SEARCH APPLICATIONS

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N-queens problem

Place N queens on an N by N chess board such that none of the N queens are attacking any other queen.

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How do we solve this with search:

- What is a state?
- What is the start state?
- What is the goal?
- How do we transition from one state to the next?

Search algorithm

1. add the start state to to_visit

2. Repeat
   - take a state off the to_visit list
   - if it's the goal state
     - we're done!
   - if it's not the goal state
     - Add all of the successive states to the to_visit list

Any problem that we can define these two things can be plugged into the search algorithm!

N-queens problem

http://en.wikipedia.org/wiki/Eight_queens_puzzle

Missionaries and Cannibals

Three missionaries and three cannibals wish to cross the river. They have a small boat that will carry up to two people. Everyone can navigate the boat. If at any time the Cannibals outnumber the Missionaries on either bank of the river, they will eat the Missionaries. Find the smallest number of crossings that will allow everyone to cross the river safely.

What is the "state" of this problem (it should capture all possible valid configurations)?