

CSE 223 (ADA(B)) Homework Assignment 1 (Theory)

Deadline : Feb 9 (Tuesday) 11:59 PM.

The theory assignment has to be done individually. The solutions are to be typed either as a word document or latex-ed and uploaded as pdf on GC. We shall strictly not accept solutions written in any other form. Collaboration or seeking help from any sources other than the lectures, notes and texts mentioned on google classroom will be considered an act of plagiarism.

The problems below are from the text by Jeff Erickson. You can find an online copy [here](#). The number of * indicates the relative hardness of the problems (as per our opinion).

Problem 1. Solve Question 31 from the above text. *7 points for part (a) and 3 points for (b)*

Problem 2*. Solve Question 12 parts (a), (d) and (e) from the above text. *5 points for part (a), 3 points for (d) and 2 points for (e)*

Problem 3.** Solve Question 14 parts (a), (b) and (c) from the above text. *2 points for part (a), 5 points for part (b) and 3 points for (c)*

For all the questions (unless mentioned otherwise), you need to show the following.

Algorithm. This can be in the form of pseudocode or clear and brief precise description in English or a particular syntax.

Runtime. Formally argue the best possible asymptotic runtime.

Correctness. You should give precise arguments for why your algorithm works. Ideally you should use proof techniques like induction, contradiction etc.