

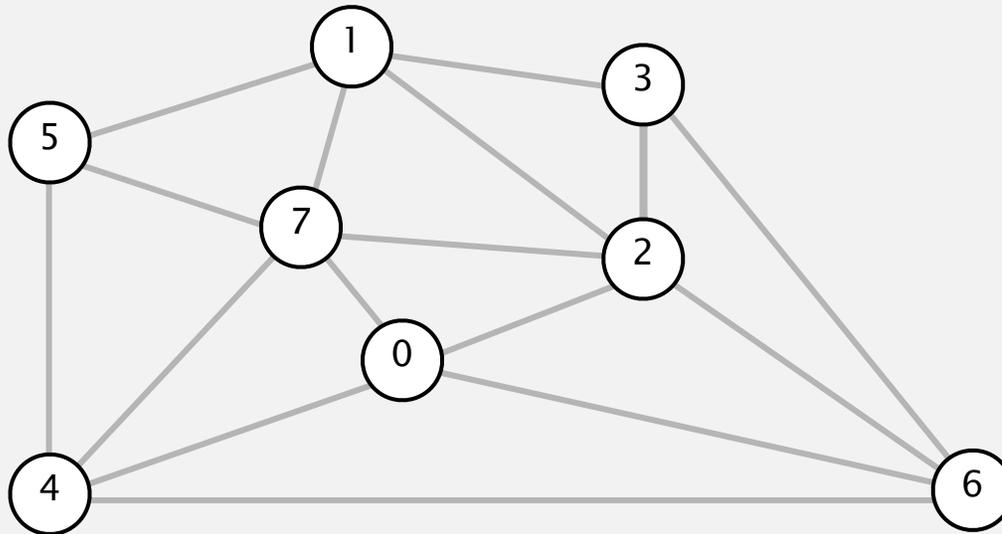
4.3 KRUSKAL'S ALGORITHM DEMO



Kruskal's algorithm

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

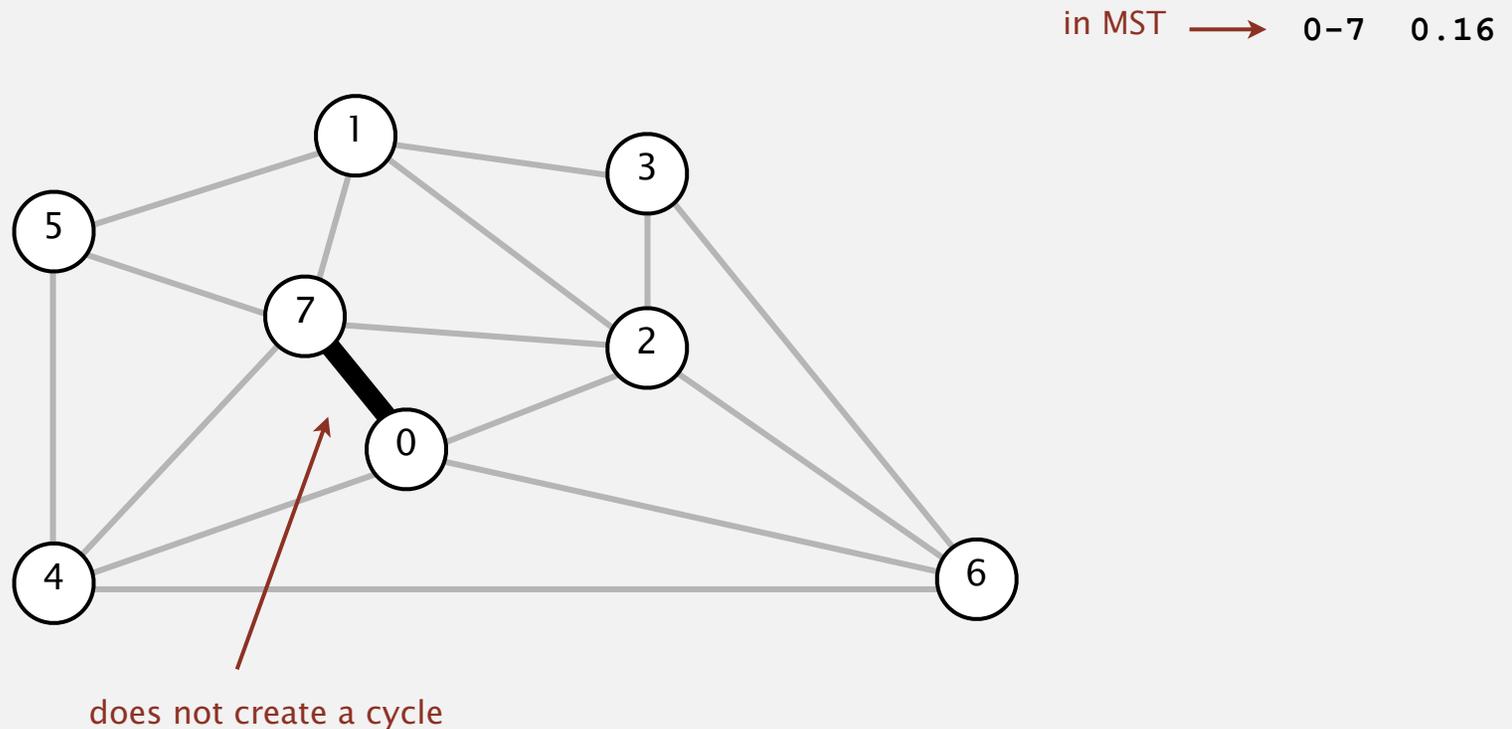


0-7	0.16
2-3	0.17
1-7	0.19
0-2	0.26
5-7	0.28
1-3	0.29
1-5	0.32
2-7	0.34
4-5	0.35
1-2	0.36
4-7	0.37
0-4	0.38
6-2	0.40
3-6	0.52
6-0	0.58
6-4	0.93

Kruskal's algorithm

Consider edges in ascending order of weight.

