



<http://algs4.cs.princeton.edu>

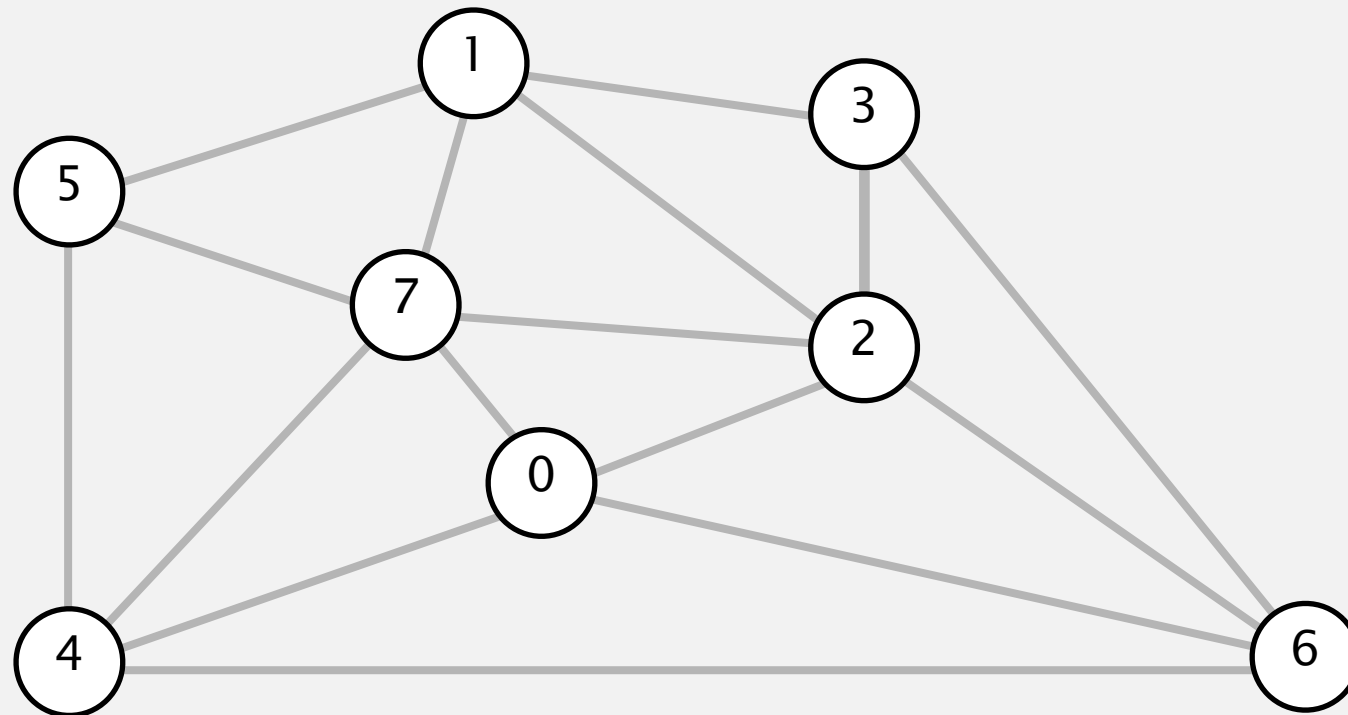
## KRUSKAL'S ALGORITHM DEMO

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# Kruskal's algorithm demo

Consider edges in ascending order of weight.

- Add next edge to tree  $T$  unless doing so would create a cycle.



an edge-weighted graph

graph edges  
sorted by weight



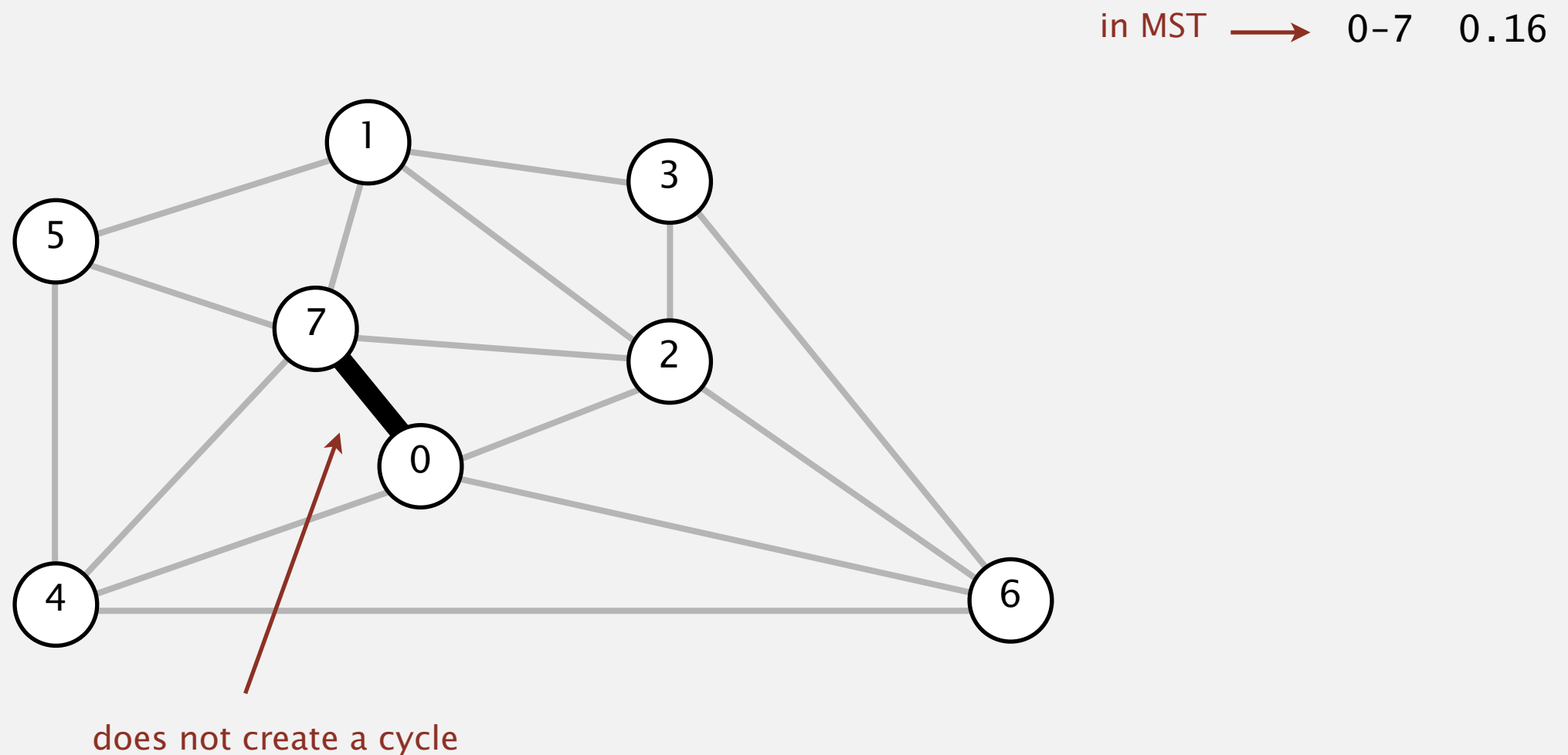
0-7	0.16
2-3	0.17
1-7	0.19
0-2	0.26
5-7	0.28
1-3	0.29
1-5	0.32
2-7	0.34
4-5	0.35
1-2	0.36
4-7	0.37
0-4	0.38
6-2	0.40
3-6	0.52
6-0	0.58
6-4	0.93

