Next Thursday- Mid 2

1. Write a java program which will have a class named box2 that has three members, height, width and depth, a method which will calculate the volume of the box. A subclass of box2 named boxweight will have two members, weight and shipcost. Boxweight class will have a constructor which will assign the values to the members of the box2 class and boxweight class. boxweight class has a method named total which will calculate the total cost of a box. Total cost= (volume*1.15)+shipcost. If the weight of the box is more than 50 kg, then we will add 15% vat to the total cost. Create an object of the subclass and call the methods

```
class box2{
    double height,width,depth;
    double volume() {
        return height*width*depth;
    }


}
    class boxweight extends box2{
        double weight,shipcost;
        boxweight(double height, double width,
  double depth, double weight, double shipcost){
            this.height=height;
            this.width=width;
            this.depth=depth;
            this.weight=weight;
            this.shipcost=shipcost;
        }
        double cost() {
            if(weight>50) {
                return
  (volume()*1.15+shipcost)+((volume()*1.15+shipcost)*
  (15/100));
            }
            else {
                return (volume()*1.15+shipcost);
```

```
25.             }
26.         }
27.     }
28.     public class boxcost {
29.
30.         public static void main(String[] args) {
31.             boxweight box=new boxweight(73, 48,
    54, 55, 5.5);
32.             System.out.println("The volume of
    the box is "+box.volume());
33.             System.out.println("the total cost
    of the box is "+box.cost());
34.             // TODO Auto-generated method stub
35.
36.         }
37.
38.     }
```

Write a java program which has a class A that has two members , fig1 and fig2, and a method named rectangle which will print out the following message " The area of the rectangle is empty". A subclass of class A named B has a member named weight and a method named area which will calculate the inside area of a rectangle by using the following formula fig1*fig2. A subclass of class B named C that has a constructor which will assign values to the members of class A and B. Class C has a method named calculate which will calculate the external area of a rectangle by using the following formula fig1*fig2/ 2. Create object of the class C inside the main class and call the method.

```
class A{
    double fig1,fig2;
    void rectangle() {
        System.out.println("The area of the rectangle
is empty");
    }
}
class B extends A{
    double weight;
    double area() {
```

```
        return fig1*fig2;
    }
}
class C extends B{
    C(double fig1, double fig2, double weight){
        this.fig1=fig1;
        this.fig2=fig2;
        this.weight=weight;
    }
    // Class C can inherit members from both class A
and B because Class C is inheriting from class B and
Class B is inheriting from Class A. So class A's
member and methods are already in class B. Since
class C is inheriting all the members and methods of
class B, it can inherit from class A.
    double calculate() {
        return (fig1*fig2)/2;
    }
}

public class inheritancehi {

    public static void main(String[] args) {
        C c1 = new C(40,20,10);// TODO Auto-generated
method stub
        c1.rectangle();
        System.out.println("Inside area of the
rectangle is"+c1.area());
        System.out.println("Outside area of the
rectangle is"+c1.calculate());
// We can access the methods of class A and B by
using the object of class C
    }
```

```
}
```
The above is an example of multilevel hierarchy of inheritance.

Write a java program which has a class named D that has two members n1 and n2. Class D has a method named primerange which will calculate all the prime numbers between n1 and n2. A subclass of Class D named class E has a constructor which will assign values to n1 and n2. Class E has a method named gcd will calculate the gcd between n1 and n2. Create an object of class E inside the main class and call the methods.