Senior Design Progress Report

|  |  |  |  |
| --- | --- | --- | --- |
| **Student**: | Brian Dye | **Team**: | 20 ENIGMA |
| **Semester**: | Spring 2022 | **Position**: | Team Leader |
| **Week**: | **4** | **Hours**: | 15 |

# Progress Description

This week my team learned that we cannot use MicroPython to accomplish our PSSCs. As a team, we contemplated whether we should complete our project using the familiar **STM-32** microcontroller and the **System Workbench** integrated development environment (IDE) or attempt to program the ESP-32 in C using an IDE we are unfamiliar using.

I also spent quite a bit of time last weekend (1/29/2022) attempting to setup the SPI connection between the ESP-32 microcontroller and the MSP2202 TFT LCD display using MicroPython. I re-read the documentation and lab manuals from ECE-36200 to gain a better understanding of how to communicate with the LCD display effectively. I came to understand that the LCD requires a special SPI protocol that switches between 8-bit and 16-bit word transfers, along with setting and unsetting pins on the LCD screen to distinguish between communicating register updates and data (screen) updates. While I was setting up communication between the ESP-32 and LCD screen, I ran into an issue with the ESP-32 not being able to switch between sending 8-bit words and 16-bit words. When I attempted to de-initialize the SPI connection to change the word size, I received the following error:

Graphical user interface, text

Description automatically generated

I could not find a solution online and I believe the problem lies within the boundaries of MicroPython (which would further demonstrate why MicroPython is insufficient). If my team decides to utilize the ESP-32 using C, I am curious to see if we run into the same issue.

# Electronic Components

My team is incredibly fortunate that ECE-47700 staff has many of the electronic components that I planned on ordering last week already in stock. This week I checked out 2 GPS modules and 2 Duck antennas. I also learned that the ECE-47700 has Bluetooth modules if my team decides to use the STM-32 and they also ordered SMA connectors. Because the ECE-47700 staff already has these components in stock, this saves my team approximately $200.00. My team can now allocate our budget to other pieces of equipment and possibly create more individual devices.

A picture containing text, indoor

Description automatically generated