

Input: A universe  $U$  of  $n$  elements, a collection of subsets of  $U$ ,  $T = \{S_1, \dots, S_k\}$ , and a cost function  $c : S \rightarrow \mathbb{Q}$ .

Output: A subset  $T'$  of  $T$  s.t.  $U = \bigcup_{S_i \in T'} S_i$

1.  $C \leftarrow \emptyset$
2. While  $C \neq U$  do
  - Find the most cost-effective set in the current iteration, say  $S$ .
  - Let  $\alpha = \frac{\text{cost}(S)}{|S - C|}$ , i.e., the cost-effectiveness of  $S$ .
  - Pick  $S$ , and for each  $e \in S - C$ , set  $\text{price}(e) = \alpha$ .
  - $C \leftarrow C \cup S$ .
3. Output the picked sets.

- 1、实现上述 Set cover 算法。
- 2、提交报告一份。需包含以下内容：核心源代码、构造的数据、运行结果。
- 3、编程语言不限。