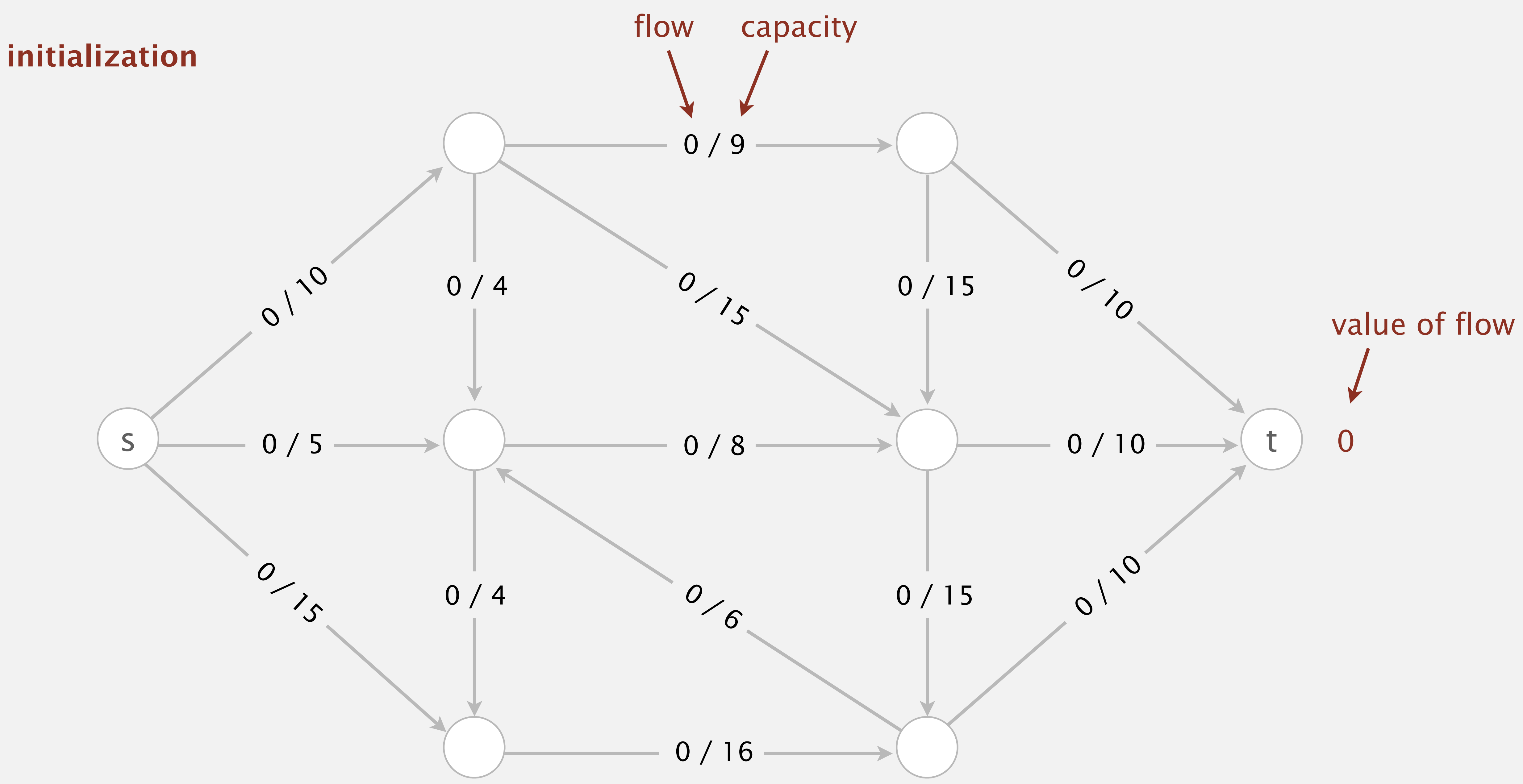
6.4 Ford-Fulkerson Demo

click to begin demo

- **Ford-Fulkerson algorithm**
- **computing a min cut**

Initialization. Start with 0 flow.

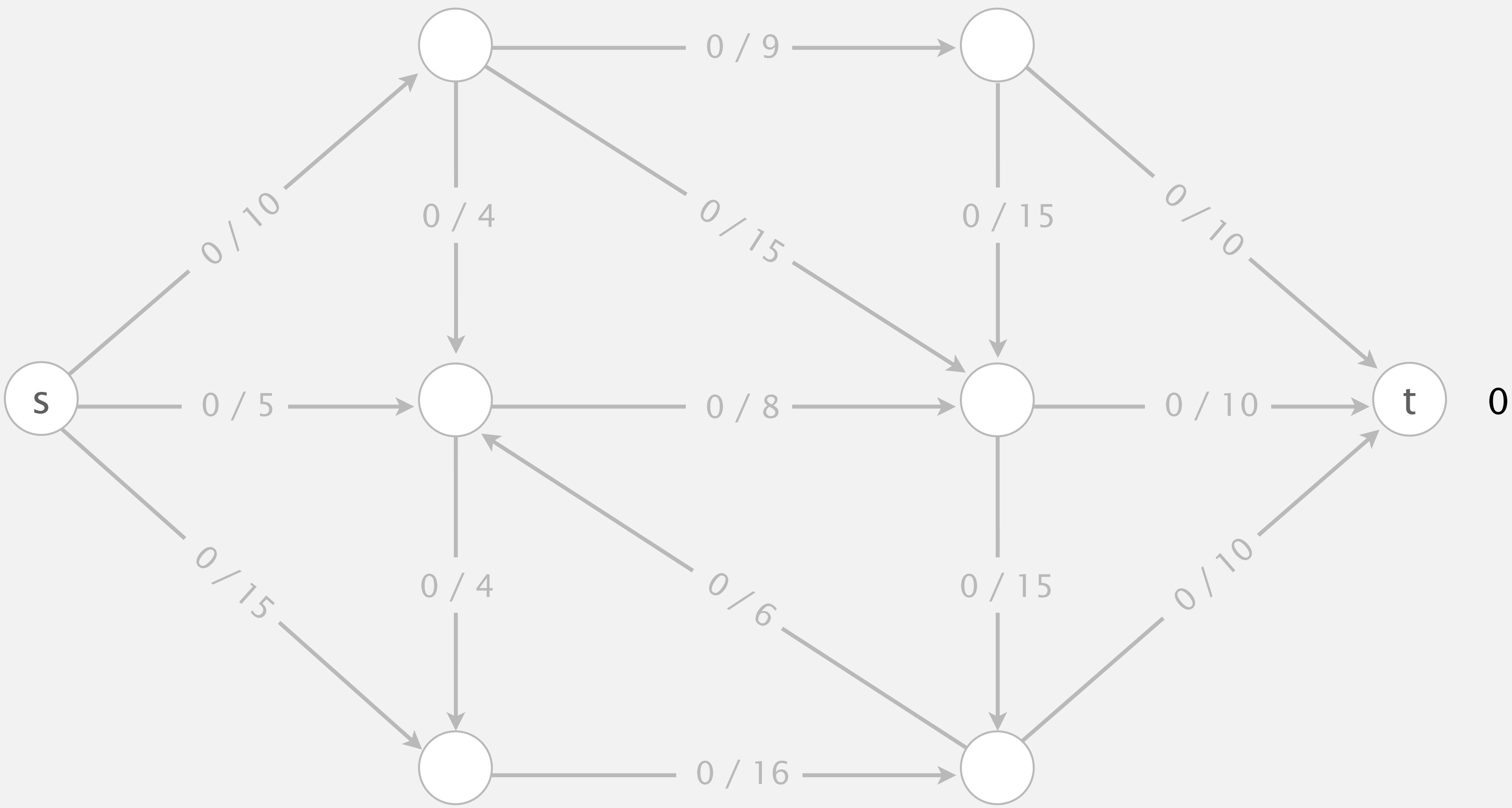


Idea: increase flow along augmenting paths

Augmenting path. Find an undirected path from s to t such that:

- Can increase flow on forward edges (not full).
- Can decrease flow on backward edge (not empty).

1st augmenting path



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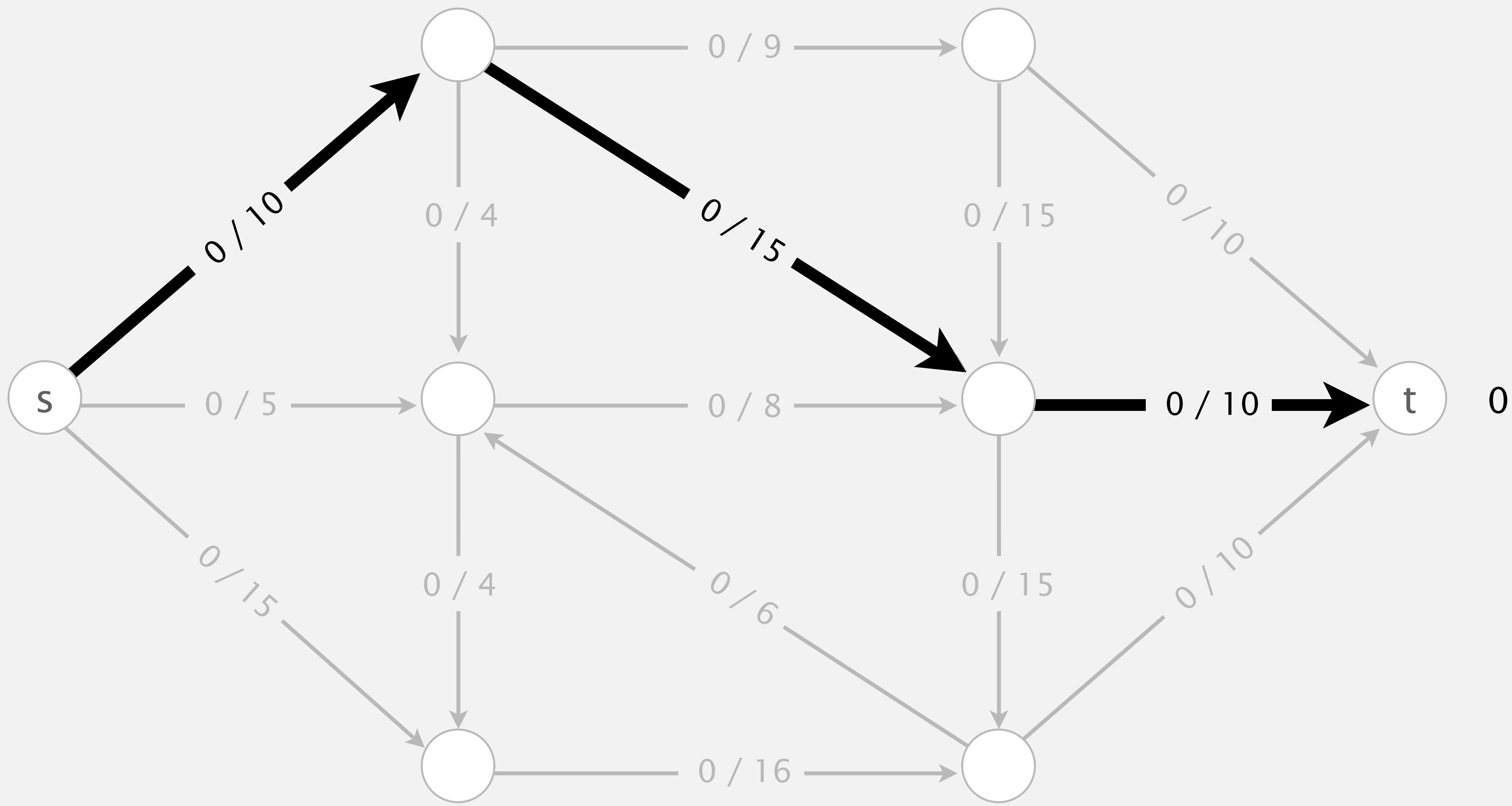

