Q5 (through Graph Search 2)

This is a preview of the published version of the quiz

Started: Nov 2 at 9:52am

Quiz Instructions

Question 1 0.1 pts

Which acronym does NOT refer to a type of graph?

- DAG
- BST
- BFS

Question 2 0.1 pts

What is the largest number of grandchildren that the root of a binary tree might have?

Question 3 0.1 pts

Which statement is TRUE?

- every binary tree is a BST

- ◯ every DAG is also a directed graph
- ◯ every non-root in a binary tree has exactly two parents
- ◯ every non-leaf in a binary tree has exactly 2 children

Question 4 — 0.1 pts

In order to make worst-case lookups as fast as possible, we prefer our BSTs to be:

- ◯ short
- ◯ tall

Question 5 — 0.2 pts

During a graph search, the program crashes due to a stack overflow (that is, too many stack frames are allocated). What graph search algorithm is being used?

- ◯ DFS
- ◯ BFS

Question 6 — 0.1 pts

For which use case is Python's deque data structure NOT suitable?

- ◯ queue

- ◯ stack
- ◯ priority queue

Question 7 — 0.1 pts

Which of the following graphs is NOT always a DAG?

- ◯ streets: nodes for intersections, edges for street sections connecting intersections
- ◯ human ancestry: nodes for people, edges from parents to children
- ◯ git: nodes for commits, edges pointing from each commit to the prior commit

Question 8 — 0.2 pts

Assume nums is a list with N elements. What is the complexity of the following code? Calling len(q) is a single step. For the complexity of the other deque operations in the following code, it may be useful to reference the first couple paragraphs of the deque documentation: https://docs.python.org/3/library/collections.html#collections.deque (https://docs.python.org/3/library/collections.html#collections.deque) before answering.

If multiple answers are correct, choose the best answer.

```
from collections import deque

q = deque()

for x in nums:
    q.append(x)

while len(q) > 0:
    print(q.popleft())
```

- ◯ O(1)

- ◯ O(N)
- ◯ O(N + (N-1) + (N-2) + ... + 2 + 1)
- ◯ O(N**3)
- ◯ O(N**2)
- ◯ O(N + N**2)

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