Team Project Proposal

CS320-102: Software Engineering, Spring Semester 2020

Due Date: Monday, 2-3-2020, by 7:00 am

Air Quality Monitor

Team Members:

1) **Dylan Bieber**

2) **David McHugh**

3) **Mikayla Trost**

4) **Trevor Gerst**

Summary:

Our project will be based around a remote Air Quality Testing Device that then sends the collected data to a website and, if time permits, a mobile application. With this project we hope to combine hardware and software elements to be able to test air quality and store the collected information into a database. This database information would then be able to be retrieved by our server and website and able to be displayed to the user on the site.

Using environment and GPS sensors, the modules would be used to take measurements of the air quality and the information retrieved would be sent to the database where it is collected and updated. From here the data is able to be retrieved from the user on the website where they can see certain air quality tests and statistics from the current day and past days.

Features: Key: **MG** = Main Goal, **SG** = Stretch Goal

MG: The web application will include the **GPS locations** of the active sensors. A map will be displayed with all the locations in real-time. Users will be able to select a specific sensor and see the live status report of it. This will be one of the main features of the web application.

MG: Each module will be equipped with a **unique location code** that can be typed or scanned into the website allowing the user to gain access to its data. The user will be able to view its geographic location along with its current status. This will be another main feature of the web application.

MG: The user will be able to view the **current reading of the air quality modules**. They will also be able to view the past history of the module and any trends that may exist along with data for that specific area. This will be another main feature of the web application.

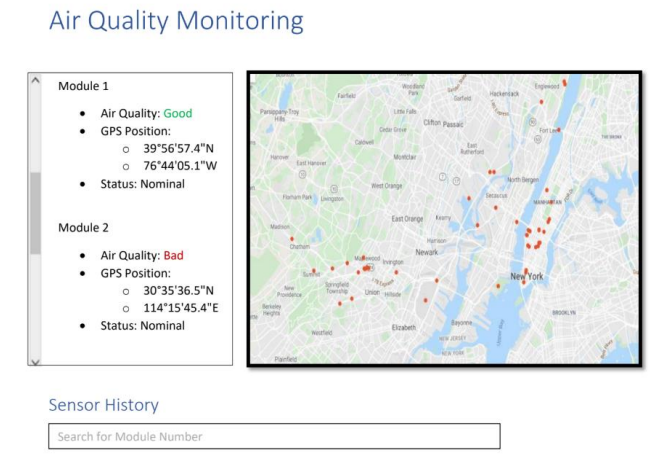
MG: The database will be in-depth as to **store locational data** for each module and its current status. It will also store the past data for each module allowing the user to access old records and allow expansion of the database in the future. This will be one of the main features of the database.

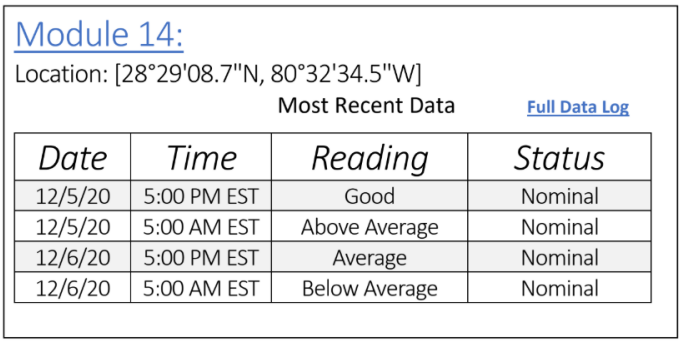
SG: The user will be able to access all the information on a **phone friendly version of the web application**. This will allow users to see the information on this site on the go. If time allows a phone application will be created making it even easier to access the information. The phone friendly version of the web application is one main feature but the app is an implementation that would be nice to have but not necessary.

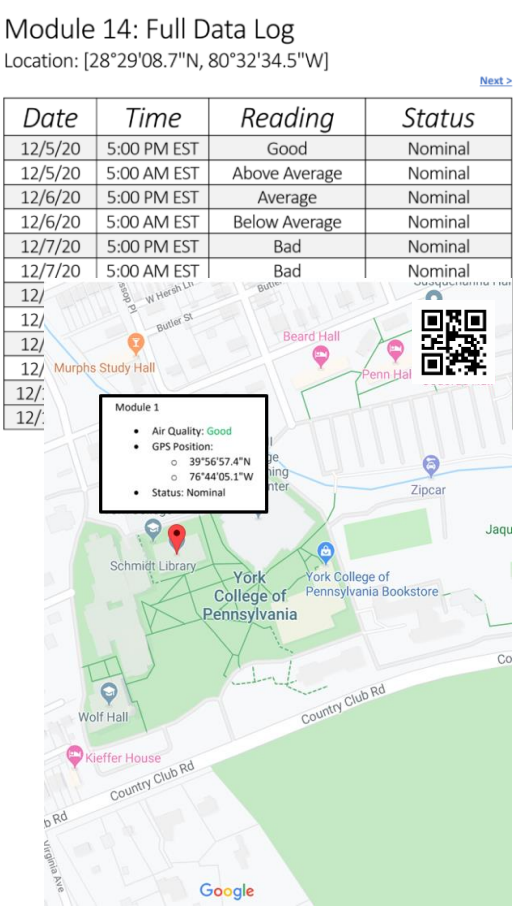
SG: To go along with the mobile-friendly website the user will be able to enter a code to see the information about a specific module. A **unique location QR code** is a

handy feature that will allow the user an easier experience. The code is a main feature of our web application and the QR code is a nice feature to have.

Sketches:







Responsibilities:

Module Input and Communication- Dylan & Trevor

HTML/CSS- Mikayla & Dylan

Database- David will lead, but we all will be helping/learning

Challenges:

One of the challenges we expect to face is being able to control and get information from remote/wireless locations. When it comes to controlling or using remotely connected stations we have not had experience with communicating between them and the host so learning how to do this will be one of our main challenges. Our next challenge will be developing a way for these remote stations to not only access our data from our database but also being able to write up to date and meaningful information back to our database. If the hardware does not function, we will use a software simulation that gives us data points - such as pulling information from a pre-existing air quality website.

Our next challenge will be designing the main website that the user will be interfacing with. In order to allow the user to choose a specific location to monitor or gather new information, we will need to allow the user to interface with something like Google Maps and at the same time be able to ping the location/station they have selected.

Development Environment:

Our development environment will be primarily in Eclipse. Here we will be doing the majority of our HTML/CSS, server, and database work. Most of our work will be done in Java to develop our servlets, and server code. However, our user interface and web-based front end will be done in HTML/CSS using Brackets software. We will also be using Git as a version control so that we can develop our project in steps while making sure our working versions are saved.