• From your textbook (CLRS), please read Chapter 25.2, Chapter 16 up to (and including) Section 16.2, and Chapter 23.

• A general note: When writing up your homework, please write neatly and explain your answers clearly, giving all details needed to make your answers easy to understand. Graders may not award credit to incomplete or illegible solutions. Clear communication is the point, on every assignment.

Exercises

1. CLRS Exercise 15.4-5 (pg. 397).

2. In chess, a rook can move horizontally or vertically to any square in the same row or in the same column of a chessboard. Find the number of shortest paths by which a rook can move from one corner of a chessboard to the diagonally opposite corner. (The length of a path is measured by the number of squares it passes through, including the first and the last squares.)

Solve the problem by a dynamic programming method. That is, come up with a relevant recurrence—i.e., a recursive definition of the relevant values for a solution, as we’ve seen in the examples from class—and using dynamic programming techniques, calculate the solution. Note that you do not need to provide a shortest path from one corner to the other, just the number of shortest such paths. Please be sure to include an explanation of the correctness of your solution (a well-worded paragraph could suffice).