Hands-on Experiment # 5 : Worksheet

Section_____2_____ Date_____14/02/2018_____

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

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Part A: Java API

1. Place the file "Point.class" (which is a Java 7 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 pointer {

	public static void main(String[] args) {

		Point startPoint = new Point(2,3);

		double dis = startPoint.distance(Point.origin);

		System.out.println("Distance between the two points is " + dis);

		startPoint.clear();

	}

}
```

3. Explain the difference between "static data" and "object data"

Static data belongs to the class and can be used by every object, while object data is unique to each object

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) {

		Scanner sc = new Scanner(System.in);

		System.out.println("Please enter x1 coordinate: ");

		double x1 = sc.nextDouble();

		System.out.println("Please enter y1 coordinate: ");

		double y1 = sc.nextDouble();

		System.out.println("Please enter x2 coordinate: ");

		double x2 = sc.nextDouble();

		System.out.println("Please enter y2 coordinate: ");

		double y2 = sc.nextDouble();


		sc.close();


		Point point1 = new Point(x1,y1);

		Point point2 = new Point(x2,y2);


		double dis = point1.distance(point2);

		System.out.println("Distance between the two points is "+dis);

	}

}
```

b. Capture the program output.

```
C:\Java work\week5>java PointTest1
Please enter x1 coordinate:
1
Please enter y1 coordinate:
2
Please enter x2 coordinate:
3
Please enter y2 coordinate:
4
Distace between the two point is 2.8284271247461903

C:\Java work\week5>
```

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"?

```
C:\Java work\week5
```

    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) {

		try{

			FileReader fr = new FileReader("C:/Java work/week2/location1.txt");

			BufferedReader br = new BufferedReader(fr);

			String line1 = br.readLine();

			String line2 = br.readLine();

			double num1 = Double.parseDouble(line1);

			double num2 = Double.parseDouble(line2);
```

```
                    Point startPoint = new Point(num1,num2);

                    double dis = startPoint.distance(Point.origin);

                    System.out.println("Distance between the two points is " + dis);

                }

                catch (IOException e) {

                    e.printStackTrace();

                }

                catch (NumberFormatException e) {

                     e.printStackTrace();

                }

        }

}
```

c. Capture the program output.

```
C:\Java work\week5>java PointTest2
Distance between the two points is 53.85164807134504
```

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

```
C:\Java work\week5>java PointTest2
java.lang.NumberFormatException: For input string: "2,3"
        at java.base/jdk.internal.math.FloatingDecimal.readJavaFormatString(FloatingDecimal.java:2054)
        at java.base/jdk.internal.math.FloatingDecimal.parseDouble(FloatingDecimal.java:110)
        at java.base/java.lang.Double.parseDouble(Double.java:543)
        at PointTest2.main(PointTest2.java:11)
```

Submit this worksheet (by only one member of the group) via http://www.myCourseVille.com (Assignments > Hands-on Experiment # 5) **within the day after your lecture.**