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**Week 2 Quiz: Uninformed
Search**

Quiz due Apr 11, 2017 05:00 IST

**Week 2 Project: Search
Algorithms**

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Week 2 Quiz: Uninformed Search

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Definition of Artificial Intelligence

10/10 points (graded)

Which of the following is the definition of AI agent mentioned in lecture?

☐ Anything that perceives its environment through actuators and acting upon its environment through sensors.

☒ Anything that perceives its environment through sensors and acting upon its environment through actuators. ✓

☐ Anything that perceives its environment through sensors.

☐ Anything that is operated by machine learning algorithms.

Submit

You have used 1 of 1 attempt

Week 2 Discussion Questions

- ▶ Week 3: Heuristic Search
- ▶ Week 4: Adversarial Search and Games

✓ Correct (10/10 points)

Breadth-First Search vs. Depth-First Search

10/10 points (graded)

Compare breadth-first search with depth-first search. Please check all that apply:

☐ DFS and BFS use a similar amount of space.

☒ DFS uses less space than BFS. ✓

☐ BFS uses less space than DFS.

☒ Both BFS and DFS have exponential time complexity. ✓



Submit

You have used 1 of 2 attempts

✓ Correct (10/10 points)

Uniform-Cost Search

10/10 points (graded)

If there is a solution, Uniform-cost search is guaranteed to return the optimal one. True or False ?

☒ True ✓☐ False

You have used 1 of 1 attempt

✓ Correct (10/10 points)

Breadth-First Search

10/10 points (graded)

In a breadth-first search tree, when a goal node is found, how does the depth of the goal node compare to the height of the search tree? (The depth of a node is defined as the number of edges traversed from the root to that node. The height of a tree is equal to the depth of the deepest node in the tree. The search tree includes nodes in the visited and frontier sets.)

The depth of the goal node is _____ the height of the search tree:

☐ less than☐ greater than☐ equal to

☒ less than or equal to ✓

☐ greater than or equal to

☐ greater than, less than, or equal to

Submit

You have used 1 of 2 attempts

✓ Correct (10/10 points)

Depth-First Search

10/10 points (graded)

In a depth-first search tree, when a goal node is found, how does the depth of the goal node compare to the height of the search tree? (The depth of a node is defined as the number of edges traversed from the root to that node. The height of a tree is equal to the depth of the deepest node in the tree. The search tree includes nodes in the visited and frontier sets.)

The depth of the goal node is _____ the height of the search tree:

☐ less than

☐ greater than

☐ equal to☒ less than or equal to ✓☐ greater than or equal to☐ greater than, less than, or equal to

You have used 1 of 2 attempts

✓ Correct (10/10 points)

Uniform-Cost Search

10/10 points (graded)

In a uniform-cost search tree, when a goal node is found, how does the depth of the goal node compare to the height of the search tree? (The depth of a node is defined as the number of edges traversed from the root to that node. The height of a tree is equal to the depth of the deepest node in the tree. The search tree includes nodes in the visited and frontier sets.)

The depth of the goal node is _____ the height of the search tree:

☐ less than

- ☐ greater than
- ☐ equal to
- ☒ less than or equal to ✓
- ☐ greater than or equal to
- ☐ greater than, less than, or equal to

You have used 2 of 2 attempts

✓ Correct (10/10 points)

