TP 1 Proposal

Project description: My project is one where people may create an account which they can then access. The site will allow people to upload gpx files which I will then run some metrics on. I am thinking of holding these records to show progress as well as storing date to possibly show progress from week to week. Alongside this any new files uploaded will use previous files in order to show how much more somebody can ride/ run from their previous bests. It will also hold the longest ride/run they did and congratulate them if they get a better score. Also with enough records it will localize the trails that are constantly being ridden and will tell you what you ride the most and what trails you may want to ride more of.

Competitive Analysis: I am taking some ideas from sites like strava and map my ride which will take gpx files and apply their metrics to them. However what i am doing is focused more on personal improvement rather than getting records. I will also try and make it so that the results highlight the hardest parts of the trail which is something none of these apps do and one has to infer. This will give a better sense of what parts of the trails are best for training and can help develop more customizable routes.

Structural Plan: I have one database file which has two tables, Users and GpxFiles. Gpxfiles contains the actual gpx file along with other required. I have a graphic interface which has many pages which first allow the user to either create or select an account. Once logged in the user can see their statistics or see how difficult their rides are. For tp3 I will add functions which will split up their current rides and create a full new gpx file

Algorithmic Plan: My hardest part of the project will probably be analyzing maps and suggesting alternating routes in order to increase difficulty. This will take both plotting the original routes, assigning a score to each segment and then lining up many connective routes based on varying difficulty level. Alongside this I also plot the gpx file the user selected. I have also used the os module un order to be able to find various folders and files which may contain gpxfiles which the user who is logged in can then add to their gpxfiles which will immediately be added to the database. When a gpx file is added to the database multiple metrics occur. I find the total distance and the minimum and maximum longitude. Whenever a person gets into a selection screen I implement pagination so instead of having to select everything on one page they have multiple pages.

Timeline: Right now, I have implemented basically everything except the trail recommendation algorithm. I have pagination for every select screen. Now I am implementing the hardest algorithm which is splitting up a trail into various routes and suggesting easier/ harder routes based on user preference. Right now for this I have implemented a plot which will show the hard parts of the trail and easier sections.

Version control: I will be using GitHub for version control as I am familiar with it and I now have private repositories under the student license.

Module List: The modules I will use are: tkinter, os, sqlite3 and gpxpy.