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Github: Francis CSC615 Embedded Linux

Assignment 4 -Follow in Line but Stop

Description:

Read (i.e. input) from the two sensors, one should be able to tell you if you are over Black or over White (i.e. on the line or off the line) and the other sensor will state if there is an obstruction in front of the sensor. This will be done with threads, one for each sensor and a main loop that checks the values.

Approach / What I Did:

First, I tested the sensors separately to ensure that the raspberry pi could read their outputs. Once they were working, I started to experiment with the threads. I created a function that would be able to work with both sensors. The function printed only when the sensor is activated. It would also print out the sensor's GPIO pin status. Finally, I used the clock function to have the threads exit after a certain amount of time.

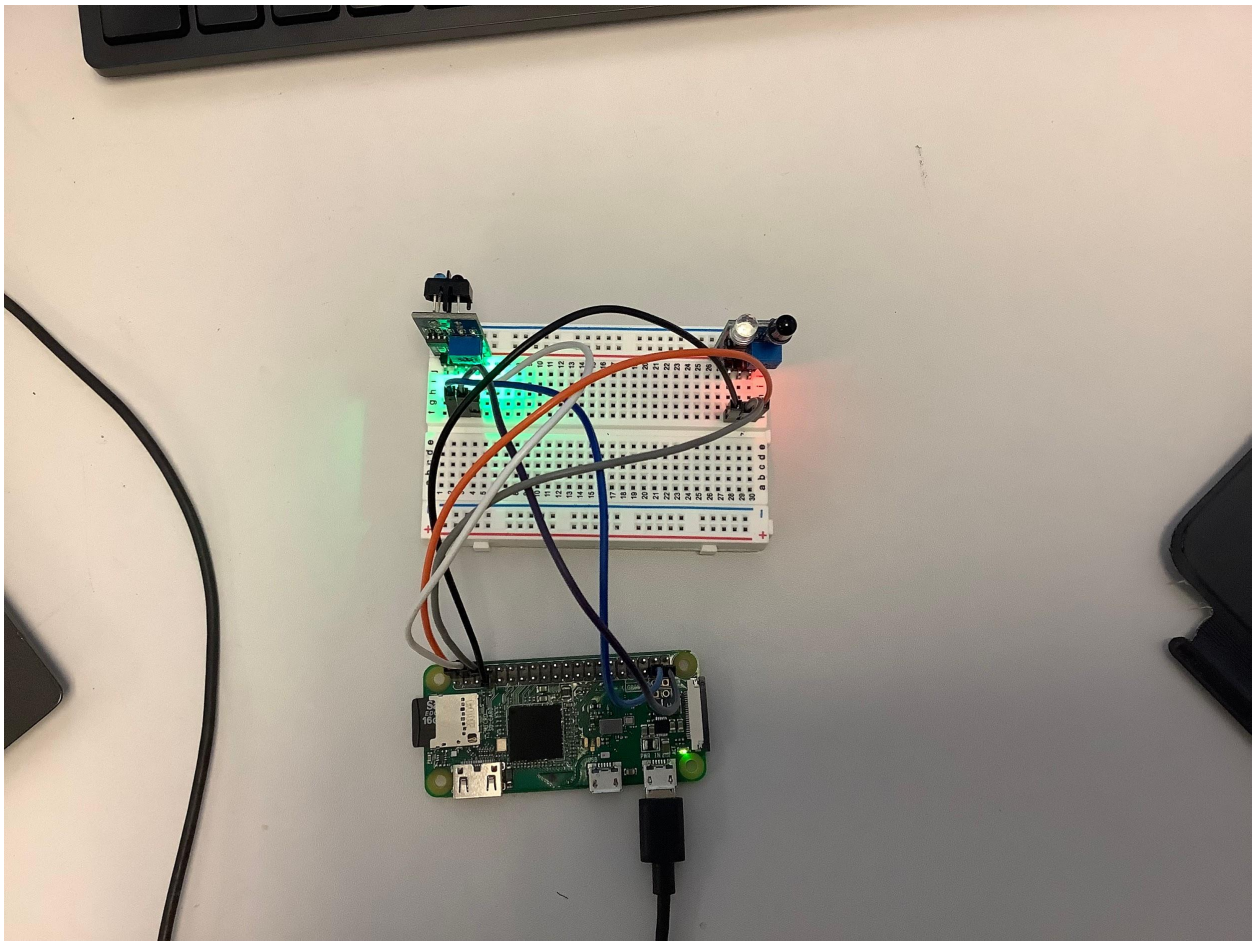
Issues and Resolutions:

