CST471

Memo

To: Kevin Pintong

From: Zak Rowland

Date: October 9, 2020

Re: Memo 1

The first few weeks of progress has mainly involved researching and deciding on parts that I will likely use. Before the pandemic hit, I wanted to go for the lowest cost parts available that would still satisfy the requirements in order to keep the project affordable for anyone. Since cheap parts usually don't have the best documentation, the class was advised against doing this and instead going for the most commonly used and well documented parts. This factor has removed one of the big purposes of my project, which is keeping the cost as low as possible, but I think the benefits of completing the project remain the same. I plan on finding theoretical low-cost alternatives to the parts I will be using to highlight what I likely would have used if access to lab equipment was permitted as usual.

In these first three weeks of the term, I have worked on the project for about 11 hours and 15 minutes. The first week, I spent 3 hours revising the requirements and schedule from last term, as well as developing a work deliverables agreement. The second week I spent more time researching parts, had a short meeting with Kevin, began building a parts table, and revised the work deliverables agreement. This progress from the second week took about 6 hours and 15 minutes. Finally, this week I spent more time researching parts, and ordered the ELM327 OBD-II to RS232 interpreter IC as well as a 5-inch touchscreen with a DSI cable. I want to develop my schematics before ordering any other parts, but these parts are essential and will not change so I wanted to get them shipped to start using and testing. I also got a MicroSD to store the Raspberry Pi's operating system.

During the second week, I spent a lot of time researching all the different Bluetooth modules and thought would settle on the HC-06 module. However, after reviewing the part documentation and my own requirements, the HC-06 uses Bluetooth 2.0 and my requirements require Bluetooth 4.0+ for Bluetooth Low Energy (BLE). I could take the "easy" route and remove the 4.0+ requirement, however I want to learn how to use BLE. The HM-19 is Bluetooth 5.0 (which means BLE is supported,) and the pinout is the same as all the other common Bluetooth modules like HC-05 or -06, so I think this is the one I will finally settle on. However, I am going to wait until I work on schematics before I order a Bluetooth module to be sure I get one that will suit my needs. Another problem I noticed is that according to the ELM327 datasheet, it uses 5V logic for RX/TX instead of 3.3V, so I will likely need a logic level adjusting chip to go along with

the Bluetooth module I order (recommendations from Elm are included in the datasheet) unless it can handle 5V logic, which most don't from what I have seen.

Over the next week, I plan to start tinkering with the Raspberry Pi 4 and becoming familiar with how to use it and develop for it. This should help me decide the best operating system to use for the project. If time permits, I will start working on schematics as well.

Schedule / project management (Trello):

https://trello.com/b/57kp2fr0/zaks-senior-project

Work-in-progress parts table (Excel – View Only):

https://oregontech-my.sharepoint.com/:x:/g/personal/zak_rowland_oit_edu/ESNJ9B0jKnFEjfNFRXb084MBa_BKUOOE3Skfk8lLYKfS-Q?e=bcle9j