OBJECTIVE

$$\max_{x} \; c^T x = \underbrace{[50k, 60k, 90k, 40k, 30k,}_{1^{st}} \underbrace{2^{nd}}, 3^{rd}] \begin{bmatrix} a_1 \\ \vdots \\ e_1 \\ a_2 \\ \vdots \\ e_2 \\ a_3 \\ \vdots \\ e_3 \end{bmatrix} = x$$

CONSTRAINTS

- Bounds on # of each crate: $0 \leq crate_i \leq max_i$

  $\forall i \in \{A, B, C, D, E\}$

  → Crate A: $0 \leq [\underbrace{1,0,0,0,0}_{rep_A}, rep_A^A, rep_A^A][x] \leq 12$

  → Crate B: $0 \leq [\underbrace{0,1,0,0,0}_{rep_B}, rep_B, rep_B][x] \leq 8$

  ⋮

  → Crate E: $0 \leq [\underbrace{0,0,0,0,1}_{rep_E}, rep_E, rep_E][x] \leq 11$

- MASS BOUNDS for each SEGMENT:

  → Front: $[500, 1500, 2100, 600, 400, 0 \text{ (10 times)} \cdots][x] \leq 8000$

  → Middle: $[0,0,0,0,0,0, 500, 500, 2100, 600, 400, 0,0,0,0,0][x] \leq 20,000$

  → Back: $[0 \text{ (10 times)}, 500, 1500, 2100, 600, 400][x] \leq 6,000$