Exercise 9-1:

Create an example of the vertex cover problem where $w(S)$ obtained by the pricing method is always $2w(S^*)$ independent of the order of edges. Your example should include at least three vertexes.

Please try to create interesting examples

Exercise 9-2:

Create an example of the vertex cover problem where better results are always obtained (independent of the order of edges and a tie-breaking mechanism) by the greedy set cover algorithm than the pricing method. Your example should include at least three vertexes.

Please try to create interesting examples

Exercise 9-3:

Create an example of the vertex cover problem where better results are always obtained (independent of the order of edges and a tie-breaking mechanism) by the pricing method than the greedy set cover algorithm. Your example should include at least three vertexes.
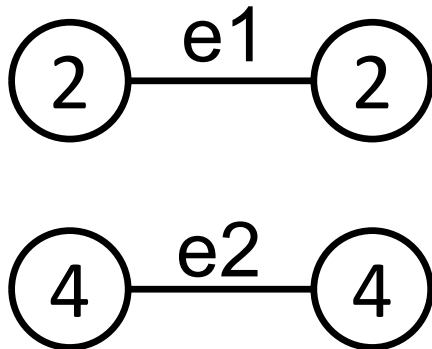
Not interesting example for Exercise 9.1 and Exercise 9.2.

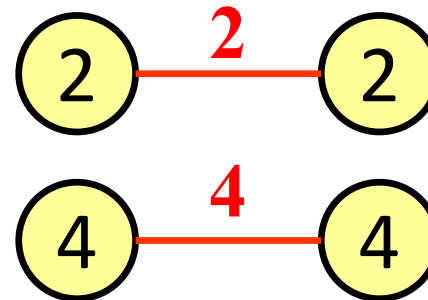**9.1:** The pricing algorithm result $w(S)$ is always $2w(S^*)$ independent of the order of edges.

9.2: The greedy set cover result is always better than the pricing algorithm result independent of the order of edges and a tie-breaking mechanism.

Pricing algorithm result: $w(S) = 12$

Example

2 —e1— 2

4 —e2— 4

Optimal value: $w(S^*) = 6$

2 —2— 2

4 —4— 4

Greedy set cover result: $w(S) = 6$

2   2   4   4

e1   e2