

Algorithm Design and Analysis

CS 376, Spring 2023

Smaller Assignment 8

Due **BY THE BEGINNING OF CLASS** Monday, April 17

- For this Smaller Assignment, the standard conventions apply: Please submit your typewritten answers in a PDF file named

CS376_SA8_<userid>.pdf

where <userid> is replaced by your Colby userid. **Please be sure to give your full userid, including the numbers representing your class year.**

To submit this assignment, place the properly named file in your **Private** directory in your CS376 filespace on **filer**. **Please make sure all Problem Set and Smaller Assignment submissions are to your Private folders!**

- *A general note for CS376:* When writing up your homework, **explain your answers clearly and thoroughly**, giving all details needed to make your answers easy to understand. Clear communication *is* the point, on every assignment.

Unless explicitly specified otherwise, answers in CS376 should be accompanied by explanations; as part of this, in general, when you present an algorithm, give an accompanying correctness argument. Answers without convincing explanations that show command of the relevant concepts may not receive full credit. Please feel free to ask me any questions about explanations that might come up!

Exercises

1. CLRS Exercise 15.4-1 (pg. 396). This exercise is intended to give you practice with the algorithm in Section 15.4. As part of your answer, please show the table constructed (see Figure 15.8) for this example; for this exercise, no additional explanation of your work is needed—a correctly completed table will suffice.

Please submit a table in which you've handwritten or typed in the answers yourself, and please do the work by hand; implementing code to get this output defeats the purpose of the exercise.

In addition, please use $X = \langle 1, 0, 0, 1, 0, 1, 0, 1 \rangle$ on the vertical axis (left side of table) and $Y = \langle 0, 1, 0, 1, 1, 0, 1, 1, 0 \rangle$ on the horizontal axis (top of table). A sample table is on the next page. (L^AT_EX for a similar table can be found in a file on our Smaller Assignments webpage.)

Also, please note that there may be more than one LCS of X and Y . For this assignment, give the one that results from the algorithm and the table it generates.

	y_j	0	1	0	1	1	0	1	1	0
x_i										
1										
0										
0										
1										
0										
1										
0										
1										