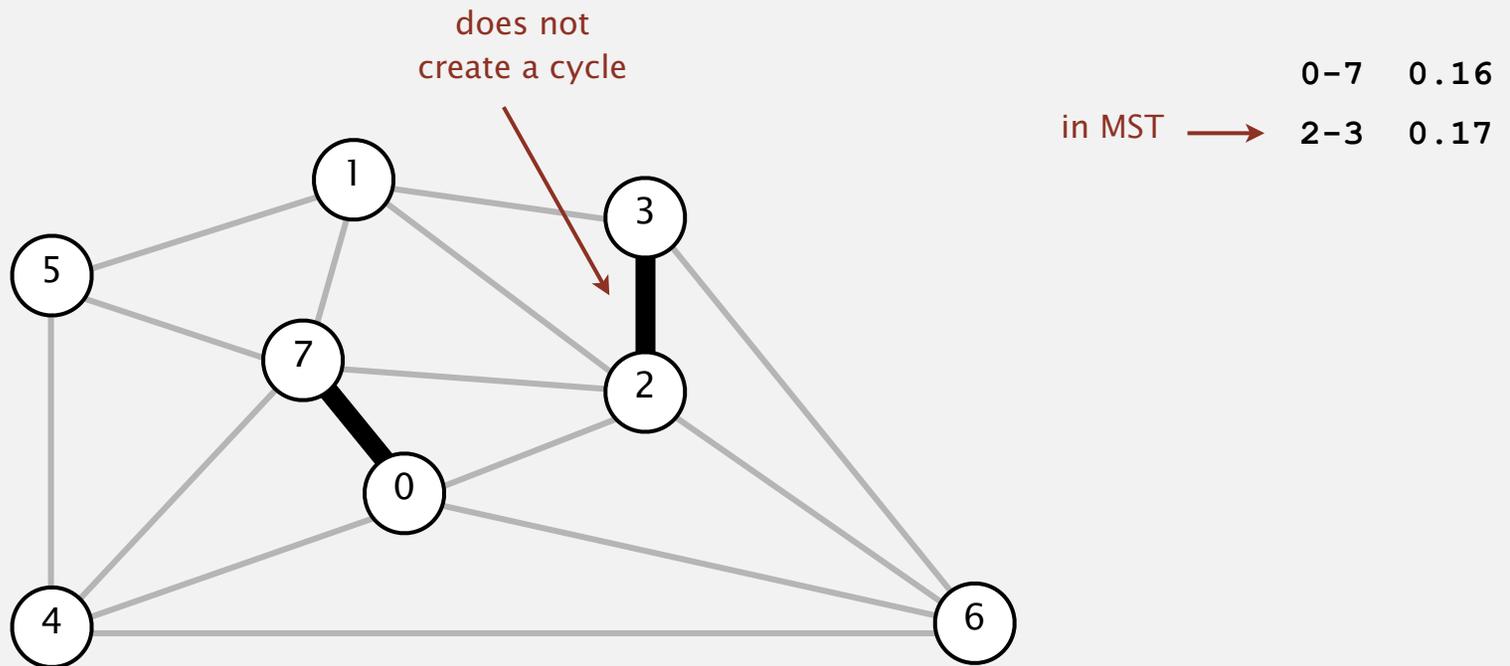
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Kruskal's algorithm

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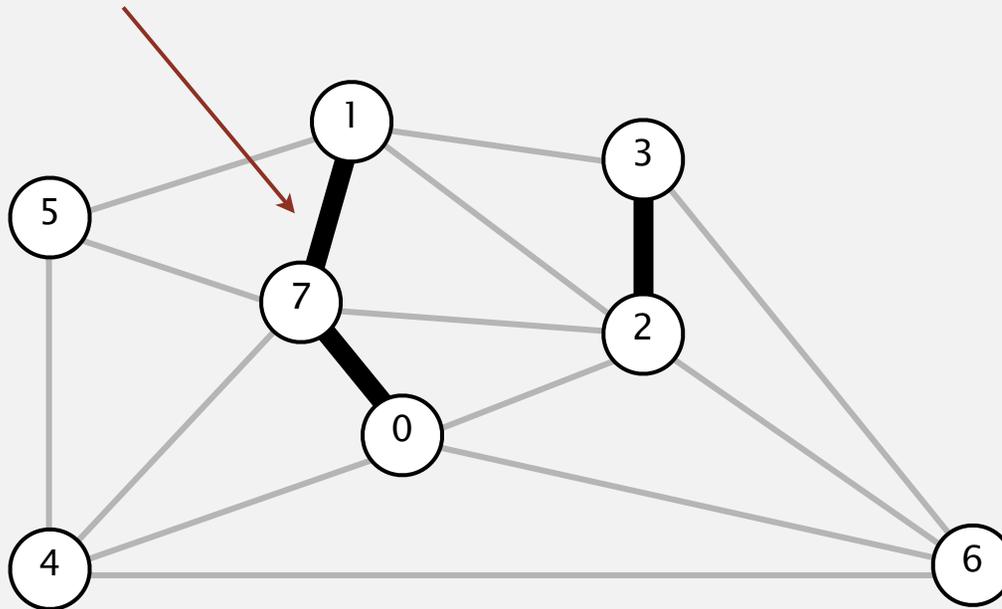


