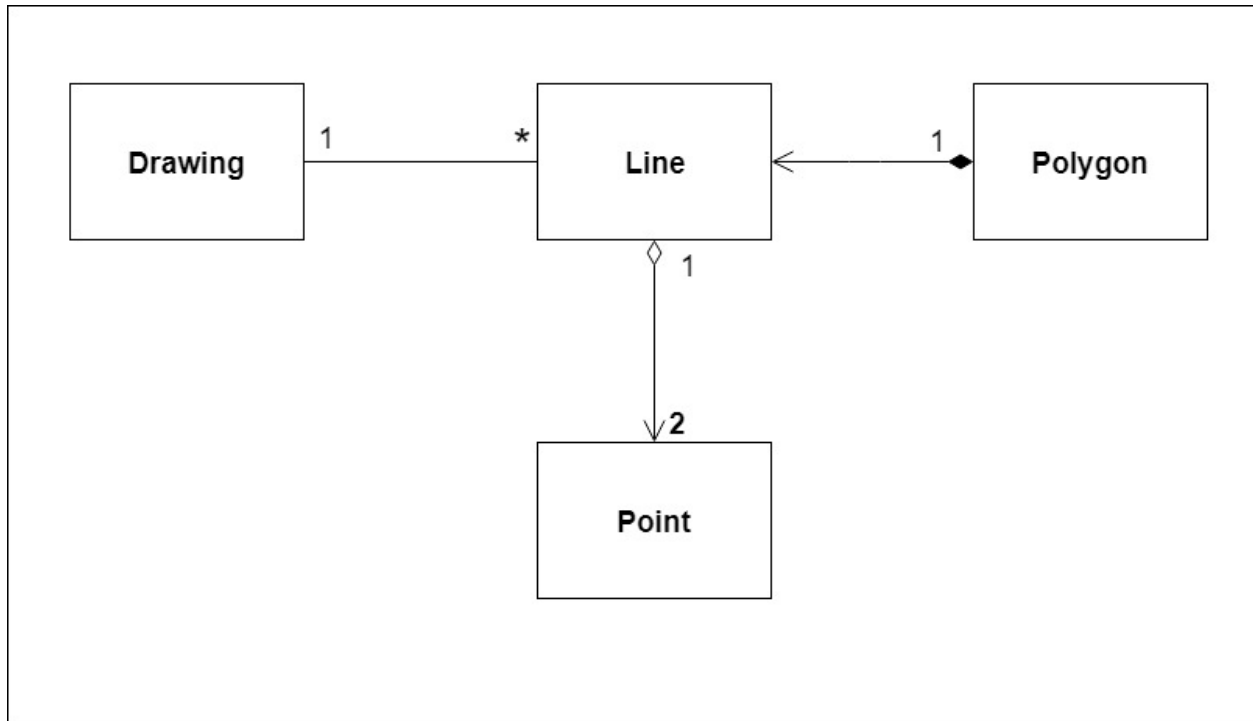Course: ENSF 409

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Lab number: Lab 2

Exercise 1

Exercise 2

```java
class Point {
    private int x, y;

    public Point(int x, int y) {
    this.x = x;
    this.y = y;
    }

    static public double distance(Point a, Point b){
        double diffx = a.x - b.x;
        double diffy = a.y - b.y;
        return Math.sqrt(diffx * diffx + diffy * diffy);
    }

    public String toString(){
        String s = "(" + x + "," + y + ")";
        return  s;
    }
}
```

```java
class Line {

    Point start, end;
    private static int classID = 0;
    private int objID;

    public Line(Point a, Point b) {
    start = a;
    end = b;
     objID = ++ classID;
    }


    public double distance(){
        return Point.distance(start, end);
    }

    public String toString()
    {
```

```java
        String s = "Line " + objID + ": starts at" + start.toString() + ", and
ends at" + end.toString();
        return s;
    }
}
```

```java
import java.util.*;

class Polygon {
    private final LinkedHashSet <Line> polygon;
    private int objID;
    private static int classID;
    Iterator <Line> it;

    public Polygon(LinkedHashSet<Line> polygon) {
        this.polygon = new LinkedHashSet<Line>();
        for(Line l: polygon)
            this.polygon.add (l);
        objID = ++ classID;
        it = this.polygon.iterator();
    }

    public Iterator <Line> getLine() {
        it = polygon.iterator();
        return it;
    }

    public static int classID(){
        return classID;
    }


    public String toString() {
        String s = new String();
        System.out.print("\nThe Lines in polygon " + objID + " are:");
        for(Line l: polygon)
            s += "\n" + l.toString();
        return s;
    }
}
```

```
The Lines in polygon 1 are:
Line 1: starts at(20,30), and ends at(50,100)
Line 2: starts at(50,100), and ends at(105,30)
Line 3: starts at(105,30), and ends at(20,30)
The perimeter of the polygon 1 is 250.18:

The Lines in polygon 2 are:
Line 4: starts at(120,130), and ends at(150,200)
Line 5: starts at(150,200), and ends at(200,130)
Line 6: starts at(200,130), and ends at(120,130)
The perimeter of the polygon 2 is 242.18:

The Lines in polygon 3 are:
Line 7: starts at(320,330), and ends at(250,400)
Line 8: starts at(250,400), and ends at(400,330)
Line 9: starts at(400,330), and ends at(320,330)
The perimeter of the polygon 3 is 344.52:
```