Congratulations! You passed!
TO PASS 1% or higher

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GRADE
100%

Interview Questions: Undirected Graphs (ungraded)

TOTAL POINTS 3

1. **Nonrecursive depth-first search.** Implement depth-first search in an undirected graph without using recursion. **1 / 1 point**

non recursive depth-first search.

Correct
Hint 1: use an explicit stack.

Hint 2: it is trickier than it may appear at first; you can simply replace a queue with a stack in breadth-first search.

2. **Diameter and center of a tree.** Given a connected graph with no cycles **1 / 1 point**

- *Diameter*: design a linear-time algorithm to find the longest simple path in the graph.
- *Center*: design a linear-time algorithm to find a vertex such that its maximum distance from any other vertex is minimized.

Find diameter and center.

Correct
Hint (diameter): to compute the diameter, pick a vertex s; run BFS from s; then run BFS again from the vertex that is furthest from s.

Hint (center): consider vertices on the longest path.

3. **Euler cycle.** An Euler cycle in a graph is a cycle (not necessarily simple) that uses every edge in the graph exactly one. **1 / 1 point**

- Show that a connected graph has an Euler cycle if and only if every vertex has even degree.
- Design a linear-time algorithm to determine whether a graph has an Euler cycle, and if so, find one.

Prove the conditions of Euler cycle and design a way to find Euler cycle.

Correct
Hint: use depth-first search and piece together the cycles you discover.