Lab 7: Dijkstra's Algorithm

COSC 3020: Algorithms and Data Structures

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Instructions

Attempt to finish the tasks below during the lab time. You have until Friday, 4 November 2022, 23:59h to submit the solutions to WyoCourses. You may ask the TA for feedback before submitting, but this feedback will be qualitative only.

You may *not* use external libraries in your code unless explicitly stated.

1 Dijkstra's Algorithm

Recall the pseudocode for Dijkstra's algorithm:

- Initialize the dist to each vertex to ∞, source to 0
- While there are unmarked vertices left in the graph
  - Select the unmarked vertex v with the lowest dist
  - Mark v with distance dist
  - For each edge (v, w)
    - dist(w) = min {dist(w), dist(v) + weight of (v, w)}

Implement Dijkstra's algorithm and test it on a few different graphs. The signature of the function should be

```
function dijkstra(graph, source);
```

The choice of data structures is up to you – your implementation does not have to be the most efficient one!

What is the big-Θ complexity of your implementation?

Total 10 points.