Hands-on Experiment # 4 : Worksheet

Section_________1_______ Date___17 Feb 2020_________________________________

No more than 3 students per one submission of this worksheet.

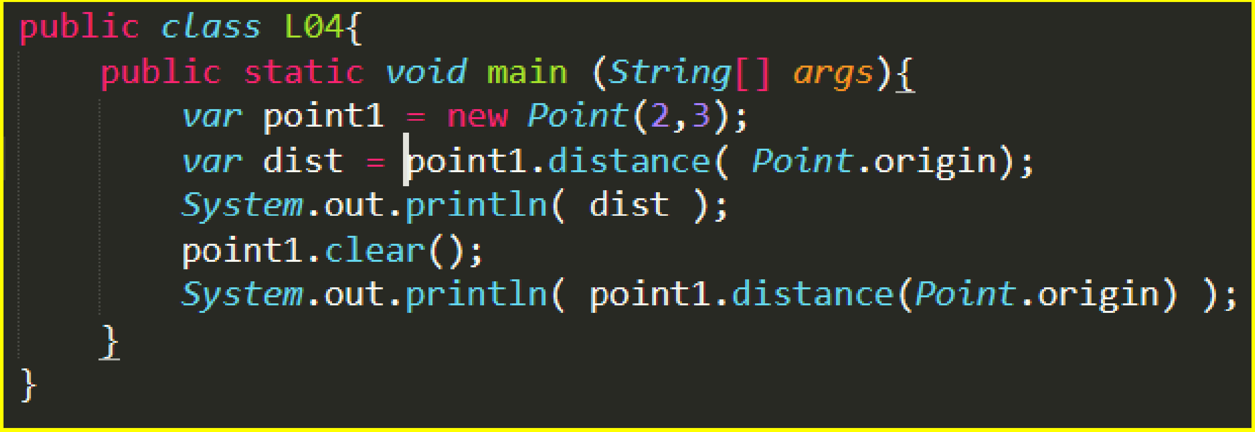
Student ID _________6238218321___________ Name_________Sippakorn Ornwichian_____________________

Student ID ______________6238160521_________ Name_________ Panupong Vijakwitchakorn_________________

Student ID __________6238193221_________ Name________ Wasu Sonthichai ________

Part A: Java API

1. Place the file “Point.class” (which is a Java bytecode) in the same folder as the Java source code files you will be writing in this Hands-on Experiment.
2. Understand the source file “Point.pdf” (Point.java). Assume we want to create a point called “startPoint” at (2,3). Write the code to do the following task:
   a. Create this point
   b. Compute the distance of this point to the original point (origin)
   c. Clear this point



```
public class L04{
    public static void main (String[] args){
        var point1 = new Point(2,3);
        var dist = point1.distance( Point.origin);
        System.out.println( dist );
        point1.clear();
        System.out.println( point1.distance(Point.origin) );
    }
}
```

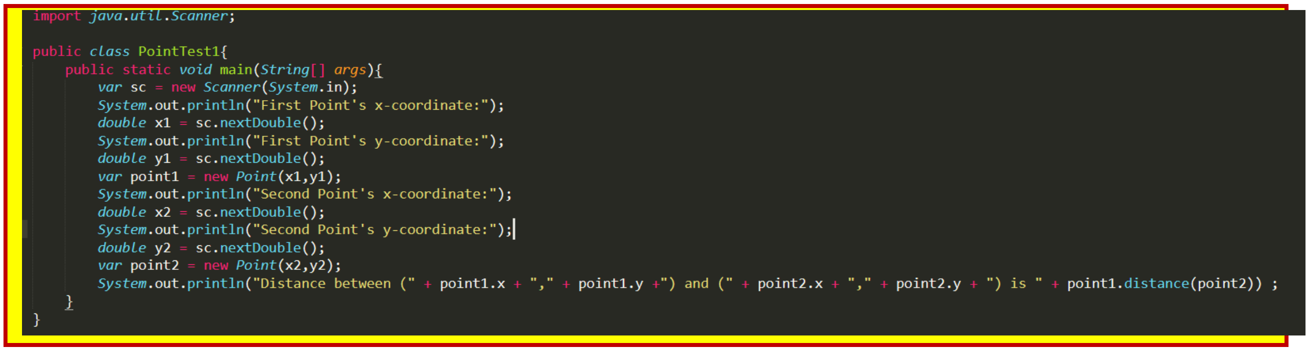
3. Explain the difference between “static data” and “object data”

Static data is the class’s data and can be used without initializing objects.

