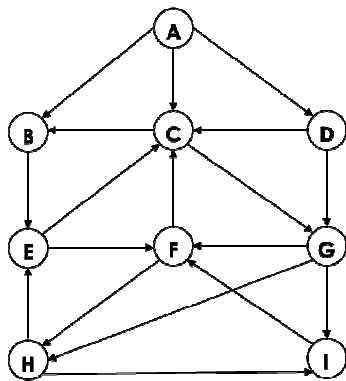


CS2413: Data Structures Fall 2021

Homework #5

- Full name only: _____
- Release date: Nov 3rd, 2021 (Wednesday)
- Due date: **Nov 16th, 2021 (Tuesday) before midnight, 11:59 PM**
- It should be done INDIVIDUALLY; Show ALL your work; Submit your all source codes and results through the Blackboard.
- Total: 20 pts

I. Write a program to conduct a depth-first search using a stack (refer to Review #6) and the minimum path search (e.g., breadth-first search) using a queue (refer to Review #7) based on the following directed graph and its adjacency lists. In the depth-first search, any starting node can be selected (e.g., user input) in the graph. In the minimum path search, both starting and ending nodes should be selected (e.g., user input).



Adjacency Lists			
A:	B	C	D
B:	E		
C:	B	G	
D:	C	G	
E:	C	F	
F:	C	H	
G:	F	H	I
H:	E	I	
I:	F		

- Type the homework number and your full name at the top of your source code.

```
/* Homework #5, James Bond */
```

- Your program should be a menu-driven and execute the chosen command. If you type 3, then exit the program.

M E N U

```
Depth-First Search (0), Minimum Path Search (1)
Exit Program (3)
```

Choose?

- Display a message, in the case when searching a path that does not exist in the graph.
- Show ALL your work. For example,

M E N U

```
Depth-First Search (0), Minimum Path Search (1)
Exit Program (3)
```

Choose? 0 H

H I F C G B E

M E N U

Depth-First Search (0), Minimum Path Search (1)
Exit Program (3)

Choose? 1 A I

A C G I

M E N U

Depth-First Search (0), Minimum Path Search (1)
Exit Program (3)

Choose? 3

.
.
.

2. Please refer to Reviews #6 and #7.

3. The adjacency list can be implemented by using either a linked list or an array. Both stack and queue data structures should be implemented in your way.

4. Submit your all source codes and results (e.g., screen copy) through the Blackboard before the due date, **Nov 16th, 2021 (Tuesday) before midnight, 11:59 PM**. The TA will build and run your source codes and test with random input.

- Source codes – The file name should be “your name + homework number”, e.g., james_bond_5.cpp, james_bond_5.h, etc.
- Results in a word file (e.g., screen copy)