Quiz 7 - Graph Algorithms - 1

Due Feb 22 at 11:59pm **Points** 10 **Questions** 8
Available until Feb 23 at 11:59pm **Time Limit** None **Allowed Attempts** 2

Instructions

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This quiz will test your understanding of the material covered so far this week (MLOs).

This is an online quiz. There will be no time limit to the quiz. You can attempt the quiz twice and the best of the scores will be retained. This is open notes and open internet quiz but refrain from discussing with anybody during the exam.

Note that this test cannot be taken past the due date for any credit.

This quiz is worth 10 points.

You can view the correct answers here after the due date.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	less than 1 minute	10 out of 10
EST	Attempt 2	less than 1 minute	10 out of 10
	Attempt 1	12 minutes	9 out of 10

Score for this attempt: **10** out of 10
Submitted Feb 22 at 10:04am
This attempt took less than 1 minute.

Question 1 — 1 / 1 pts

A graph can be represented as a tuple containing two sets. For example:
A= ({...},{...})

False

Correct!

True

Graph can be represented as tuple containing two sets. A set for vertices and set for edges.

Question 2

1 / 1 pts

Dijkstra is used to solve for a shortest path in a weighted graph with non negative weights.

Correct!

True

False

Question 3

1 / 1 pts

For an undirected graph G, what will be the sum of degrees of all vertices. (degree of a vertex is the number of edges connected to it.)
V: number of vertices, E: number of edges.

|E|

|V|

|V|+|E|

Correct!

2|E|

Since the given graph is undirected, every edge contributes as 2 to sum of degrees. So the sum of degrees is 2E.

Question 4

1 / 1 pts

Which of the following data structures can be used to implement the Dijkstra algorithm most efficiently?

- Stack
- Max priority queue
- Min priority queue

Correct!

- Circular queue

Question 5

1 / 1 pts

Given two vertices s and t in a connected graph G, which of the two traversals, BFS and DFS can be used to find if there is a path from s to t?

- Only BFS
- Only DFS
- Neither BFS nor DFS
- Both BFS and DFS

Correct!

Question 6

2 / 2 pts

Following is a pseudocode for graph traversal approach:

```
traverse (G, s)                  //Where G is the graph and s is the source
node
      let Q be queue.
      Q.enqueue( s ) //Inserting s in queue until all its neighbour vertices
are marked.

      mark s as visited.
      while ( Q is not empty)
           //Removing that vertex from queue,whose neighbour will be visited
now
           v  =  Q.dequeue( )

          //processing all the neighbours of v
          for all neighbours w of v in Graph G
               if w is not visited
                        Q.enqueue( w )             //Stores w in Q to furthe
r visit its neighbour
                        mark w as visited.
```

This pseudocode is for Breadth First Search approach

Answer 1:

Correct!

Breadth First Search

Question 7

2 / 2 pts

Following is a pseudocode for a graph traversal technique:

```
    traversal-recursive(G, s):
        mark s as visited
        for all neighbours w of s in Graph G:
            if w is not visited:
                traversal-recursive(G, w)
```

This pseudocode is for Depth First Search approach

Answer 1:

Correct!

Depth First Search

Question 8

1 / 1 pts

When performing the topological sort we always find a unique solution.

- True
- False

Correct!

Refer to exploration on topological sort. It lists an example.

Quiz Score: **10** out of 10