Kruskal's algorithm

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



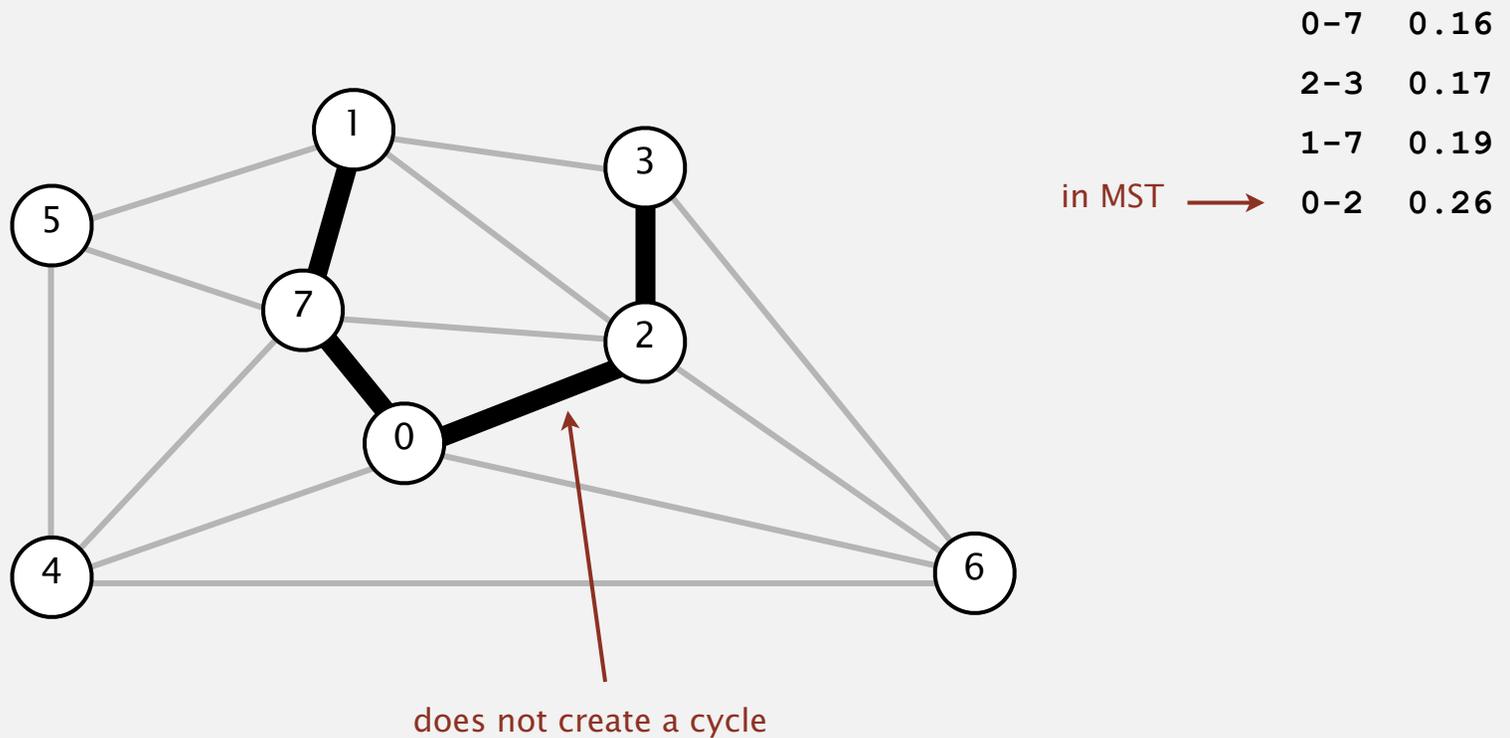
in MST →

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

Kruskal's algorithm

Consider edges in ascending order of weight.

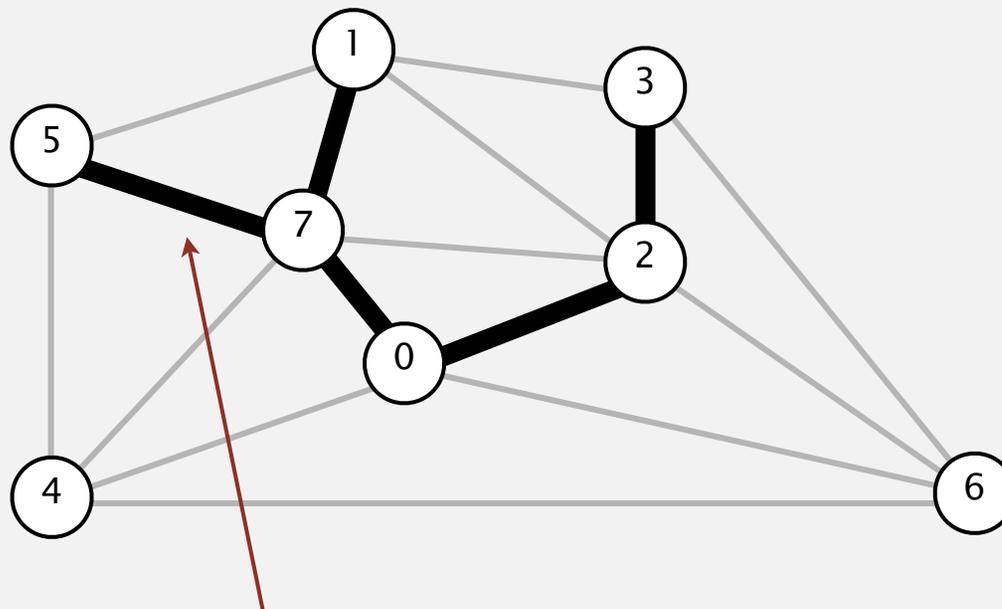
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Kruskal's algorithm

Consider edges in ascending order of weight.

