Homework 8
Vertex Cover Problem

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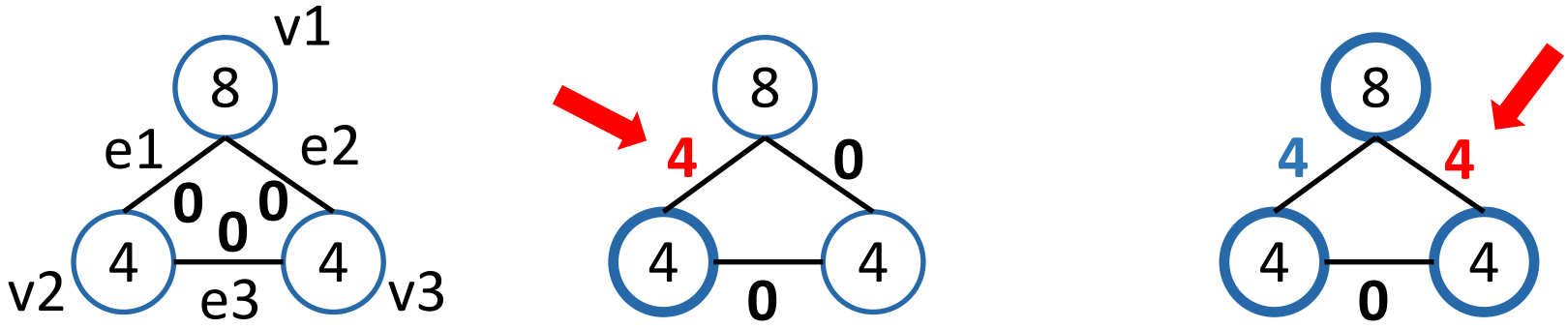
Exercise 7-1

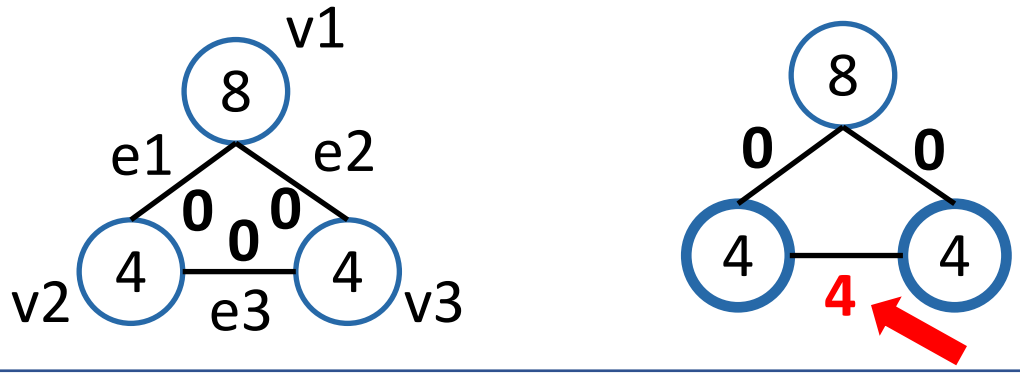
- An example where different results are obtained depending on the order of edges

Simple example:

