

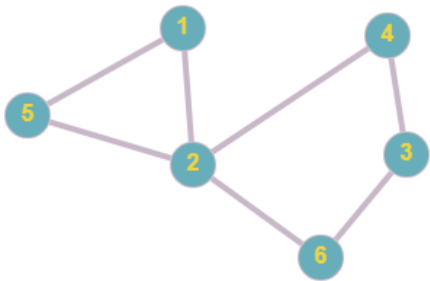
Started on	Saturday, 13 May 2023, 7:37 PM
State	Finished
Completed on	Saturday, 13 May 2023, 8:08 PM
Time taken	30 mins 33 secs
Grade	7.00 out of 10.00 (70%)

Question 1

Correct

Mark 1.00 out of 1.00

Given the following unweighted undirected graph please fill in the corresponding adjacency matrix.



	1	2	3	4	5	6
1	<div>0</div> <div>✓</div>	X	X	X	X	X
2	<div>1</div> <div>✓</div>	0	X	X	X	X
3	0	<div>0</div> <div>✓</div>	0	X	X	X
4	0	<div>1</div> <div>✓</div>	1	0	X	X
5	1	<div>1</div> <div>✓</div>	<div>0</div> <div>✓</div>	0	0	X
6	0	1	<div>1</div> <div>✓</div>	0	<div>0</div> <div>✓</div>	0

Question 2

Correct

Mark 1.00 out of 1.00

Which of the following represent the correct pseudo code for non recursive DFS algorithm?

Select one:

- ☐ a.

```
procedure DFS-non_recursive(G,v):  
  //let St be a stack  
  St.push(v)  
  while St is not empty  
    v = St.pop()  
    if v is not discovered:  
      label v as discovered  
      for all adjacent vertices of v do  
        St.push(v)
```
- ☐ b.

```
procedure DFS-non_recursive(G,v):  
  //let St be a stack  
  St.pop()  
  while St is not empty  
    v = St.push(v)  
    if v is not discovered:  
      label v as discovered  
      for all adjacent vertices of v do  
        St.push(a) //a being the adjacent vertex
```
- ☐ c.

```
procedure DFS-non_recursive(G,v):  
  //let St be a stack  
  St.pop(v)  
  while St is not empty  
    v = St.pop()  
    if v is not discovered:  
      label v as discovered  
      for all adjacent vertices of v do  
        St.push(a) //a being the adjacent vertex
```
- ☒ d.

```
procedure DFS-non_recursive(G,v):  
  //let St be a stack  
  St.push(v)  
  while St is not empty  
    v = St.pop()  
    if v is not discovered:  
      label v as discovered  
      for all adjacent vertices of v do  
        St.push(a) //a being the adjacent vertex
```

 ✓

Your answer is correct.

The correct answer is:

```
procedure DFS-non_recursive(G,v):  
  //let St be a stack  
  St.push(v)  
  while St is not empty  
    v = St.pop()  
    if v is not discovered:  
      label v as discovered  
      for all adjacent vertices of v do  
        St.push(a) //a being the adjacent vertex
```

Question 3

Correct

Mark 1.00 out of 1.00

Time Complexity of Breadth First Search is:

Select one:

- ☐ a. $O(V / E)$
- ☐ b. $O(V * E)$
- ☐ c. $O(\log(V + E))$
- ☒ d. $O(V + E)$ ✓

Your answer is correct.

The correct answer is: $O(V + E)$

Question 4

Correct

Mark 1.00 out of 1.00

For a Graph $G = (V, E)$ and source vertex s , Breadth First Search(BFS) algorithm builds breadth-first tree with root s that contains all reachable vertices.

Select one:

- ☒ True ✓
- ☐ False

The correct answer is 'True'.

Question 5

Correct

Mark 1.00 out of 1.00

Which of the following is/are the application(s) of Depth First Search

Select one or more:

- ☒ a. Solving puzzles with only one solution like mazes ✓
- ☐ b. To find friends and friends of friend of a person in social networks like Facebook
- ☐ c. Finding all neighbor nodes in Peer to Peer Networks like BitTorrent.
- ☒ d. Detecting the existence of cycles in a graph. ✓

Your answer is correct.