# Kruskal's algorithm demo

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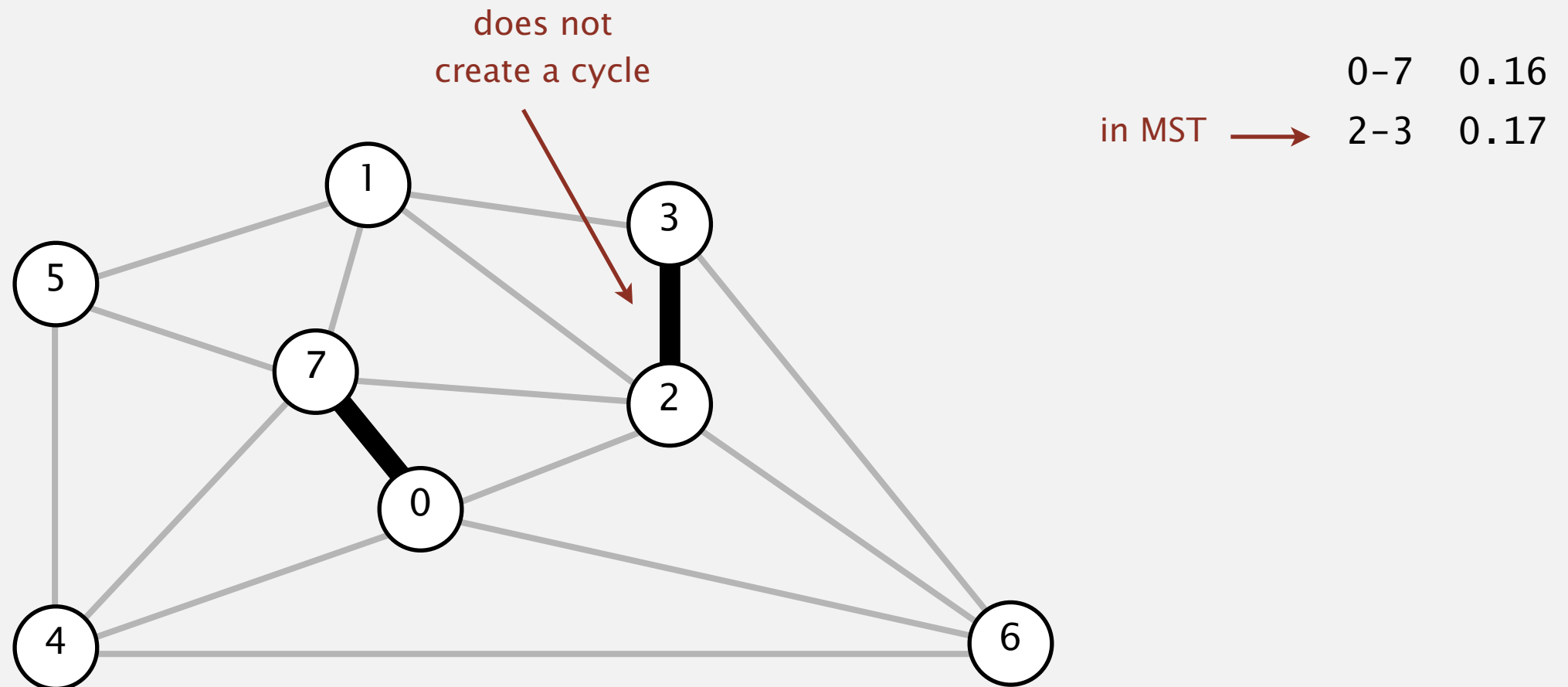


# Kruskal's algorithm demo

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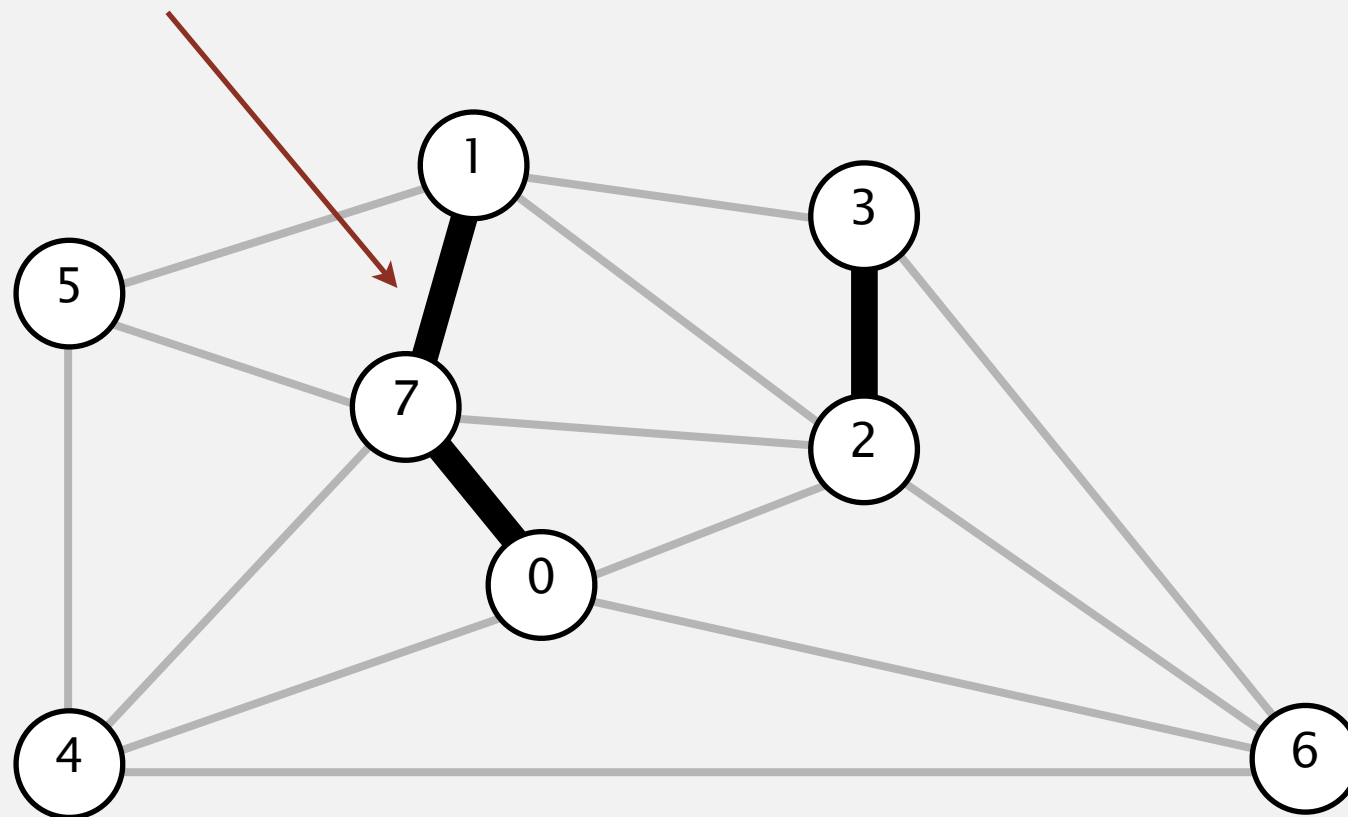
# Kruskal's algorithm demo

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Consider edges in ascending order of weight.

- Add next edge to tree  $T$  unless doing so would create a cycle.

