TP proposal due: Thursday, Feb. 7th
TP final report due: Thursday, March 12th
TP peer eval: by 10:00 am, March 12th (by email ONLY)

8 hrs

LHS = 7.5 hrs:

\[ 7.5 \leq 8 \cdot x_i \]

\[ 13.5 \leq 8 \cdot x_2 \]

2
Computational complexity

Graph:
- Y-axis: Compute time
- X-axis: Number of integer variables
- NP hard in the strong sense

Manageable vs. Not manageable

Example:
- Binary:
  - $2^2 = 4$
  - $2^3 = 8$
  - $2^{15} = 32,768$

11! = (3,638,800) x 11
   = 39,916,800

12! = (39,916,800) x 12 = 479,001,600 \approx \frac{1}{2} \text{ billion}

Polynomial time algorithms $\rightarrow 2^x \rightarrow \text{computable}$

Examples:
- $2 \times 10^2 = 200$
- $2 \times 10^3 = 2 \times 1000 = 2000$
Tabu search

Greedy heuristic

Obj. func. $z^* = \min\{L_0, L_2, L_3, \ldots, L_N\}$

Taboo search

Tabu search

$\frac{\text{PI}}{\text{TAC for initial sol.}} = \$13488.00$