Reykjavík University

Mechatronics I

T-411-MECH

Individual Assignment 8

04/10/2020

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Contents

1 Tasks

As usual, the code for this assignment is available at the following Github repo:

Link: GitHub Repo

1.1 Task 1

Task: Setup an Adafruit IO dashboard with

1. 3 feeds one labelled input, another threshold and the third trigger
2. Slider marked "threshold" which sets values from 0-1023
3. Graph that shows the live data from feed "input" (
4. Graph that shows the threshold values over the last hour
5. an indicator that shows if 'trigger' is 1

Screenshots: Those below are the screenshots that show how I set everything up.

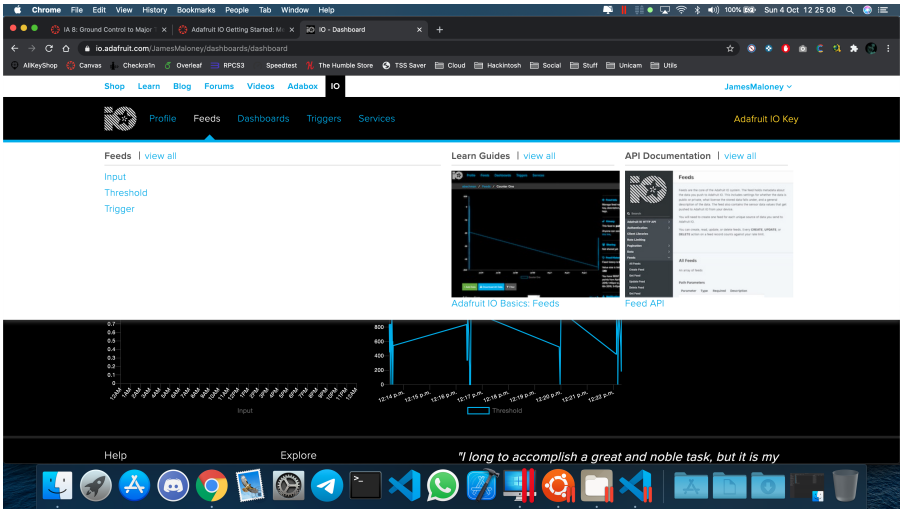

Figure 1: Feeds (Task 1.1).

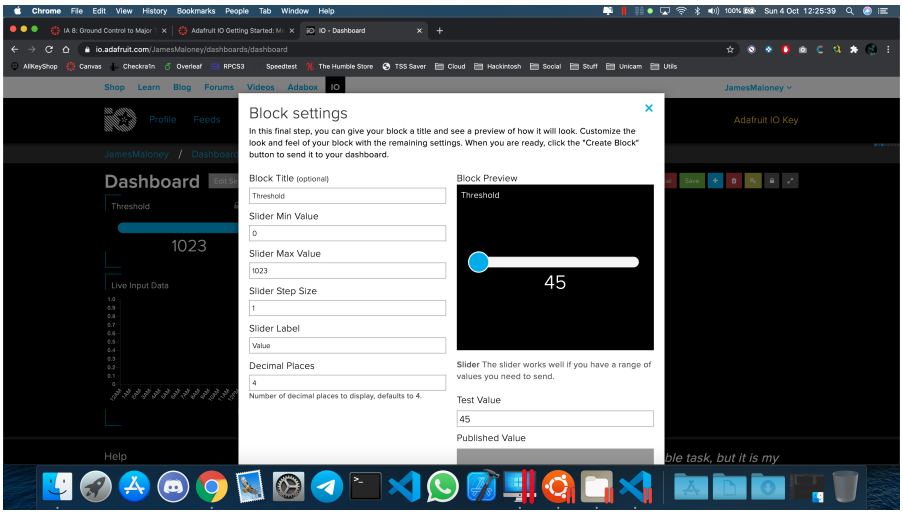

Figure 2: Threshold slider (Task 1.2).

