Lab 5: Graph Representations

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, 18 October 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 Graph Representations

Implement a function that converts an adjacency matrix to an adjacency list – store only the things that are needed. It should have the following signature:

```
function convertToAdjList(adjMatrix);
```

Make sure that your implementation creates a memory-efficient adjacency list.

Submit your complete code, including a function that demonstrates that your implementation works with a few test inputs.

Total 6 points.

2 Runtime Analysis

What is the runtime complexity of the conversion that you implemented? Does it depend on the number of vertices, the number of edges, or both? What would the time complexity of a conversion function from adjacency list to matrix be?

Submit a PDF document describing your reasoning and the answers. Your reasoning is the most important part.

Total 4 points.

Testing

I'm not giving you the code to test your implementation this week because the testing code contains the solution, but you are encouraged to write testing code yourself.