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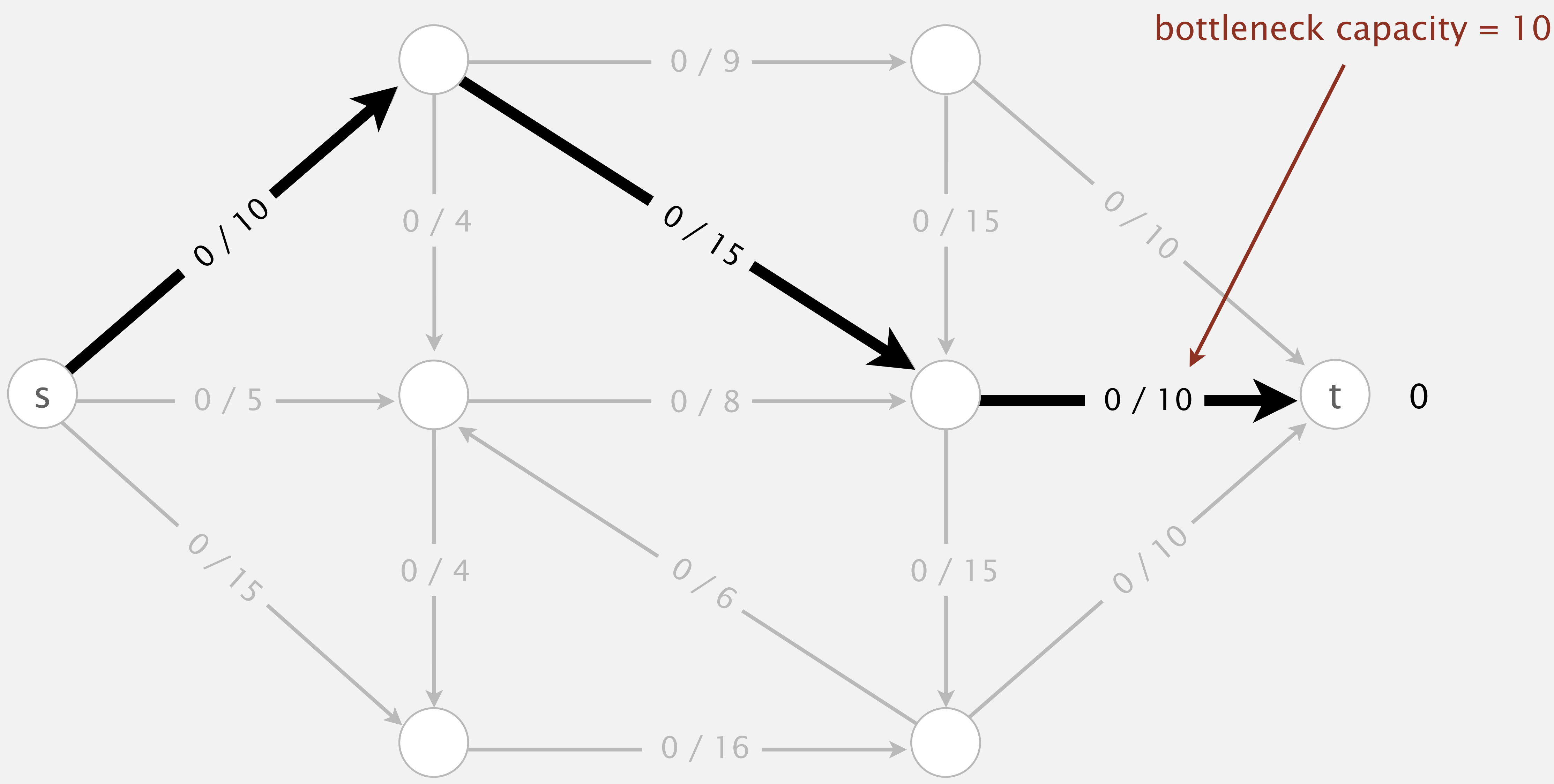

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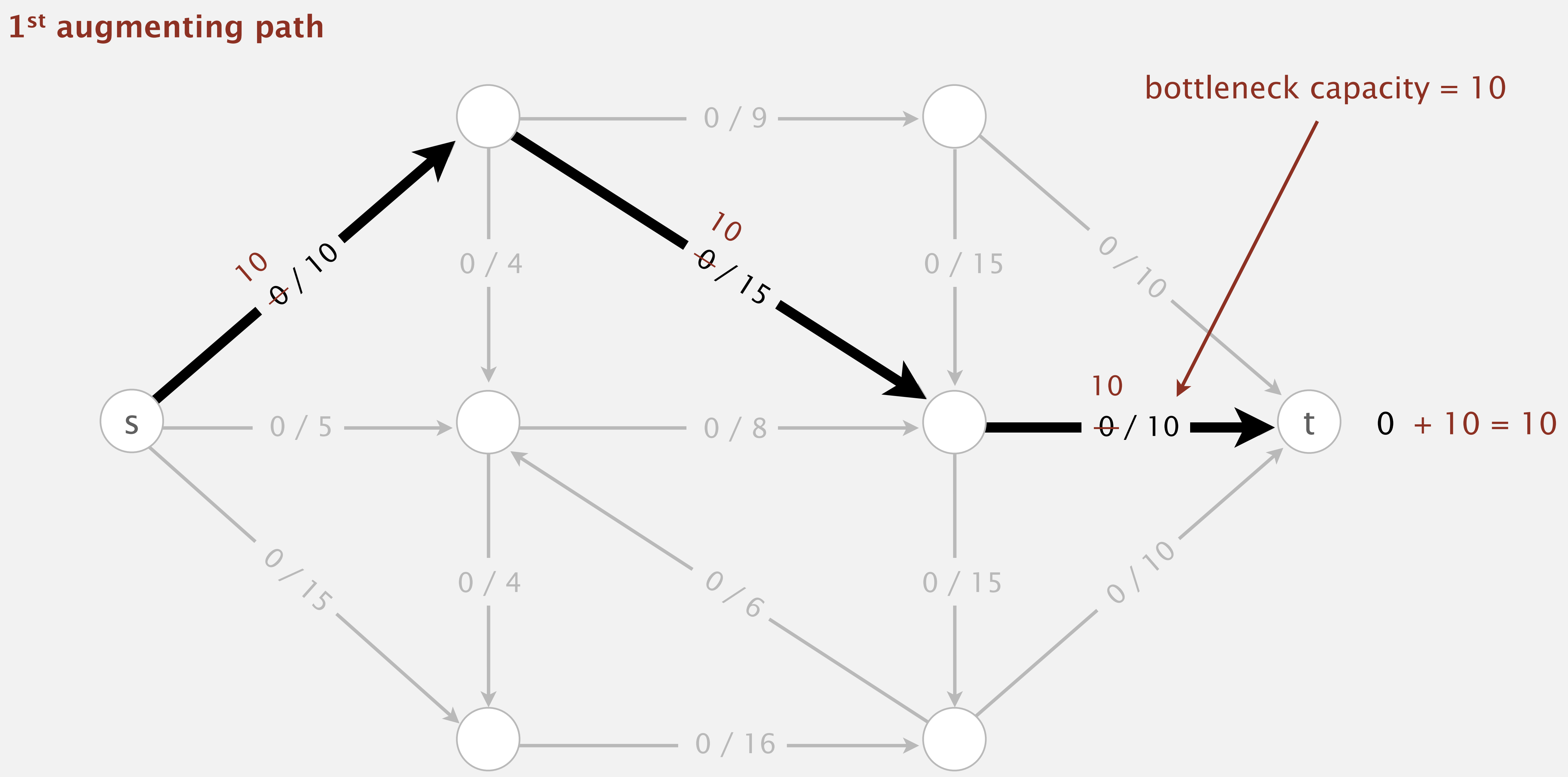

