



## Practice Midterm Examination

### CSCI 561 FALL2014: Artificial Intelligence

Student ID: \_\_\_\_\_

Last Name: \_\_\_\_\_

First Name: \_\_\_\_\_

USC email: \_\_\_\_\_

#### Instructions:

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2. Maximum credits/points for this midterm: 100 points.
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# 1. [15%] General AI knowledge.

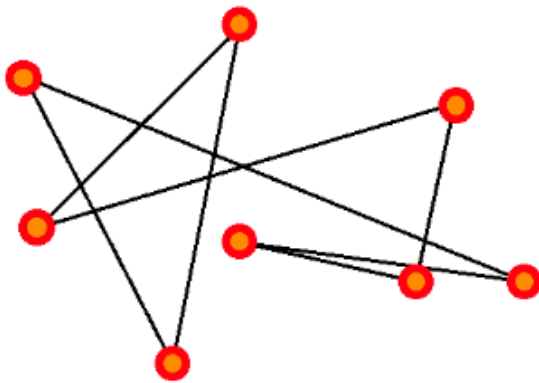
For each of the statements below, write **T** if the statement is always and unconditionally true, and write **F** if it is always false, sometimes false, or just does not make sense:

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- (vi) [1%]      ☐ A\* is an admissible algorithm.
- (vii) [1%]      ☐ DFS is faster than BFS.
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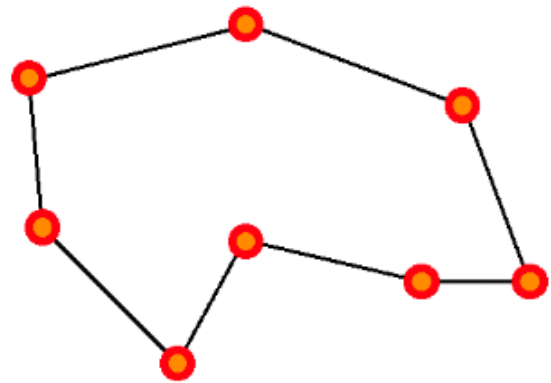


## 2. [15%] Search Algorithms Concepts.

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Suboptimal solution (long path)



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(a) [5%] A suitable representation for states:



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#1 4 of 10

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### 3. [30%] Comparing Search Strategies

Consider the search space on the following page, where S is the start node and G1, G2 and G3 satisfy the goal test. Arcs are labeled with the cost of traversing them and the estimated cost to a goal is reported inside nodes.

