Day 1 Assignment:

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1A.

```
class A{
  void a(){
    System.out.println("class A is Responding");
  }
}
//Single Inheritance
class B extends A{
  void b(){
    System.out.println("class B is Responding");

  }
}
//Multilevel Inheritance
class C extends B{
  void c(){
    System.out.println("class C is Responding");
    b();
    a();
  }
}
//Hierarchical Inheritance
class D extends A{
  void d(){
    System.out.println("class D is Responding");
      a();
  }
}
```

```
class Main  {
  public static void main(String[] args) {

  C obj1=new C();
    obj1.c();
    D obj2=new D();
    obj2.d();

  }
}
```

Expected Output:

```
class C is Responding
class B is Responding
class A is Responding
class D is Responding
class A is Responding
```

2A.

Code:

```
public class Main2 {

        void add(int a,int b){
                int c=a+b;
                System.out.println("sum of "+a+" "+b+" is "+c);
        }
        void add(int a,int b,int c){
                int d=a+b+c;
                System.out.println("sum of "+a+" "+b+" "+c+" is "+d);
        }
```

```
	void add(String msg,int a,int b) {
		int d=a+b;
		System.out.println(msg+d);
	}

	public static void main(String[] args) {
		Main2 obj=new Main2();
		obj.add(2,5);
		obj.add(2,5,7);
		String msg="sum of "+1+" "+2+" "+" is ";
		obj.add(msg,1,2);

	}

}
```

Output:

sum of 2 5 is 7

sum of 2 5 7 is 14

sum of 1 2 is 3

3A.

Code:

```
class Vehicle
{
   protected String regnNumber, color, ownerName;
   protected int speed;
```

```
    public Vehicle(String regno, String color, String owner, int speed) {
                    this.regnNumber=regno;
                    this.color=color;
                    this.ownerName=owner;
                    this.speed=speed;
            }

    public void showData()
            {
        System.out.println("This is a Vehicle Class");
    }
}
class Bus extends Vehicle
{
    private int routeNumber;

    Bus(String regno, String color, String owner, int speed, int route)
            {
        super(regno, color, owner, speed);
        routeNumber = route;
    }

    public void showData()
            {
        super.showData();
        System.out.println("Reg no: " + regnNumber);
        System.out.println("Color: " + color);
        System.out.println("Owner: " + ownerName);
        System.out.println("Speed: " + speed);
        System.out.println("Route: " + routeNumber);
```

```
    }
}
class Car extends Vehicle
{
    private String manufacturerName;
    Car(String regno, String color, String owner, int speed, String mName)
            {
        super(regno, color, owner, speed);
        manufacturerName= mName;
    }
    public void showData()
            {
        super.showData();
        System.out.println("Reg no: " + regnNumber);
        System.out.println("Color: " + color);
        System.out.println("Owner: " + ownerName);
        System.out.println("Speed: " + speed);
        System.out.println("Manufacturer: " + manufacturerName);
    }
}
public class demo
{
    public static void main(String[] args)
            {
        String regno,color,owner,manufacturer;
        int speed,route;

        //Bus
        regno="BUS656";
        color="Blue";
```

```
        owner="RAM";
        speed=100;
        route=67895;
        Bus b = new Bus(regno,color,owner,speed,route);
        b.showData();

        //Car

        regno="CAR656";
        color="BLACK";
        owner="RAVI";
        speed=200;
        manufacturer="Tesla";
        Car c = new Car(regno,color,owner,speed,manufacturer);
        c.showData();
    }
}
```

Output:

```
This is a Vehicle Class
Reg no: BUS656
Color: Blue
Owner: RAM
Speed: 100
Route: 67895
This is a Vehicle Class
Reg no: CAR656
Color: BLACK
Owner: RAVI
Speed: 200
```

Manufacturer: Tesla

5A.

Code:

```
package sre;
class Building {
	int floors,rooms,totalFootage;
	Building(int floors,int rooms,int totalFootage){
		this.floors=floors;
		this.rooms=rooms;
		this.totalFootage=totalFootage;

	}
}
class House extends Building{
	int bedRooms,bathRooms;
	House(int floors, int rooms, int totalFootage,int bedRooms, int bathRooms) {
		super(floors, rooms, totalFootage);
		this.bathRooms=bathRooms;
		this.bedRooms=bedRooms;
	}
void ShowData() {
	System.out.println("Number of Floors : "+floors);
	System.out.println("Number of rooms : "+rooms);
	System.out.println("Number of total CCTV Footage : "+totalFootage);
	System.out.println("Number of bedrooms : "+bedRooms);
```

```
        System.out.println("Number of bathrooms : "+bathRooms);
}



}
public class Main5 {

        public static void main(String[] args) {
                House house=new House(5,15,30,2,3);

                house.ShowData();
        }

}
```

Output:

Number of Floors : 5

Number of rooms : 15

Number of total CCTV Footage : 30

Number of bedrooms : 2

Number of bathrooms : 3

6A.

Code:

```
package sre;

class Num{
        public int number;
        public Num(int number) {
```

```
        this.number=number;
    }
    void shownum(){
        System.out.println("Number : "+number);
    }
}

class HexNum extends Num{
    HexNum(int number){
        super(number);
    }
    void shownum(){
        super.shownum();
      int rem;
      String hex="";
      char hexchars[]={'0','1','2','3','4','5','6','7','8','9','A','B','C','D','E','F'};
     while(number>0)
      {
       rem=number%16;
       hex=hexchars[rem]+hex;
       number=number/16;
      }
         System.out.println("Hexadecimal Number : "+hex);

    }
}

public class Main {

    public static void main(String[] args) {
```

```
        HexNum obj=new HexNum(158);

        obj.shownum();

    }

}
```

Output:

Number : 158

Hexadecimal Number : 9E

7A.