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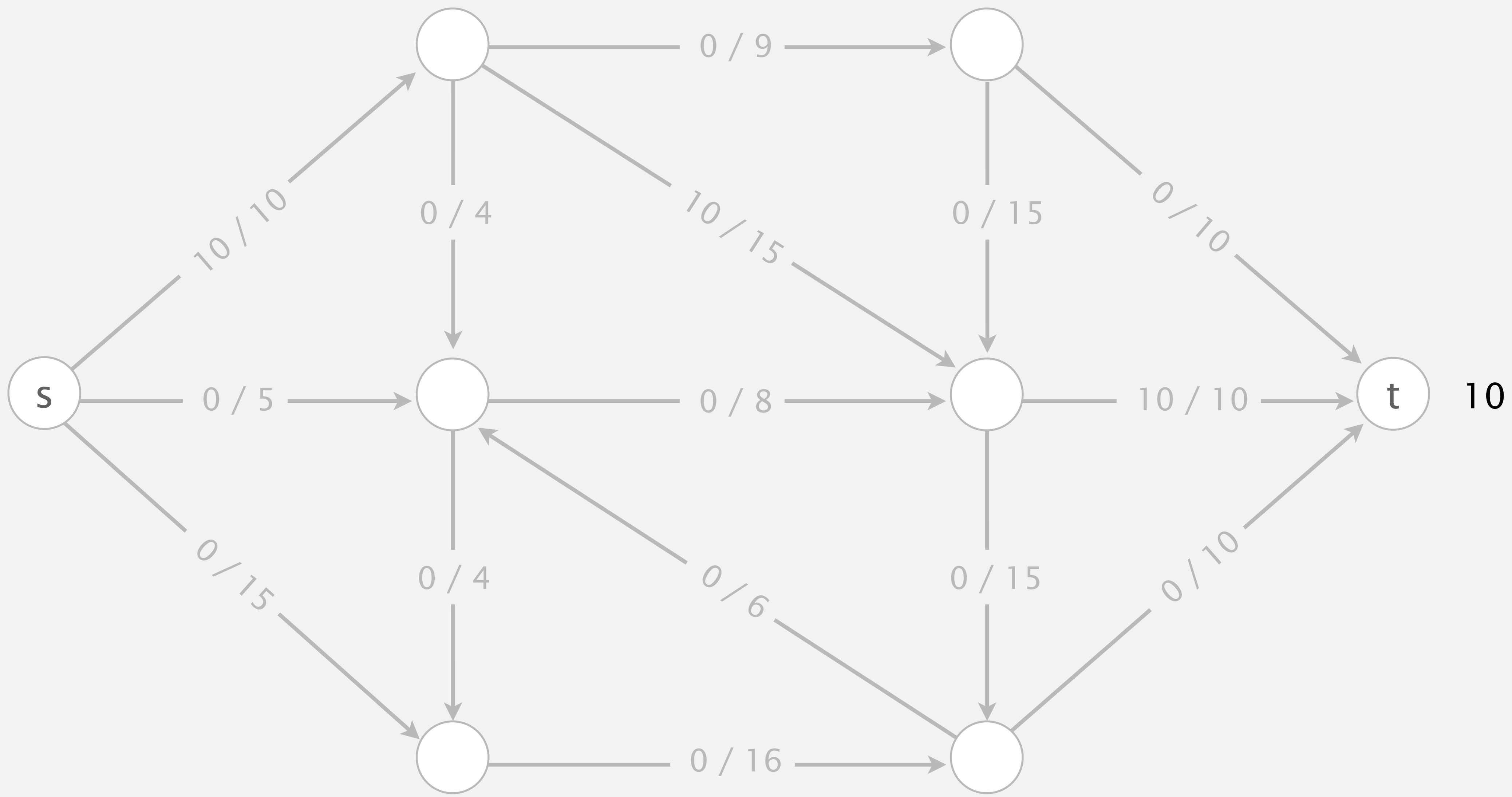
2nd augmenting path



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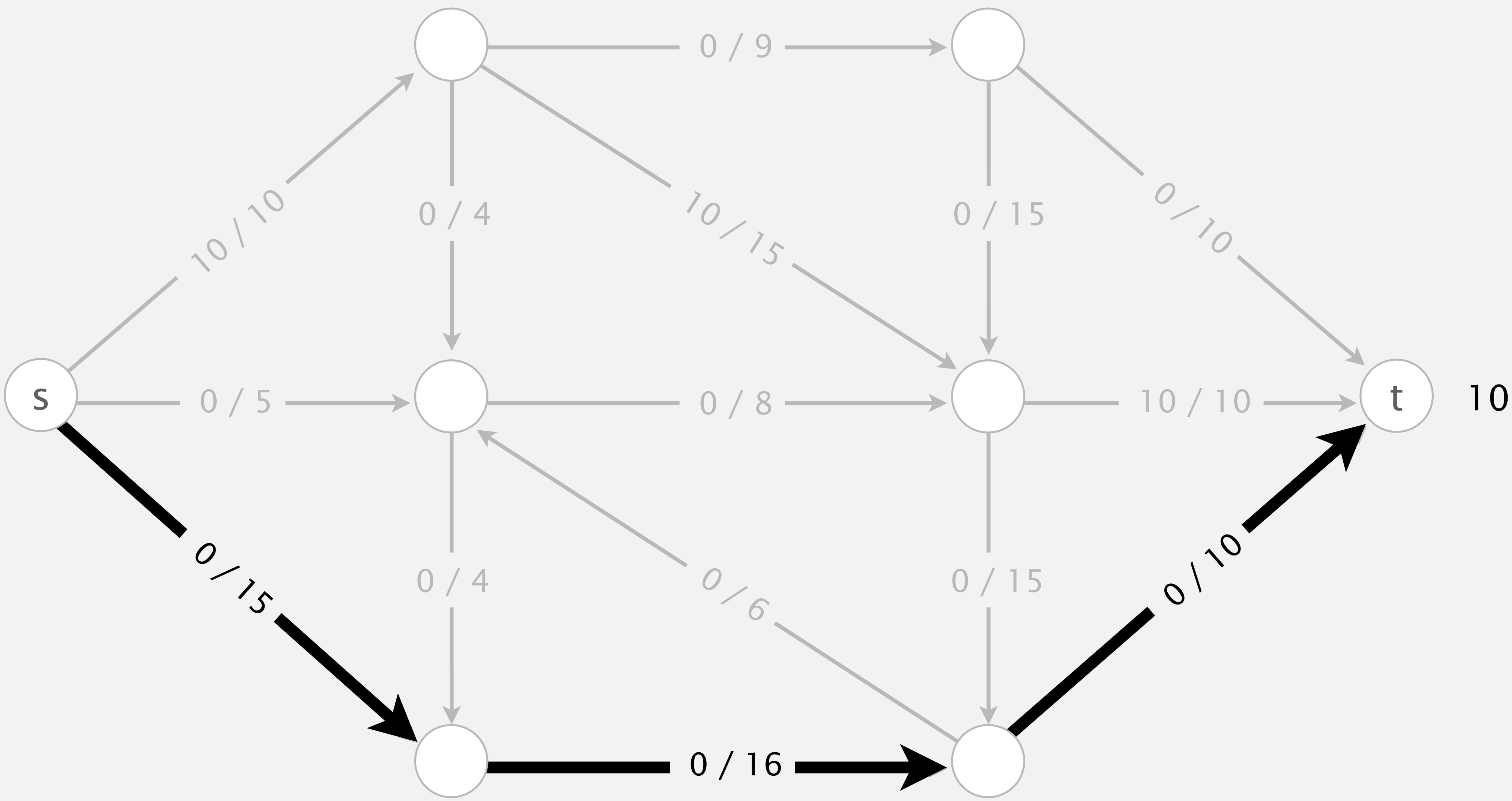

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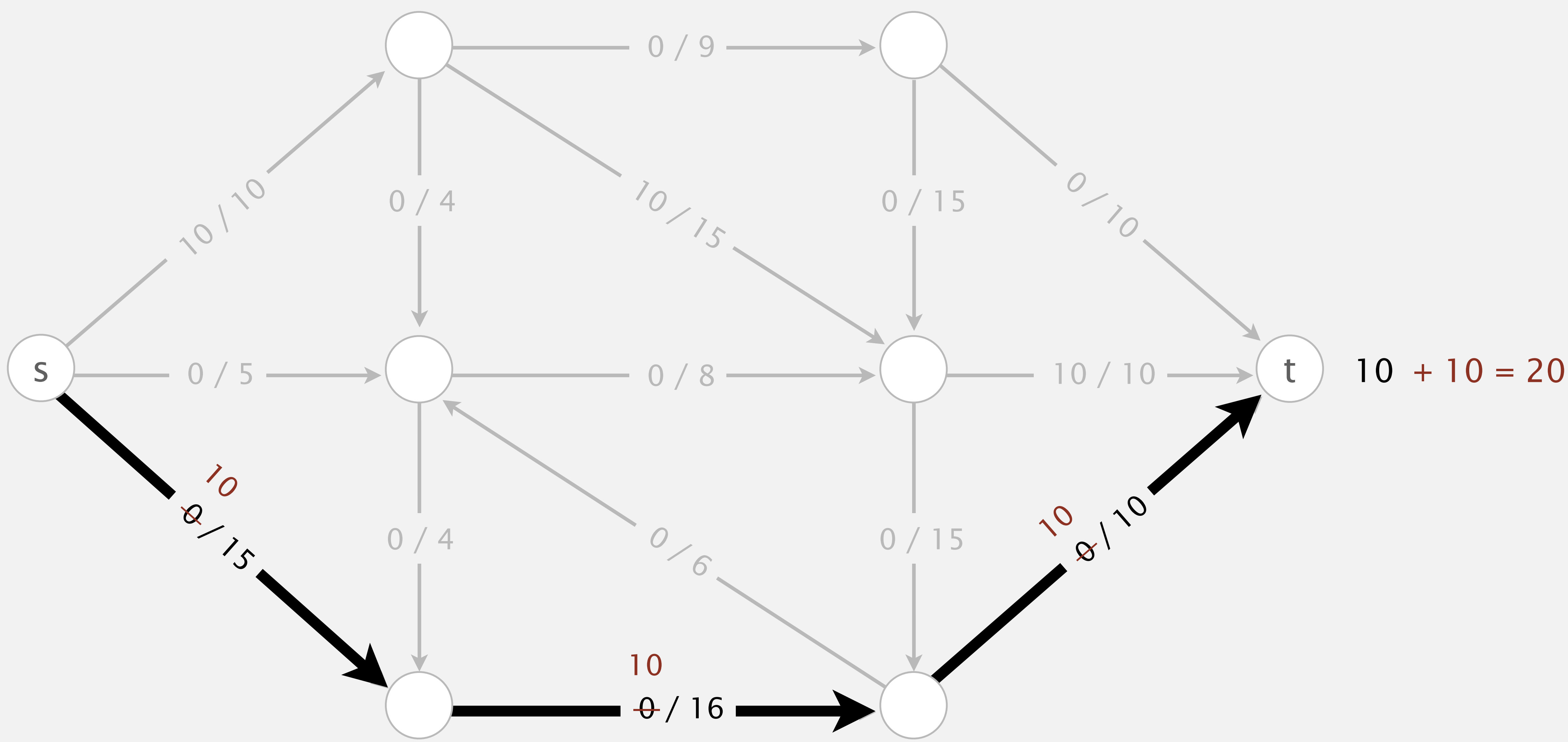

