In Search of Further Intelligence

Note Title

Step II: Recognize When You're Beating a Dead Horse

— or —

Deadend Conditions

Flailing wildly – or even moving intelligently won't work if a solution is impossible from where you are now:

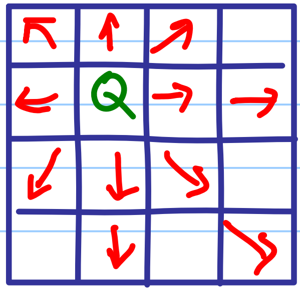
Example: Water Jugs, revisited

Deadend condition: sum of all water in assorted jugs is < amt in goal

can stop now.

N Queens

Given an n×n chessboard, place N chess queens on an N×N board in such a way that they are "mutually non-threatening" — none can attack any other. [**Note**: Must have exactly 1 in each row, column]



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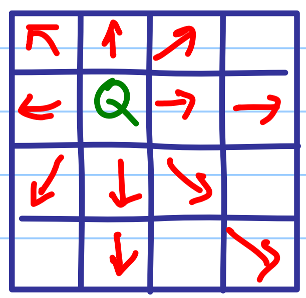

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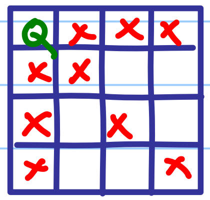

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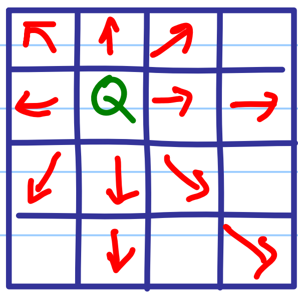

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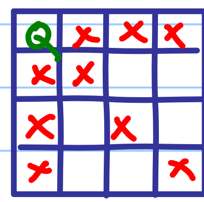

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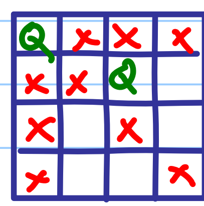

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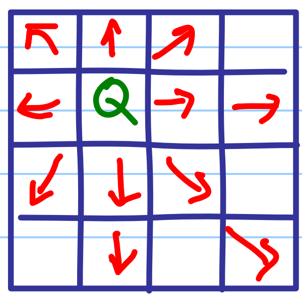

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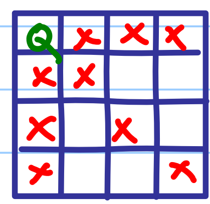

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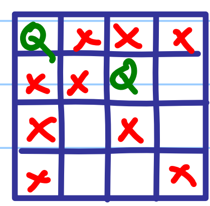

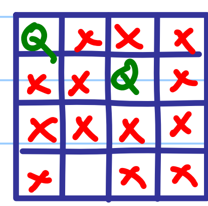

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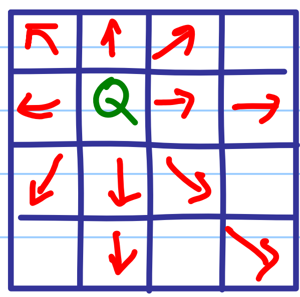

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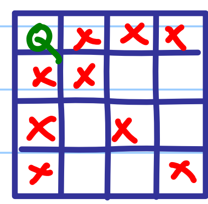

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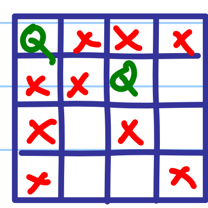

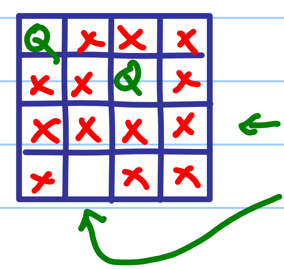

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can put one here

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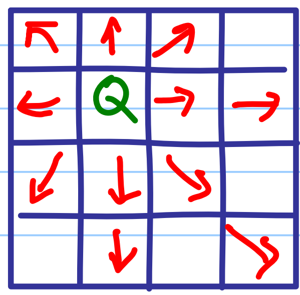

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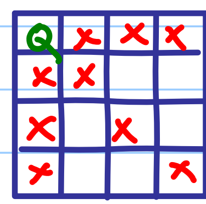
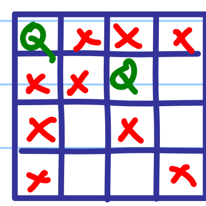
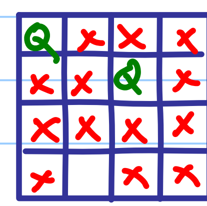


Deadend condition:

If can't put a Q in row i, can stop without considering row $i+1$, $i+2$, ...

2 —





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Example :

Losing Your Marbles:
Each of three baskets contains a certain number of marbles. You may move from one basket into another basket as many marbles as are already there, thus doubling the quantity in the basket that received the marbles. You must find a sequence of moves that will yield the same number of marbles in the three baskets (or decide that no such sequence exists).

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$(n \ n \ 2n) \rightarrow$
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or $n/3$ is odd (can't have odd number after doubling — ok only if starting that way)