CompSci 260P
Spring 2023 Lecture:
Review of Diagnostic Exams (2)
Greedy: Doubles Tennis

- We will form teams of size two
- Each player has a tennis rating
- Quality of team: weakest link
- Goal: maximize sum of team quality
- Algorithm: pair best two players, repeat

Let \( P = \text{best player} \) \( \forall Q \neq P \) each disagree

\( Q = P \)'s partner in \( \text{All} \)

\( \text{All}: (P, X), (Q, B) \)

Quality of \( \text{All} \): \( A + B + \sum \) if all distinct

\( Q + \min(A, B) + \sum \)
Greedy: Supervisors at Library

- Workers have a daily shift
- Select subset to be supervisors
- Every worker’s shift overlaps a supervisor
- Choose last ending that overlaps first ending

\[ x = \text{OPT's first chosen} \]
\[ y = \text{my first chosen} \]
\[ \text{OPT'} = "\text{OPT} - x + y" \]
Both cover 1st.

\[ f_x \leq f_y \]
Divide and Conquer: Missing Integer

- \( n = 2^k - 1, \ k > 0 \)
- One is missing. Find it.

\[ \begin{array}{cccc}
0 & 0 & 0 & 0 \\
0 & 0 & 1 & \leftarrow \\
0 & 1 & 0 & \leftarrow \\
0 & 1 & 1 & \leftarrow \\
1 & 0 & 0 & \leftarrow \\
1 & 0 & 1 & \leftarrow \\
1 & 1 & 1 & \leftarrow \\
0 & 0 & - & \\
0 & 1 & - & \\
1 & 0 & - & \\
\end{array} \]
Divide and Conquer: Skyline
When do I see you next?

- Wednesday: Exam 2

- Monday: Final Exam
  - Starts at 7pm
  - Please be here by 6:55
  - Full 120 minutes allowed.

- December?
  - Graduation ceremony
  - Tell me about awesome job you have
  - Tell me 260P was worth it (I hope)