**Programming** **Lab Exercise 6**

Before you start:

Create a folder called l**ab6** inside your personal **java** folder you created at the start. Save all your work for lab 6 in this folder.

Using the eclipse IDE:

Your understanding of the concept of classes and methods are examined here, in particular:

1. Writing class definitions
2. Creating instances of classes
3. Calling object methods
4. Accessing data belonging to an object instance

Complete each question (successfully!) before you move on to the next one.

**Each program should be saved in a file named after the question. For example, the answer for Q1 should be saved in a file called lab6q1.java etc.**

**Exercises:**

**Q1**. Download the Thermometer.java and ThermTest.java source files. Compile them and ensure the driver program runs successfully. Examine the Thermometer class and note the presence of a second constructor: **public Thermometer(double cel)**. What is this used for?

1. Create a second instance of the Thermometer class called **thermB**.
2. thermB should be instantiated using the second constructor, so that its temperature is set to 10.0 Celsius.
3. Now Get the temperature of thermB and store it in a variable called tempB.
4. Print the value of tempB on the screen.

Your output should like this:

Temp. of Thermometer A is 0.0

Temp. of Thermometer A is 20.0

Temp. of Thermometer B is 10.0

**Q2**. We want to visualise the thermometer we have just created, so we will add a method to our Thermometer class called display as follows:

public void display()

{

System.out.println("0 50 100");

System.out.println("ooooooooooooooooooooooooooooooooooooooooooooooooooo");

int t = **map**((int) getCelsius(), 0, 100, 0, 50);

for (int i=0; i<t; i++)

{

System.out.print("-");

}

System.out.print(">");

System.out.println();

System.out.println("ooooooooooooooooooooooooooooooooooooooooooooooooooo");

}

You will need to fix the indentation in your source code (I squashed it in here for clarity).

Because I do not want to have 100 characters across the screen representing the temperature scale (0 – 100), we have to somehow map our temperature value (Celsius) to a smaller range for example 0 to 50. I use a **map** method as follows:

int **map**(int x, int in\_min, int in\_max, int out\_min, int out\_max)

{

return (x - in\_min)\*(out\_max - out\_min)/(in\_max - in\_min)+ out\_min;

}

Implement these in your Thermometer class.

Create a new test program and create three thermometers with different temperatures. Display the three Thermometers on screen by invoking their display() methods.