Example 1, order={e1 ,e2 ,e3}, S_1={v1,v2,v3}, w(S_1)=16



Example 2, order={e3,e2,e1}, S_2={v2,v3}, w(S_2)=8

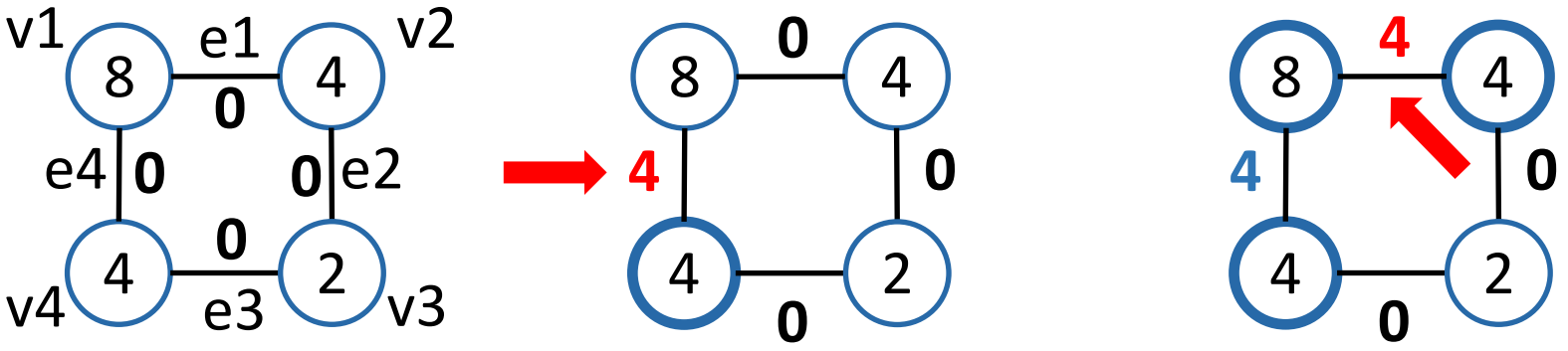


Exercise 7-2

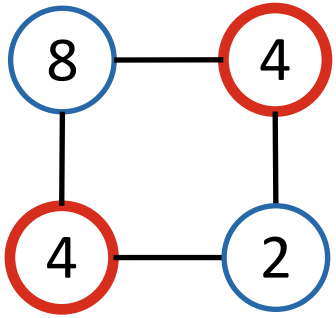
- An example where a good solution is not obtained by the pricing method

Simple example: w=2w*

The pricing method,order={e4,e1,e2,e3},S={v1,v2,v4},w(S)=16



The optimal solution, S^*={v2,v4}, $w(S^*)$=8

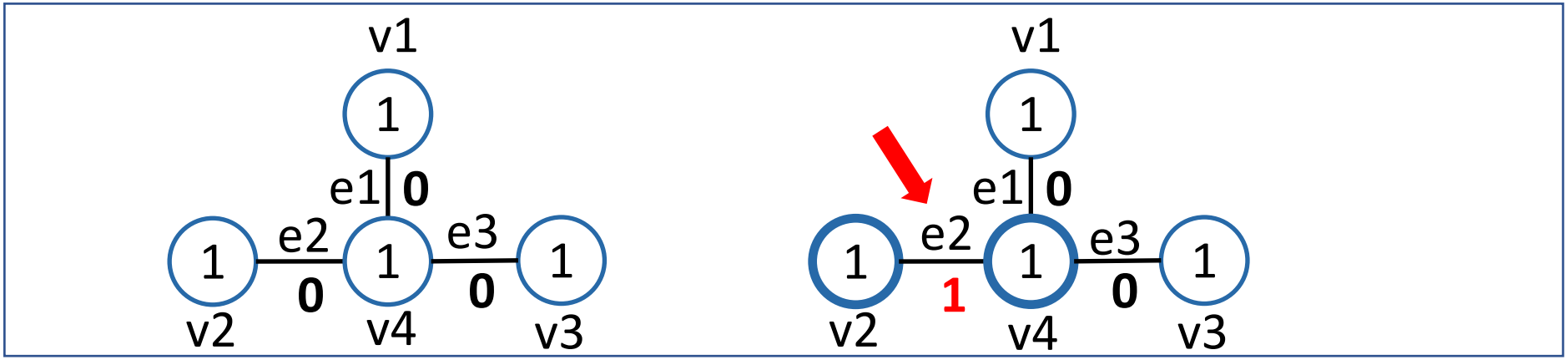


Exercise 7-3

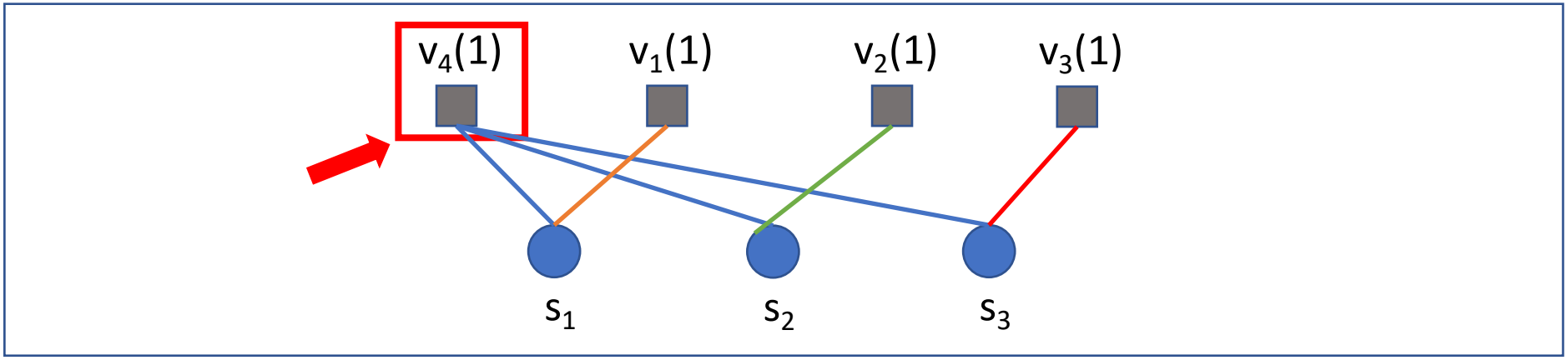
- An example where a better result is always obtained by the greedy set cover algorithm

