CS2223 D Term 2020 Quiz 19

(1 point) Question 1: "My brain is open. . . ."
I pledge that I am taking this quiz on my own, with help from no one else and no notes:

(3 points) Question 2: What is a state-space tree?

a.)   A representation of a problem with nodes as partial solutions and leaves as (potential) solutions.
b.)   A representation of a problem with leaves as partial solutions and nodes as (potential) solutions.
c.)   A representation of a problem such that solutions are always found in the left-most branch.
d.)   A representation of a problem such that solutions are always found in the right-most branch.
e.)   A representation of a problem such that solutions are made to bubble up to the root.

(3 points) Question 3: Backtracking is a technique that attempts to improve on exhaustive search methods by doing what with the corresponding state-space tree?

a.)   Looking only at its leaves and completely ignoring internal nodes.
b.)   Making internal nodes complete solutions so that leaves need not be checked.
c.)   Turning every leaf into a solution.
d.)   Pruning the state space tree so that only viable/promising nodes and leaves are further examined.
e.)   Reducing it to a single node/leaf/root.

(3 points) Question 4: In backtracking through a state-space tree, is a Depth-First Search or a Breadth-First Search more likely to find a solution quickly? Why?

a.)   Breadth-First Search because it always finds the shortest path.
b.)   Breadth-First Search because solutions might take a just single step.
c.)   Depth-First Search because it will get to leaves (possible solutions) before checking every internal node.
d.)   Depth-First Search because it finds symmetric solutions Breadth-First Search misses.
e.)   Depth-First Search because Breadth-First Searching a tree is unnatural.

(1 point) Bonus Question: What role does modeling play in backtracking?

a.)   Modeling is the process of representing the problem in a way that a computer can work on it.
b.)   Good modeling can reduce the state-space tree by omitting redundant/impossible states.
c.)   Good modeling can give insight to the coder/developer.
d.)   A problem properly modeled is already solved. The solution(s) is/are in the state-space tree.
e.)   All of the Above

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