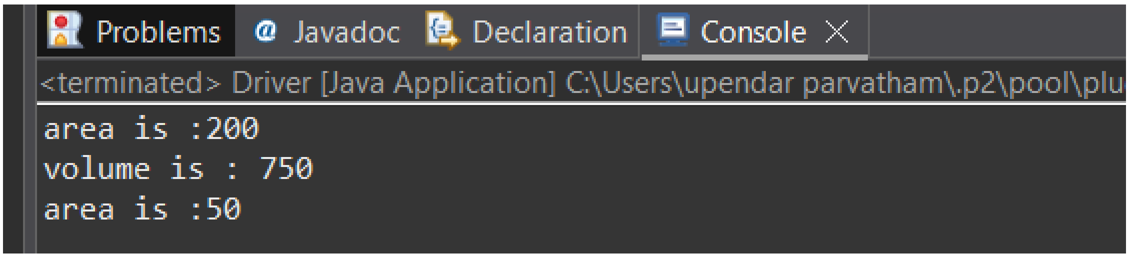
Box.java:

```
package problem1;
public class Box {
    private int length;
    private int breadth;
    public Box() {


    }
    public Box(int length,int breadth) {
            this.length= length;
            this.breadth=breadth;
      }
      public void calArea() {
            System.out.println("area is :" +(length*breadth));
      }
      public int getLength() {
            return length;
      }
      public int getBreadth() {
            return breadth;
      }

}
```

Box3d.java

```
package problem1;
public class Box3d extends Box {
        private int height;
        public Box3d(int length, int breadth, int height) {
                super(length, breadth);
                this.height=height;
        }
        public void calVol() {
                int l = getLength();
                int b = getBreadth();
                System.out.println("volume is : "+(l*b*height));
        }



 }
```

Output:



```
<terminated> Driver [Java Application] C:\Users\upendar parvatham\.p2\pool\plu
area is :200
volume is : 750
area is :50
```

2.Define a base class Person and a derived class employee with single inheritance. Define SetData() member functions in each of the class with different signatures to set the data members and demonstrate overloading of member functions. Define GetData() member functions in each of the class with same signatures to display data and demonstrate overriding of member functions.

Driver.class:

```
package Problem2;
public class Driver {

        public static void main(String[] args) {
                Person p =new Person();
                p.set("ram",123, "hyd");
                System.out.println("person details : ");
                p.get();

                employee e = new employee();
                e.set("raju",321,"pune",10000,"software");
                System.out.println("Student details : ");
                e.get();
                }
}
```

Person.java

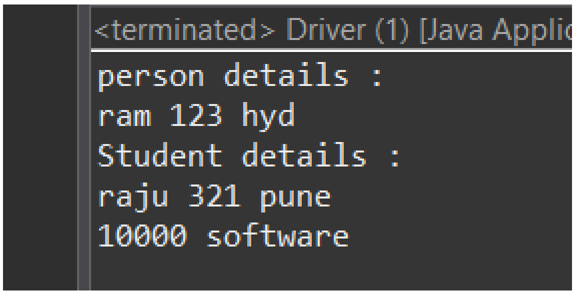
```
package Problem2;
public class Person {
    private String name;
    private int id;
    private String place;
    public void set(String name ,int id,String place) {
          this.name=name;
          this.id=id;
          this.place=place;
    }
    public void set(String name,int id) {
          this.name=name;
          this.id=id;
    }
    public void set(String name) {
          this.name= name;
    }
    public void get() {
          System.out.println(name+" "+id+" "+place);
    }
}
```

Employee.java:

```
package Problem2;

public class employee extends Person {
     private int salary;
     private String designation;
     public void set(String name ,int id,String place,int salary,String designation) {
        super.set(name,id,place);
```

```
            this.salary=salary;

            this.designation=designation;

        }

        @Override

        public void get() {

            super.get();

            System.out.print(salary+" "+designation);

        }

}
```

Output:



```
<terminated> Driver (1) [Java Applic
person details :
ram 123 hyd
Student details :
raju 321 pune
10000 software
```

 3. Write a program to give example for multilevel inheritance in Java.

Driver.java:

```
package problem3;

//3. Write a program to give example for multilevel inheritance in Java.

public class Driver {

            public static void main(String[] args) {

                        Manager m = new Manager();

                         m.setName("Ravi");

                             m.setSalary(60000);

                m.setDepartment("IT");

             m.display();
```

```
        }
}
```

Person.java

```
package problem3;

public class Person {
  private String name;
  public void setName(String name) {
        this.name = name;
  }
  public void display() {
        System.out.println(name);
  }
}
```