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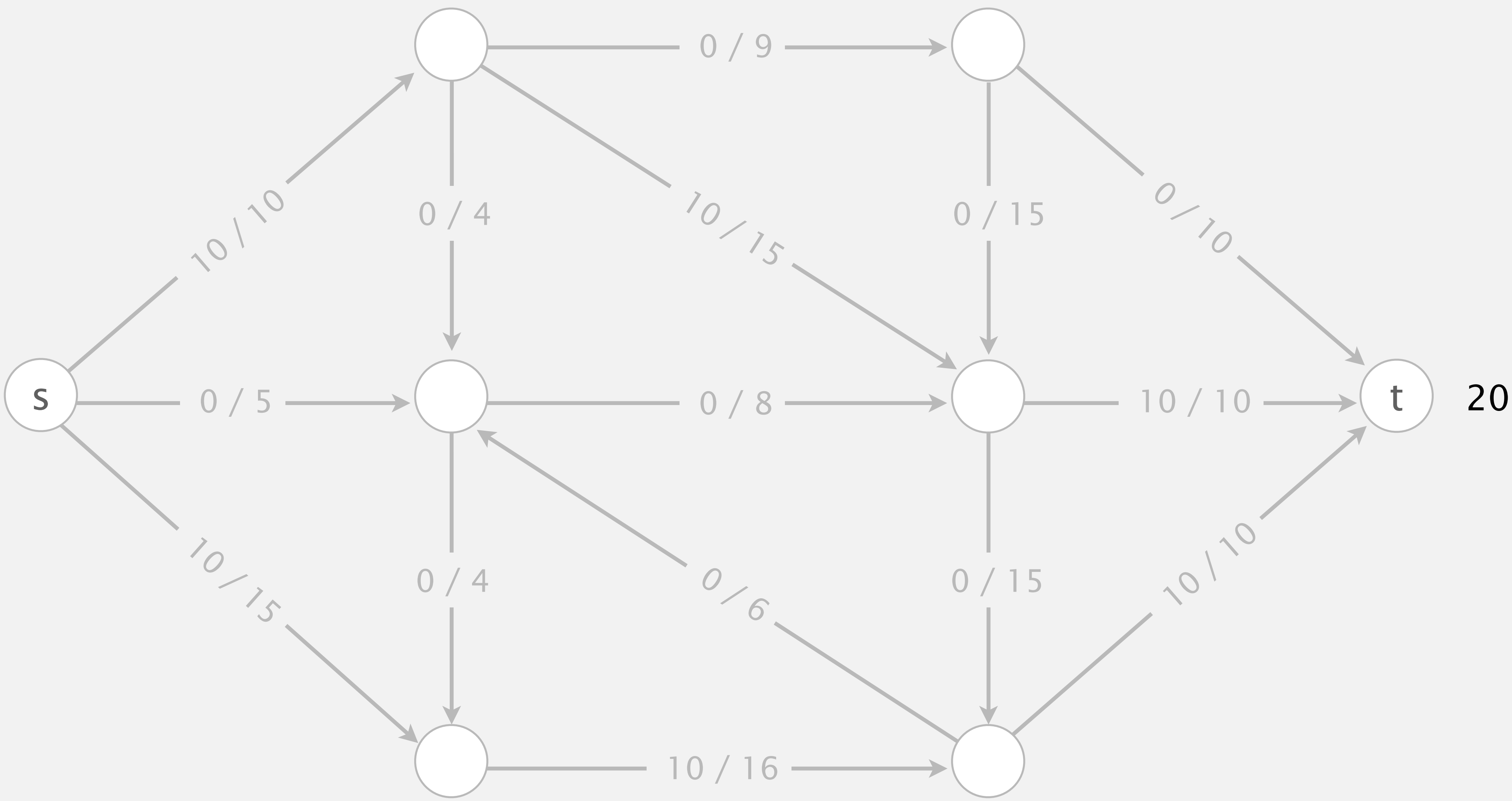

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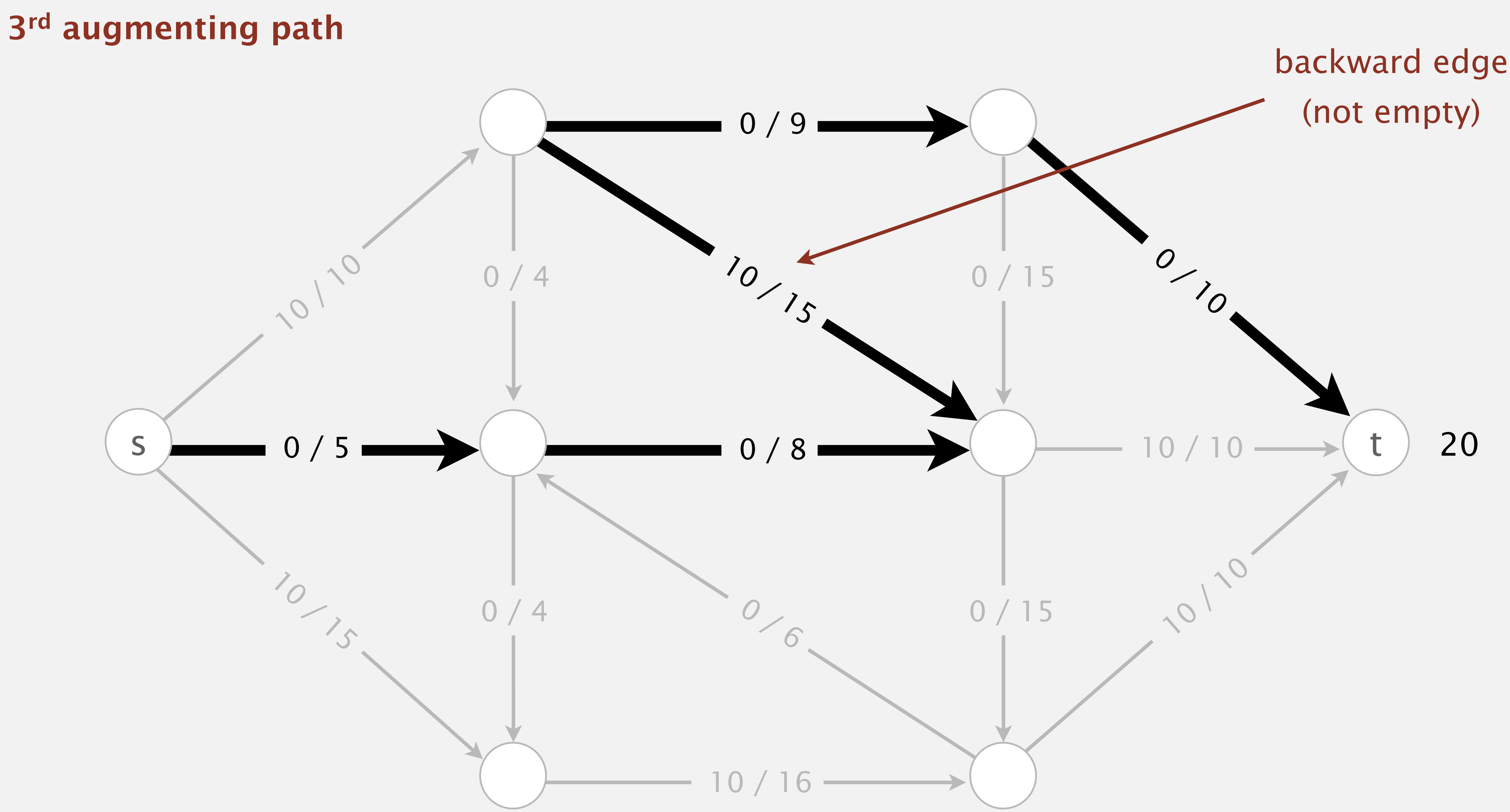

