

Analysis of Algorithms
CS 375, Spring 2019

Homework 14

Due **AT THE BEGINNING OF CLASS** Monday, April 22

- From your textbook (CLRS), please read Chapter 15, pages 359–360, 378–396.
- When presenting an algorithm, describe it in English clearly, concisely, and unambiguously; pseudocode often helps clarify a presentation, but a pseudocode-only presentation is not acceptable. In general, unclear presentations may not receive full credit.
- *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 (recursively defining the relevant values for a solution), 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.