does not create a cycle



in MST →

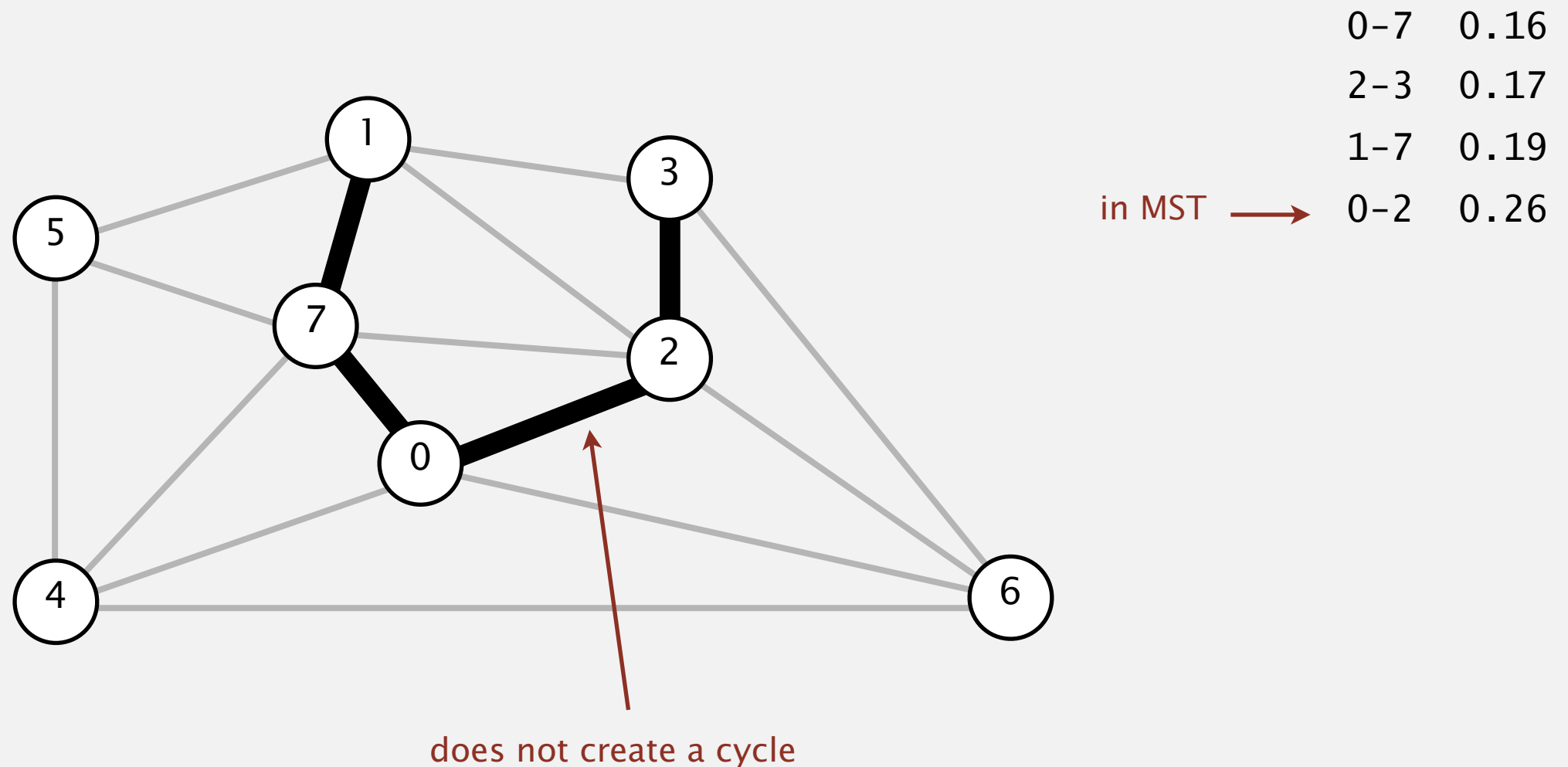
0-7	0.16
2-3	0.17
1-7	0.19

# Kruskal's algorithm demo

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Consider edges in ascending order of weight.

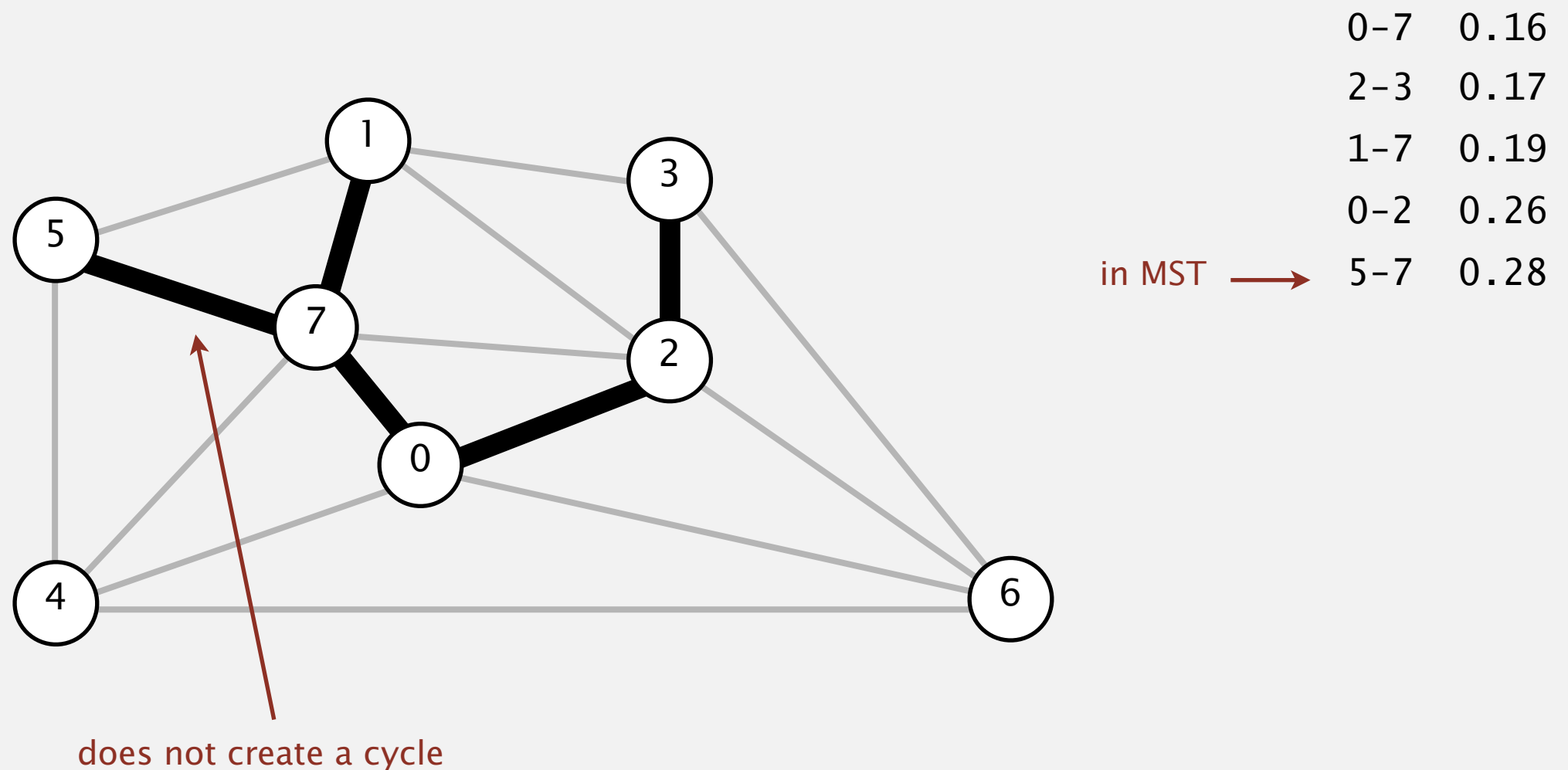
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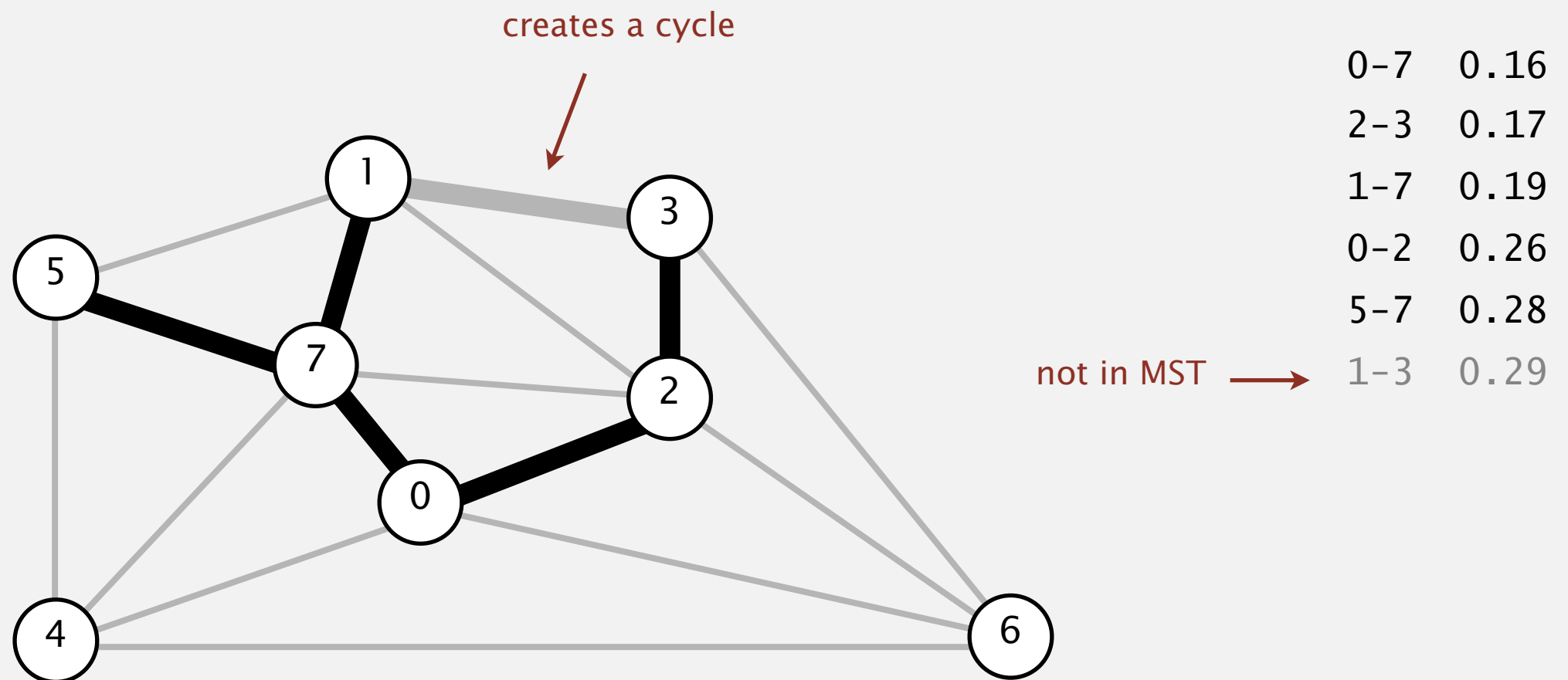


