



Homework 7

Set Cover Problem

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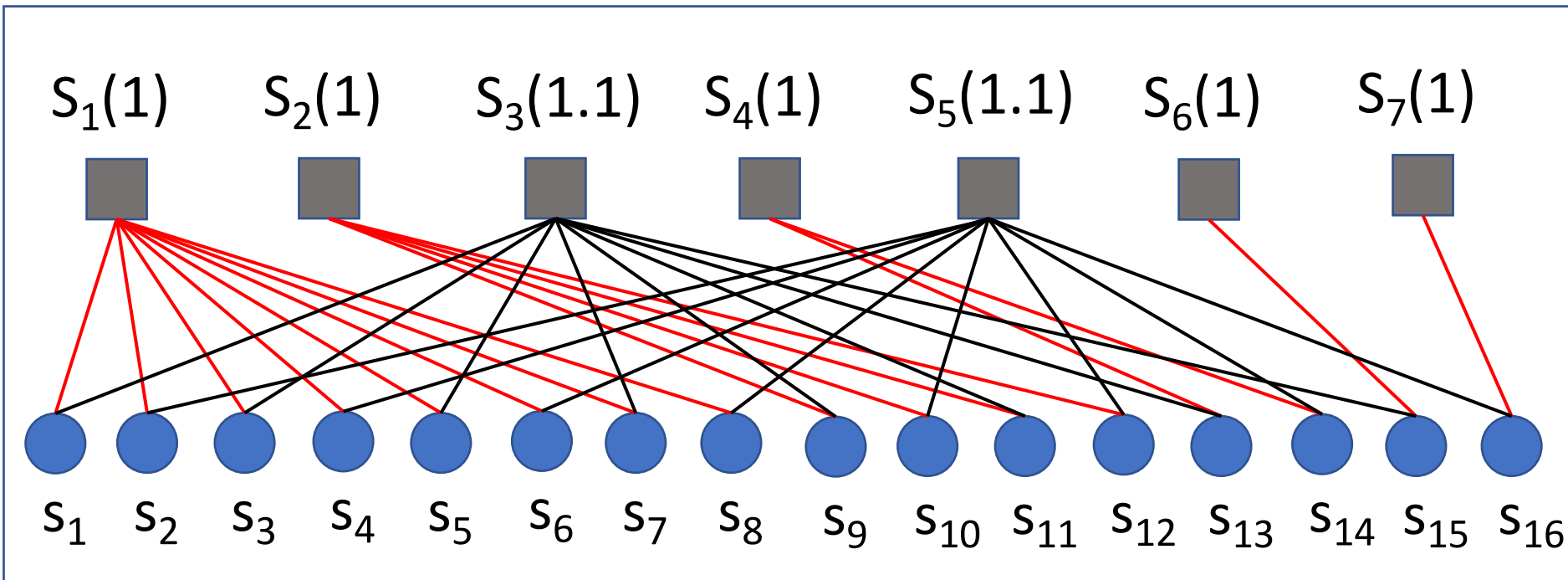
Exercise 6-1

■ An example where the good solution is not obtained
by the greedy algorithm

Simple example:

$n=16, w(C) > 2.2w(C^*)$

$w=5$ by $C=\{S_1, S_2, S_4, S_6, S_7\}$, $w=2.2$ by $C^*=\{S_3, S_5\}$





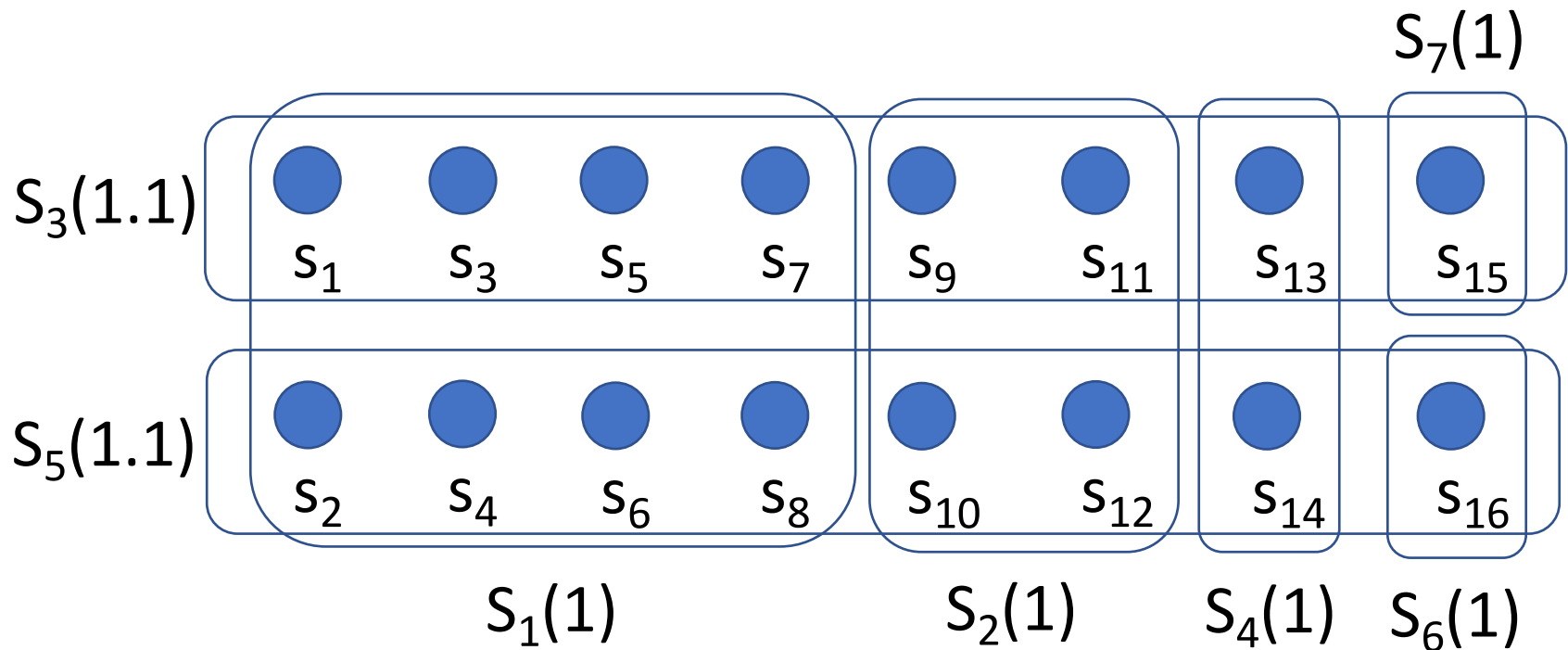
Exercise 6-1

- An example where the good solution is not obtained by the greedy algorithm

Simple example: Another expression

$n=16, w(C) > 2.2w(C^*)$

$w=5$ by $C=\{S_1, S_2, S_4, S_6, S_7\}$, $w=2.2$ by $C^*=\{S_3, S_5\}$





Exercise 6-1

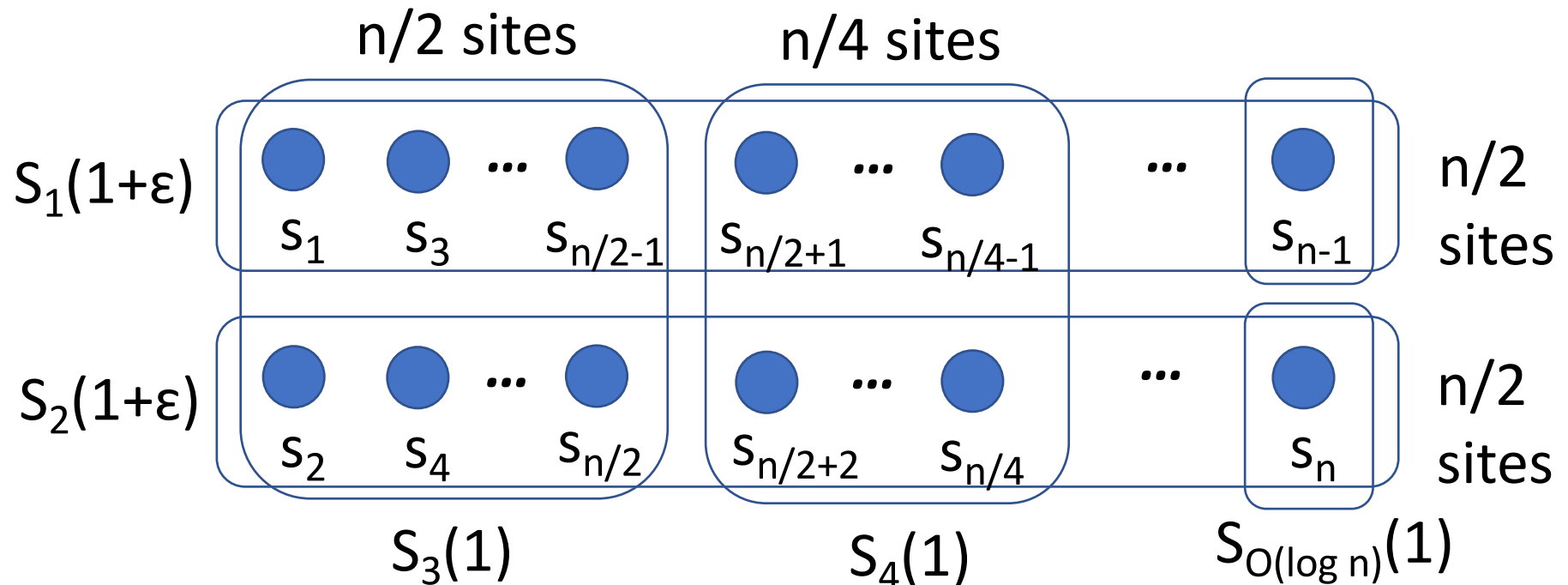
- An example where the good solution is not obtained by the greedy algorithm

Generalize the example above

n sites, each set of C has size of $n/2, n/4, n/8, \dots$, weight is 1

$w = \Omega(\log n)$ by $C = \{S_3, S_4, \dots, S_{O(\log n)}\}$

$w = 2 + 2\varepsilon (\varepsilon > 0)$ by $C^* = \{S_1, S_2\}$, ε is small





Thanks!

**Please contact me with email
if you have any problem**

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