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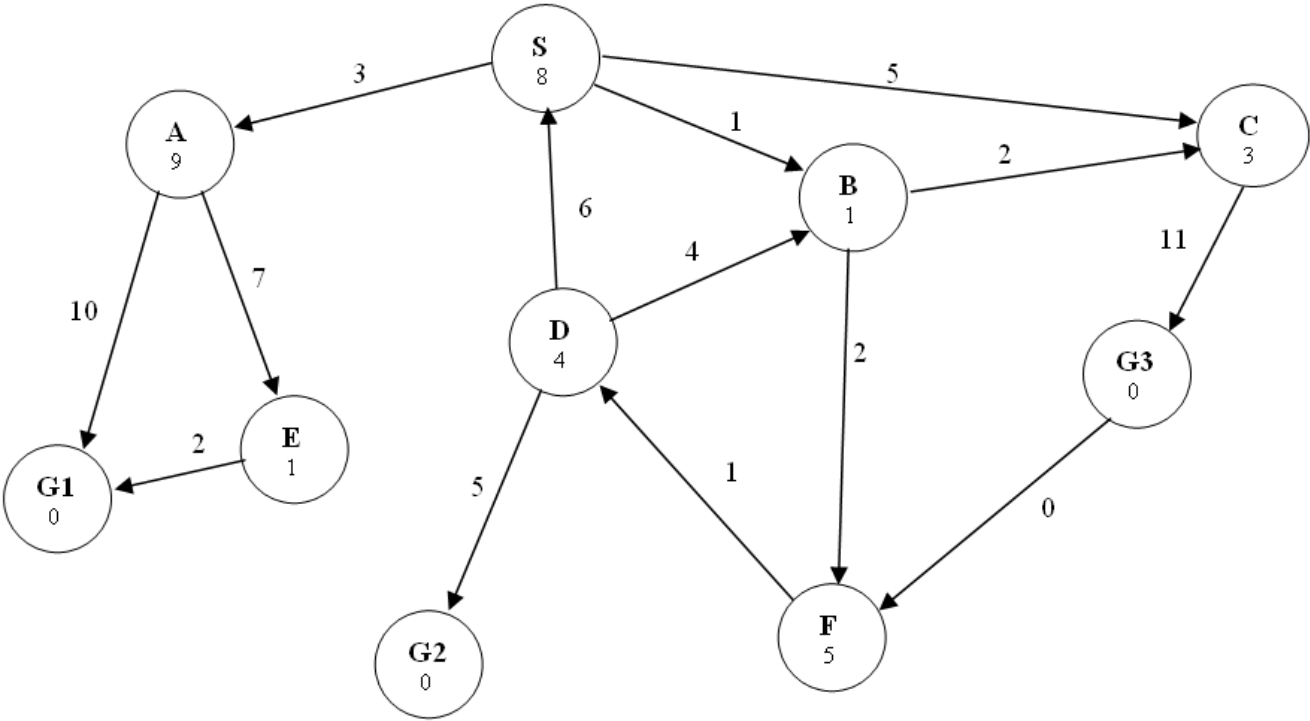
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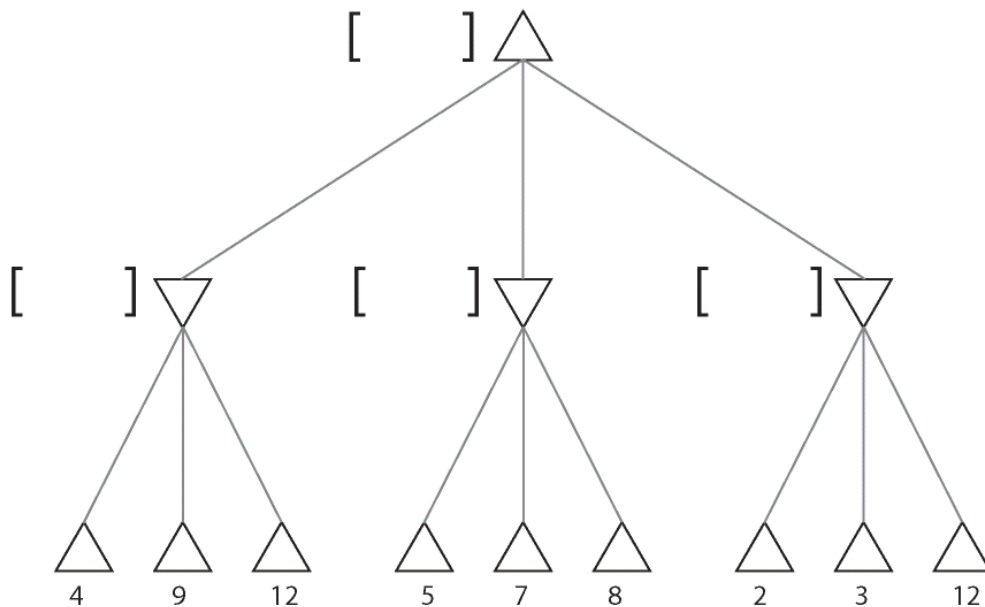
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## 4. [10%] Game Playing.

Consider the following game tree in which the evaluation function values are shown below each leaf node. Assume that the root node corresponds to the minimizing player. Assume that the search always visits children left-to-right.



(a) [4%] Compute the backed-up values computed by the minimax algorithm. Show your answer by writing values at the appropriate nodes in the above tree.

