**CPSC 2150: Week 12 Lab Dijkstra Code Analysis**

**Due: As indicated by submission link**

**Total Marks: 1**

**Instructions – PLEASE READ**

1. This work may be done in pairs.
2. You should submit only one version via D2L. Check instructions from TA regarding what to submit (zip/just code). Code files must always be included.
3. Keep a copy of everything you submit in some online storage that is accessible by you only.

# EXERCISES

1. Extract the contents of **ShortestPathThroughMaze\_WITH\_ERRORS.zip**. This file contains an implementation of Dijkstra’s Single Source Shortest Path algorithm to find the shortest path through a maze (mazes you worked on during Wk10HW) **albeit incorrectly**.  
   The specific methods in question are the following:

* **SolveMazeDijkstra** and the DFS method it calls (**void DFS(int v1, int v2, vector<bool> &visited, vector<int> &dist, vector<int> &path, vector<vector<int>> &allPaths)**)

Compare this implementation with the one demonstrated in the animation link ( [**https://visualgo.net/en/sssp**](https://visualgo.net/en/sssp)) [original implementation, not modified] and list all the issues with the faulty implementation in your own words.  
In your analysis include the following,

* 1. **Issues with the algorithm**
  2. **Issues with data structures being used (or not being used that should have been)**
  3. **Issues in the code**
  4. **Any other reason for the code producing incorrect results**

Use code snippets as necessary to argue your points. Type your answer below.

a)

DFS(closestNeighbor, v2, visited, dist, path, allPaths); On line 286 is called outside of the for loop in the DFS method.

b) Dijkstras should use a priority queue

c) if(visited[v2]){

return;

} //seems to be a redundant piece of code

d)