

Lab 6 Scanner Assignment

Our goal today is to create a robot that reads sensor data (light) and displays it in a graphical manner. When done while the robot is moving, we can gather information about the brightness of the terrain that the robot is traversing.

Perform these steps on a lab computer (logged into Windows). Save the files on you T: drive, in a new directory in CSCI1111. Only one group member must create these files.

1. Create a file “Scanner.java” with the following contents:

```
import edu.gwu.Jobot.agents.standalone.LejosAgent;
import javax.microedition.lcdui.Graphics;
import lejos.nxt.*;

public class Scanner extends LejosAgent
{
    public static void main(String[] args)
    {
        Scanner sunny = new Scanner();
        sunny.perform();
    }

    public void perform()
    {
        LightSensor light = new LightSensor(SensorPort.S2);
        Graphics g = new Graphics();
        int[] graph = {0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0};
        int n = 20; // or int n = graph.length

        while(true) {

            // Read from the light sensor 10 times (.1 second intervals)
            // Find the average of those readings.
            // Shift each element of the array to the right one place.
            // Update the array with the new average in the 0th location.

            g.clear();
            // Display the resulting array as a graph
            g.refresh();

            if (Button.ESCAPE.isPressed()) {
                System.exit(0);
            }
        }
    }
}
```

2. The LCD screen is 100 x 64 pixels, with point (0, 0) in the upper left hand corner, and (99, 64) in the lower right. You should make your rectangles wide enough that they span the screen, and you will have to scale the values read from the light sensor to fit in 64 pixels.

3. If you finish early, make the robot move continuously while the program runs. Now “scan” the brightness levels of various parts of the lab. You can experiment with changing the read intervals.

4. Remember to upload your program at the end of lab.

Important methods:

```
light.readNormalizedValue(); // Returns light reading (0 - 1023)
g.drawRect(x, y, width, height); // Draws a rectangle to the lcd
try { Thread.sleep( m ); } catch (Exception e) {} // pause execution
```

Commands:

```
nxjc -cp C:\Jobot.jar Scanner.java
nxj -cp .;C:\Jobot.jar Scanner
```