

X4 Individual Member Project Proposal

Author: Zhenya Liu

Title: UW-Madison Bus Search

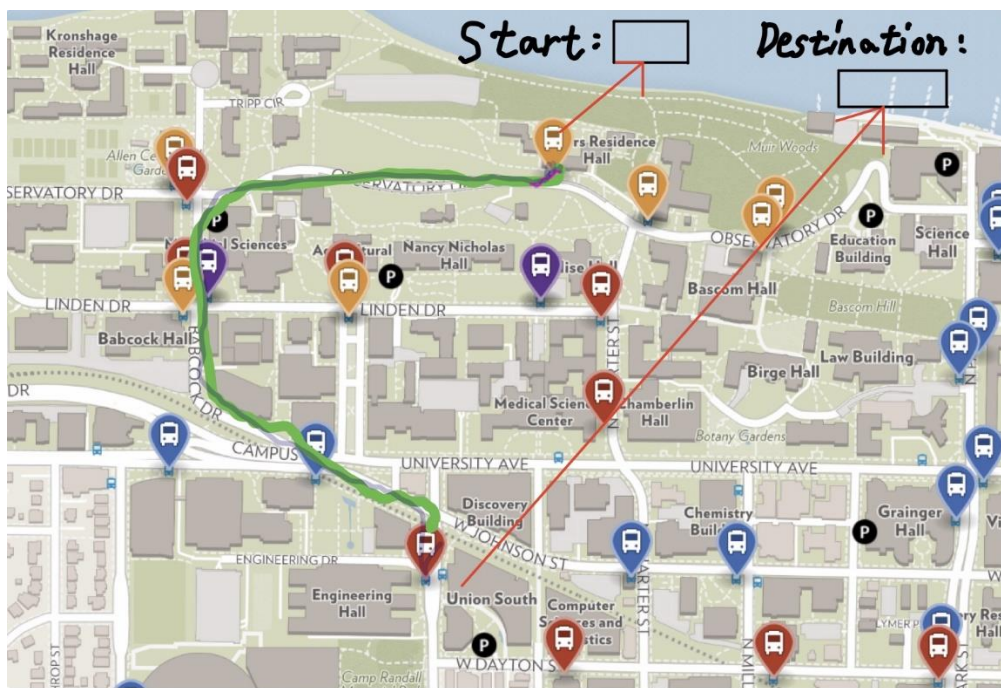
Problem:

This program will show a map in UW-Madison campus. Users can set their start locations and destinations to find the possible best bus line.

Primary Stakeholder:

This program will be extremely useful for people who are not familiar with UW-Madison campus and do not realize they can check the map on their smartphones. When they want to go to some buildings such as Union South, they can search on the software and find the bus they can take.

GUI:



(Red arrows mean using finger to move the location into the button; Green lines mean the output route)

Data:

For this project, graph data structure is needed to produce the result of routes. In the map, possible chosen locations are stored as instances of class location. For each object of Class

Location, it has fields such as coordinates and an Array List of bus stops near the location. The Class of bus stops are actually the graph nodes in our Graph Class. Then we create four other class as sub-Graph because each of the sub-Graph needs to deal with one bus line. From the GUI above, there are four bus lines here. For each sub-Graph Class, we store every location in it and add edges if there are bus stops of the same bus line in two near locations by using adjacency matrix (because we will never add or delete graph nodes). The sub-Graph will generate the best bus route by itself, and the Graph Class will compare these four results and get the best one, which is showed to users.