ENGI1020 – Lab 2 Logbook

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| --- | --- | --- |
| Name | Lab & Date | Input & Output Devices |
| Anton Guaman | Lab 2  Oct. 2 2020 | Digital Input:  Button and Analog  Output:  LED’s in LED socket |

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

Apply your learning from class by using control of flow (if, elif and else). We used if and else statements to control the flow of input (whether it was digital or analog input), and how the output would appear depending on the input source.

For the lab preparation we wrote a pseudocodes to represent the control of flow that we would do in the lab with the actual coding terms. Also, in the preparation we decided which digital input we would use I selected the button. Finally, I wrote some ways that I can test the code which would involve the print option. The print option would state the input depending on the input device used whether it was the digital or analog input.

* 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)

Connected the Arduino components to the Arduino with the correct way of the cables. Then I proceeded to connect the Arduino to my computer. Then I followed the instructions of the procedure. I downloaded and opened the script in Spyder. I made the required changes to control the flow of input. Using if, elif and else statements we control how the output would be displayed.

﻿if choice == 1:

The statement above was nested to the following:

﻿inputs = digital\_read(4)

﻿ if inputs == 1:

digital\_write(2,1)

Where “inputs” is the variable name that stores the input of the button. If the value of inputs ==1 the LED socket would turn on as the output.

After this another statement but this time using “elif” was nested:

elif choice == 2:

The nest part consisted of:

﻿inputj = analog\_read(0)

if inputj < 600:

print("Low")

print(inputj)

else:

print("High")

print(inputj)

Where “inputj” is the variable name that stores the input of the analog. If the value of inputj <600 the console will print “Low” and print the value. Else if the value of inputj >600 the console will print “High” and print the value.

Finally, we end the implementation with an else statement where if a value that is not 1 or 2 entered by the user at the beginning of the script an error message would appear to run the script again.

* + 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

No errors encountered while implementing.

* + 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

Revise your code before running it through the console. Verify that the variables created are the same throughout your code. Always finish an if, elif, else statement with “:”. When using comparing operators remember that the values must be integers so use the int() to convert the string. Be patient while being efficient during the implementation process.

* 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?  Pressed the button and entered 1. | What did you  expect to  observe?  I expected to see the LED socket turn on. | What did you  observe?  I observed a time out error. | Did they match?  If not, what did  you do (can  reference  Section 2.2)  They did not match I did not expect this message. |
| Test 2 | Pressed the button and entered 1. | I expected to see the LED socket turn on. | I observed the LED socket turn on. | They did match when the input (button was pressed) the output is the LED socket turned on. |
| Test 3 | Entered the 2 and did not rotate the analog input. | I expected to get a value <600 and the console to print “Low”. | I observed the console print “Low” and the value of 361 | They did match, the output was as I expected. |
| Test 4 | Entered 2 and rotated the the analog input to the max. | I expected to get a value >600 and the console to print “High”. | I observed the console print “High” and the value of 1023. | They did match, the output was as I expected. |
| Test 5 | Entered the value 3. | I expected the error message to display in the console. | I observed the error message displayed in the console. | They did match, the output was what I expected. |

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

I received time out errors while running the code multiple times. To fix this error message I was guided by Professor Hogan. First, I disconnected and connected the Arduino to my computer. This did not work. Second, I rested the kernel. This did not work. Third, I changed the Arduino to a different USB-port. Also, I opened the Arduino app and uploaded the Firmware again. After this process the time out error disappeared, and I was able to test the script.

* + 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

Be patient and now I am more acquainted with possible solutions to these types of errors. I know a process I can follow to solve these types of errors. I learned that my computer works better with the Arduino when the Firmware is uploaded prior to use.

* 3. Reflection and Conclusion

1. Describe the concepts learned in class that you applied in this lab.

The concepts we applied where the conditional flow key words(if, else, elif) and use comparison operators. Also, we used nested statements. Another important concept applied was transforming an input string to integer.

1. Describe how useful (or not) the provided script was in this lab, and the general benefit of using a Python script.

The script was great and really helpful. It helped me understand better the concept of conditional flow. It was easy to follow and understand. Also, the comments were really helpful as well as the videos.

1. How did your test plan or implementation change as you tested? If it did not, why do you think this was?

My implementation and test plan went as planned. I tried what I wrote down in my prelab and it worked.

1. How would you change or expand this lab project if you could?

I am really satisfied with how this lab project was delivered and all the hands-on experience that it offers to students. I learned so much more about conditional flow and I feel more comfortable with this topic!