ENGI1020 - Lab 1 Logbook Temperature Sensor

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| --- | --- | --- |
| Name | Lab & Date | Input & Output Devices |
| Anton Guaman | Lab 1  September 24 2020 | Input: Temperature Sensor  Output: LCD screen |

* 0 Preparation
  + - Summary of lab task in your own words
    - Summary of preparation (no need to repeat entirely)

The lab consists in using our Arduino component while connecting it to the input device (temperature sensor) in the analog 0 and also connect the output device (LCD screen). After that we import engi1020.arudino module into our Python. From our temperature sensor we would receive the temperature and using the equation we created in the lab preparation it would give us the hue value which would be displayed in the LCD screen.

The preparation for the lab was to create a linear equation (y=mx + b) with the minimum and maximum values given (Min value: (20, 0.7) ; Max Value: (30, 0)) from the limits of temperature in Celsius 20 to 30. The equation would be y= -0.7x + 2.1 Where x is the temperature and y is the hue value that would be the output in the LCD screen.

* 1 Implementation
  + 1.1 Converting Design to Implementation
    - Notes about how you took your design and implemented it
    - DO NOT just insert your code (though if it is useful to include lines of code to explain, you can)

I implemented the design by first importing the engi1020.arudino module into spyder. After that I used a variable for the input and checked it by printing the assigned variable letter.

﻿x=temp\_celsius(0)

print(x)

Continuously I used my equation that I created in the Prelab to verify it. I also printed the assigned variable letter.

y=-0.07\*x+2.1

print(y)

After that I used the “lcd\_hsv(y, 1, 255)” so the y value would change the colour in my LCD screen.

* + 1.2. Errors Encountered While Implementing
    - Notes about errors encountered in Python interpreter or syntax problems
    - Include notes about solution
    - If useful, include names of errors

I had a few syntax errors that appeared in my console when trying x = temp\_celsius(0) or x = analog\_read(0). First, I began by restarting the kernel in my console and executing the sequence of statements. This did not resolve the syntax error since I received the same error from the console. After, I proceeded to disconnect the USB cable that was connected to the Arduino and try connecting it again. I restarted the kernel in my console as well. I wrote the sequence of statements again and it worked! No syntax error anymore.

* + 1.3 Details and Facts from Implementation to Remember
    - Details about concepts that you learned from implementation
    - Technical details about interpreter, Arduino equipment, engi1020 module related to implementation
    - Anything else you think will demonstrate your learning and will be useful to remember for future

I learned to not stress out if I receive an error message from the console and try to find a solution. I learned that the most viable solution is first restarting the kernel in my console, and if that does not work disconnect and connect the USB cable that is connected to the Arduino. This will be useful in future labs and assignments where I receive an error message. I will know the process on how to address errors and try to solve them.

* 2 Testing
  + 2.1. Test Plan and Results
    - Should be in table format!!

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test** | **Input Manipulation** | **Output**  **Expected** | **Output**  **Observed** | **Investigation** |
| **Test 1** | **How did you**  **change the**  **input?**  I changed the input by warming the sensor with my hands. | **What did you**  **expect to**  **observe?**  I expected that the output would be a light shade of blue. | **What did you**  **observe?**  It was a light shade of blue. | **Did they match?**  **If not, what did**  **you do (can**  **reference**  **Section 2.2)**  Yes, they did match. |
| **Test 2** | I warmed the temperature for more time with my hands. | I expected the color of blue to be a lighter shade. | It was a lighter shade of blue. | Yes, they did match |
| **Test 3** | I let the temperature sensor to cool down and be at room temperature. | I expected the color blue to be dimer blue. | It was a shade of blue in between. | They did not match as I expected because the temperature did not decrease to the level I thought it would be. |

* 2.2. Errors Encountered while Testing
  + - Details about semantics or syntax errors discovered through testing
    - Expanding on “Investigation Column” above

No, I did not receive any more errors. The only errors I received were those mentioned above in section 1.2.

* + 2.3. Details and Facts from Testing to Remember
    - Details about concepts that you learned from testing
    - Technical details about interpreter, Arduino equipment, engi1020 module related to testing
    - Anything else you think will demonstrate your learning and will be useful to remember for future

Always verify that your statements are well written so there are no inconveniences, so double checking is an excellent tool! If the interpreter does not understand an error would appear, and it is better to take some time to review the statements and then run it. Make sure that your test methods are effective so you can see a more notable change in your results. Last, the most important that will be key for the entire course is to remember to begin by writing *from* *engi1020.arduino import\*.*

* 3. Reflection and Conclusion
  + 3.1. Reflection Question Answers
    - While other parts of the lab logbook should be in jot-note form, reflection question answers should be complete sentences.

I enjoyed this lab since we were able to apply what we have been learning in class lectures. It was amazing to see and test how we can control input and visualize the results through the output. It was a productive experience because we were able to see how our code and our Arduino connected with each other. This concept is becoming clearer and I am learning more and more every day!

* + 3.2 Additional conclusion Notes