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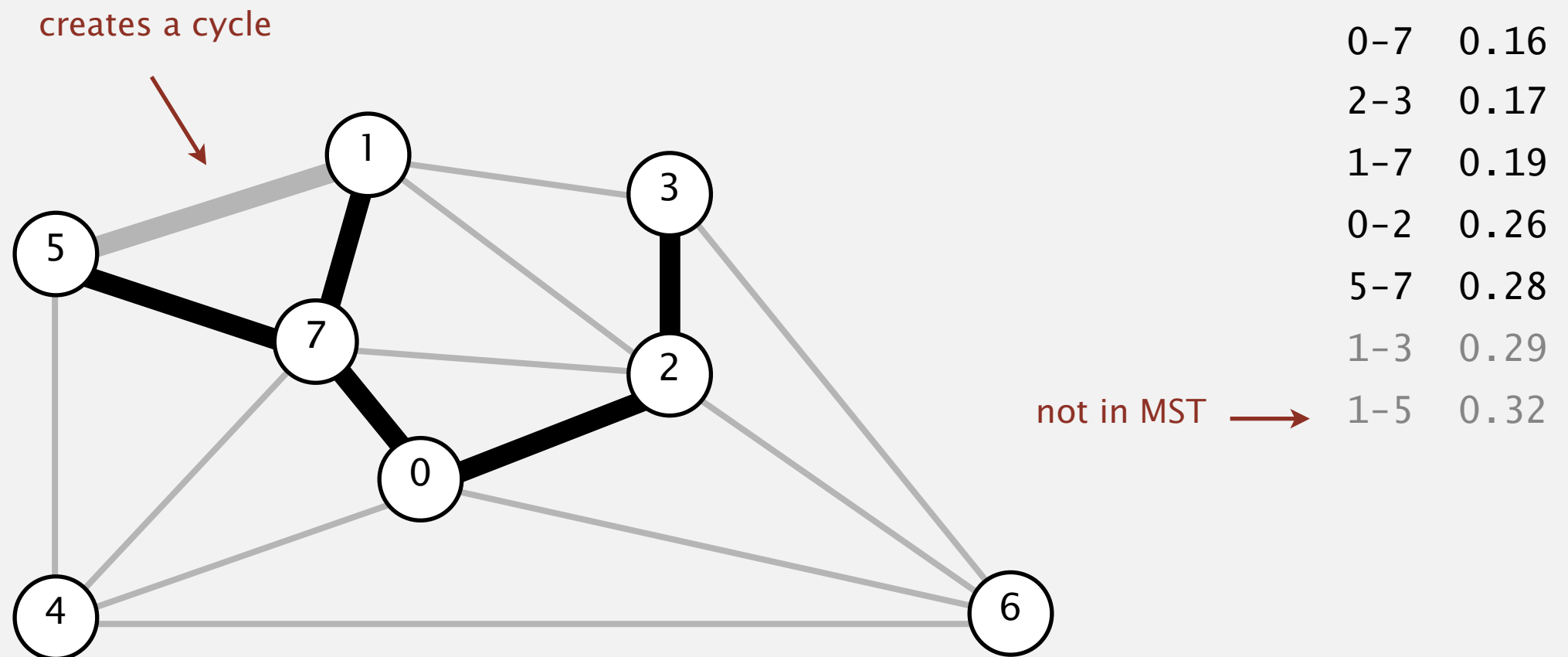


# Kruskal's algorithm demo

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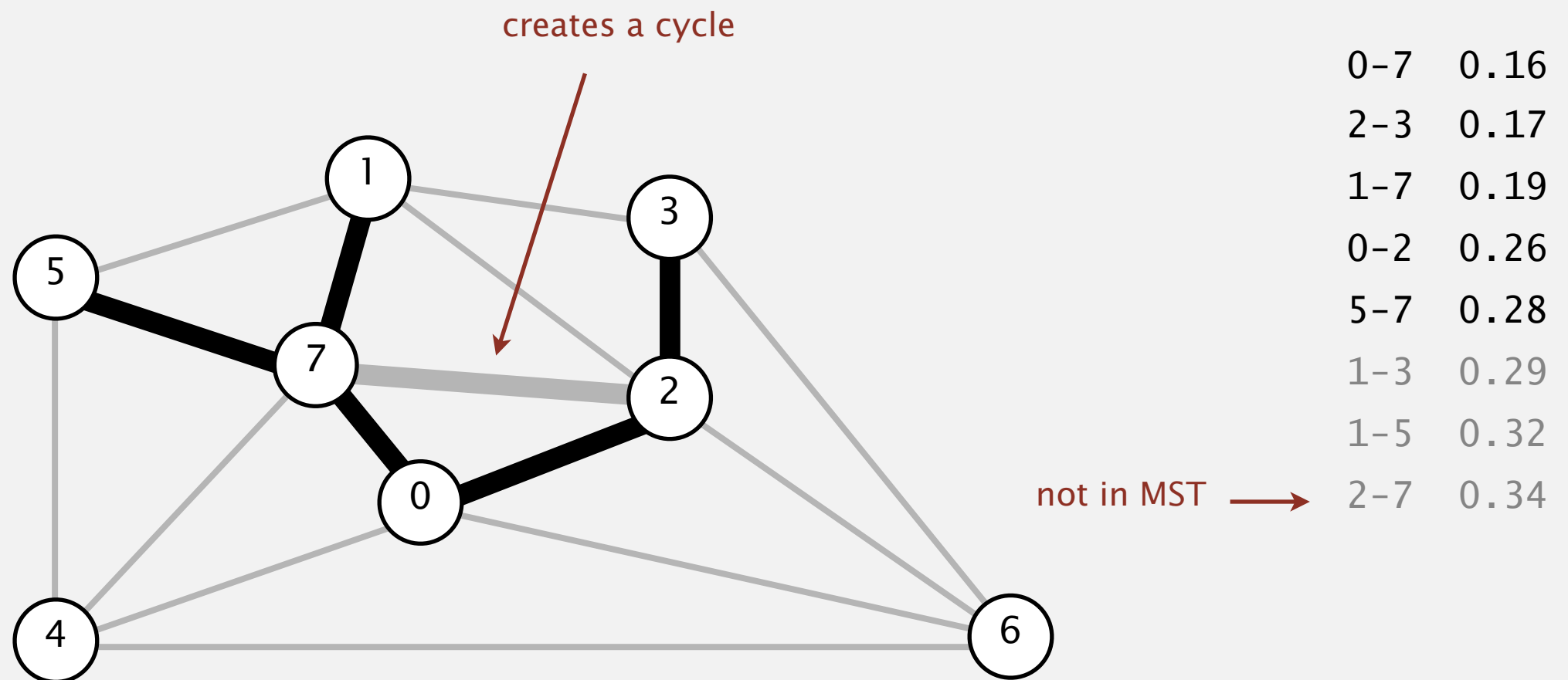


# Kruskal's algorithm demo

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Consider edges in ascending order of weight.