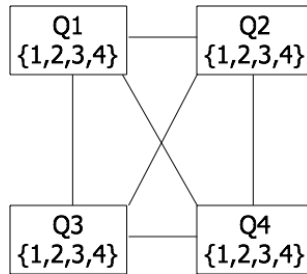
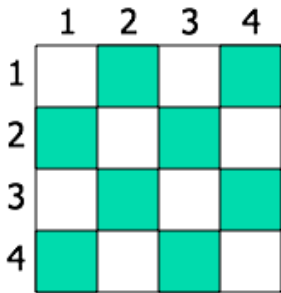
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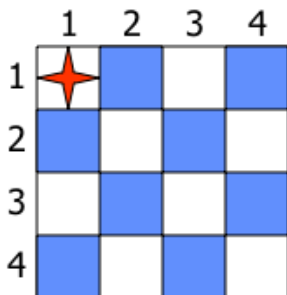
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- (f) Draw the constraint graph again after performing Arc Consistency to solve this 4 queens board, given the first queen's position is square 1.







## 6. [20%] AI Applications.

- (a) [5%] Which AI application has a discrete, static environment?
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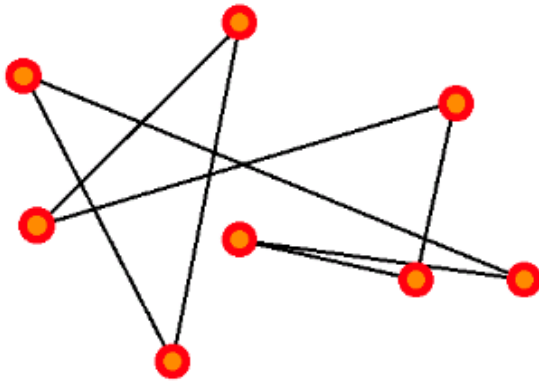
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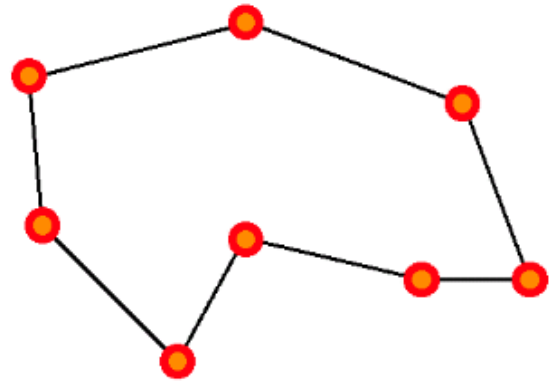