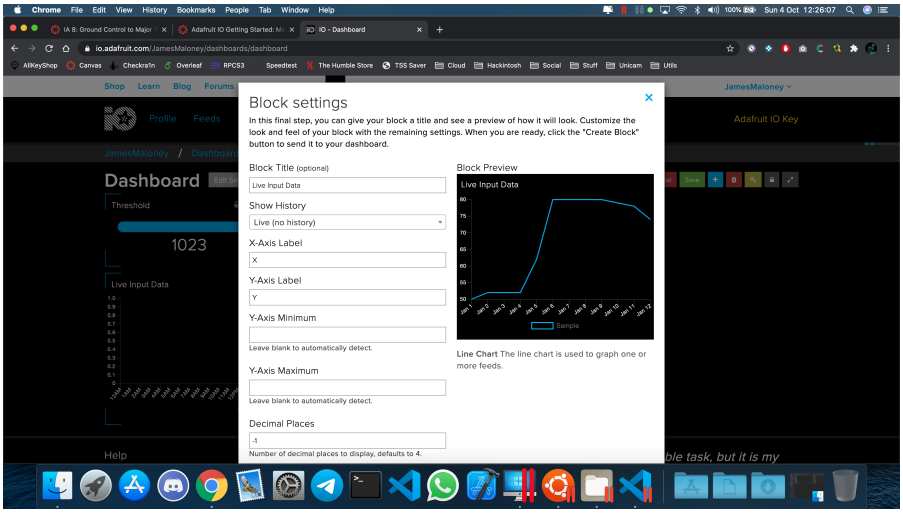

Figure 3: Live Input data (Task 1.3).

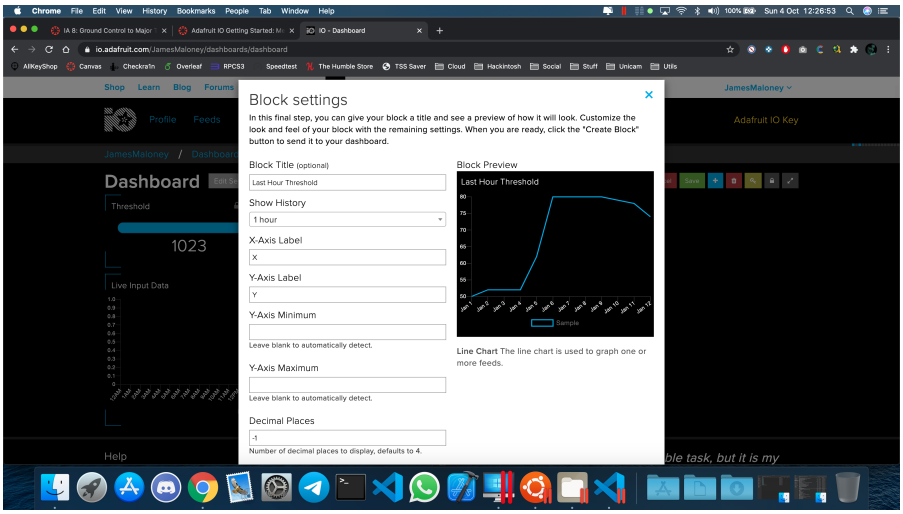

Figure 4: Last hour threshold data (Task 1.4).

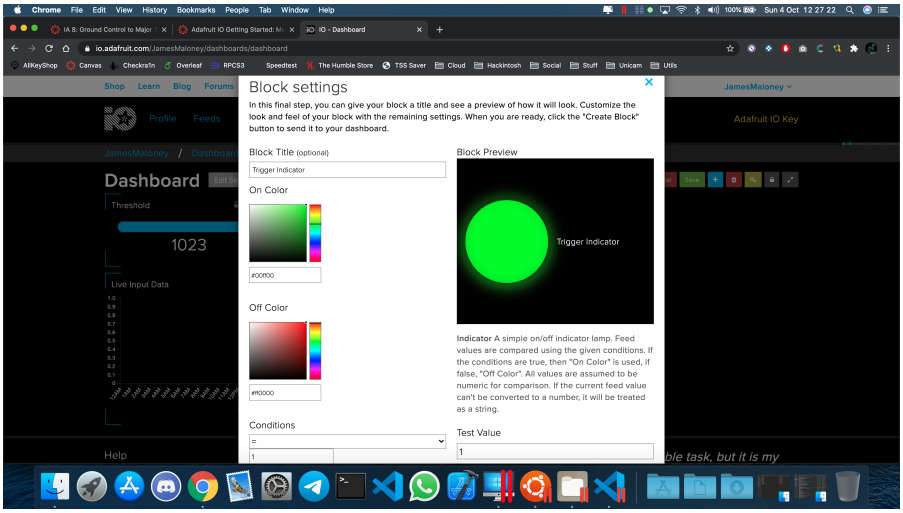

Figure 5: Trigger indicator (Task 1.5).