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



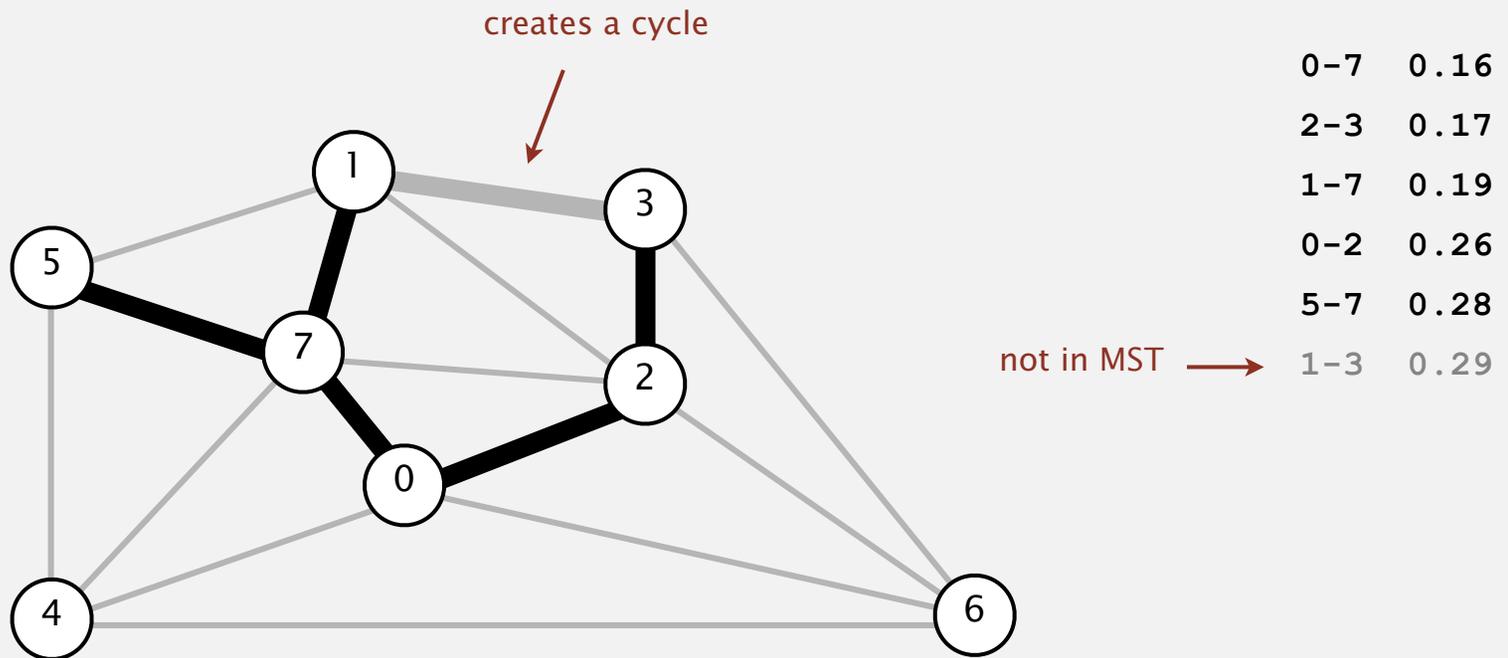
	0-7	0.16
	2-3	0.17
	1-7	0.19
	0-2	0.26
in MST →	5-7	0.28

does not create a cycle

Kruskal's algorithm

Consider edges in ascending order of weight.

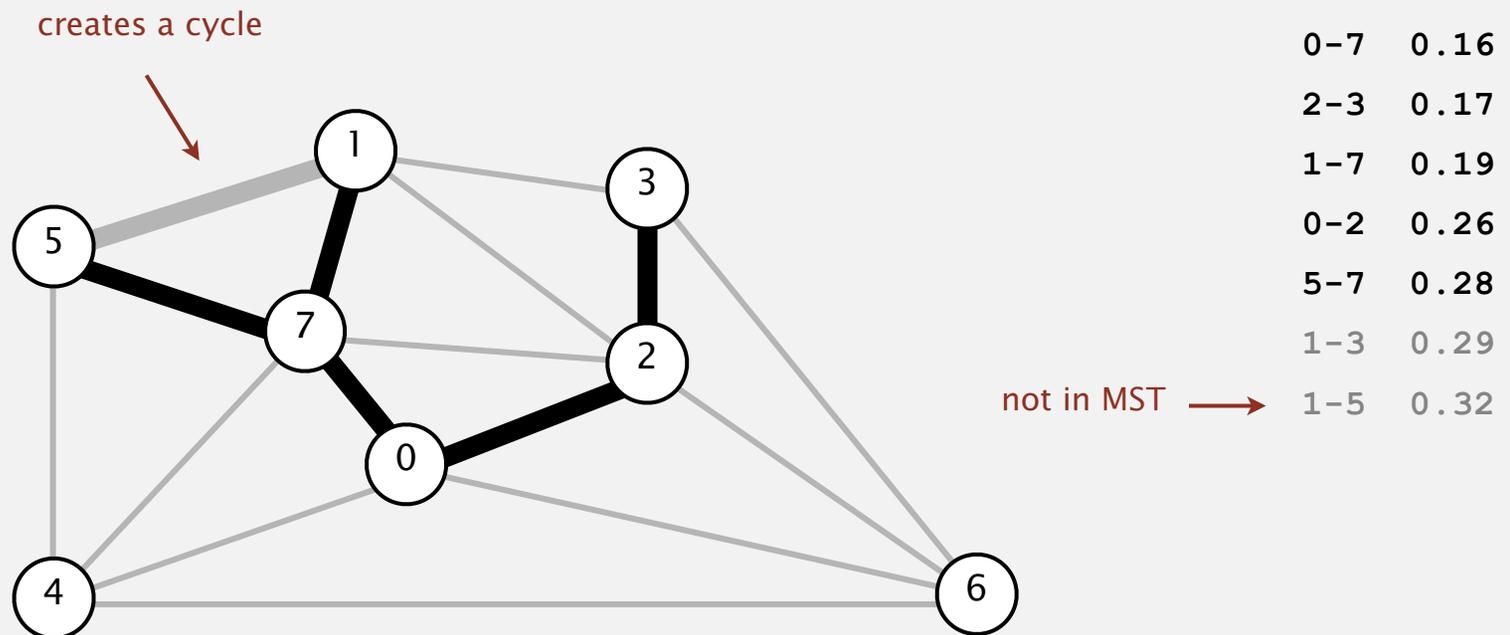
- Add next edge to tree T unless doing so would create a cycle.



Kruskal's algorithm

Consider edges in ascending order of weight.