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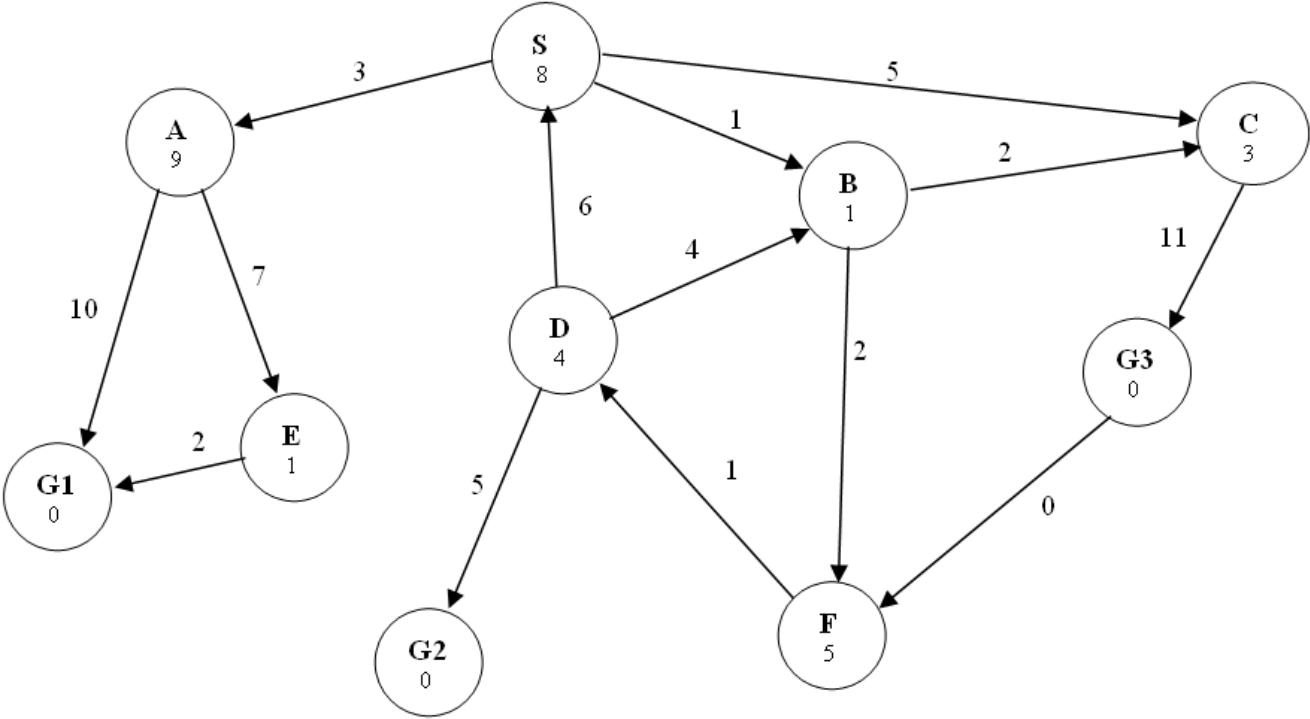
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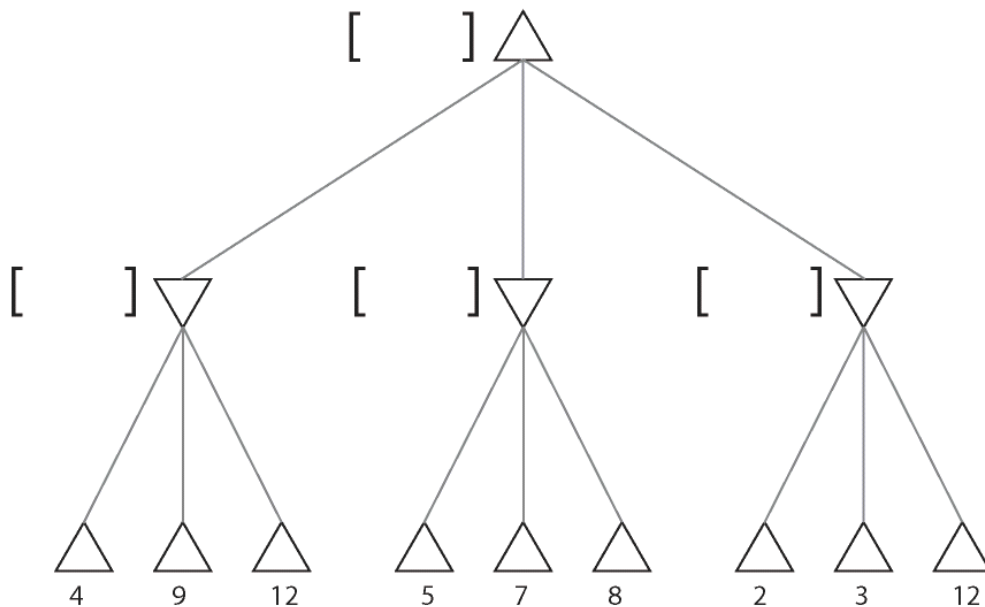