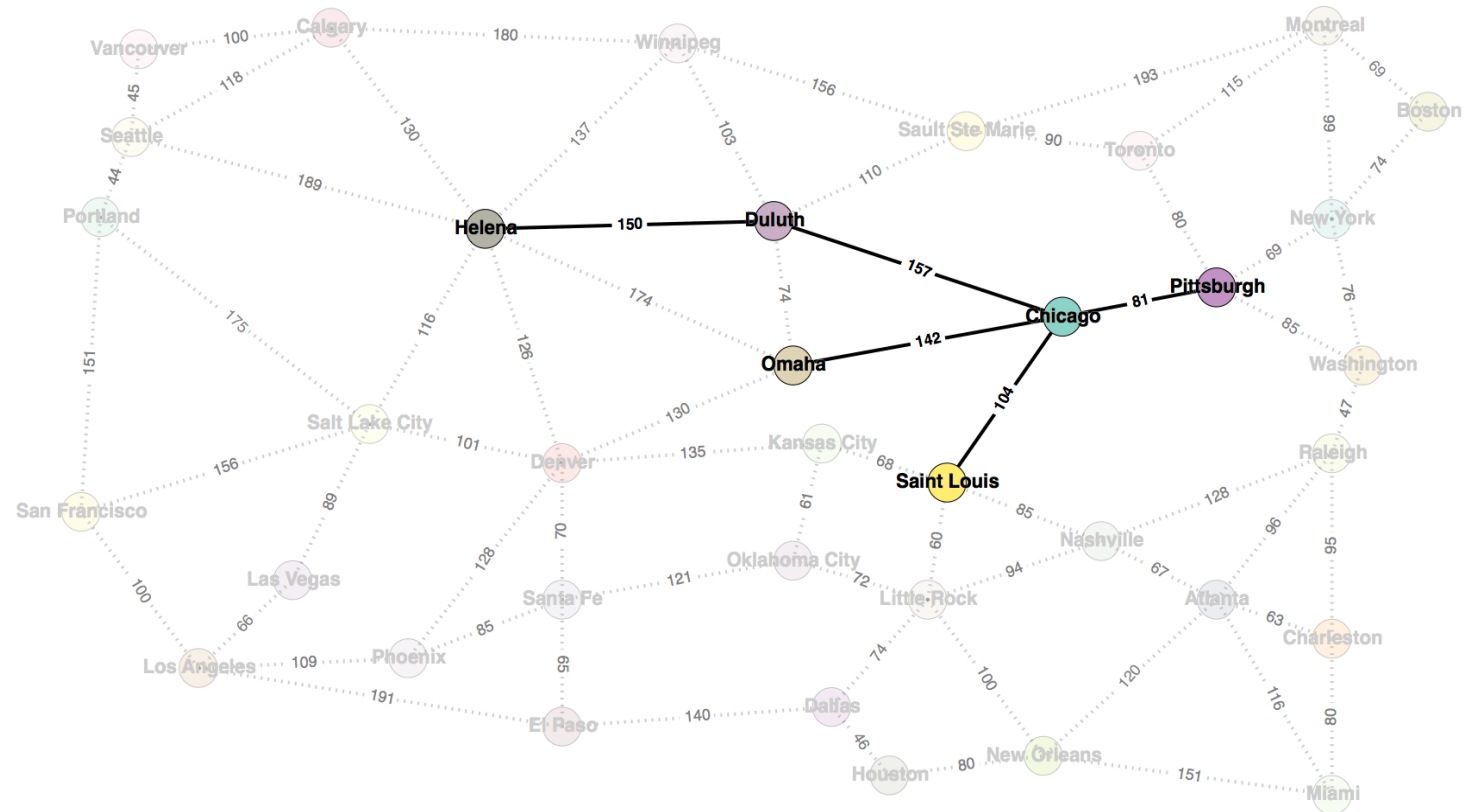
For the following questions, you are given the city that you start in (the "**start city**"), and the city that you want to find (the "**goal city**"). With each of the following search strategies, please list the cities in the exact order in which you end up visiting the cities. The following is the same map used in lecture, provided here again for reference:



All else equal, assume that nodes are always visited in **lexicographical** order. For example, starting at Duluth, a depth-first or breadth-first search strategy would lead to Chicago being the next node visited. In particular, for depth-first search this means that nodes are pushed onto the frontier in reverse lexicographical order (and popped in lexicographical order). For breadth-first search, nodes are simply enqueued and dequeued in lexicographical order.

Example

List the cities in the order visited, using **commas** as separators. Make sure your **spelling** matches the city names exactly. The start city will be the first on the list, and the goal city will be the last on the list. For example, a breadth-first search for Helena, starting from Chicago, will have the correct answer of *"Chicago, Duluth, Omaha, Pittsburgh, Saint Louis, Helena"* (without the quotes). Note that we are listing all the cities **visited**, not just the resulting **path** (which, in this case, only contains Chicago, Duluth, and Helena). The graph of this example is as follows:



IMPORTANT

You may have multiple attempts per question, but each attempt will involve a **randomly generated** instance of the problem. This is intended to discourage submitting by trial-and-error. If you submit an incorrect answer, please make sure to review the examples in lecture before attempting the problem again.

Depth-First Search


10/10 points (graded)

Start: El Paso**Goal:** Charleston

List of cities, separated by commas:

**Answer:** El Paso, Dallas, Houston, New Orleans, Atlanta, Charleston

You have used 1 of 3 attempts

 Correct (10/10 points)**Breadth-First Search**

10/10 points (graded)

Start: Houston

Goal: Los Angeles

List of cities, separated by commas:

Houston,Dallas,New Orleans,El Paso,Little Rock,Atlanta,Miami,Los A



Answer: Houston, Dallas, New Orleans, El Paso, Little Rock, Atlanta, Miami, Los Angeles

Submit

You have used 1 of 3 attempts

✓ Correct (10/10 points)

Uniform-Cost Search

20/20 points (graded)

Start: New Orleans

Goal: Charleston

List of cities, separated by commas:

New Orleans, Houston, Little Rock, Atlanta, Dallas, Miami, Saint Loui



Answer: New Orleans, Houston, Little Rock, Atlanta, Dallas, Miami, Saint Louis, Oklahoma City, Charleston

You have used 3 of 3 attempts

✓ Correct (20/20 points)

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