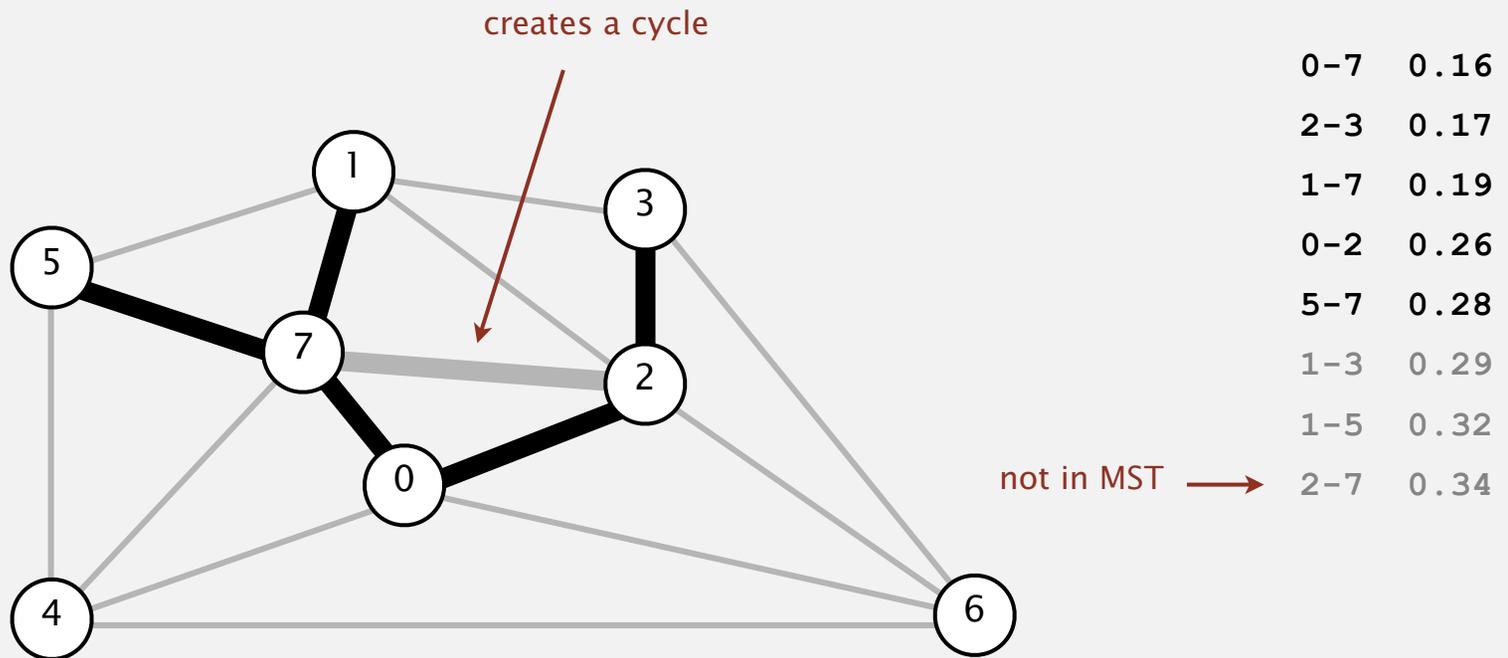
- Add next edge to tree T unless doing so would create a cycle.



Kruskal's algorithm

Consider edges in ascending order of weight.

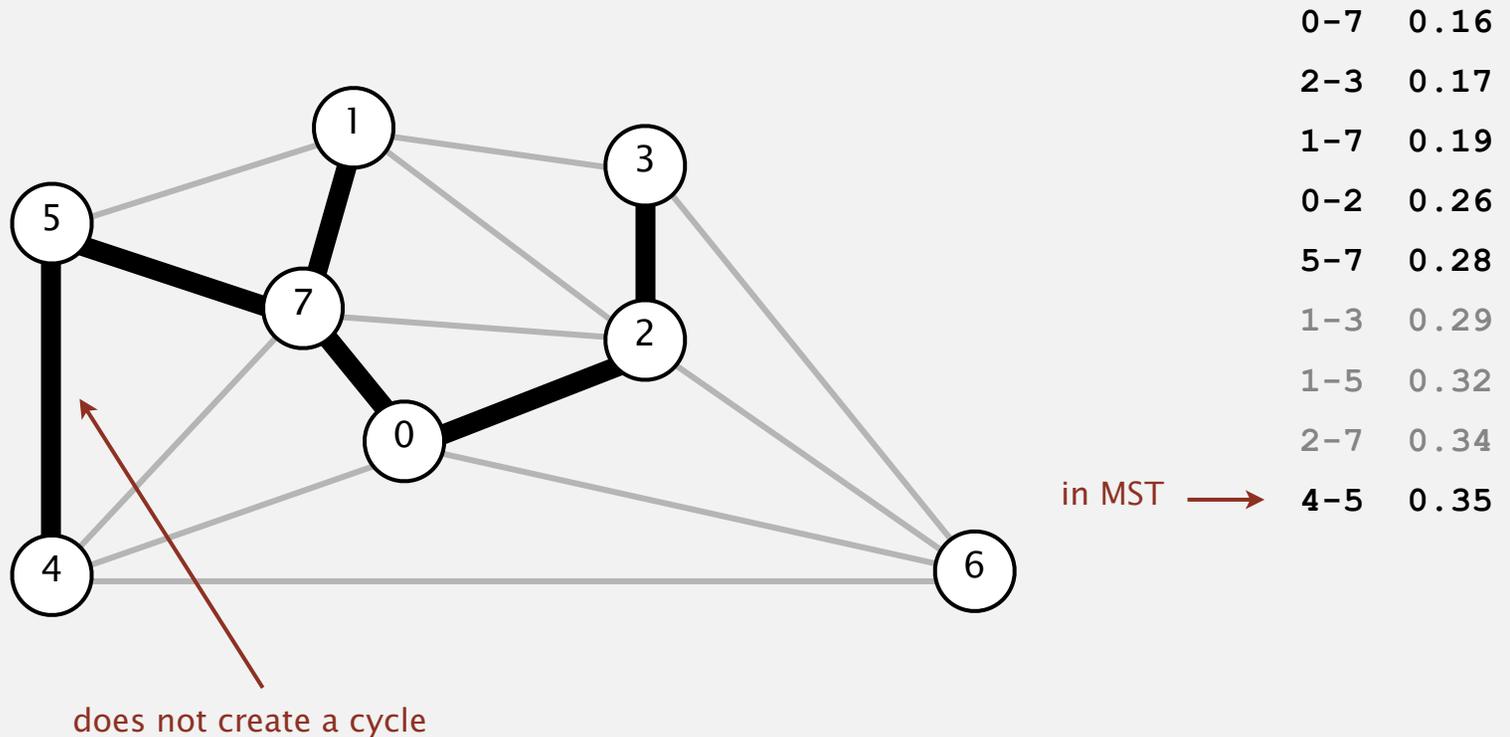
- Add next edge to tree T unless doing so would create a cycle.