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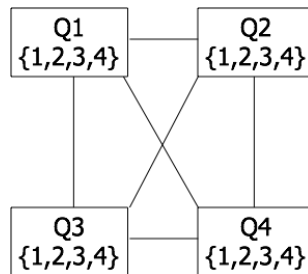
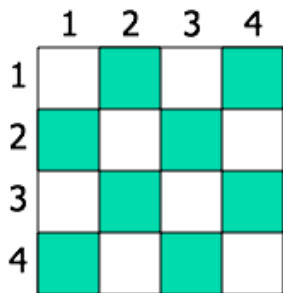
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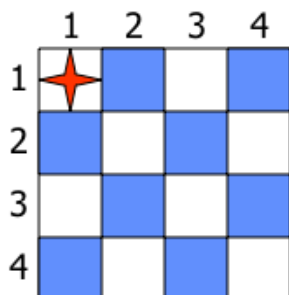
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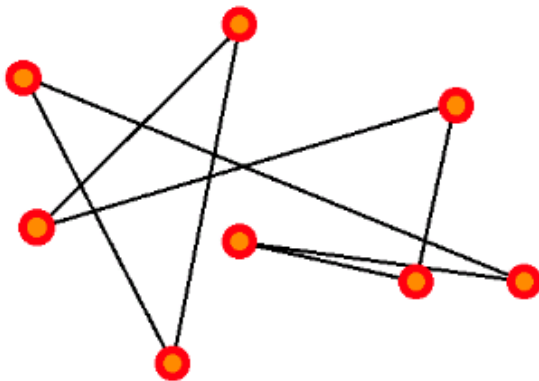
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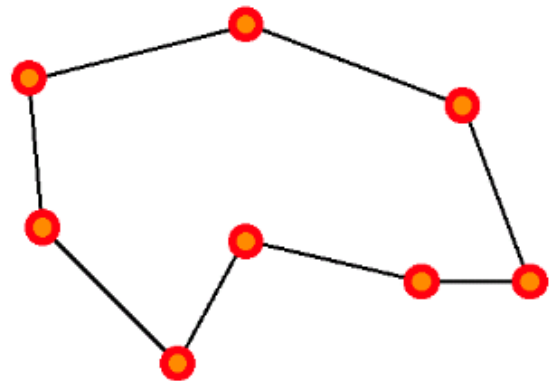