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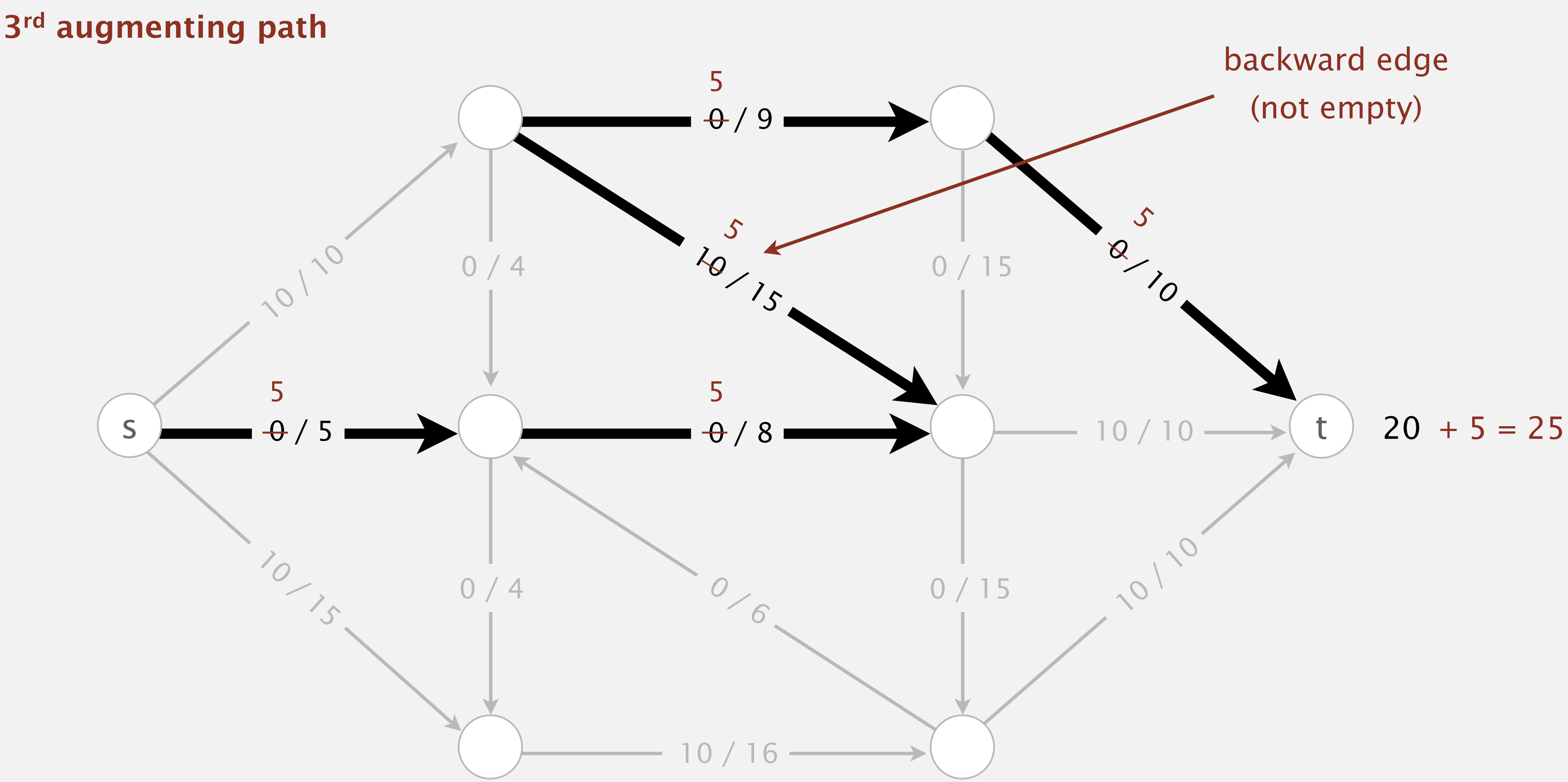

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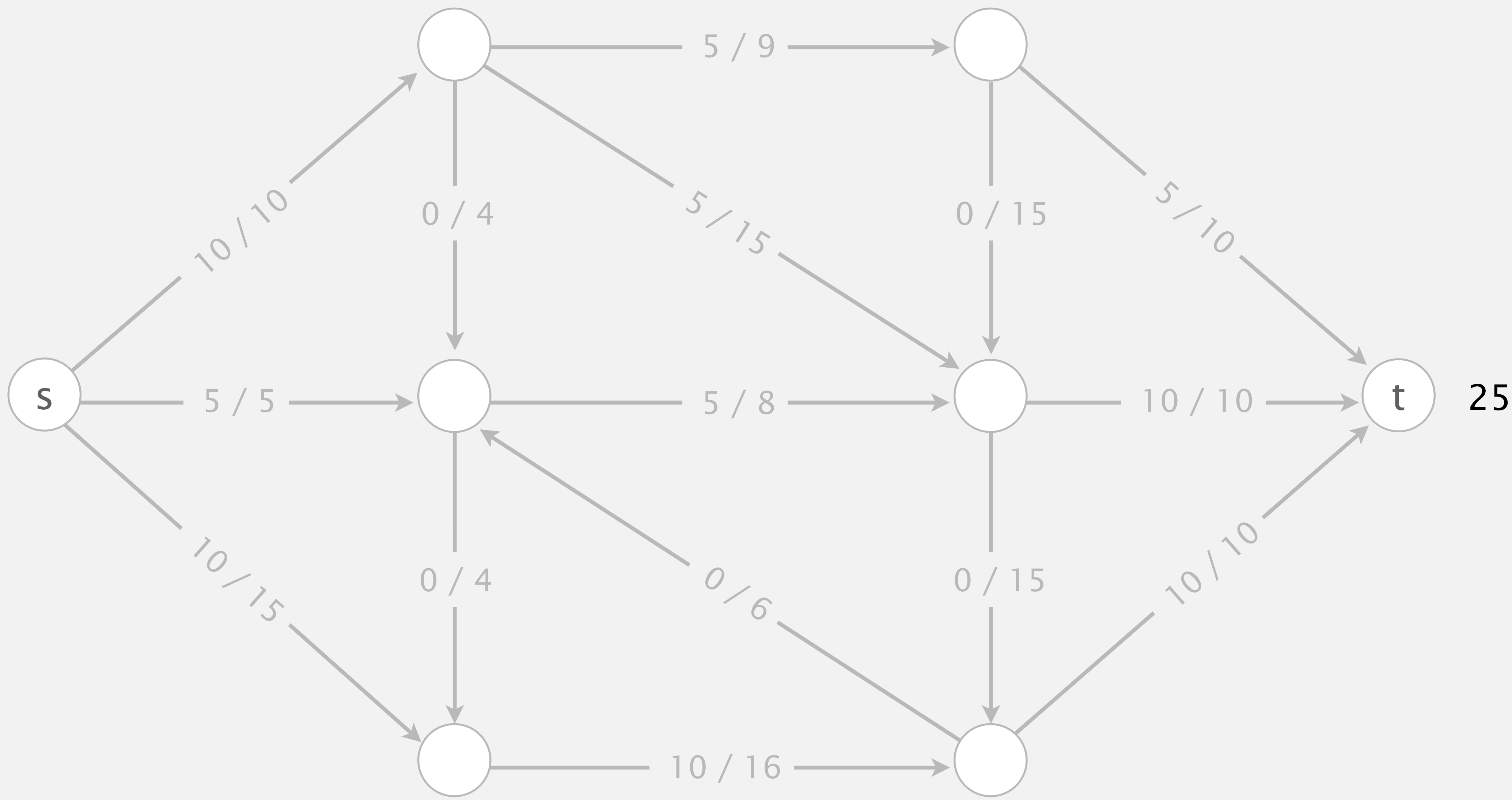

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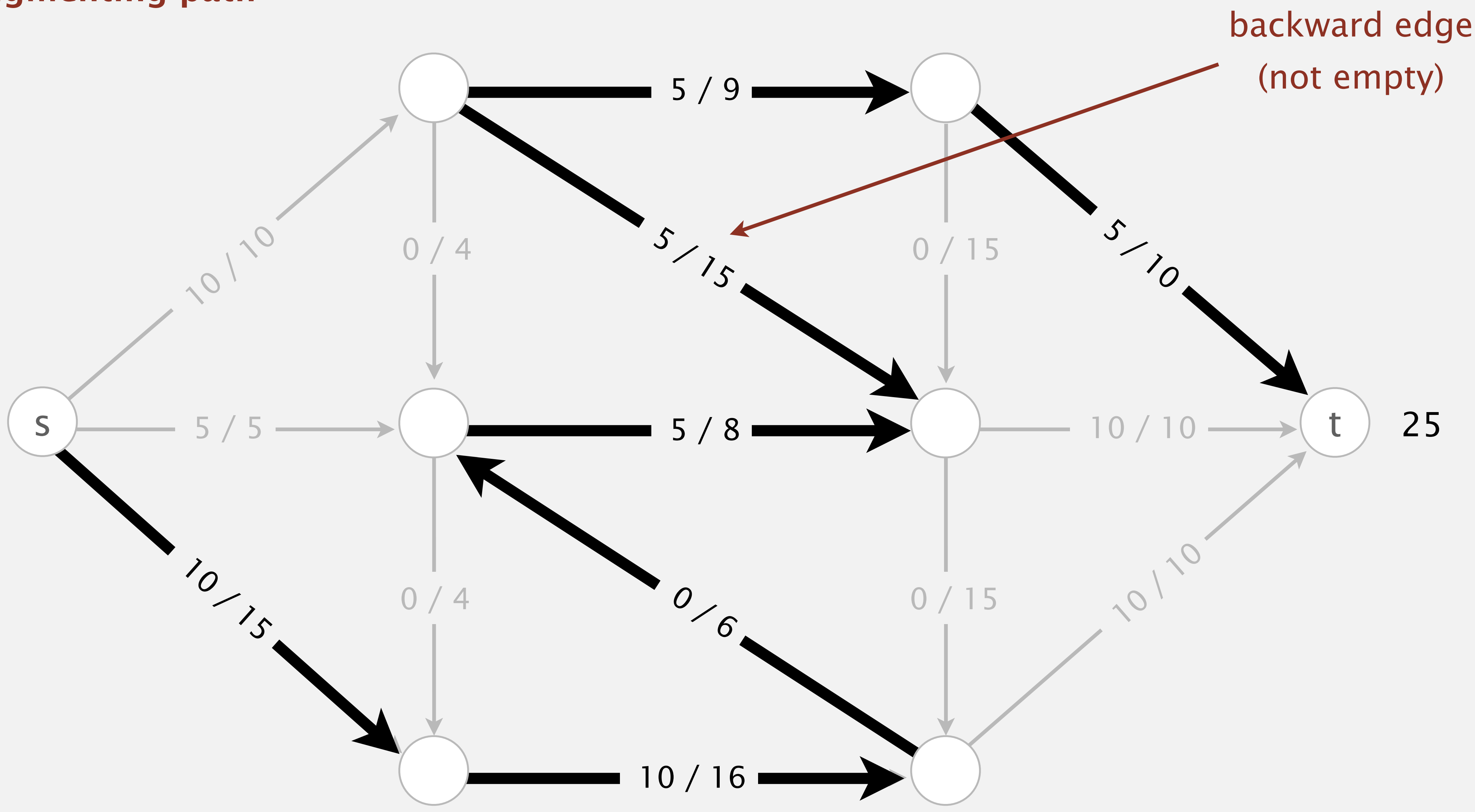

