Architectural Spike Report

During the Architectural Spike we accomplished several things. We started by meeting our sponsor, Dr. McElroy, about out project and his requirements. Our project is to design an Android and an iOS application that can calculate the growing degree day of certain plants. A growing degree day is calculated with the formula growing degree day (GDD) = Σ [(Tmax - Tmin) / 2] – Tbase. Growing degree days are used to know when plants are blooming. You can use that information to know when to apply pesticide, fertilizer, and other things. This application will take in a start date and end date, fetch the maximum and minimum temperature of each day, and calculate the GDD.

To retrieve the maximum and minimum temperatures for each day, we decided to use developer.forecast.io. We looked at several other APIs, weather underground, etc., but decided on forecast.io for a couple of key reasons. First, it was by far the cheapest. It is around $1 for every 10,000 requests. Where as the other APIs were hundreds of dollars. Second, and more importantly, we could retrieve all of the data we needed and then some.

For the architectural spike, our goal was to get basic functionality programmed for the Android application. We implemented a simple graphical user interface, which will be improved in subsequent design cycles. Presently we are calculating the growing degree days using an arbitrary base temperature for all the types of grass while we wait on the actual base values and grass from Dr. McElroy. To get the user’s location, he or she is required to enter a zip code. We then convert the zip code to latitude and longitude coordinates. The user also enters a start and end date for the GDD to be calculated with. We convert the dates to Unix time and use that to get the maximum and minimum temperatures.