

CSE 421 Spring 2025: Midterm

Instructor: Chinmay Nirkhe

Date: May 5th, 2025 3:30-4:30pm

Instructions: You are allowed to bring one 8.5 x 11 piece of paper (double sided) of notes to the exam. It must be physical and no digital versions are allowed. The exam is on pen and paper and you are to write in this exam booklet. There is ample space provided for your solution but if you need more, use blank 8.5 x 11 pieces of paper, write your name on the top of each page, the problem being worked on and staple it to the back of your solution.

Unlike problem sets, each problem will be broken down into subparts in which you are asked to *either* give the algorithm description, proof of correctness, or state and prove the runtime. Only answer what is asked of you. For an algorithmic question, if no specific runtime is provided in the question, find as efficient an algorithm as you can. If a runtime is specified and you can't achieve it, but you can get a weaker runtime, then submit that solution.

There are a combination of short answer and long answer questions for a total of **50** points. We anticipate that the later problems will take you longer than the earlier problems.

It is important that your work be **legibly handwritten** written in clear technical English. Full sentences are not explicitly required but highly suggested. Length in a proof (as in other writing) is not a virtue. You can accompany (but not replace) your technical English description of an algorithm with pseudocode, if you feel that that helps resolve ambiguities. If it is hard for us to read your work we will reluctantly deduct points. Mathematically rigorous solutions are expected for all problems unless explicitly stated.

In case pages get separated by accident, we advise you to write your name on the top of each page.

Name: _____

Email address: _____

Names of your adjacent test takers: _____