The only issues I had, were deciding how to display the sensor information and how to end the threads.

I ultimately decided to have the program only output when the sensors would change value. So when the line sensor is in the black, there was no output. But when it moves the white the sensor's name and gpio status would come up.

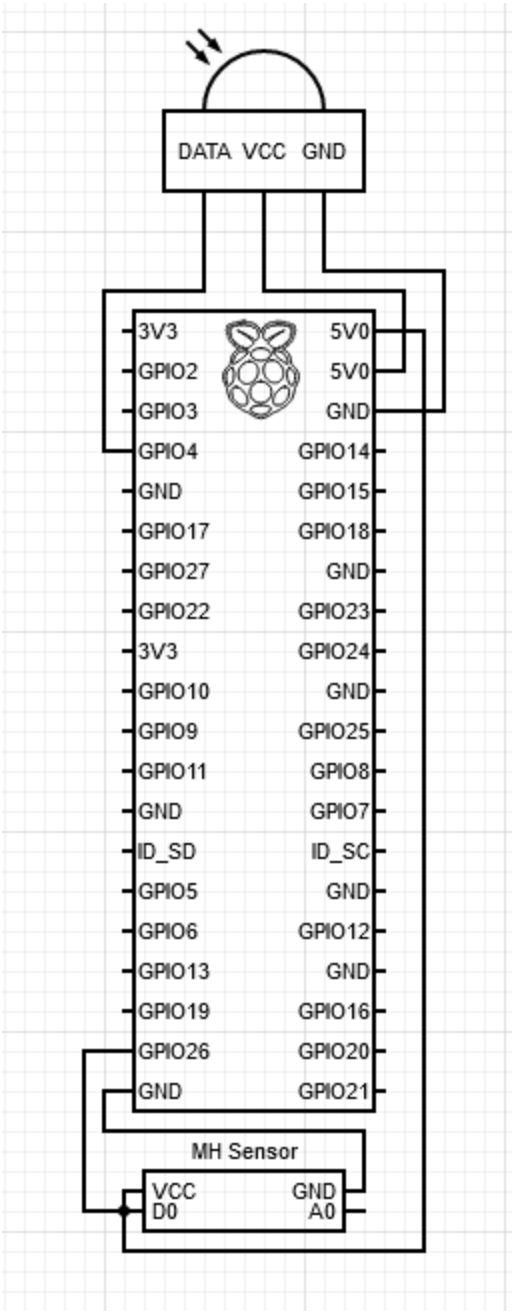
I also chose to end the threads after a certain amount of time. Because both threads were running in a loop it was better for me to have them stop based on time.

Photo of the completed circuit.

