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Quiz 2

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Quiz 2

4/4 points (graded)

1. Imagine a graph where u and v are vertices, and there is no path for which u and v are extremities. If we run a DFS from u , which of the following propositions are true?

☒ At the end of the DFS, v has not been explored.

☐ The DFS is not well defined and cannot be processed.

☐ The resulting tree is made exclusively of shortest paths from u to the accessible vertices of the graph.



2. Imagine we run a DFS (respectively a BFS) from any vertex u of a complete graph of order n . How many vertices are neighbors of u in the resulting tree?

☐ $n - 1$ (respectively 1).

☐ $n(n - 1) / 2$ in both cases.

☒ 1 (respectively $n - 1$).



3. Imagine a graph with vertices (v_1, v_2, v_3, v_4) , in which $\{v_1, v_2\}$, $\{v_1, v_3\}$, and $\{v_1, v_4\}$ are edges. Which of the following are correct (two correct answers)?

☒ To traverse this graph using a DFS from v_1 , we use a LIFO. v_2 , v_3 , and v_4 (in this order) are added to the LIFO, and none of them have been previously visited. As a consequence, the next vertex to be visited is v_4 .

☒ To traverse this graph using a BFS from v_1 , we use a FIFO. v_2 , v_3 , and v_4 (in this order) are added to the FIFO, and none of them have been previously visited. As a consequence, the next vertex to be visited is v_2 .

☐ To traverse this graph using a DFS from v_1 , we use a LIFO. v_2 , v_3 , and v_4 (in this order) are added to the LIFO, and none of them have been previously visited. As a consequence, the next vertex to be visited is v_1 .



4. Imagine a graph with vertices $(v_1, v_2, v_3, v_4, v_5)$. A graph traversal algorithm from v_1 has produced the following routing table (second row): $(undefined, v_3, v_1, v_2, v_1)$. What is the corresponding path between v_1 and v_4 ?

☐ $\{v_1, v_2\}, \{v_2, v_3\}, \{v_3, v_4\}$

☐ $\{v_1, v_3\}, \{v_3, v_5\}, \{v_4, v_5\}$

☐ $\{v_1, v_2\}, \{v_2, v_4\}$

☒ $\{v_1, v_3\}, \{v_2, v_3\}, \{v_2, v_4\}$



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