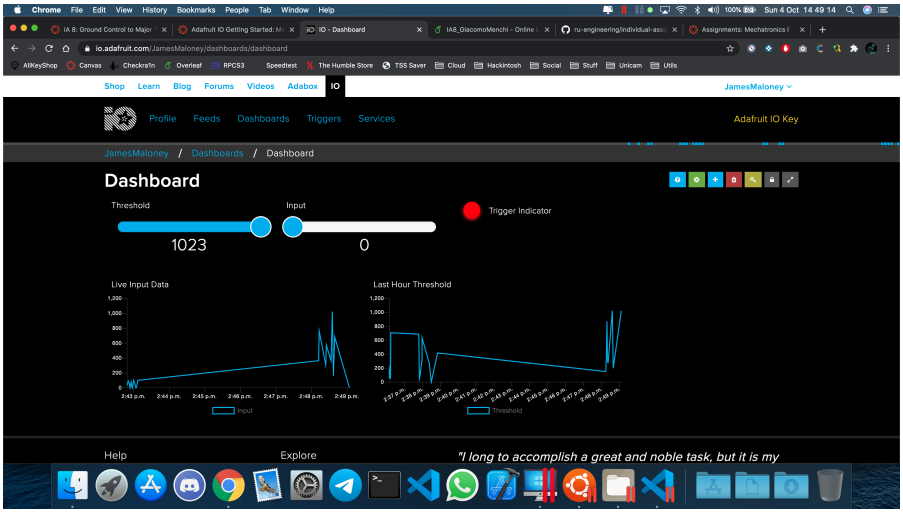

Figure 6: Complete dashboard.

1.2 Task 2

Task: Make the indicator green on if threshold $<$ input, and red for other values using the Trigger menu

Screenshots: Once again, these are the screenshots that prove this task completion. In figure 8 and 9 the live input graph is not showing anything because I used the Feeds menu to manually set the input value, which somehow breaks the live graph feature.

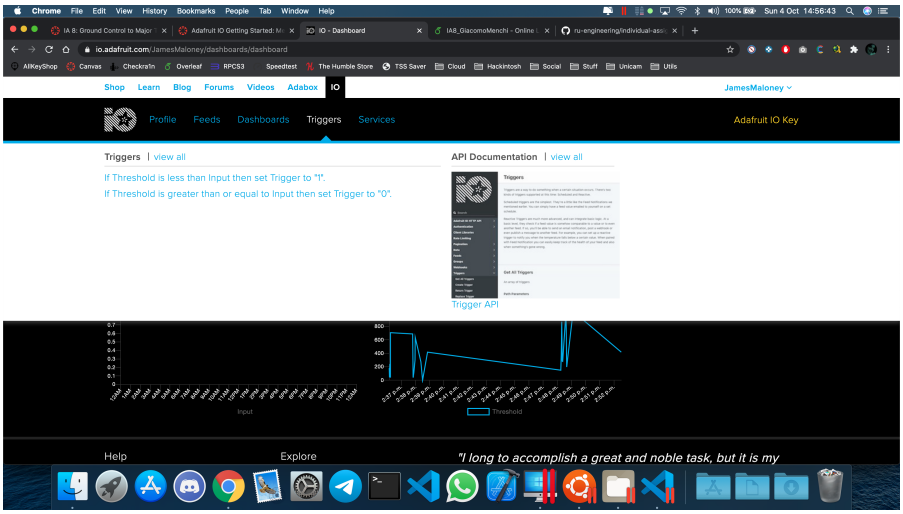

Figure 7: Triggers setup.

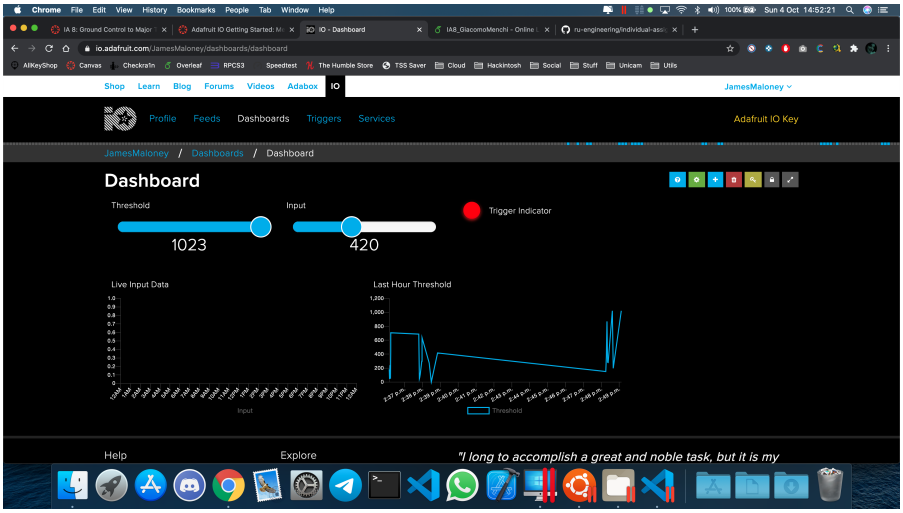

Figure 8: Threshold > Input = Red indicator.