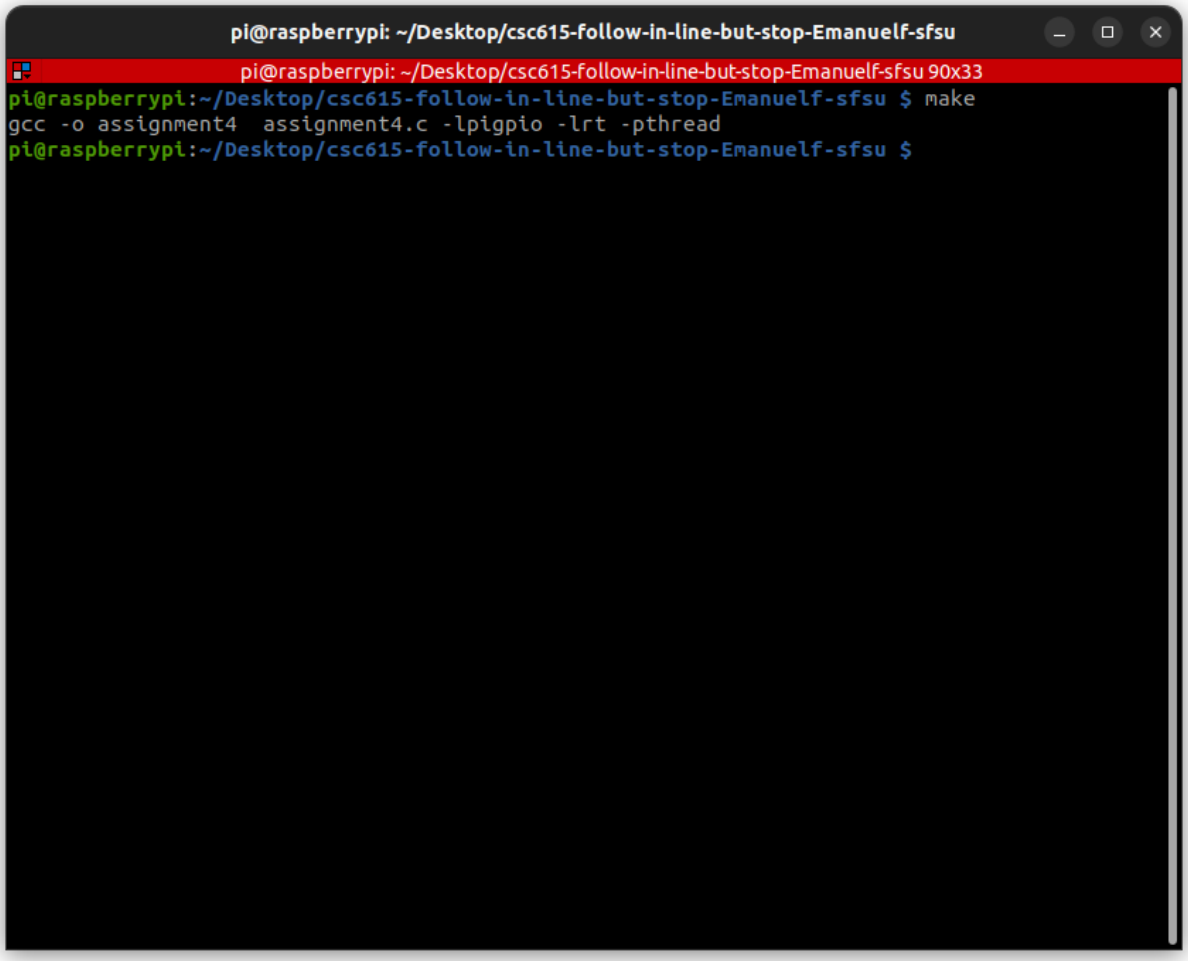


Hardware Diagram:

All components must be labeled and values specified and pins used (Physical pin numbering)