Kruskal's algorithm

Consider edges in ascending order of weight.

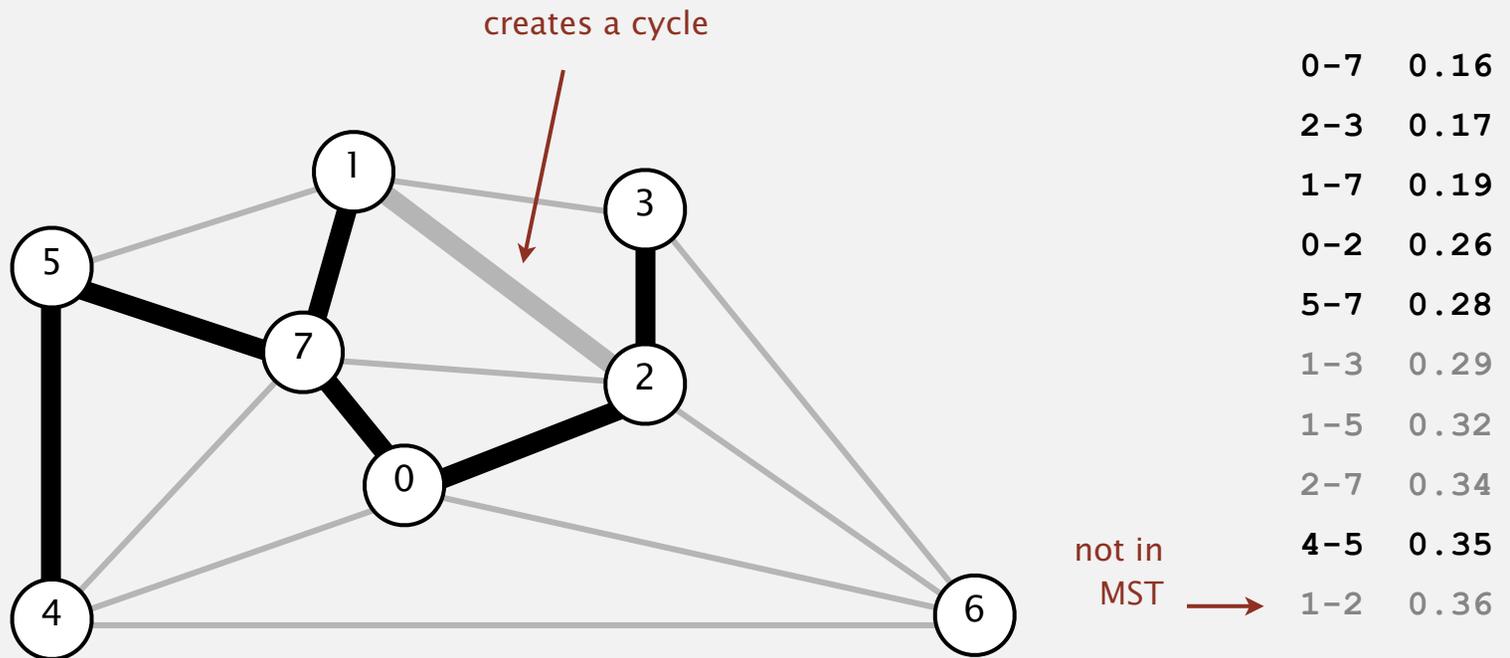
- Add next edge to tree T unless doing so would create a cycle.



Kruskal's algorithm

Consider edges in ascending order of weight.

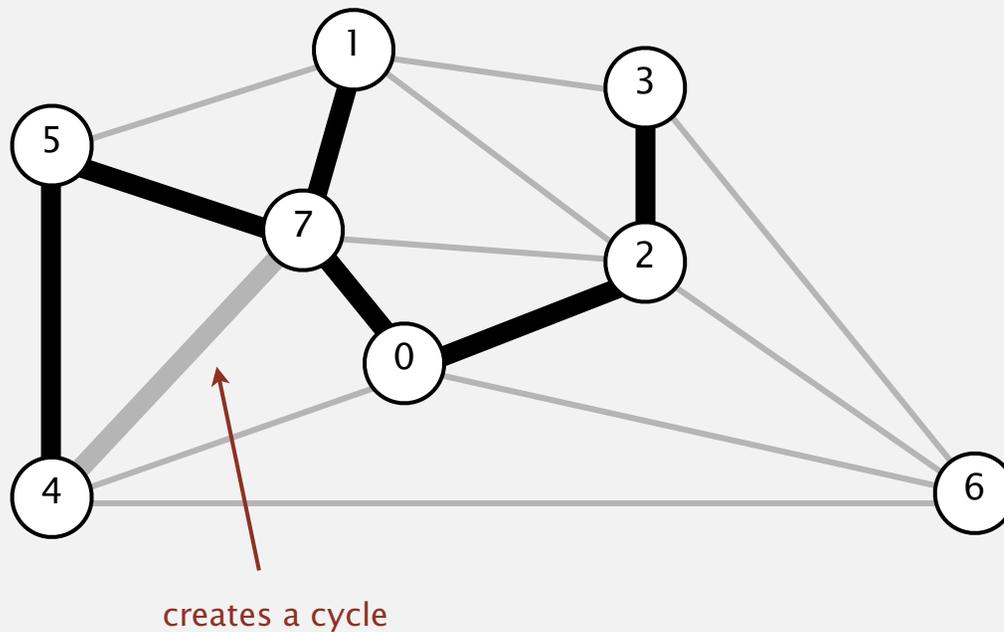
- Add next edge to tree T unless doing so would create a cycle.