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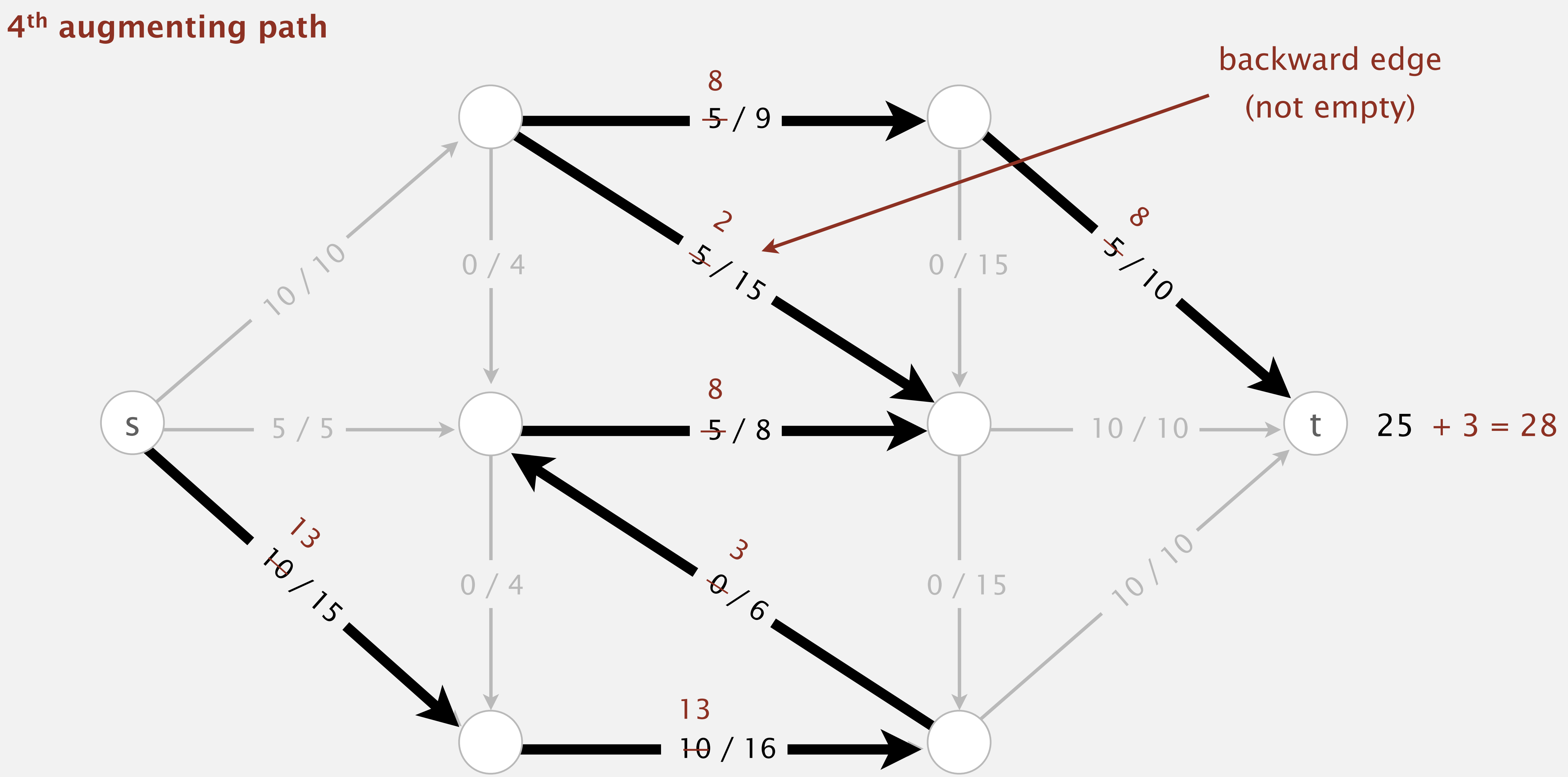
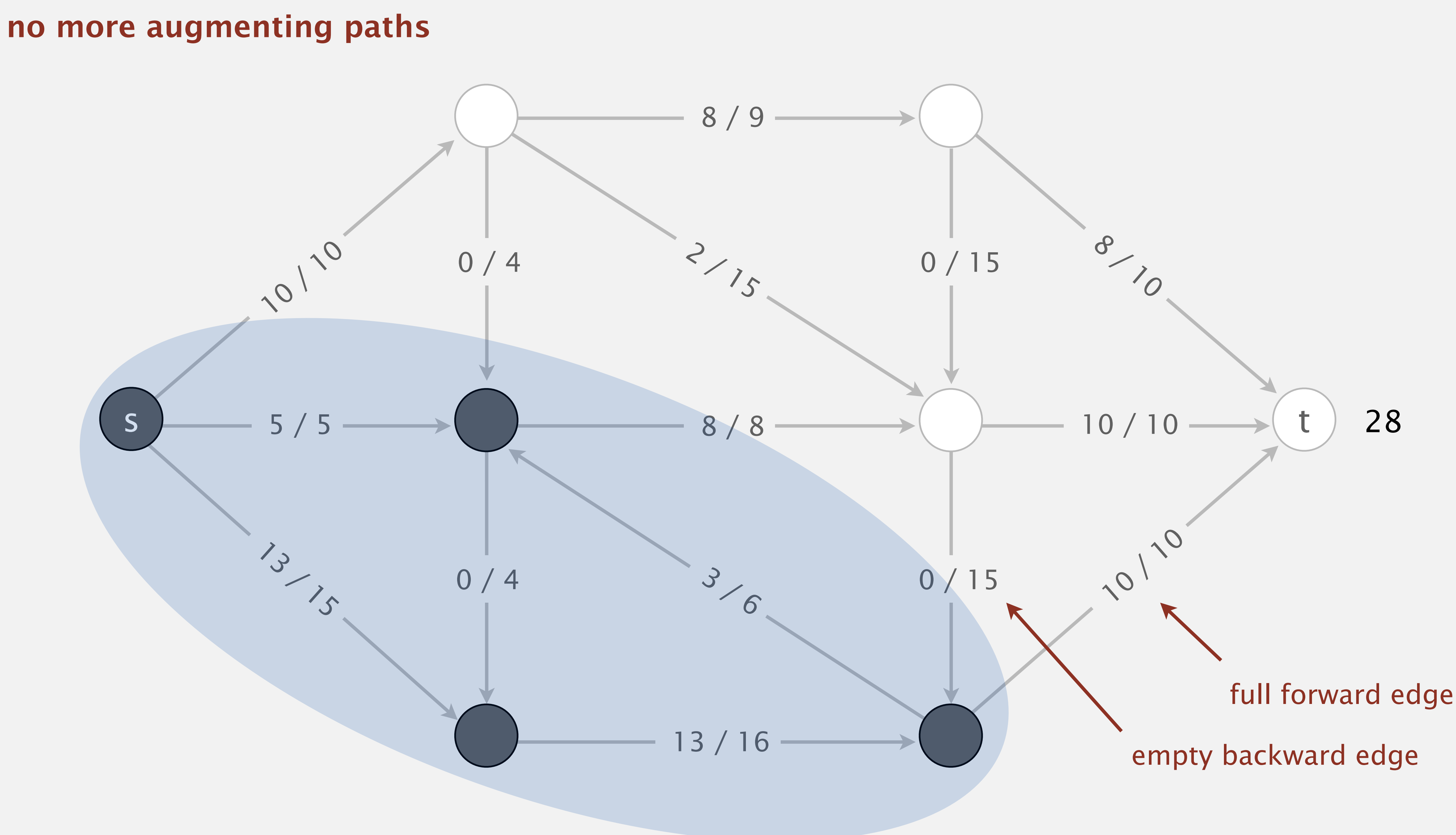


Idea: increase flow along augmenting paths

Termination. All paths from s to t are blocked by either a

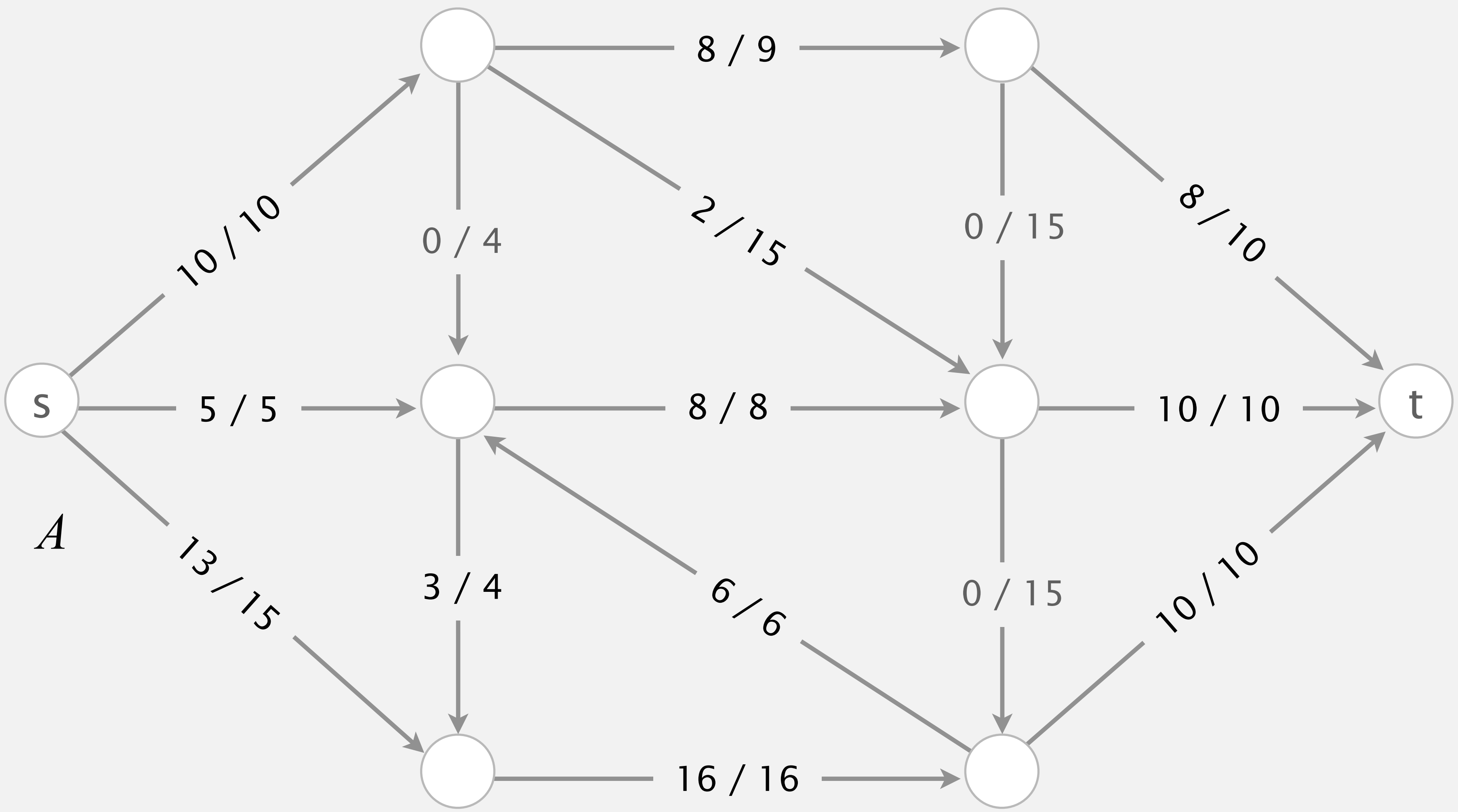
- Full forward edge.
- Empty backward edge.



