Java Lab Assessment 5
Chapter 4
Aaditya Kumar Muktavarapu HU21CSEN0100580

1. Define a class Point with two fields x and y each of type double. Also, define a method
   distance (Point p1, Point p2) to calculate the distance between points p1 and p2 and return the value in double. Use Math.sqrt) to calculate the square root.

```
import java.util.Scanner;



class Point

{

   double x,y;



   Point(double x, double y)

   {

       this.x=x;

       this.y=y;

   }



   double getX()

   {

       return x;

   }
```

```
   double getY()
   {
       return y;
   }
}


public class distance
{
   public static void main(String[] args)
   {
       Scanner sc = new Scanner(System.in);


       System.out.println("Enter x and y coordinates for the first point: ");
       double x1=sc.nextDouble();
       double y1=sc.nextDouble();


       System.out.println("Enter x and y coordinates for the second point: ");
       double x2=sc.nextDouble();
       double y2=sc.nextDouble();


       Point p1=new Point(x1, y1);
       Point p2=new Point(x2, y2);


       double xdiff=p2.getX()-p1.getX();
```

```
        double ydiff=p2.getY()-p1.getY();

        double dist=Math.sqrt(Math.pow(xdiff, 2)-Math.pow(ydiff, 2));



        System.out.println("The distance between the two points is: "+dist);



        sc.close();

    }

}
```

Output

Enter x and y coordinates for the first point:

10

7

Enter x and y coordinates for the second point:

3

4

The distance between the two points is: 6.324555320336759

2. A class Shape is defined with two overloading constructors in it. Another class Test1 is partially defined which inherits the class Shape. The class Test1 should include two overloading constructors as appropriate for some object instantiation. You should define the constructors using the super class constructors. Also, override the method calculate () in Test1 to calculate the volume of a Shape.

```
import java.util.Scanner;
```

```
class Shape

{

   float l,b,h;

   Shape(float l,float b,float h)

   {

       this.l=l;

       this.b=b;

       this.h=h;

   }



   Shape(int l,int b,int h)

   {

       this.l=l;

       this.b=b;

       this.h=h;

   }



   float calculate()

   {

       return l*b*h;

   }

}



class Test1 extends Shape
```

```
{
   Test1(float l,float b,float h)
   {
       super(l,b,h);
   }

   Test1(int l,int b,int h)
   {
       super(l,b,h);
   }
}



public class volume
{
public static void main(String[] args)
{
   Scanner sc= new Scanner(System.in);

   System.out.println("Enter the length breadth and height of your shape: ");
   int l= sc.nextInt();
   int b= sc.nextInt();
   int h= sc.nextInt();
```

```
   Test1 test= new Test1(l, b, h);

   System.out.println("The volume of the shape is: "+test.calculate());



   sc.close();

}

}
```

Output

Enter the length breadth and height of your shape:

5

6

7

The volume of the shape is: 210.0

3. Create a class named 'Member' having the following members: Name, Age, Phone number, Address, 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.

```
class Member

{

   String Name,Address;

   int Age;

   String Number;
```

```
   float Salary;



   Member(String Name,int Age, String Number,String Address,int Salary)

   {

       this.Name=Name;

       this.Age=Age;

       this.Number=Number;

       this.Address=Address;

       this.Salary=Salary;

   }

   void printSalary()

   {

       System.out.println(Salary);

   }

}



class Employee extends Member

{

   String Specialization;

   Employee(String Name,int Age, String Number,String Address,int Salary,String
Specialization)

   {

       super(Name, Age, Number, Address, Salary);

       this.Specialization=Specialization;
```

```
    }
    @Override
    public String toString()
    {
        return Name+" "+Age+ " "+Number+" "+Address+" "+Salary+" "+Specialization+" ";
    }
}


class Manager extends Member
{
    String Department;
    Manager(String Name,int Age, String Number,String Address,int Salary,String
Department)
    {
        super(Name, Age, Number, Address, Salary);
        this.Department=Department;
    }
    @Override
    public String toString()
    {
        return Name+" "+Age+ " "+Number+" "+Address+" "+Salary+" "+Department+" ";
    }
}
public class salary
```

```
{

   public static void main(String[] args)

   {

       Employee a = new Employee("Aaditya", 20,"9502663840","Kokapet", 50000,
"Guitarist");

       Manager b = new Manager("Siddarth", 19,"9542756044" , "Kukatpally", 50000,
"TFA");



       System.out.println("Employee details: "+a.toString());

       System.out.println("Manager details: "+b.toString());

       a.printSalary();

       b.printSalary();

   }

}
```

Output

Employee details: Aaditya 20 9502663840 Kokapet 50000.0 Guitarist

Manager details: Siddarth 19 9542756044 Kukatpally 50000.0 TFA

50000.0

50000.0

4. Create a class named 'Shape' with a method to print "This is This is shape". Then create two other classes named 'Rectangle', 'Circle' inheriting the Shape class, both having a method to print "This I rectangular shape" and "This is circular shape" respectively. Create a subclass 'Square' of 'Rectangle hSaving a method

to print "Square is a rectangle". Now call the method of 'Shape' and 'Rectangle' clas by the object of 'Square' class.

```
class Shape

{

   void printshape()

   {

       System.out.println("This is This is shape");

   }

}



class Rectangle extends Shape

{

   void printrec()

   {

       System.out.println("This I rectangular shape");

   }

}



class Circle extends Shape

{

   void printcirc()

   {

       System.out.println("This is circular shape");

   }
```

```
}

class Square extends Rectangle

{

   void printsquare()

   {

       System.out.println("Square is a rectangle");

   }

}

public class shapes

{

   public static void main(String[] args)

   {

       Square sq= new Square();



       sq.printsquare();

       sq.printrec();

       sq.printshape();

   }

}
```

Output

Square is a rectangle
This I rectangular shape
This is This is shape

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 method of parent class by object of parent class
   - method of child class by object of child class
   - method of parent class by obiect of child class

```
class Parent

{

   void printParent()

   {

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

   }

}

class Child extends Parent

{

   void printChild()

   {

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

   }

}

public class parentchild

{

   public static void main(String[] args)

   {

       Parent p=new Parent();

       Child c =new Child();
```

```
        p.printParent();

        c.printChild();

        c.printParent();

    }

}
```

Output

This is parent class

This is child class

This is parent class