A hint for diet – part 2

Recall that in the original LP for the diet problem, we have decision variables

\[ x_j = \text{amount of food } j \text{ in the diet} \quad \text{for } j \in F, \]

where \( F \) is the set of available foods.

The problem asks you to modify this LP so that the diet contains at least 4 beverages. The way you know that food \( j \in F \) is a beverage is through the \( \text{type} \) parameter; in particular, if food \( j \) is a beverage, then

\[ \text{type}_j = \text{Beverage} \]

Therefore, we can express the amount of beverages in the diet as

\[ \sum_{j \in F: \text{type}_j = \text{Beverage}} x_j \]

(Why does this work?)