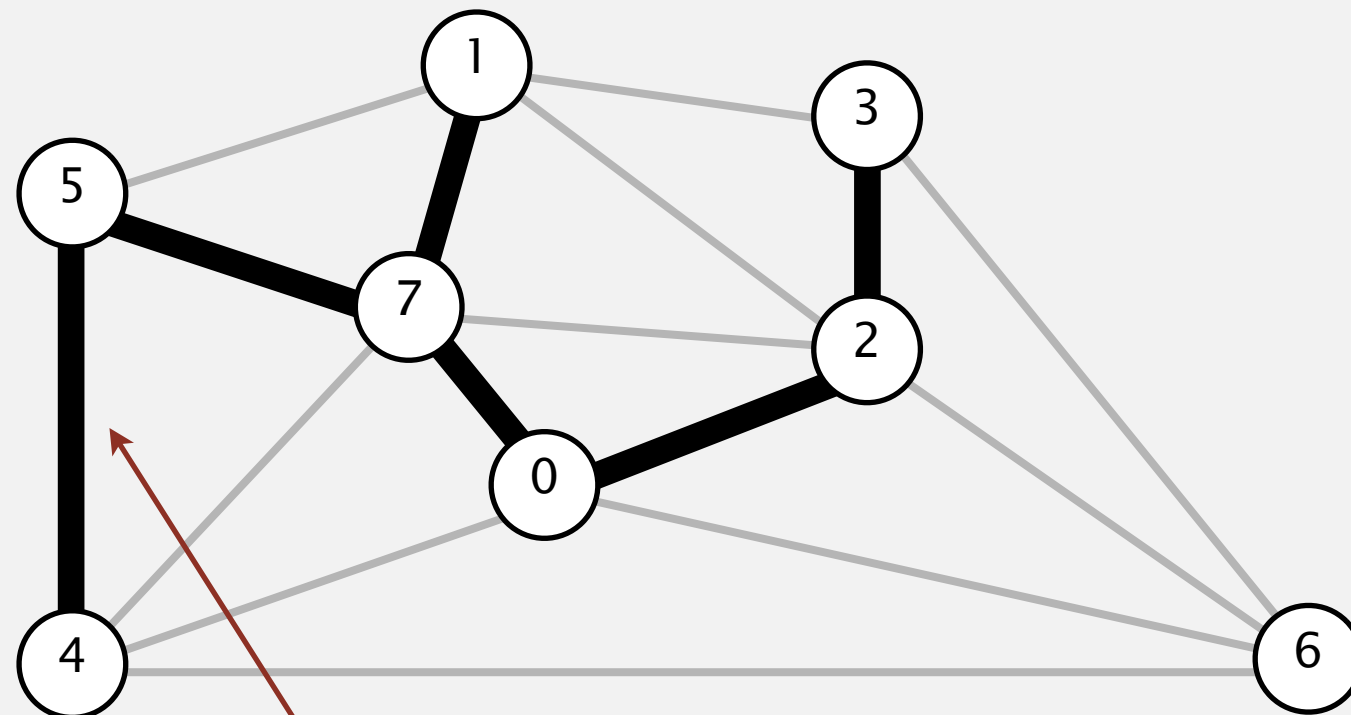
- Add next edge to tree  $T$  unless doing so would create a cycle.



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does not create a cycle

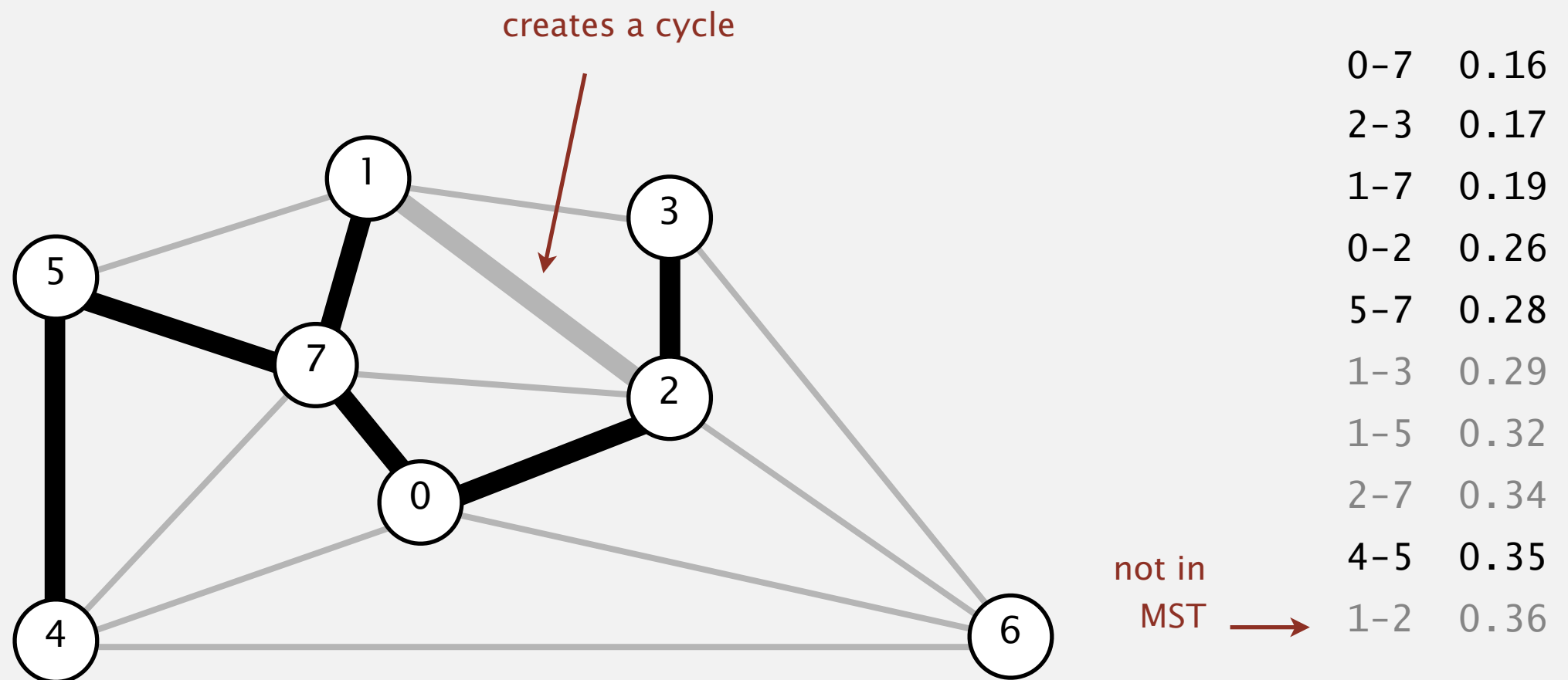
in MST →

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2-7	0.34
4-5	0.35

# Kruskal's algorithm demo

Consider edges in ascending order of weight.

