**NLP:**

A laptop store wants to stock their latest products. The store has 30 different products in their inventory that need to go on the shelves. The shelves can hold 60 units of products each. The store has 14 shelves available for the new arrival products. All the products have an associated cost and number of units given in the spreadsheet. All the articles of one product type must be kept in the same shelf. A shelf can hold more than 1 type of product. How should the store arrange the products in the shelves?

**Discussion:**

The products should be arranged in the shelves so that maximum number of products with the highest costs can be displayed.

**Model:**

Parameters:

$$U\_{i}:Units of product i, where i=\left\{1,2,…,30\right\}$$

$$P\_{i}:Price of product i, where i=\{1,2,…,30\}$$

$$M:Maximum units of product in a shelf$$

Decision Variable:

$$X\_{i}:Shelf Number where product i is kept, where i=\left\{1,2,…,30\right\}$$

Objective:

$$Maximize:\sum\_{i}^{}P\_{i}, for i where X\_{i}\ne 0$$

Constraints:

1. $X\_{i}\in Integers$
2. $X\_{i}\geq 0$
3. $X\_{i}\leq 14$
4. $\sum\_{i}^{}U\_{i}\leq M, for i where X\_{i}=\{1,2,…,14\}$