Employee.java

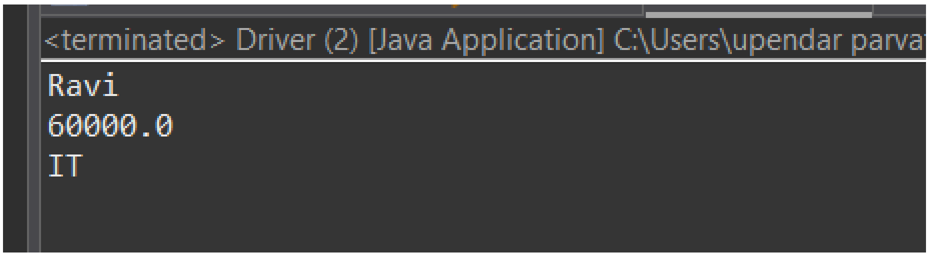
```
package problem3;

public class Employee extends Person{
     private double salary;
     public void setSalary(double salary) {
        this.salary=salary;
     }
     @Override
     public void display() {
         super.display();
         System.out.println(salary);
```

```
    }
}
```

Manager.java:

```
package problem3;
public class Manager extends Employee {
    private String department;
    public void setDepartment(String department) {
        this.department=department;
    }
    @Override
    public void display() {
        super.display();
        System.out.println(department);
    }
}
```

Output:



```
<terminated> Driver (2) [Java Application] C:\Users\upendar parva
Ravi
60000.0
IT
```

4. Demonstrate calling the constructor of the base class from the constructor of the derived class. Create objects of person and employee classes to show the order of invocation of constructors.

Driver.java:

```
package problem4;
public class Driver {

        public static void main(String[] args) {
          Person p = new Person("ram",21);
          p.display();

          Employee e = new Employee("raju",21,12345,200000);
          e.display();

        }

}
```

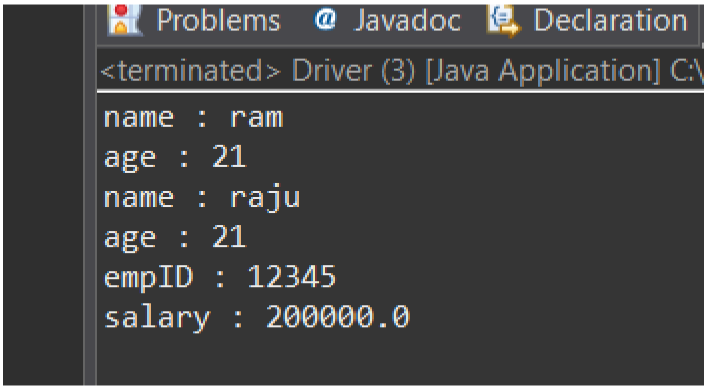
Person.java

```
package problem4;

public class Person {
   private String name;
   private int age;
   Person(String name ,int age){
         this.name=name;
         this.age=age;
   }
   public void display() {
         System.out.println("name : "+name);
         System.out.println("age : "+age);
   }
}
```

Employee.java

```
package problem4;


public class Employee extends Person{
            private int empID;
            private double salary;
   Employee(String name ,int age, int empID, double salary){
            super(name,age);
            this.empID=empID;
            this.salary= salary;
   }
   @Override
   public void display() {
            super.display();
            System.out.println("empID : "+empID);
            System.out.println("salary : "+salary);
   }
}
```

Output:



```
<terminated> Driver (3) [Java Application] C:\
name : ram
age : 21
name : raju
age : 21
empID : 12345
salary : 200000.0
```

5. Create a class with a method that prints "This is parent class" and its subclass with another method that prints "This is child class". Now, create an object for each of the class and call

1 - method of parent class by object of parent class

2 - method of child class by object of child class

3 - method of parent class by object of child class

Driver.java

```
package problem5;

public class Driver {

        public static void main(String[] args) {
                // 1. Method of parent class by object of parent class
    Parent p = new Parent();
    p.displayParent();

    // 2. Method of child class by object of child class
    Child c = new Child();
    c.dispChild();

    // 3. Method of parent class by object of child class
    c.displayParent();

        }

}
```

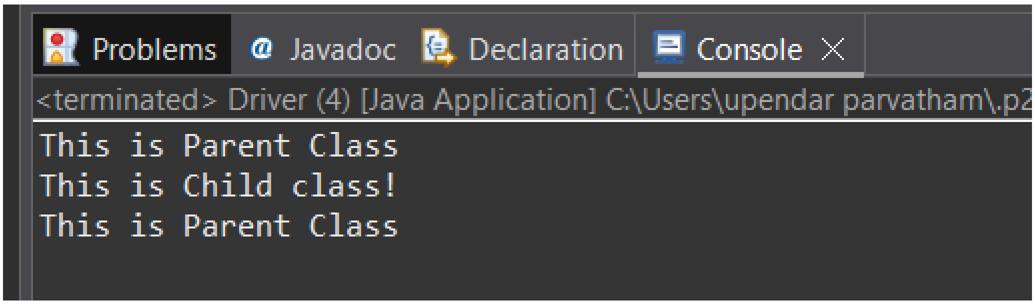
Parent.java:

```
package problem5;


public class Parent {

	public void displayParent() {

		System.out.println("This is Parent Class");

	}

}
```

