**Memorandum 2**

**From:** Justin Pajak, Patrick Creaven, Carter Goldman, Raytheon Preternship Team

**To:** Dr. Matthew Morrison, Assistant Teaching Professor, Department of Computer Science and Engineering, University of Notre Dame

**CC:** John Mallinger, Deputy Chief Engineer, Next Gen GPS Ground System, Raytheon Technologies

Below is an overview of what we have done so far with the project, and our plans for the future.

**What were the goals for this week?**

1. Conduct further research on communication latency and satellite distance calculations
2. Create basic classes for satellite and ground station objects
3. Schedule a meeting with our project manager

**What was accomplished this week?**

This week, we had our initial meeting with our advisor, Ryan. We talked about our initial project document submission, and he suggested a few improvements. Aside from a few syntax and grammatical errors, the one major change is in the project requirements section. We did not fully understand the requirements for that section, but Ryan explained the expectations for the section to us; we changed our document accordingly.

We found an initial source for our orbital data, linked [here](http://celestrak.com/NORAD/elements/). The data is in a format that will be easy to parse through and process using our program. For now, we will focus on the geosynchronous satellites, listed [here](http://celestrak.com/NORAD/elements/geo.php), and listed in raw format [here](http://celestrak.com/NORAD/elements/geo.txt). However, if time and complexity allows, we will move on to support all satellites.

We also wrote some code this week for the basic satellite, ground station, main program, and make file. These tasks were broken up amongst our group which allowed us to get this done relatively quickly. We also added the graph code that was provided in class to our project repository. The plan is to implement this with our Satellite and ground station classes this upcoming week.

**Goals for next week**

1. Utilize inheritance to make the satellite and ground station classes have a common parent, making it easier to facilitate calculations.
2. Create functions in satellite class and ground station class that allow basic communication between one satellite and one ground station
3. Create an initial graph data structure to house the satellites and ground stations, so that we can represent their relationships to each other

**Critical dependencies, open problems, or other things to be aware of for next week?**

1. Continue to flush out full project scope as we begin to develop and finish the actual code for our satellites and ground stations.
   1. Dealing with skeleton code construction of the classes and data structures and working out the smaller details as we progress.
2. Determining which satellites and ground stations can communicate with one another and how exactly that communication will occur.
3. Determining how to write functions that will download and parse through the satellite data.

**How many hours were spent on each goal noted above?**

1. Justin Pajak - 8 hours
2. Patrick Creaven - 8 hours
3. Carter Goldman - 8 hours

Very Respectfully,

Justin Pajak

Patrick Creaven

Carter Goldman

Raytheon Preternship Team

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