Kruskal's algorithm

Consider edges in ascending order of weight.

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

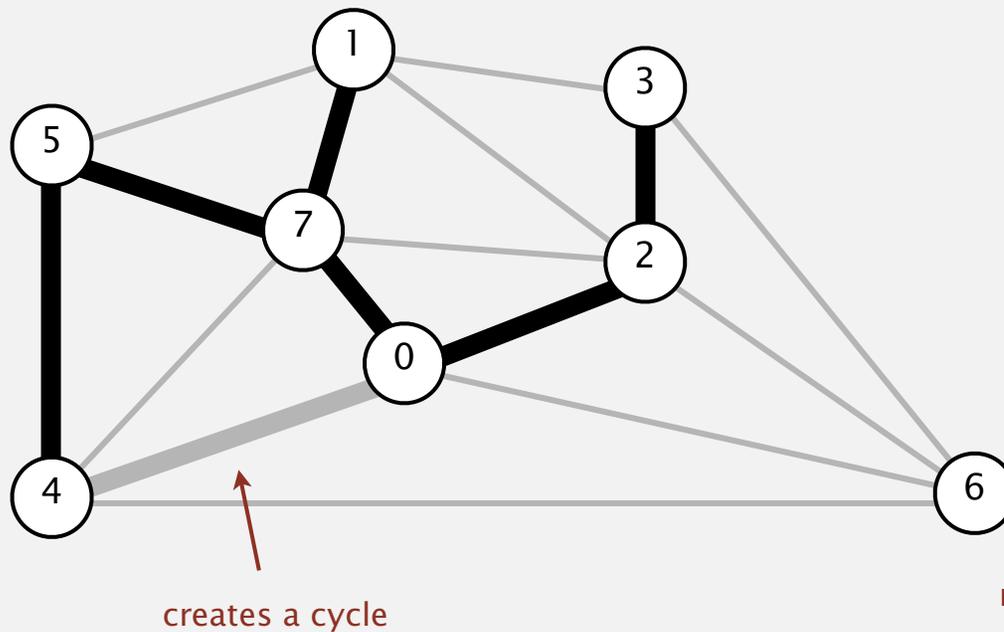


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2-3	0.17
1-7	0.19
0-2	0.26
5-7	0.28
1-3	0.29
1-5	0.32
2-7	0.34
4-5	0.35
1-2	0.36
4-7	0.37

Kruskal's algorithm

Consider edges in ascending order of weight.

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

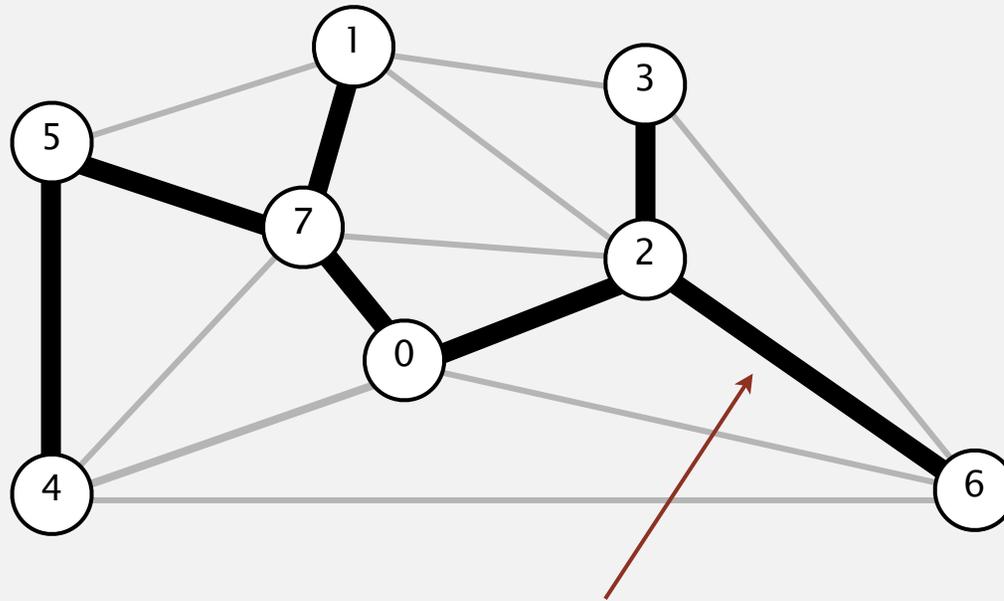


0-7	0.16
2-3	0.17
1-7	0.19
0-2	0.26
5-7	0.28
1-3	0.29
1-5	0.32
2-7	0.34
4-5	0.35
1-2	0.36
4-7	0.37
0-4	0.38

