# Lab 6: 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, 26 October 2018, 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 $\infty$, 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. You can choose any data structures you like for the implementation.

What is the big-$\Theta$ complexity of your implementation?

Total 10 points.