- Ford-Fulkerson algorithm
- **computing a min cut**

To compute mincut (A, B) from maxflow f:

- By augmenting path theorem, no augmenting paths with respect to f.
- Compute A = set of vertices connected to s by an undirected path with no full forward or empty backward edges.



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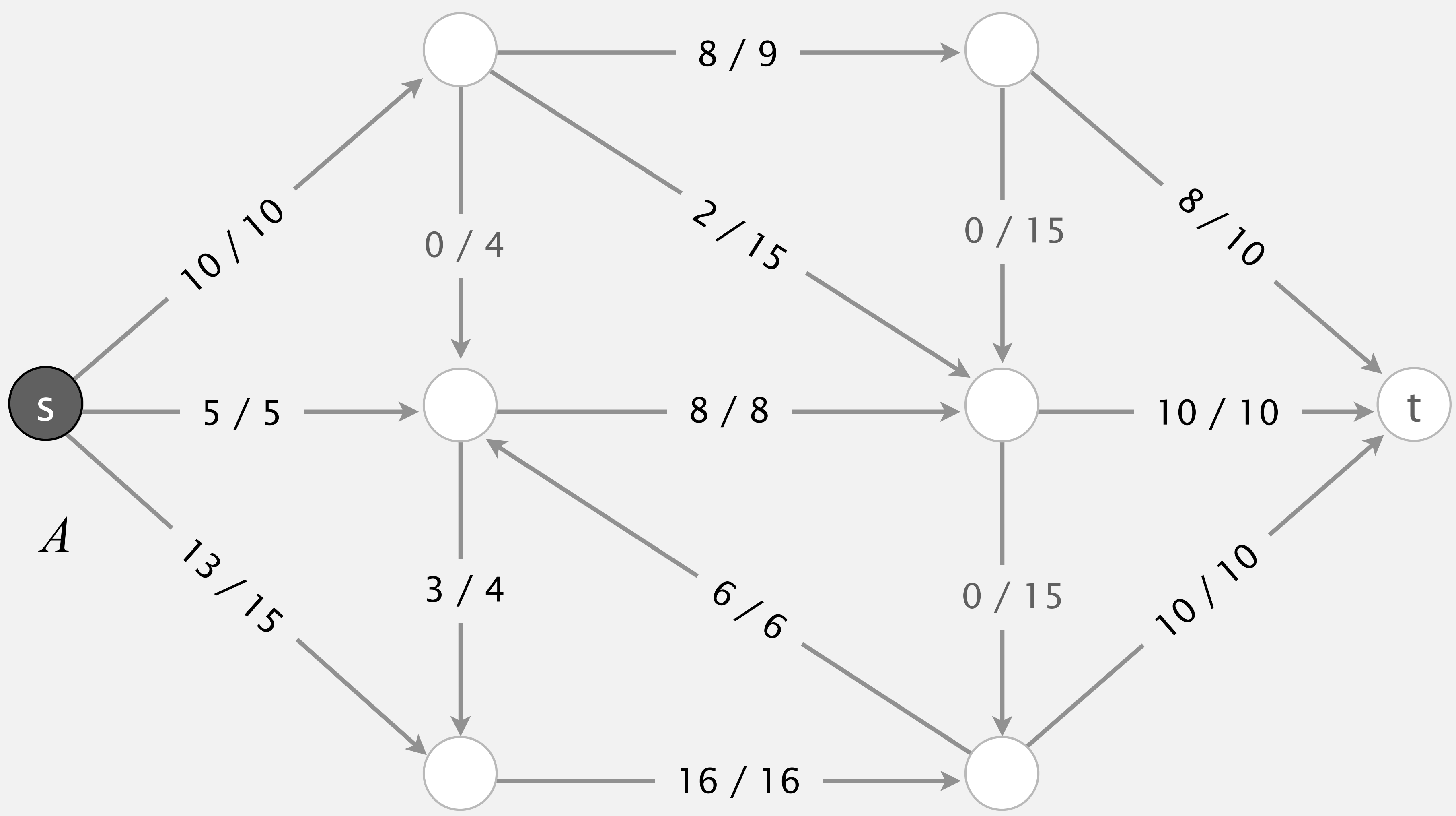

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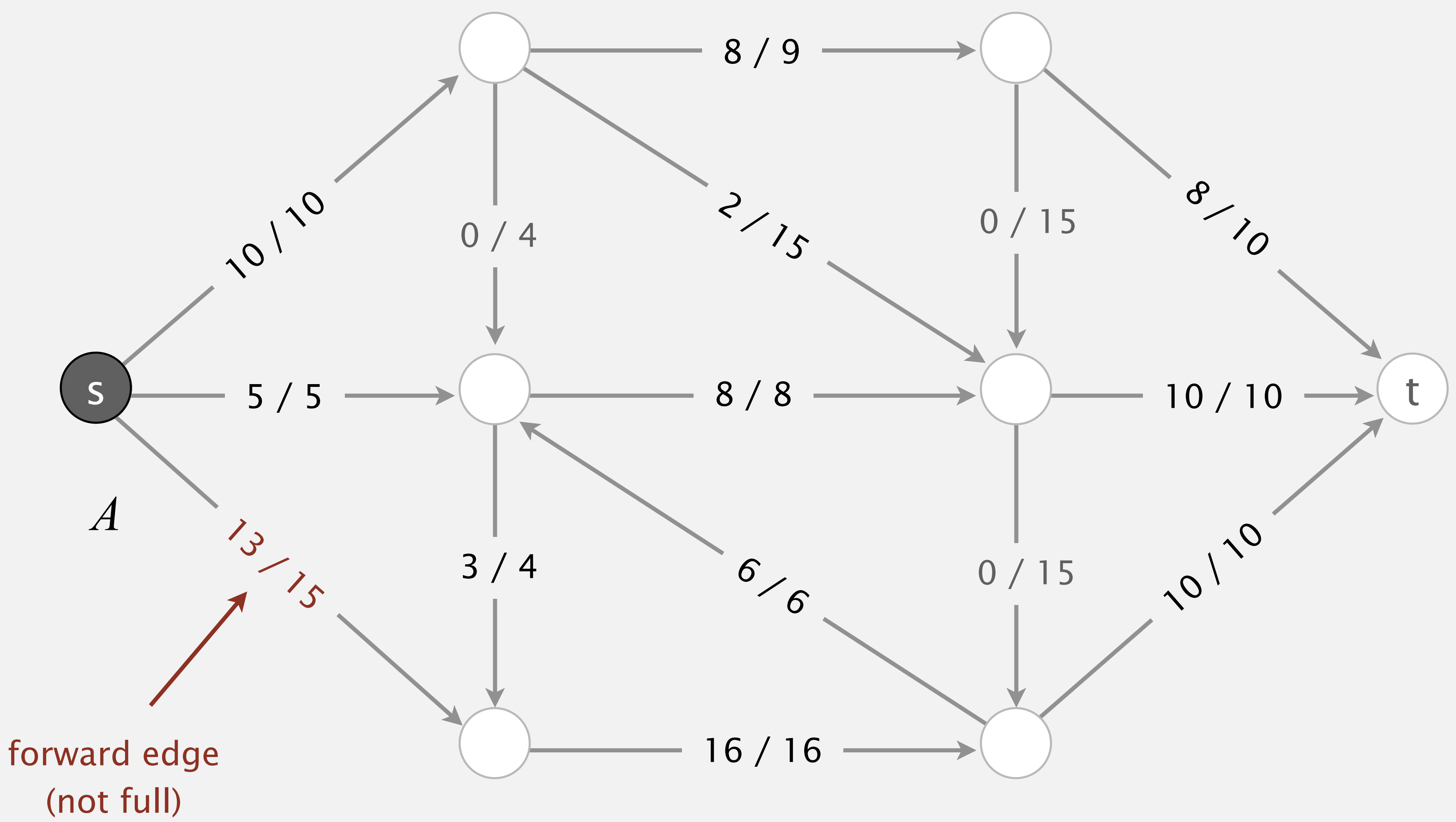

