

Analysis of Algorithms
CS 375, Fall 2019

Homework 11

Due **AT THE BEGINNING OF CLASS** Wednesday, October 30

- From your textbook (CLRS), please read Chapters 22.1–22.3.
- *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 22.1-2 (pg. 592). (**Note:** A *complete binary tree* is one in which every level is filled in, left to right; for example, a complete binary tree with 7 vertices has every possible node on three levels. See pg. 1179 for a definition of a complete tree.)
2. CLRS 22.2-2 (pg. 601). Explain your answer by showing every step in the process.
3. Show how depth-first search works on the graph of Figure 22.6 in CLRS by showing the resulting discovery time, finishing time, and π values. Once again, explain your answer by showing every step in the process.

Assume that the **for** loop of lines 5–7 of the DFS procedure considers the vertices in alphabetical order; further, assume that the graph has an adjacency list representation, and assume that each adjacency list is ordered alphabetically.