Kruskal's algorithm

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

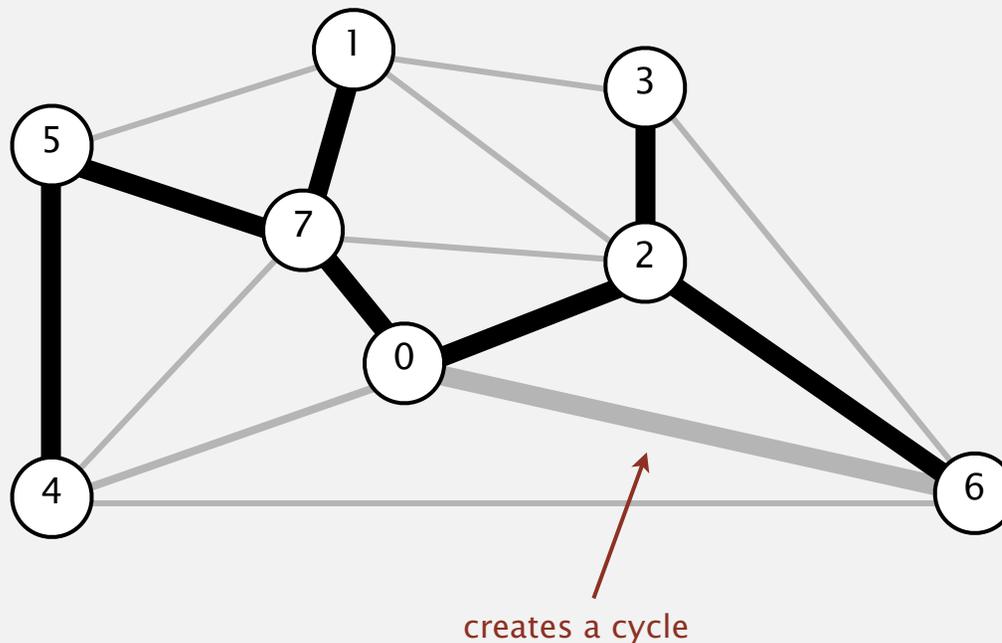
in MST →

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

Kruskal's algorithm

Consider edges in ascending order of weight.

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



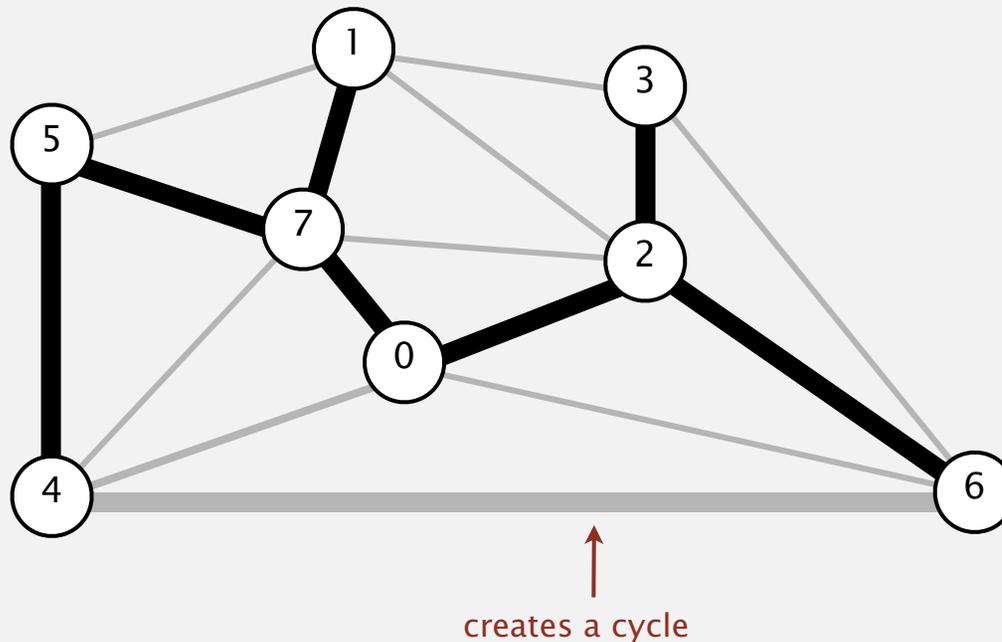
not in MST →

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

Kruskal's algorithm

Consider edges in ascending order of weight.

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



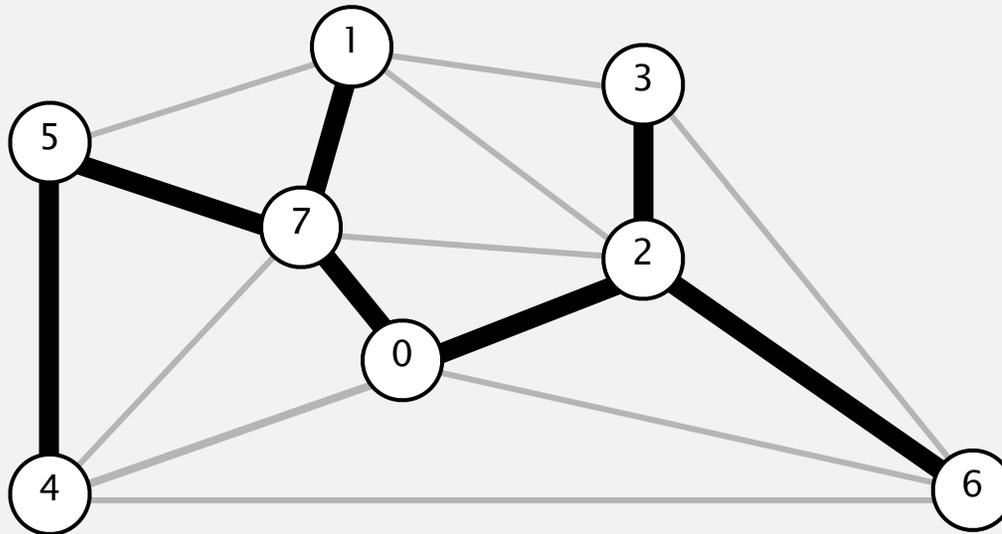
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4-7	0.37
0-4	0.38
6-2	0.40
3-6	0.52
6-0	0.58
6-4	0.93

not in MST →

Kruskal's algorithm

Consider edges in ascending order of weight.

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



a minimum spanning tree

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