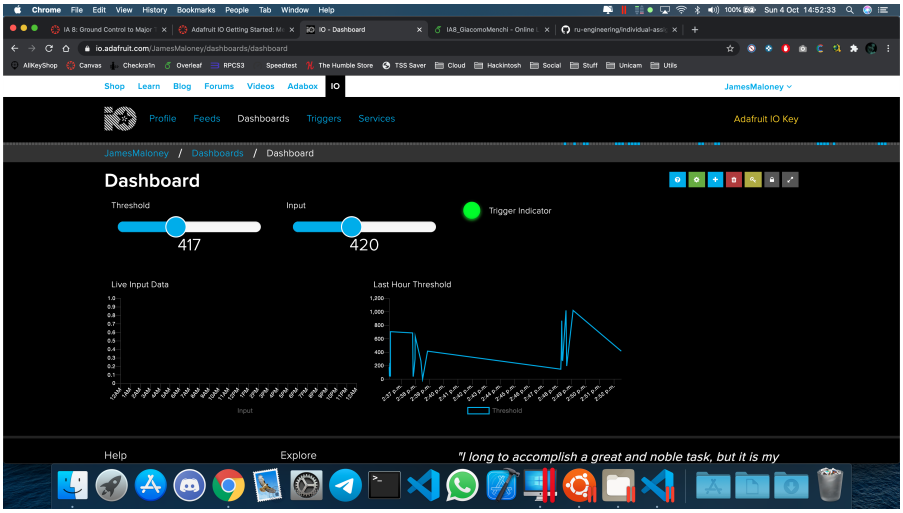

Figure 9: Threshold < Input = Green indicator.

1.3 Task 3

Task: Send data into the input stream via your computer

Screenshots: The screenshots below show how we can send data to the Adafruit IO feed endpoint to update values via Rust (I used Rust on Ubuntu to achieve this).

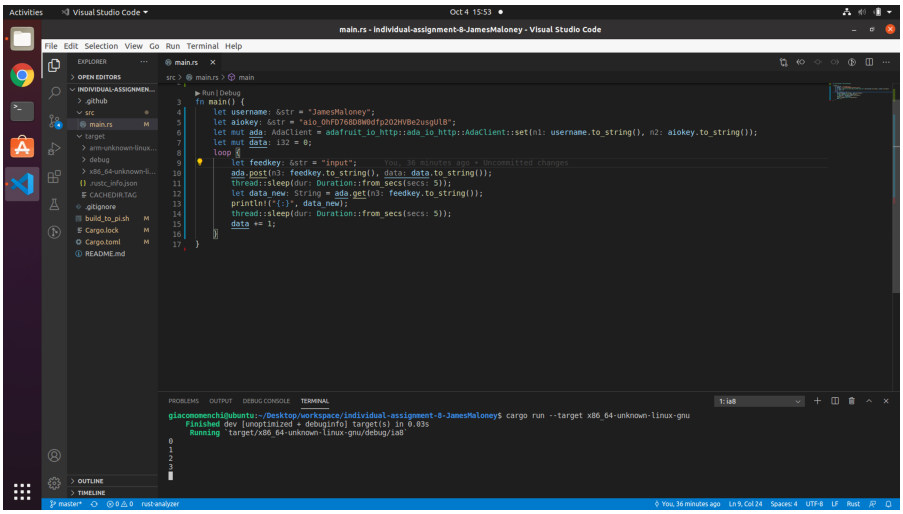

Figure 10: Rust code executing.

