Homework Overview

Submission Deadline:

Deadline: 2026/03/05 13:00 (24-hour clock)

Ensure that you submit your work before the deadline.

Late Submission Policy:

Late Submissions (before the midterm exam): The final score will be 70% of the original score.

Submissions after the midterm exam will receive a score of zero.

Submission Format:

File Format: Submit your assignment in PDF format. File Naming

Convention: Name your file as **studentID name.pdf** Submission

Method: Upload your assignment via eCourse2.

Reminder: You need to show the derivation process, not just answers. Please describe your data structure using pseudocode and analyze its time complexity. If you are not familiar with pseudocode, you are allowed to write the data structure in C / C++. Additionally, please submit the source code files (.c, .cpp), and include an explanation of the program's input format (standardized to use stdio input) as well as your compilation settings.

If you have any questions, please feel free to reach out us in class.

Best of luck with your work!

TAs

1 Question

Design a data structure to support the following two operations for a set S of integers:

- INSERT(S, x) inserts a integer x into set S.
- DELETE-LARGE-HALF(S) deletes the largest $\left\lceil \frac{|S|}{2} \right\rceil$ elements from S.

Explain how to implement this data structure so that any sequence of m operations runs in $O(m)$ time.