Assignment 6: Cities—Learning Experience

In this assignment, we created an application to maintain a network of towns (vertices) and roads (edges). The application used Dijkstra’s Shortest Path algorithm to determine the shortest distance between any two towns selected from the files uploaded or manually entered in the GUI. We wrote two Data Elements (Town and Road) as well as a Data Structure called Graph that implemented GraphInterface and a Data Manager called TownGraphManager that implemented TownGraphManagerInterface. We also had to create 4 student tests—one for each of the classes we created.

I found this Assignment to be very tricky. Although I understood how the algorithms worked from the lab and from watching YouTube videos, it was hard for me to figure out how to code the Dijkstra’s algorithm and which method (adjacency matrix or set-based) to use in finding the shortest path. I can see how powerful this type of program could be, and the uses are extensive—an app I use on my phone all the time (Waze) uses the principles we learned to calculate routes for me when I am driving. I also had a long discussion with Dr. Kuijt about polynomial and NP algorithms and how doctoral theses are built on taking one of these algorithms and tying it to the Hamiltonian problem so that one day when someone proves either that the Hamiltonian problem CAN or CANNOT be reduced to one of polynomial Big O, dozens of other problems will be solved. Oh, to be that person. Maybe it will happen in my lifetime, who knows?

I wasn’t as happy with the final product of this program as I normally am. Perhaps it’s that I’m trying to finish everything for the end of the semester or I’m ready for a break, but I didn’t get the chance to polish it as much as I would have liked. Nonetheless, I understand the way shortest path algorithms work, and I think they are fascinating.