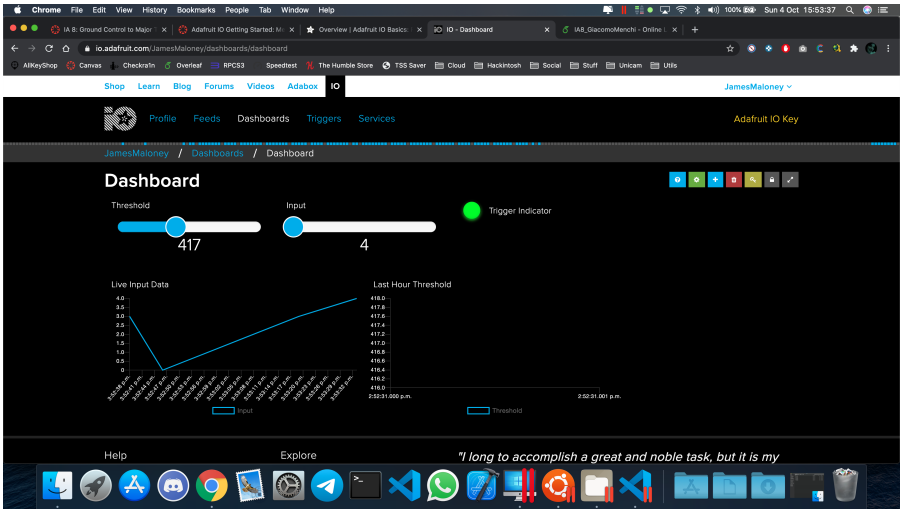

Figure 11: Input values updating real-time.

1.4 Task 4

Task: Make Raspberry Pi receive data from the trigger variable and print it to your terminal

Screenshots: The first picture shows Raspberry Pi receiving values from the website and printing them on the console, the second one shows how the dashboard updates when new values are received (thus changing trigger indicator color).

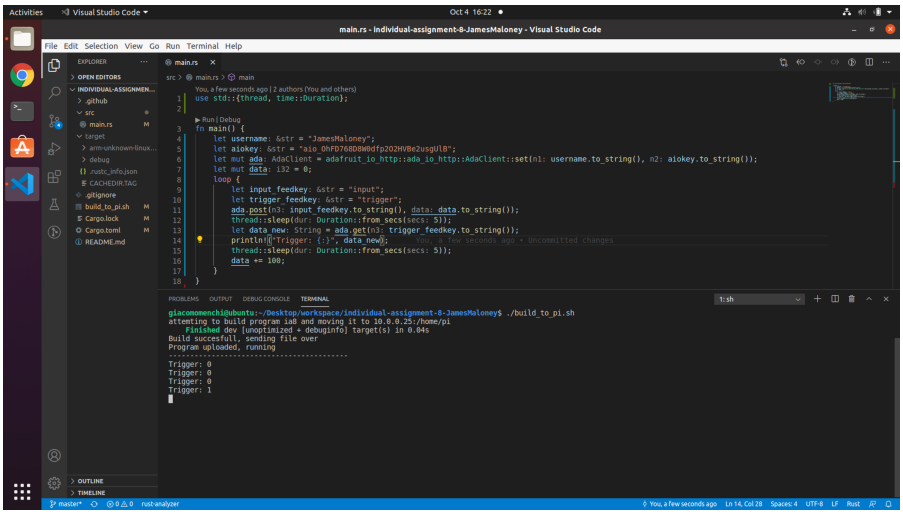

Figure 12: Raspberry Pi printing trigger values.

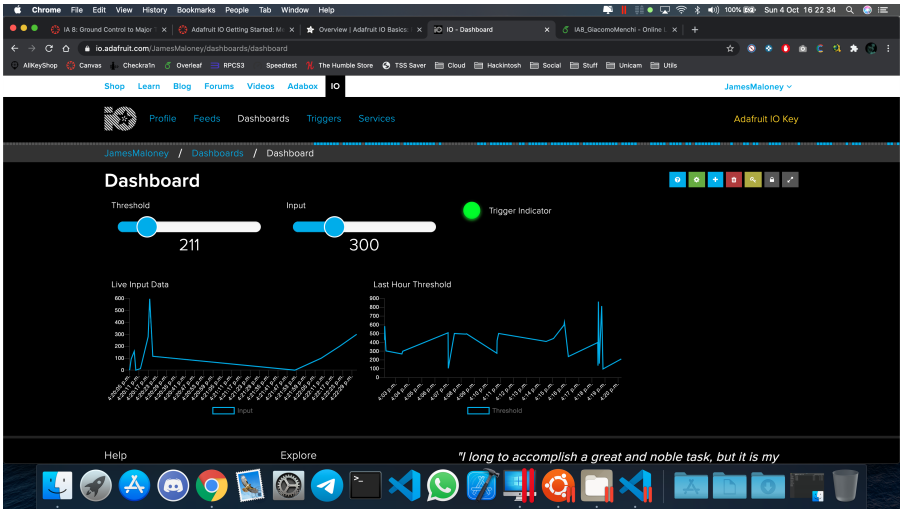

Figure 13: Adafruit IO dashboard getting updated with new trigger indicator color.

1.5 Extra Credit

Task: Drive a LED on the Raspberry Pi from the trigger variable

Video: The video below shows the LED turning on when trigger becomes "1", and also sums up everything else I've done in this assignment.

Link: Video