Project 1 Design Document Matt Stevenson 10/17/2016

The Vapor Trail Mountain Bike Race is a 125 mile ultra-enduro ride in the Colorado Rockies nearby Salida, mostly above 10,000 ft. I did the last third of this ride this summer with my buddy Cameron who has ridden the full race about 4 times. It starts at night (10pm) and people need to finish before dusk the next day. Given the intensity, there are aid stations after every 20 miles section or so, and other options to bail out mid section if you get hurt. The goal of the project is to provide an interactive database to the rider so that they know how far they have to go and where to go for safety, given an injury, fatigue, inclement weather, etc.

I will be relying on two main reference classes: Class “aid station” will have attributes assigned by arguments to the \_\_init\_\_ function and will be called on startup of the project (is that how I should implement, BTW?) including altitude, services, and a few others that I will no doubt discover are needed for functionality.

Similarly, there will be 7 instances of a class “section” whose attributes will include distance covered, start and end point (both of which will be assigned to instances of “aid station”), altitude gained, max allowable time, difficulty rating, and hopefully a picture of the map and trail for that section.

There will be a “controller” class that displays options and asks for various user inputs to navigate through the other classes. The most basic function here would allow the rider to call up each instance of “section” and “aid station” by name at a prompt. Also, there would be a separate function that tabs through the race in sequence, from “section” to “aid station” to “section,” displaying their attributes and congratulating them when they complete it.

A key feature of the “controller” class will be the optional command to “Bail out!” Sub-classes “bailout trail” and “safe zone” of classes “section” and “aid station,” respectively, will be added with fewer attributes, but including a descent elevation and additional services (phone number, road name, etc.). These will be employed to allow a function in “controller” to print out the name of the escape route, length, identifying info, etc.

Given the notion of this being fundamentally an app that someone would use to measure their ability to safely complete the race, there will be a method in the “controller” class named “total\_distance” that uses the info contained in the “section” classes to calculate % elevation gain and distance remaining. “total\_distance” will execute and print to screen every time one of the section or aid classes is called.

If time/lines permit, a few of the attributes of each class section would be updatable by the rider. These would include trail condition, difficulty, and a notes function for each section that would append text to be printed alongside the info from the classes.