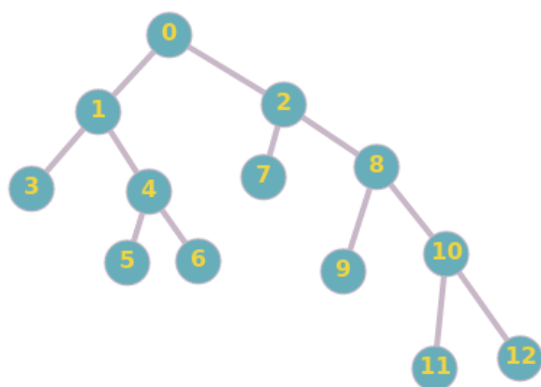
The correct answers are: Solving puzzles with only one solution like mazes, Detecting the existence of cycles in a graph.

Question 6

Incorrect

Mark 0.00 out of 1.00

Find the output of Depth-First search of the following tree using in-order traversal:



Select one:

- ☒ a. 0 1 2 3 4 7 8 5 6 9 10 11 12 ✗
- ☐ b. 3 5 6 4 1 7 9 11 12 10 8 2 0
- ☐ c. 3 1 5 4 6 0 7 2 9 8 11 10 12
- ☐ d. 0 1 3 4 5 6 2 7 8 9 10 11 12

Your answer is incorrect.

The correct answer is: 3 1 5 4 6 0 7 2 9 8 11 10 12

Question 7

Incorrect

Mark 0.00 out of 1.00

Regarding implementation of Breadth First Search using queues, at a given time, what is the maximum difference between depth of any two nodes present in the queue?

Select one:

- ☐ a. Atmost 1
- ☒ b. 0 ✖
- ☐ c. Insufficient Information
- ☐ d. Can be anything

Your answer is incorrect.

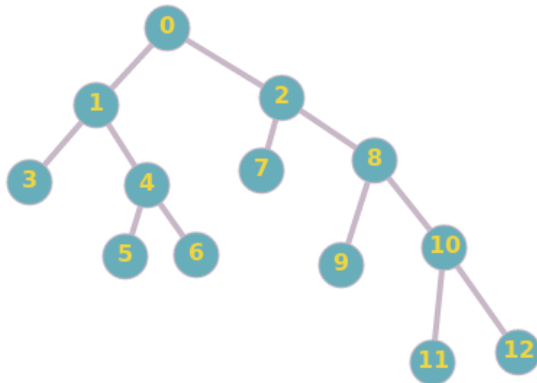
The correct answer is: Atmost 1

Question 8

Not answered

Marked out of 1.00

Find the output of Breadth-First Traversal of the following tree:



Select one:

- ☐ a. 0 1 2 3 4 7 8 5 6 9 10 11 12
- ☐ b. 0 1 3 4 5 6 2 7 8 9 10 11 12
- ☐ c. 3 5 6 4 1 7 9 11 12 10 8 2 0
- ☐ d. 3 1 5 4 6 0 7 2 9 8 11 10 12

Your answer is incorrect.

The correct answer is: 0 1 2 3 4 7 8 5 6 9 10 11 12

Question 9

Correct

Mark 1.00 out of 1.00

The Data structure used in standard implementation of Breadth First Search is?

Select one:

- ☐ a. Linked List
- ☒ b. Queue ✓
- ☐ c. Stack
- ☐ d. Tree

Your answer is correct.

The correct answer is: Queue

Question 10

Correct

Mark 1.00 out of 1.00

Which of the following are NOT a real-life application of graphs?

- ☐ a. Social networks
- ☒ b. Binary Search Algorithm ✓
- ☐ c. Google PageRank
- ☐ d. Routing algorithms in computer networks

Your answer is correct.

The correct answer is:

Binary Search Algorithm