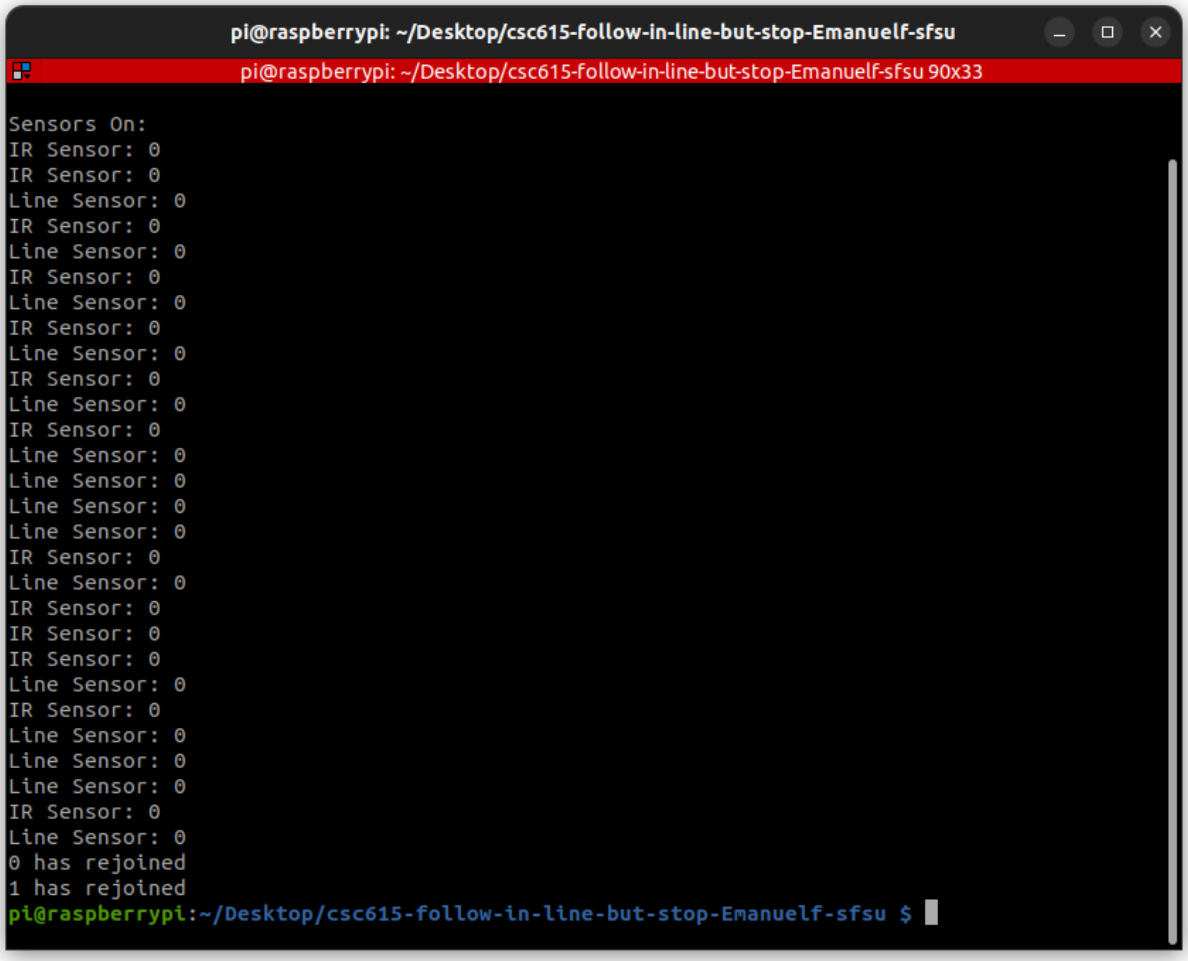


Screen shot of compilation:



Screen shot(s) of the execution of the program:

Show all necessary screen shots (some assignments require more than one).
These should be in the Terminal window.


pi@raspberrypi: ~/Desktop/csc615-follow-in-line-but-stop-Emanuelf-sfsu
pi@raspberrypi: ~/Desktop/csc615-follow-in-line-but-stop-Emanuelf-sfsu 90x33
Sensors On:
IR Sensor: 0
IR Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
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IR Sensor: 0
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IR Sensor: 0
IR Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
Line Sensor: 0
Line Sensor: 0
IR Sensor: 0
Line Sensor: 0
0 has rejoined
1 has rejoined
pi@raspberrypi:~/Desktop/csc615-follow-in-line-but-stop-Emanuelf-sfsu $