Child.java:

```
package problem5;

public class Child  extends Parent{

	public void dispChild() {

		System.out.println("This is Child class!");

	}

}
```

Output:



```
<terminated> Driver (4) [Java Application] C:\Users\upendar parvatham\.p2
This is Parent Class
This is Child class!
This is Parent Class
```

6. 6. Create a class named 'Member' having the following members:

Data members: 1 – Name, 2 – Age, 3 - Phone number, 4 – Address, 5 - Salary

It also has a method named 'printSalary' which prints the salary of the members. Two classes 'Employee' and 'Manager' inherits the 'Member' class. The 'Employee' and 'Manager' classes have data members'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an employee and a manager by making an object of both of these classes and print the same.

Driver.java:

```
package problem6;

public class Driver {

        public static void main(String[] args) {
                        // Creating Employee object
    Employee emp = new Employee();
    emp.name = "Ram Charan";
    emp.age = 25;
    emp.phoneNumber = "9876543210";
    emp.address = "Hyderabad";
    emp.salary = 50000;
    emp.specialization = "Software Development";
    emp.displayDetails();

    // Creating Manager object
    Manager mgr = new Manager();
    mgr.name = "Suresh Kumar";
    mgr.age = 40;
    mgr.phoneNumber = "9123456780";
    mgr.address = "Vijayawada";
    mgr.salary = 85000;
    mgr.department = "IT Department";
    mgr.displayDetails();
```

```
        }

}
```

Member.java

```
package problem6;
class Employee extends Member {
    String specialization;

    // Method to display employee details
    public void displayDetails() {
        System.out.println("Employee Details:");
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Phone: " + phoneNumber);
        System.out.println("Address: " + address);
        printSalary();
        System.out.println("Specialization: " + specialization);
        System.out.println("--------------------------------");
    }
}
```

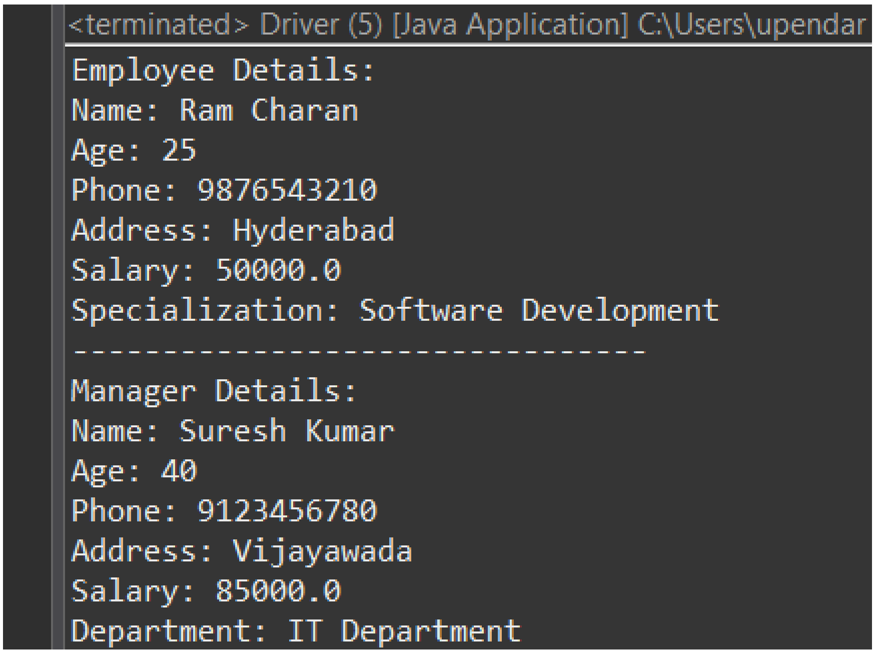
Manager.java

```
package problem6;

public class Manager extends Member {
    String department;
    // Method to display manager details
    void displayDetails() {
        System.out.println("Manager Details:");
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Phone: " + phoneNumber);
        System.out.println("Address: " + address);
        printSalary();
        System.out.println("Department: " + department);
        System.out.println("--------------------------------");
    }
}
```

Employee.java:

```
package problem6;
class Employee extends Member {
    String specialization;

    // Method to display employee details
    public void displayDetails() {
        System.out.println("Employee Details:");
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Phone: " + phoneNumber);
        System.out.println("Address: " + address);
        printSalary();
        System.out.println("Specialization: " + specialization);
        System.out.println("--------------------------------");
    }
}
```

Output:



```
<terminated> Driver (5) [Java Application] C:\Users\upendar
Employee Details:
Name: Ram Charan
Age: 25
Phone: 9876543210
Address: Hyderabad
Salary: 50000.0
Specialization: Software Development
--------------------------------
Manager Details:
Name: Suresh Kumar
Age: 40
Phone: 9123456780
Address: Vijayawada
Salary: 85000.0
Department: IT Department
```