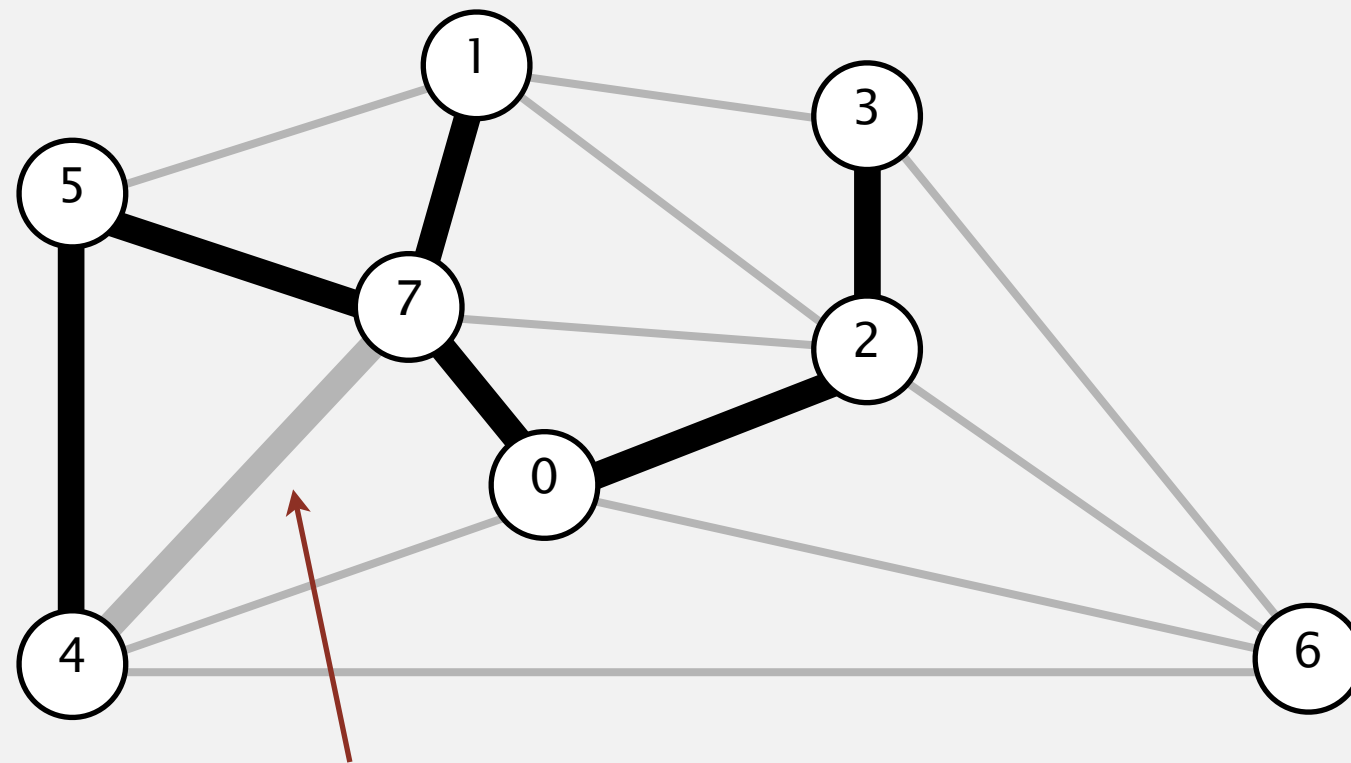
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# Kruskal's algorithm demo

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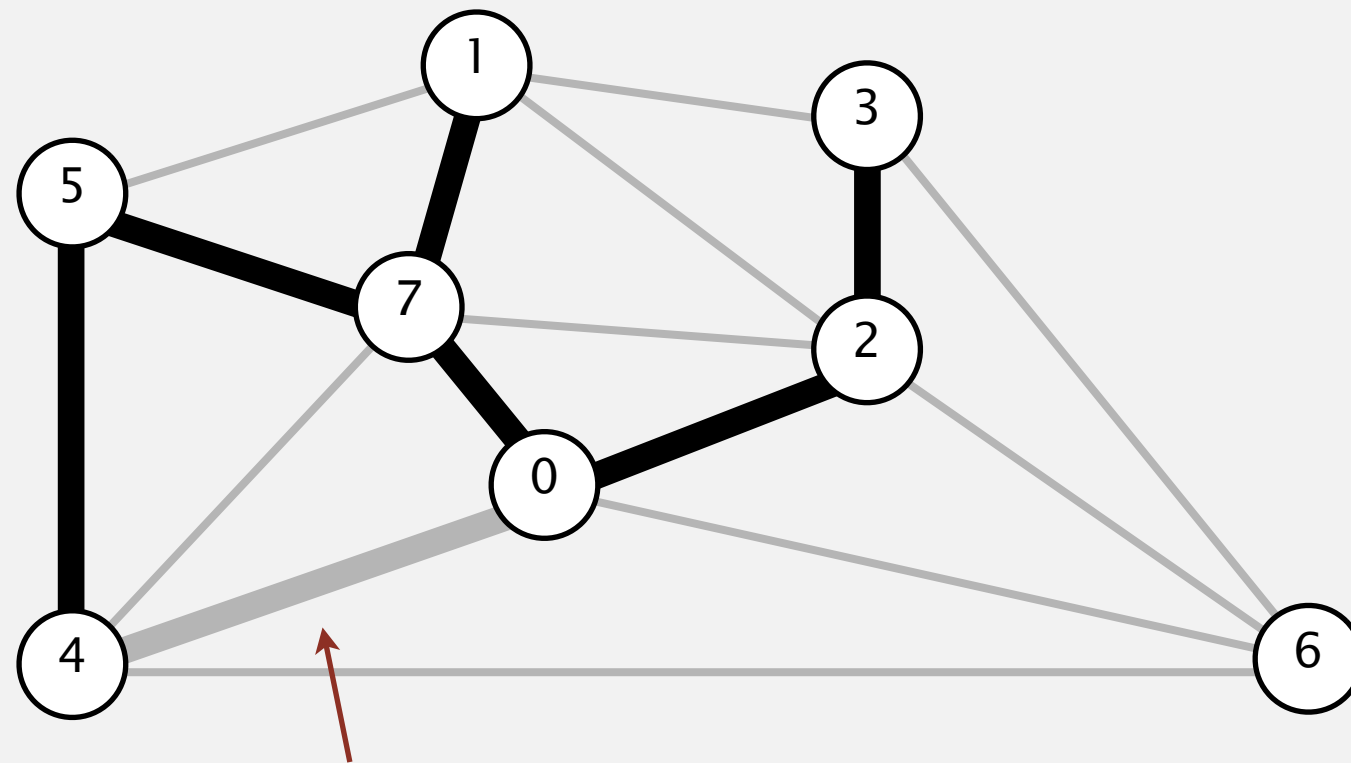
not in  
MST →

0-7	0.16
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0-2	0.26
5-7	0.28
1-3	0.29
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1-2	0.36
4-7	0.37

# Kruskal's algorithm demo

Consider edges in ascending order of weight.

- Add next edge to tree  $T$  unless doing so would create a cycle.