Object data is data that can be used only when objects are initialized, and they might be different in different objects.

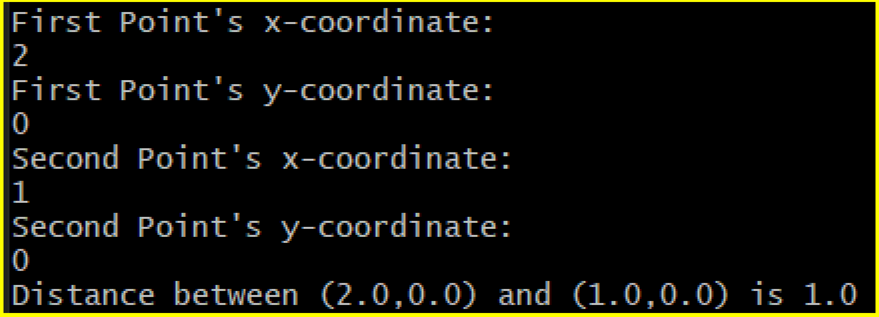
Part B: Scanner

4. Write a Java program “PointTest1.java” to read two points from user. Locations x and y are entered by user separately. The output is the distance between two points. (Hint: use “Scanner” to input data from user)
   a. List your source code below.



```
import java.util.Scanner;

public class PointTest1{
    public static void main(String[] args){
        var sc = new Scanner(System.in);
        System.out.println("First Point's x-coordinate:");
        double x1 = sc.nextDouble();
        System.out.println("First Point's y-coordinate:");
        double y1 = sc.nextDouble();
        var point1 = new Point(x1,y1);
        System.out.println("Second Point's x-coordinate:");
        double x2 = sc.nextDouble();
        System.out.println("Second Point's y-coordinate:");
        double y2 = sc.nextDouble();
        var point2 = new Point(x2,y2);
        System.out.println("Distance between (" + point1.x + "," + point1.y +") and (" + point2.x + "," + point2.y + ") is " + point1.distance(point2)) ;
    }
}
```

b. Capture the program output.



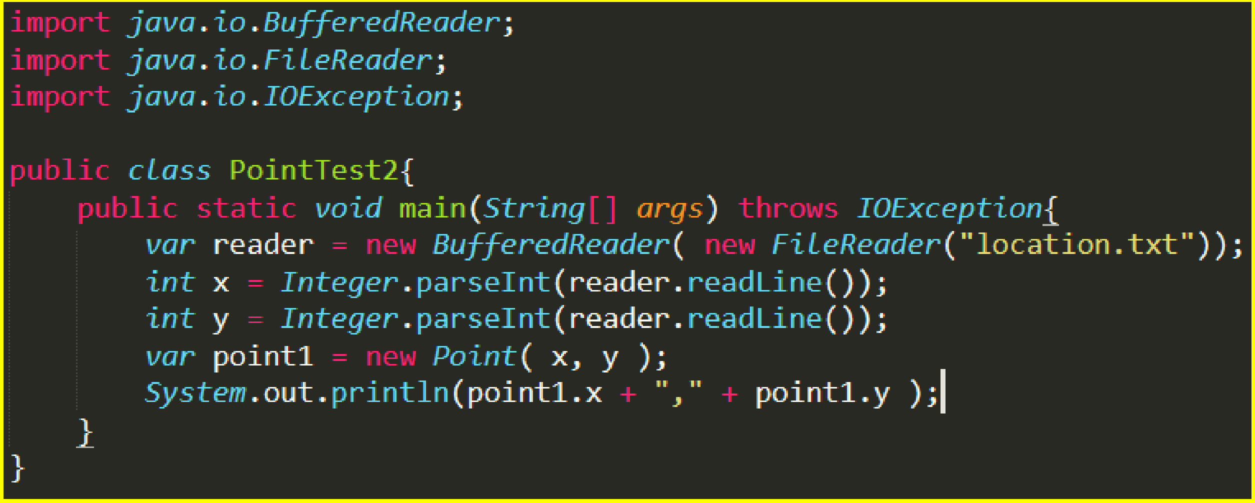
```
First Point's x-coordinate:
2
First Point's y-coordinate:
0
Second Point's x-coordinate:
1
Second Point's y-coordinate:
0
Distance between (2.0,0.0) and (1.0,0.0) is 1.0
```

Part C: BufferedReader (Advanced Problem)

5. Place the file “location.txt” in the same folder as the Java source code. In this file there is a single point, where x and y are shown in Line 1 and 2, respectively. Write a Java program “PointTest2.java” to read “location.txt” and output the distance to the original location (origin). (Hint: use “BufferedReader” to read data from file)
   a. What is the location in the text file “location.txt”?

