Exercise 8-1:

Create a simple example of the set cover problem where a good solution is not obtained by the greedy algorithm. Create another example which maximizes the value of $w(C)/w(C^*)$ where C is the obtained cover and C^* is the optimal solution.

Exercise 8-2:

Create two examples (one simple example and one interesting example) of the set cover problem where all of the following three types of solutions can be obtained by the greedy set cover algorithm depending on the choice of a tie-breaking mechanism in each iteration in the algorithm: the best solution with $w(C) = w(C^*)$, the worst solution with $w(C) = H(d^*)w(C^*)$, and some other solutions with $w(C^*) < w(C) < H(d^*)w(C^*)$ where C is the obtained solution by the greedy set cover algorithm, C^* is the optimal solution, and $d^* = \max_k |S_k|$.