Simple example:

The pricing method, S={v4,v2 or v1 or v3}, w(S)=2



The greedy set covet algorithm, S^*={v4}, $w(S^*)$=1<2

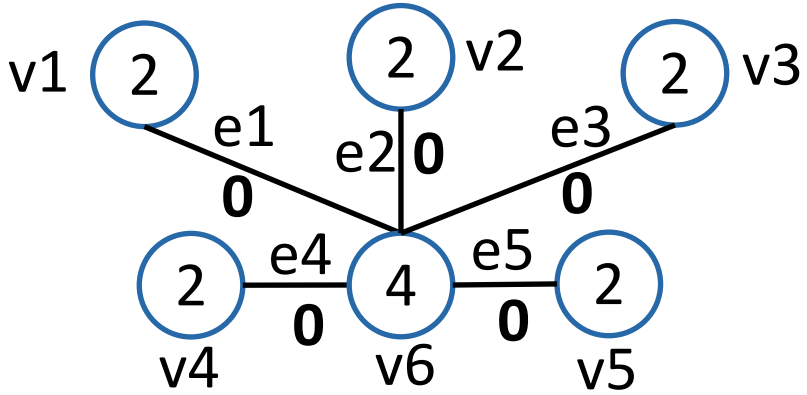


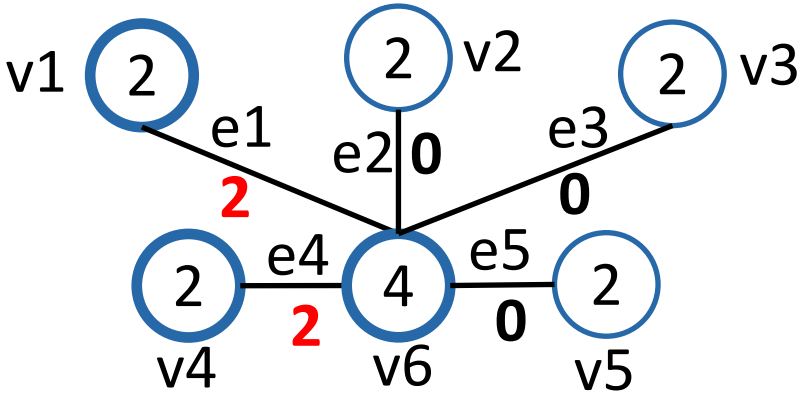
Exercise 7-4

- An example where a better result is always obtained by the pricing method

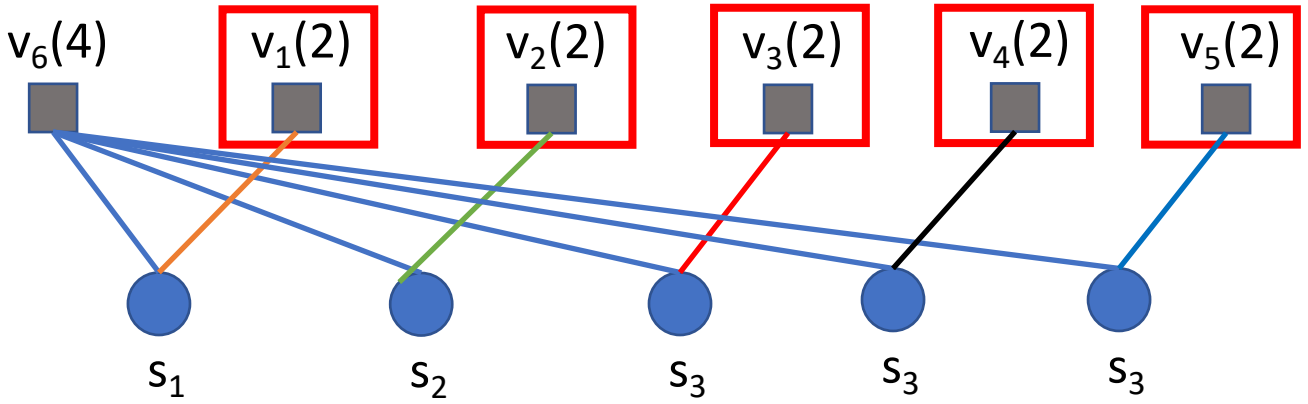
Simple example:

The pricing method, $w(S^*)=8$





The greedy set covet algorithm, $w(S)=10>8$



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Thanks!

Please contact me with email if you have any problem

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