Code:

```
package sre;

class A{
    void a(){
        System.out.println("This is Class A ");
    }
}
class B extends A{
    void b() {
        System.out.println("This is Class B");
    }
}
class C extends B{
    void c() {
        System.out.println("This is Class C");
    }
```

```
}
public class Main7 {

	public static void main(String[] args) {
		C obj=new C();
		obj.a();
		obj.b();
		obj.c();
	}

}
```

Output:

```
This is Class A
This is Class B
This is Class C
```

8a.

Code:

```
package sre;
class circle{
	private point point1;
	private point point2;
	public circle(point point1,point point2) {
		this.point1=point1;
		this.point2=point2;
	}

	double area() {
```

```
		double r=Math.sqrt(Math.pow((point1.getX()-
point2.getX()),2)+Math.pow((point1.getY()-point2.getY()),2));
		double area=Math.PI*Math.pow(r, 2);
		return area;
	}
}


class point{
	int x,y;

	public point(int i, int j) {
		this.x=i;
		this.y=j;
	}

	public int getX() {
		return x;
	}

	public void setX(int x) {
		this.x = x;
	}

	public int getY() {
		return y;
	}

	public void setY(int y) {
		this.y = y;
	}
```

```
}
public class Main88 {

	public static void main(String[] args) {
		point p1=new point(0,5);
		point p2=new point(0,-5);
		circle cir=new circle(p1,p2);
		System.out.println(cir.area());
	}

}
```

Output:

314.1592653589793

9A.

Code:

```
package sre;

public class Fraction {
	double numerator;
	double denominator;
	Fraction(int a,int b){
		this.numerator=a;
		this.denominator=b;
	}
	Fraction(int a,double b){
		this.numerator=a;
```

```
        this.denominator=b;
    }
    Fraction(double a,double b){
        this.numerator=a;
        this.denominator=b;
    }

    void fractionValue() {
        double fraction=(numerator/denominator);
        System.out.println("Fraction = "+fraction);
    }

    public static void main(String[] args) {
        Fraction a=new Fraction(10,12);
        a.fractionValue();
        Fraction b=new Fraction(10,12.5);
        b.fractionValue();
        Fraction c=new Fraction(10.8,12.5);
        c.fractionValue();

    }

}
```

Output:

```
Fraction = 0.8333333333333334
Fraction = 0.8
Fraction = 0.8640000000000001
```

10A.

Code:

```
package sre;

interface ThreeDObject{
	public void surfacearea();
	public void volume();
}

class Box implements ThreeDObject{
	private double length;
	private double width;
	private double height;
	Box(double l,double w,double h){
		this.length=l;
		this.height=h;
		this.width=w;
	}
	@Override
	public void surfacearea() {

		double area=2*((height *length)+(length*width)+(height*length));
		System.out.println("BOX");
		System.out.println("Surface Area : "+area);

	}

	@Override
	public void volume() {
		double volume=length*width*height;
```

```
                System.out.println("Volume : "+volume);

        }

}
class Cone implements ThreeDObject{
        private double radius;
        private double height;

        Cone(double r,double h){
                this.height=h;
                this.radius=r;
        }

        @Override
        public void surfacearea() {
                double area=(Math.PI * radius * radius) + (Math.PI * radius *
Math.sqrt(radius * radius + height * height));
                System.out.println("CONE ");
                System.out.println("Surface Area : "+area);

        }

        @Override
        public void volume() {
                double volume=(Math.PI * radius * radius * height) / 3;
                System.out.println("Volume : "+volume);

        }

}
```

```
class Cylinder implements ThreeDObject{
	private double radius;
	private double height;

	Cylinder(double radius,double height){
		this.radius=radius;
		this.height=height;
	}

	@Override
	public void surfacearea() {
		double area=2 * Math.PI * radius * (radius + height);
		System.out.println("Cylinder");
		System.out.println("Surface Area : "+area);



	}

	@Override
	public void volume() {
		double volume=Math.PI * radius * radius * height;
		System.out.println("Volume : "+volume);

	}

}
class Cube implements ThreeDObject{
	private double side;
	Cube(double s){
		this.side=s;
```

```
	}
	@Override
	public void surfacearea() {
		double area=6*side*side;
		System.out.println("Cube ");
		System.out.println("Surface Area : "+area);

	}

	@Override
	public void volume() {
		double volume=side*side*side;
		System.out.println("Volume : "+volume);

	}

}

public class Main10 {

	public static void main(String[] args) {
		Box box=new Box(5,6,7);
		box.surfacearea();
		box.volume();
		Cone cone=new Cone(5,6);
		cone.surfacearea();
		cone.volume();
		Cube cube=new Cube(5);
		cube.surfacearea();
		cube.volume();
```

```
        Cylinder cylin=new Cylinder(5,6);
        cylin.surfacearea();
        cylin.volume();


    }

}
```

Output:

BOX

Surface Area : 200.0

Volume : 210.0

CONE

Surface Area : 201.22293136239688

Volume : 157.07963267948966

Cube

Surface Area : 150.0

Volume : 125.0

Cylinder

Surface Area : 345.57519189487726

Volume : 471.23889803846896