

Lab 6: Graph Search

COSC 3020: Algorithms and Data Structures

Lars Kotthoff
larsko@uwyo.edu

Instructions

Attempt to finish the tasks below during the lab time. You have until Friday, 21 October 2022, 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 Depth-First Search

Recall the pseudocode for Depth-First Search:

Given a graph, a start node, and a node we're looking for:

- starting at the start node, while unvisited nodes remain
 - if current vertex v is the node we're looking for, return it
 - mark v as visited
 - for each edge (v, w)
 - * recursively process w unless marked visited

Implement the algorithm and test it on a few different graphs. You can choose any of the data structures we covered (adjacency matrix or adjacency list) for the implementation. The signature of the function should be

function depthFirstSearch(graph, start, node);

What is the worst-case big- Θ complexity of your implementation?

Total 10 points.