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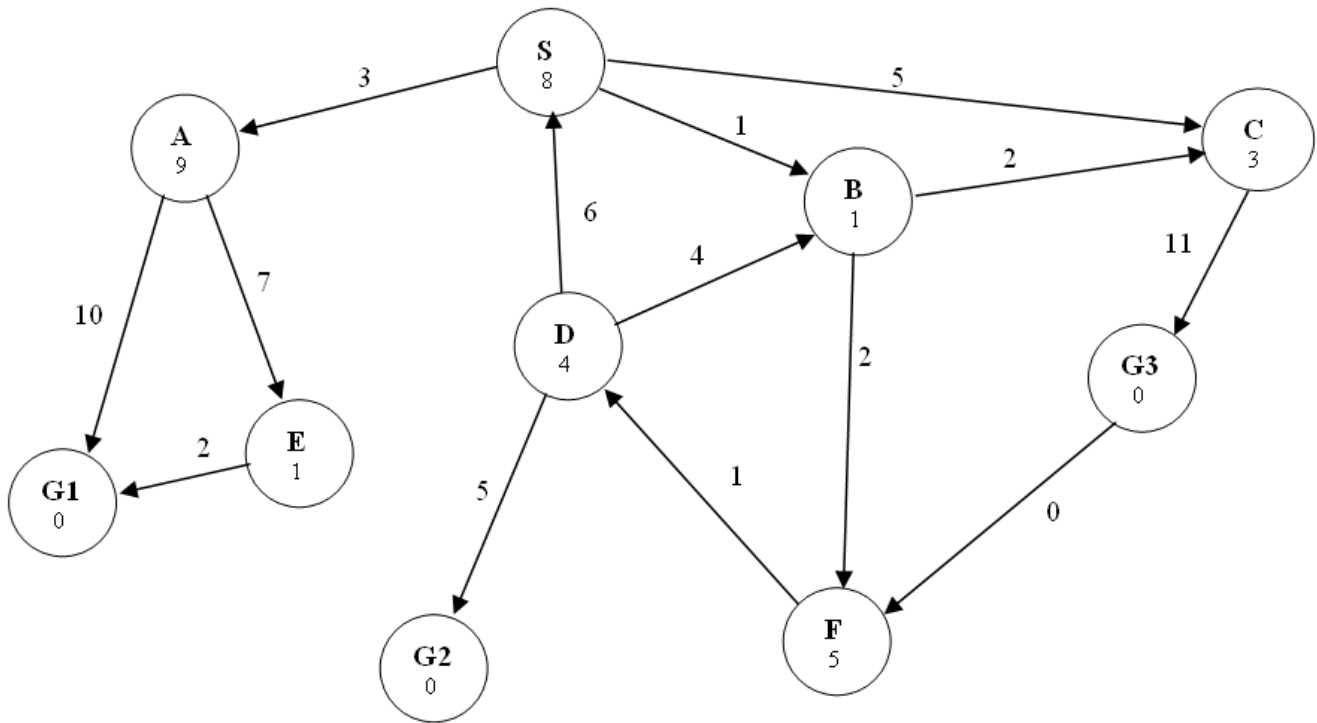
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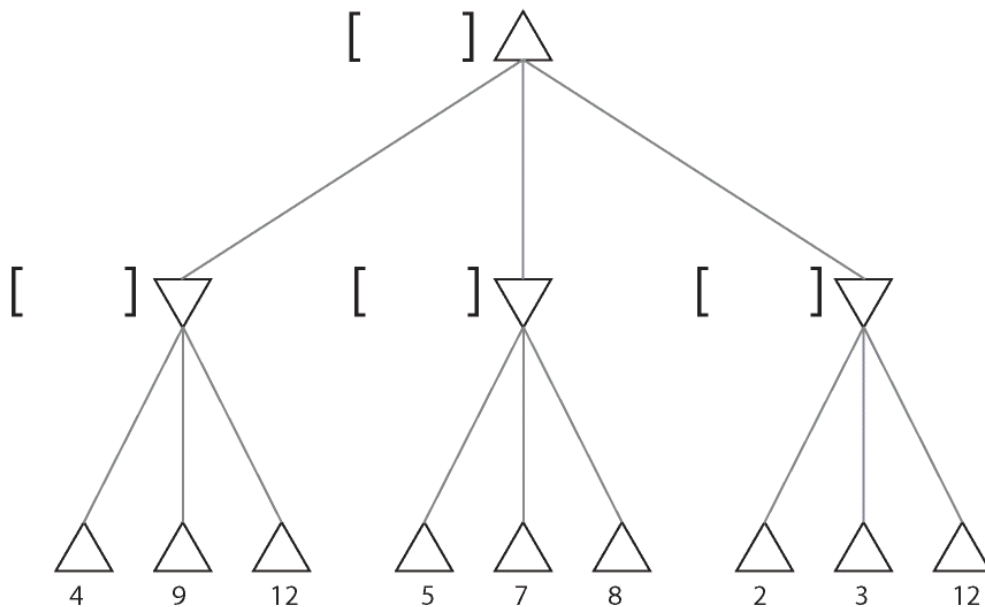
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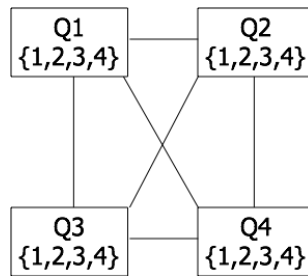
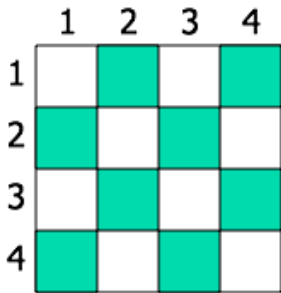
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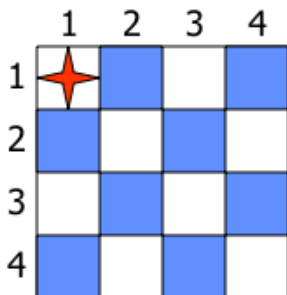
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