creates a cycle

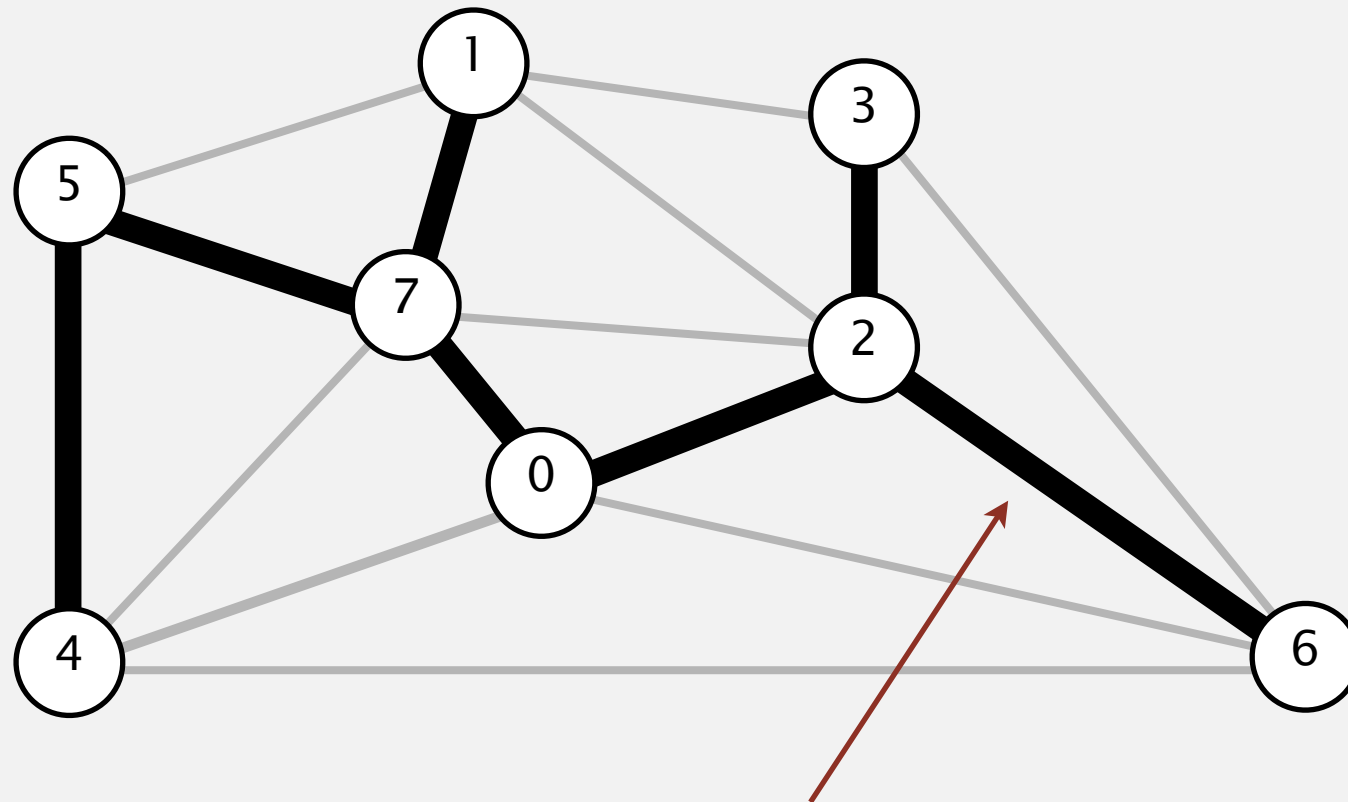
not in MST →

0-7	0.16
2-3	0.17
1-7	0.19
0-2	0.26
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# Kruskal's algorithm demo

Consider edges in ascending order of weight.

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does not create a cycle

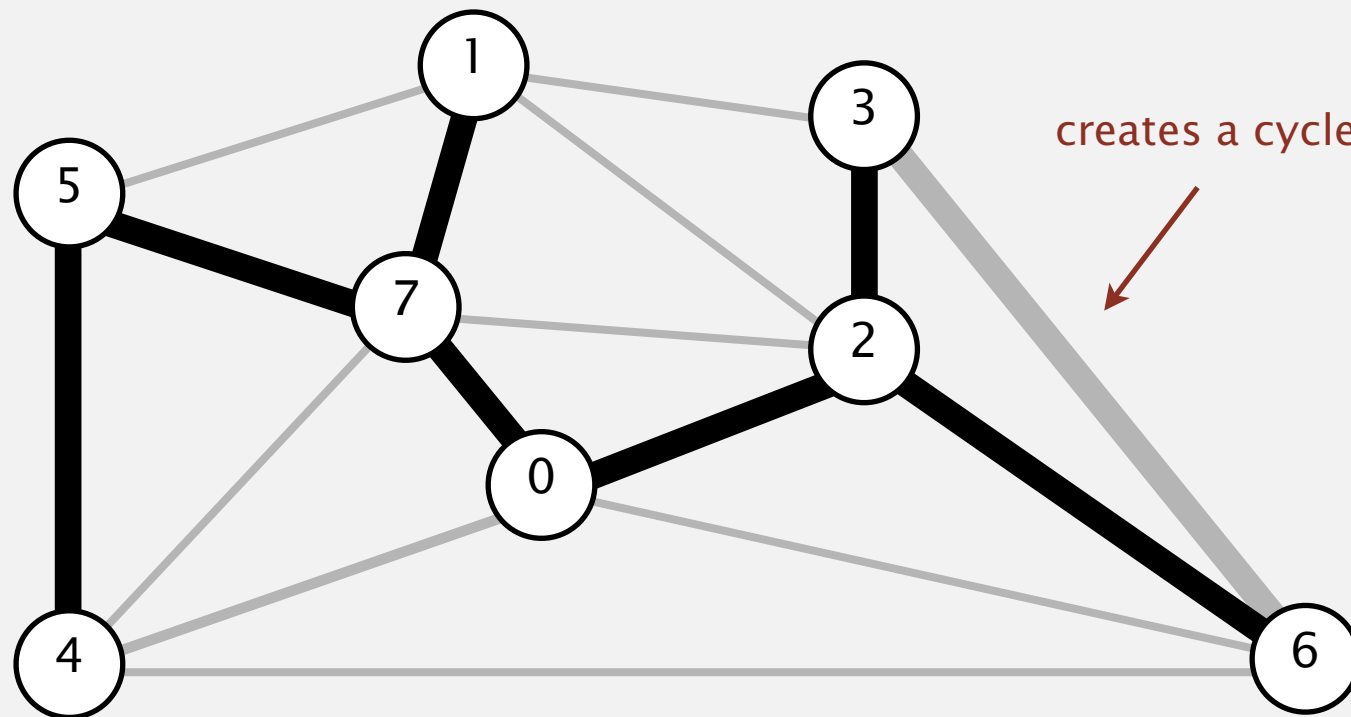
in MST →

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5-7	0.28
1-3	0.29
1-5	0.32
2-7	0.34
4-5	0.35
1-2	0.36
4-7	0.37
0-4	0.38
6-2	0.40

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4-5	0.35
1-2	0.36
4-7	0.37
0-4	0.38
6-2	0.40
3-6	0.52

