Recursion Puzzles

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Abstract

In this lab you will implement recursive solutions to classic CS questions.

1 The Eight Queens Problem

Write a recursive method which solves the eight queens problem. You must find a state where you can place eight queens on a chessboard such that no queen can capture another queen. Queens can move and capture pieces in the same row, column, or any diagonal.

You may use an 8×8 `int[][]` array to represent your chess board.

2 Towers of Hanoi

Write a recursive method that prints out the individual moves you need to perform to solve a Towers of Hanoi problem with n rings.

In Towers of Hanoi, you have three pegs and n disks, each a different size. The game starts with all the disks places on the left in sorted order, with the largest disk on the bottom, and the smallest on the top. The objective is to move all the disks from the leftmost peg to the rightmost peg, with the following rules in place.

1. You can only move one disk at a time.
2. A move moves the top disk on one peg and places it on top of another peg.
3. You may not put a larger disk on top of a smaller disk.