CSE221: Algorithms
Lab-02
Fall 2025

Assignment-02 Links:

codeforces Invitation Link:
https://codeforces.com/contestInvitation/4b5bce1def150821d972352ed3b5c38e188e0538

Alternative Link: https://codeforces.com/contests/645582
[The alternative link will **only work** after you have successfully registered using the first link.]

Deadline: Nov 2, 2025 2:00 PM
No submission can be considered after the deadline ends.

Learning Outcome:

We have already learned about time complexity in theory. Now, we will focus on improving our naive solution approach. In this lab, we will explore the two-pointer technique. Some problems that can be solved using the two-pointer approach may also be solvable with searching techniques. However, our primary focus will be on solving them using the two-pointer method. Since searching is closely related to the two-pointer technique, this lab also includes a few problems on binary search.

Understanding Two-Pointer Technique

- Learn how to optimize naive solutions using the two-pointer approach.
- Understand when and why two-pointer techniques are applicable.

- Differentiate between the **opposite-direction** and **same-direction** two-pointer strategies.

Searching

- Review the concepts of **lower bound** and **upper bound** and their applications.
- Find out if there is any alternative way to solve the problem you have solved using two-pointer approach [Self Study]

Performance Analysis

- Compare brute-force, two-pointer, and binary search approaches in terms of time complexity.