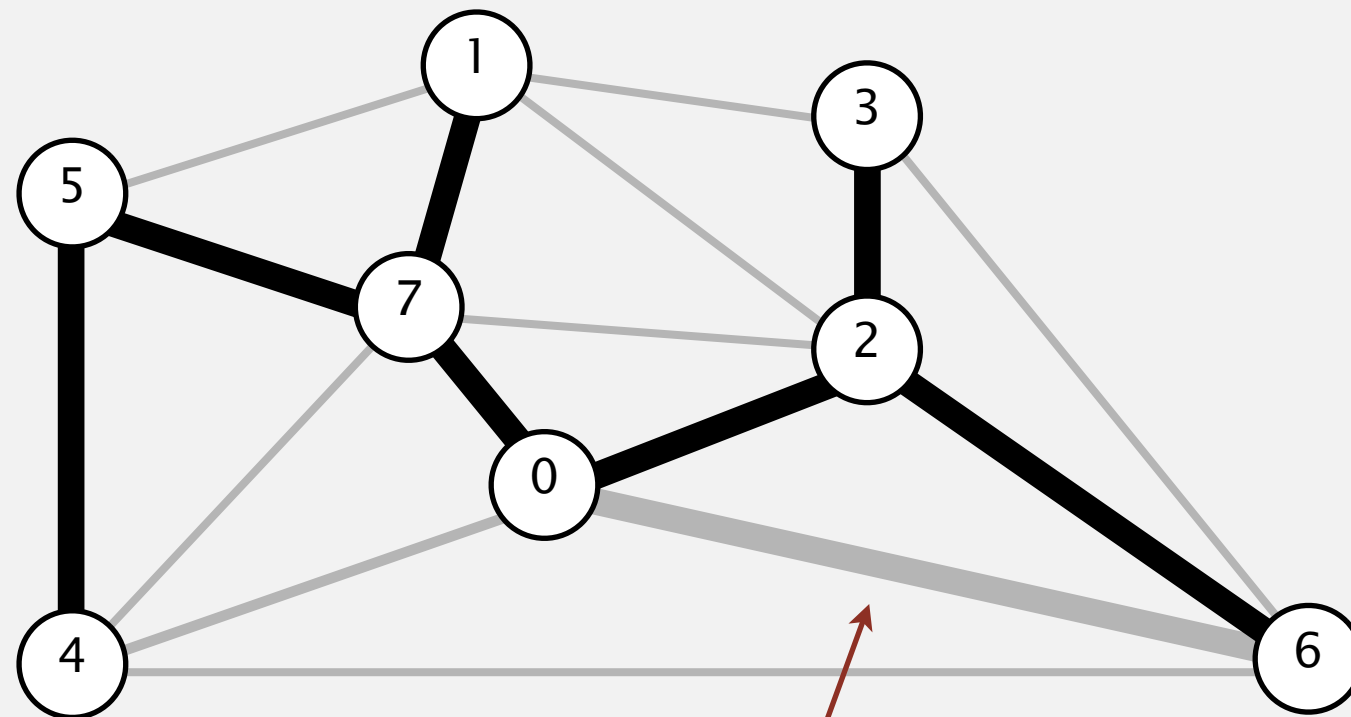
not in MST →



# Kruskal's algorithm demo

Consider edges in ascending order of weight.

- Add next edge to tree  $T$  unless doing so would create a cycle.



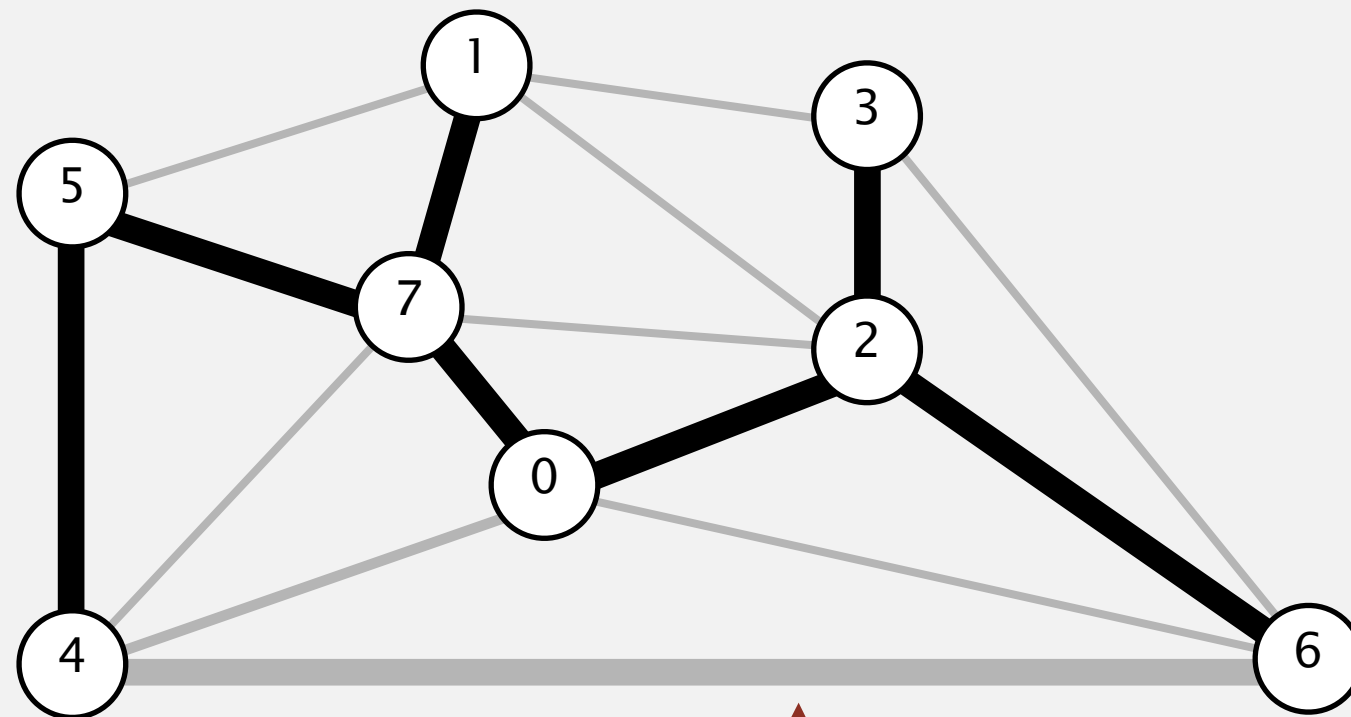
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4-5	0.35
1-2	0.36
4-7	0.37
0-4	0.38
6-2	0.40
3-6	0.52
6-0	0.58

not in MST →

# Kruskal's algorithm demo

Consider edges in ascending order of weight.

- Add next edge to tree  $T$  unless doing so would create a cycle.



creates a cycle

not in MST →

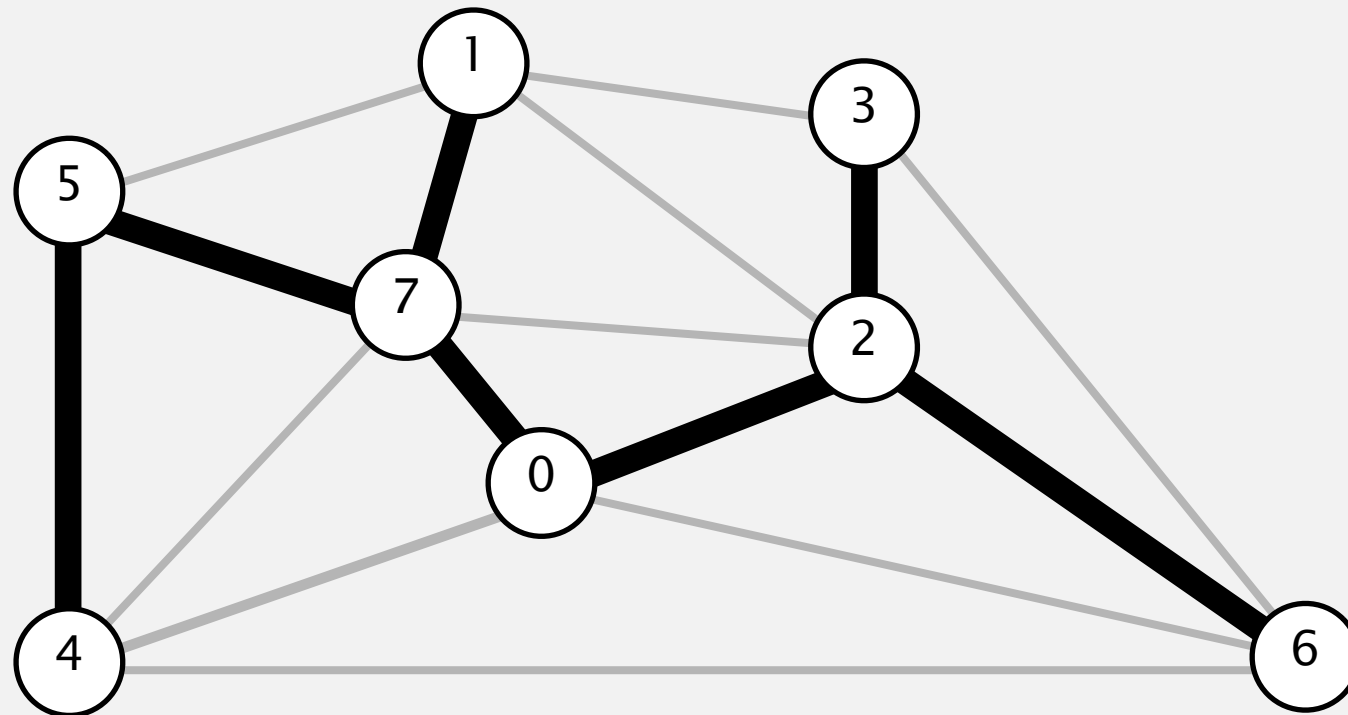
0-7	0.16
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# Kruskal's algorithm demo

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**a minimum spanning tree**

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