Algorithm 5.1 GREEDY

Input. Universe U with n elements, collection $\mathcal{S} = \{S_1, \ldots, S_k\}$, $S_i \subseteq U$, a cost function $c : \mathcal{S} \to \mathbb{R}$.

Output. Vector $x \in \{0, 1\}^k$

Step 1. $C = \emptyset$, $x = 0$.

Step 2. While $C \neq U$ do the following:

(a) Find the most cost-effective set in the current iteration, say S.

(b) Let $\alpha = c(S)/|S - C|$.

(c) Set $x_S = 1$ and for each $e \in S - C$ set price$(e) = \alpha$.

(d) $C = C \cup S$.

Step 3. Return x.