Lab 7: Dijkstra's Algorithm

COSC 3020: Algorithms and Data Structures

Lars Kotthoff
larsko@uwyo.edu

30 October 2019

Instructions

Attempt to finish the tasks below during the lab time. You have until Friday, 01 November 2019, 23:59h to submit the solutions to WyoCourses. You may ask your 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 the algorithm and test it on a few different graphs, ideally with an automated testing framework. You can choose any data structures you like for the implementation.

What is the big-Θ complexity of your implementation?

Total 10 points.