

Algorithm Design and Analysis

CS 376, Spring 2023

Smaller Assignment 4

Due **BY THE BEGINNING OF CLASS** Monday, February 20

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

CS376_SA4_<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. Consider the loop invariant for Bubble Sort, as presented at the end of the Lecture Notes slides of Feb. 15, and prove the *initialization* and *termination* parts of a correctness argument for Bubble Sort. (You need not prove the *maintenance* part for this assignment.)