- n items to be packed, indexed by $i = 1, 2, \ldots, n$

- B: bin size/capacity.

- U: upper bound of the number of bins, where the number of bins is indexed by $j = 1, 2, \ldots, U$

- s_i: weight of item i.

$$X_{ij} = \begin{cases} 1 & \text{if item } i \text{ is packed in bin } j, \\ 0 & \text{otherwise,} \end{cases}$$

$$Y_j = \begin{cases} 1 & \text{if bin } j \text{ is used,} \\ 0 & \text{otherwise.} \end{cases}$$

$$\text{minimize} \quad \sum_{j=1}^{U} Y_j$$

$$\text{subject to:} \quad \sum_{j=1}^{U} X_{ij} = 1 \quad \text{for } i = 1, \ldots, n$$

$$\sum_{i=1}^{n} s_i X_{ij} \le BY_j \quad \text{for } j = 1, \ldots, U$$

$$X_{ij} \le Y_j \quad \text{for } i = 1, \ldots, n; \quad j = 1, \ldots, U$$

$$X_{ij} \in \{0, 1\} \quad \text{for } i = 1, \ldots, n; \quad j = 1, \ldots, U$$

$$Y_j \in \{0, 1\} \quad \text{for } j = 1, \ldots, U.$$