CS5343 Assignment 3

Cliff Eddings

Assignment 4 Description

1. make a graph. you can use any representation. The graph must have at least 10 nodes and 15 edges. undirected graph.
2. run Dijkstra's algorithm.
submit screen shot and the code.

Description of the program.

The program implements a Graph class and creates an undirected graph of 10 nodes and 15 edges using an adjacency matrix. The program then runs Djikstra's Algorithm and prints the shortest path found by the algorithm.

Methods implemented in the program:

- Graph: constructor creates an adjacency matrix with all values defaulted to -1 or NO_EDGE.
- display_Matrix: prints the adjacency matrix.
- add_Edge: accepts 3 arguments, two for vertices and one for weight as integers and creates the undirected edge in the graph.
- heapify: minimum heapify method for implementation of the priority queue.
- build_heap: builds the min heap for the priority queue.
- swap: swaps the minimum value, top of the heap, with the last value
- relax: "relaxes" the weight of the edges in the priority queue
- djikstra: accepts an integer as an argument for the starting vertex, runs the algorithm using a priority queue and prints the shortest path based on the algorithm.

Compiling instructions.

This program was created using Microsoft Visual Studio. To compile open Visual Studio and create a new empty C++ project. Right click the source files folder under the solution explore window and click Add then Existing item. Browse to the file Source.cpp and double click. Save the project, click build, then "Local Windows Debugger." The program should run.