Project Summary

My project reads in a text file containing an adjacency matrix. It parses that data to create vertices and edges to form a weighted graph. The user can traverse the graph by the breadth first traversal algorithm. The shortest path between two cities in the graph can also be found. I tried implementing Dijkstra’s algorithm to find the shortest weighted distance between two cities but decided to stop after I encountered too many errors. Additionally, the user can populate each city in the graph with a standard set of city members and then also hand pick people to populate a city. The people of each city are stored in a doubly linked list that is pointed to by the vertices of the graph.

Open Issues/bugs

I was having issues retrieving the adjacency matrix via the command line arguments, so instead I just grab the .txt file using “cin”. Also, when I started implementing the linked lists on the vertices I realized I needed access to the “head” variable for the City class and the “vertices” vector for the Graph class, so I changed these variables from private to public. Initially I had a lot of issues meshing the two data structures together; I had problems getting the vertices to point to the linked lists and vice versa. Frankly, I ran out of time so adding and deleting a city member before the head of the linked list does not work. Also, the cities constituencies need to be built before performing any actions on them (adding or deleting).

How To Run

Compile the program in the terminal with:

g++ -std=c++11 Graph.cpp Final.cpp –o Final.cpp

And then run the program in the terminal with:

./Final

Alternatively, the code can be run in CodeBlocks by opening up all the pertinent files (Final.cpp, Graph.cpp, Graph.h) and then “Build and Run” Final.cpp. When the code asks for the adjacency matrix type “cities.txt”.

Dependencies

None.

System Requirements

I am not sure if there are any system requirements for running this code. It was partly developed in Linux and partly developed in Windows. It has been run on both operating systems and Mac.

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