Bloomsburg University  
Bus Tracking App

August 31, 2016

# Overview

## Project Background and Description

Create a bus tracking web application that can be used by students to help determine when an upper campus bus will arrive. The web application will be available for computers and mobile devices. The project will take advantage of GPS services on both the student’s devices and modules that will be installed in the busses to provide bus locations on a map and the next bus’s estimated time of arrival.

## Project Scope

The scope of this project defined as, but not limited to, the prototype objectives listed below. Prototype objectives are expected to be completed by the end of the 2016 Fall Semester. If prototype objectives are completed earlier than projected, we will proceed with the post-prototype objectives.

## Prototype Objectives

* Create and configure GPS boxes.
* Configure and program a web server to display bus GPS information.
* Demonstrate the proof-of-concept prototype.

## Post-Prototype Objectives

* Test prototype in actual buses and gather addition information.
* Determine if more powerful components are needed for GPS modules.
* Tweak code and program additional features into the web application.
* Write a follow-up report for Software Engineering class to continue project

## Deliverables

Biweekly updates.  
A demonstration of the completed prototype.  
Source code for prototype.

* Module Source Code: <https://github.com/DanielPany/BloomBus-Module>
* Server Source Code: <https://github.com/DanielPany/BloomBus-Server>

## Project Team

Daniel Pany  
Rio Weber

## Timeline

|  |  |
| --- | --- |
| Week |  |
| Week 1 – 8/29 | Discussing and planning the project approach. |
| Week 2 – 9/5 | Researching and practicing MEAN server backend, and order prototype parts. |
| Week 3 – 9/12 | Soldering prototype parts and setting up main server. |
| Week 4 – 9/19 | Configuring GPS Module and Web Server for testing purposes. |
| Week 5 – 9/26 | Configuring GPS Module and Web Server for testing purposes. |
| Week 6 – 10/3 | Configuring GPS Module and Web Server for testing purposes. |
| Week 7 – 10/10 | Test GPS Module and troubleshoot issues. |
| Week 8 – 10/17 | Fix issues and consolidate/refine code. |
| Week 9 – 10/24 | Test GPS Module with car and troubleshoot issues. |
| Week 10 – 10/31 | Design Web Application. |
| Week 11 – 11/7 | Design Web Application. |
| Week 12 – 11/14 | Design Web Application. |
| Week 13 – 11/21 | Add phone compatibility to web application. |
| Week 14 – 11/28 | Demonstrate prototype to faculty. |
| Week 15 – 12/5 | Write follow-up report to be used for the Software Engineering class. |

## Project Parts

* GPS Breakout: <https://www.amazon.com/Adafruit-Ultimate-GPS-Breakout-channel/dp/B00GLW4016/ref=sr_1_1?ie=UTF8&qid=1472675660&sr=8-1&keywords=gps+breakout>
* XBee Socket: <https://www.amazon.com/Adafruit-100492-XBee-Adapter-kit/dp/B00NAY3M2Q/ref=sr_1_6?ie=UTF8&qid=1472675615&sr=8-6&keywords=xbee>
* Arduino: <https://www.amazon.com/Arduino-Uno-Microcontroller-SMD-Model/dp/B008GRTSV6/ref=sr_1_2?ie=UTF8&qid=1472675605&sr=8-2&keywords=arduino>