Freshly Formulation

The statement of the use case is on Mip Wise's website: mipwise.com/use-cases/freshly.

Decision Variables

- x_1 - Number of coconuts processed daily.
- x_2 - Kilograms of oranges processed daily.

Constraints

- Extraction capacity (in seconds):

$$54x_1 + 30x_2 \leq 3 \cdot 60 \cdot 60.$$

- Packing capacity (liters):

$$0.450x_1 + 0.520x_2 \leq \frac{100}{2}.$$

- Minimum number of orange bottles:

$$0.520x_2 \geq \frac{30}{2}.$$

Objective

The objective of this problem is to maximize total profit:

$$\max 0.3825x_1 + 0.4056x_2.$$

Final Formulation

Putting all together, Mr. Mip arrived at the following formulation.

$$\begin{aligned} \max\ & 0.3825x_1 + 0.4056x_2 \\ \text{s.t. } & 54x_1 + 30x_2 \leq 10800, \\ & 0.450x_1 + 0.520x_2 \leq 50, \\ & 0.520x_2 \geq 15, \\ & x_1, x_2 \geq 0. \end{aligned}$$