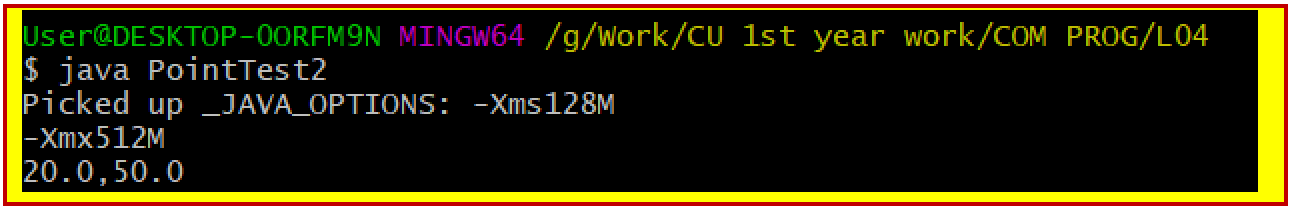
(20,50)

   b. List your source code below.



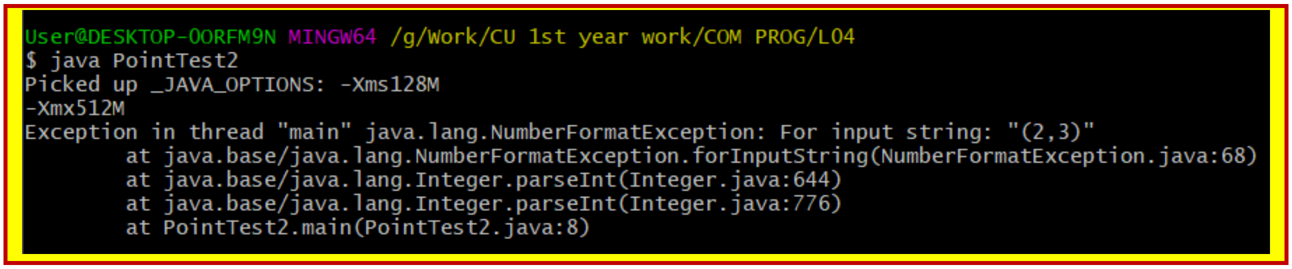
```
import java.io.BufferedReader;
import java.io.FileReader;
import java.io.IOException;

public class PointTest2{
    public static void main(String[] args) throws IOException{
        var reader = new BufferedReader( new FileReader("location.txt"));
        int x = Integer.parseInt(reader.readLine());
        int y = Integer.parseInt(reader.readLine());
        var point1 = new Point( x, y );
        System.out.println(point1.x + "," + point1.y );
    }
}
```

c. Capture the program output.



```
User@DESKTOP-OORFM9N MINGW64 /g/Work/CU 1st year work/COM PROG/L04
$ java PointTest2
Picked up _JAVA_OPTIONS: -Xms128M
-Xmx512M
20.0,50.0
```

d. Modify location in the text file to “(2, 3)”. Then, rerun your program and capture the program output.



```
User@DESKTOP-OORFM9N MINGW64 /g/Work/CU 1st year work/COM PROG/L04
$ java PointTest2
Picked up _JAVA_OPTIONS: -Xms128M
-Xmx512M
Exception in thread "main" java.lang.NumberFormatException: For input string: "(2,3)"
        at java.base/java.lang.NumberFormatException.forInputString(NumberFormatException.java:68)
        at java.base/java.lang.Integer.parseInt(Integer.java:644)
        at java.base/java.lang.Integer.parseInt(Integer.java:776)
        at PointTest2.main(PointTest2.java:8)
```

Submit this worksheet (by only one member of the group) via http://www.myCourseVille.com (Assignments > Hands-on Experiment # 4) **before noon of the day after your lecture.**