Group number: May1719
Project title: Portable Nutrient Data Collection System - Phase II
Client &/Advisor: Dr. Qiao & Dr. Qeu

Team Members/Role:
Ben Theisen - Group Leader
Michael Rupert - Webmaster
Zakk Belloma - Key Concept Holder
Ben Engebrecht - Communication Leader
Logan Boas - Communication Leader #2
Ryan Young - Key Concept Holder #2

o **Weekly Summary**

Design Document version one was worked on by all members of the team and finished. Project Plan version two is underway and will be finished by the deadline. Serial communication from the spectrometer was accomplished, which is a major milestone in our project. This means that we are able to start dealing with the data coming out of the spectrometer and designing our app to best suit displaying this data. Another accomplishment from this week was finally being able to pair the app with the Bluetooth module. This will allow us to start control of the spectrometer from the app, and with serial communication working, this development can start sooner than expected.

o **Past week accomplishments**

- ❖ Extracted data through RS232 interface on spectrometer, began designing interface between spectrometer and Android device via a Raspberry Pi Zero.
- ❖ App is able to connect to the HC-06 Bluetooth module. App is theoretically able to send data to the module. Currently unable to receive data to test full communication ability.
- ❖ Finished Design Document V1.
- ❖ Signed up for final review time slots.

o Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Michael Rupert	Assisted in experimenting with RS232 connector. Started work on Web viewer for Firebase data and graph generator.	6	41
Ben Theisen	Finished design document and submitted for grading. Assisted in creating pairing capability between app and HC-06 module. Began to implement receiving data functionality.	5	43
Zakk Belloma	Successfully got android to pair to the HC-06 through the app, and I think we are sending data but I still need to verify.	5	40
Ben Engebrecht	Achieved RS232 communication through the spectrometer, started design of program and interface to Raspberry Pi	10	45
Logan Boas	Design Document work. Started researching the material for the container that holds voltage booster, raspberry pi, spectrometer, and the bluetooth chip.	5	40
Ryan Young	Worked on rs232 communication, successfully acquired data	7	47

o Comments and extended discussion
  - ○ We are potentially going to change the Bluetooth design due to limited ports on the Raspberry Pi Zero.

o Plan for coming week
  - No advisor meeting this coming week -All
  - Finish V2 of the project plan - All
  - Get data retrieval through bluetooth working -Zakk, Ben T
  - Implement sending commands to the spectrometer through Bluetooth - Zakk, Ben T

- Research how sending data to the cloud with Firebase works and how to deal with that data afterwards - Ben T
- Work on developing a system for extracting data from the spectrometer and analyzing it - Ben E, Ryan, Michael
- Order the needed parts for the step up voltage converter after advisor approves the parts and researching container materials. - Logan B

o **What we learned this week**
- ❖ Found the wavelength and typical intensity of nitrate in a spectrometer graph which will help with what data we collect from the spectrometer - all
- ❖ Design documentation is more difficult to create than a project plan. Require much more detail in order to convey the point of the document. -Ben T
- ❖ After working through the spectrometer company's mislabeled breakout board, somewhat spotty documentation and RS232 non-standard pin arrangements, we learned that if you have issues in your design, don't assume your documentation is correct for anything - Ben E, Ryan

o **Summary of weekly advisor meeting (if applicable/optional)**

Most of the discussion with Dr Qiao this week was around the communication with our spectrometer over RS232 serial. We've been encountering a lot of issues with getting this working, and we walked him through those challenges. Fortunately, through a considerable amount of effort this week, we were able to get everything working and are moving forward rapidly with our project. We also received a presentation from Shenmin, the graduate student working on our project, where he showed us his findings when experimenting with the spectrometer as it works today, and its detection of nitrates.