Session 10
Strategy 1: Brute Force

📄 Lecture Summary

Open with the easier to describe closest pair problem. (Thinking opportunity) Encourage students to think about solution approach and applications. Draw parallels to selection sort (pair generation logic), namely generating pairs of elements from a finite set.

Geometric Problems Examples

1. Closest pair of points, solution efficiency
2. Convex hull
   - Convex set: specify precisely the geometric notion *convex* that most recognize intuitively

     ↪ *Math provides a system to describe concepts and relationships precisely*

   - Convex hull problem: (formal) statement and solution specification, preliminary analysis
   - Brute force solution using same pair enumeration logic as in closest pair, solution efficiency

Review Relevant Counting Basics

↪ Counting item permutations and selecting pairs from a set.

📄 Session Exercise

P12.   Program the convex hull brute force solution.

Detailed instructions
   - Write a pseudocode for the method described in 📖 3.3 as explained in class
   - Study the closest pair starter code in the assignment page of course website
   - Use the point set from the website to show the convex hull graphically

📖 **Exercise 3.3 • 8 🛠 2, 3**

📄 Reading List

📖 3.3

📄 Keywords

Convex [*set* or *polygon*], convex hull, distinct, pair, polygon