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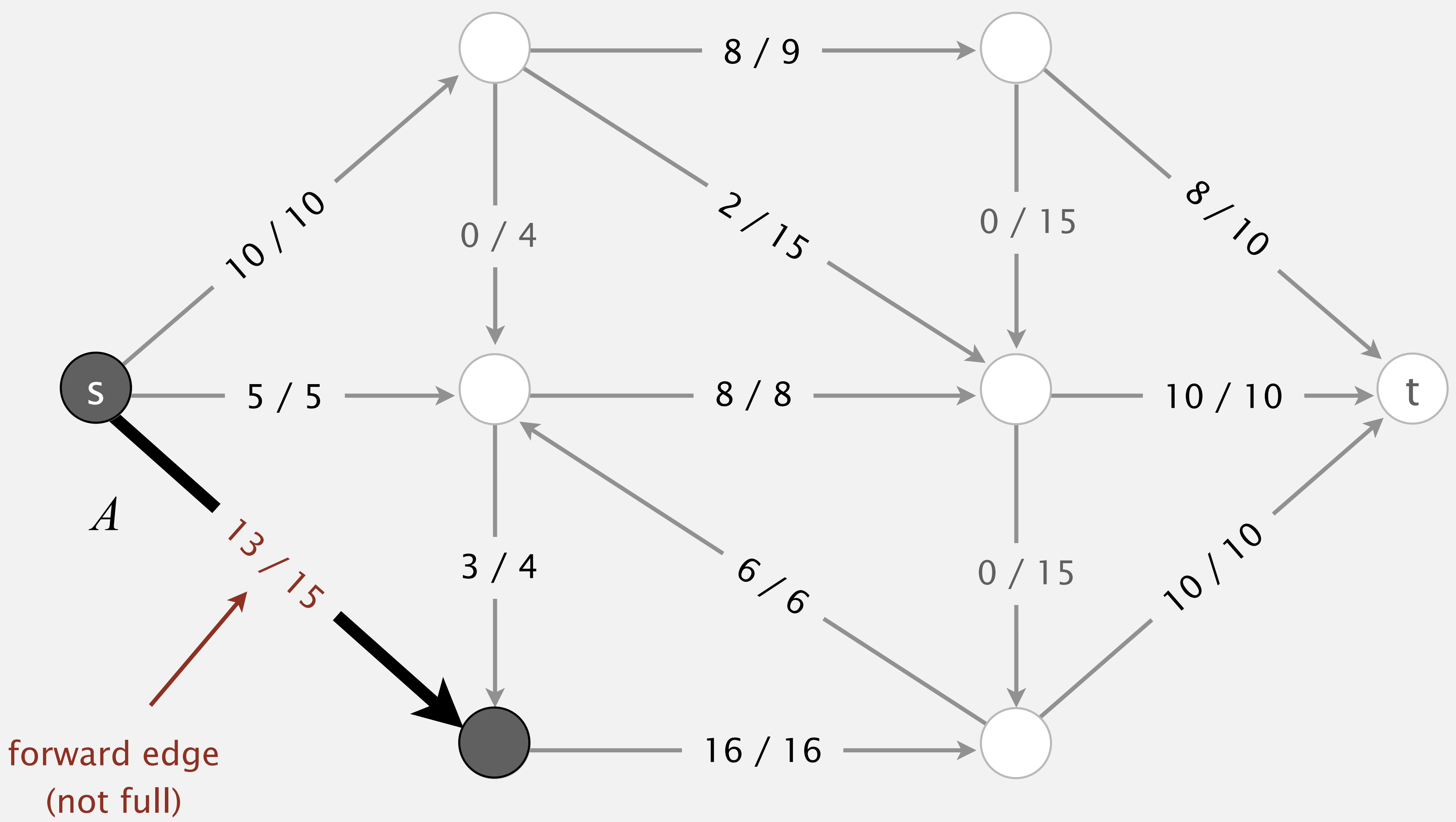

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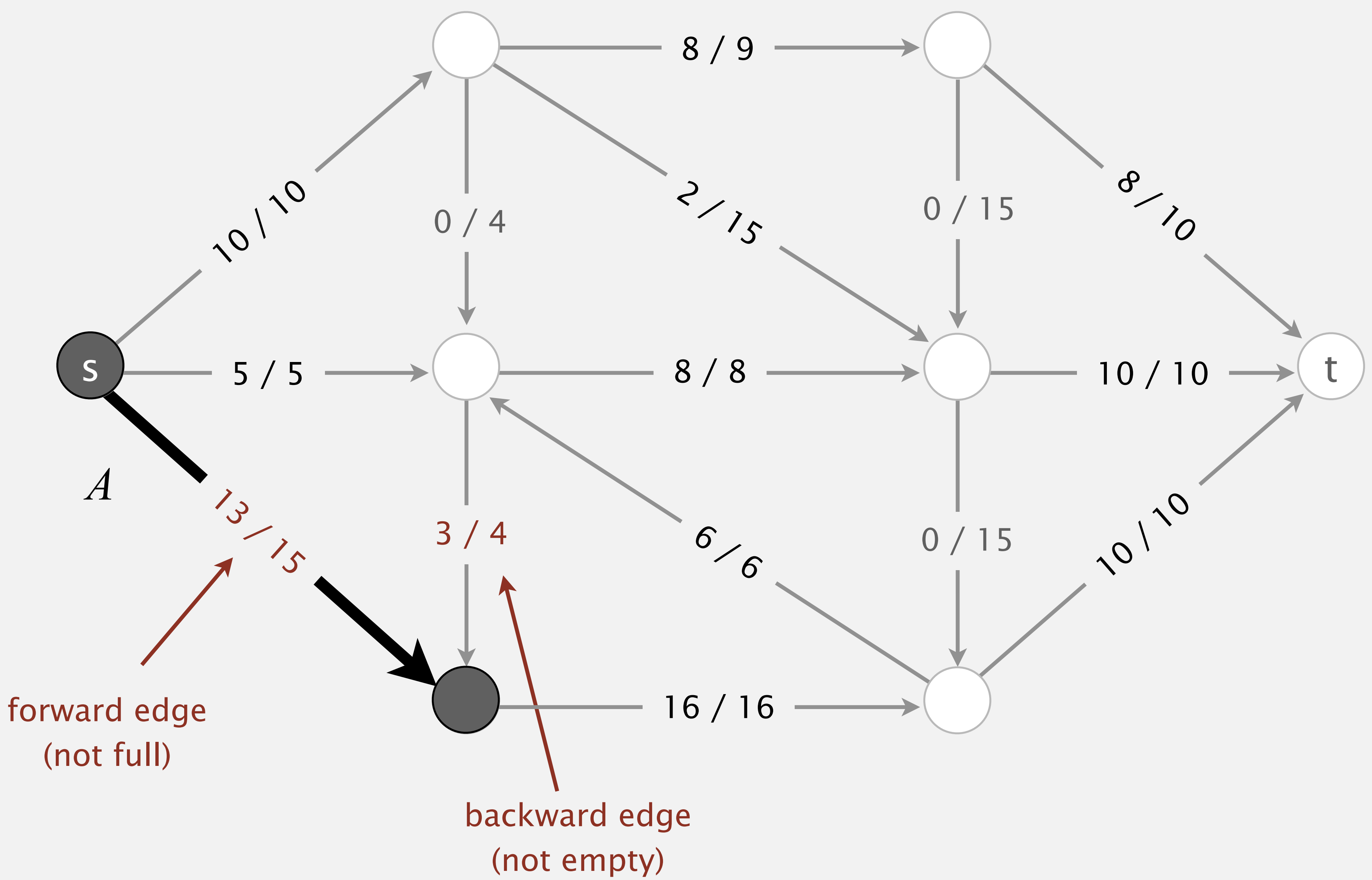

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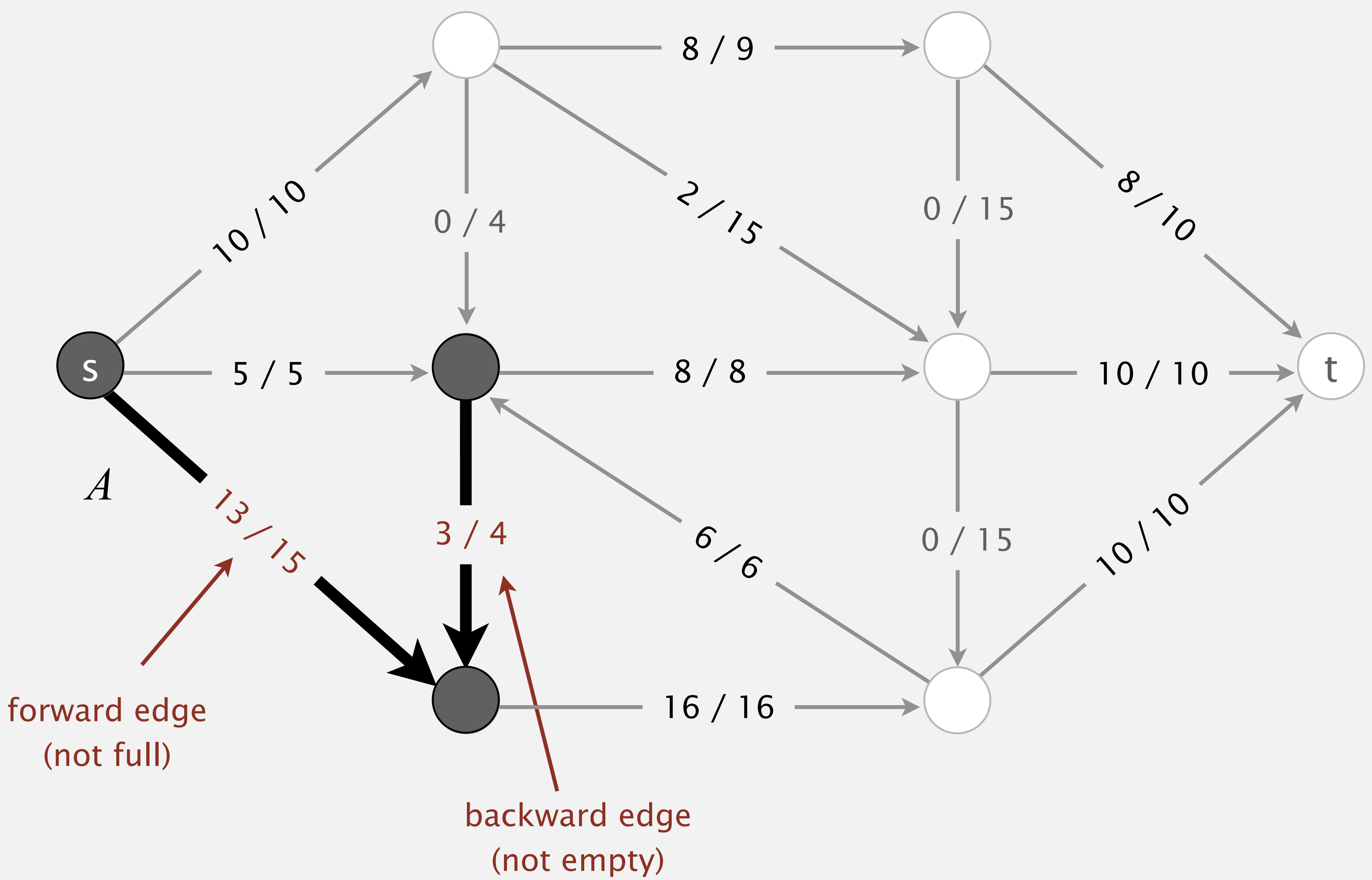

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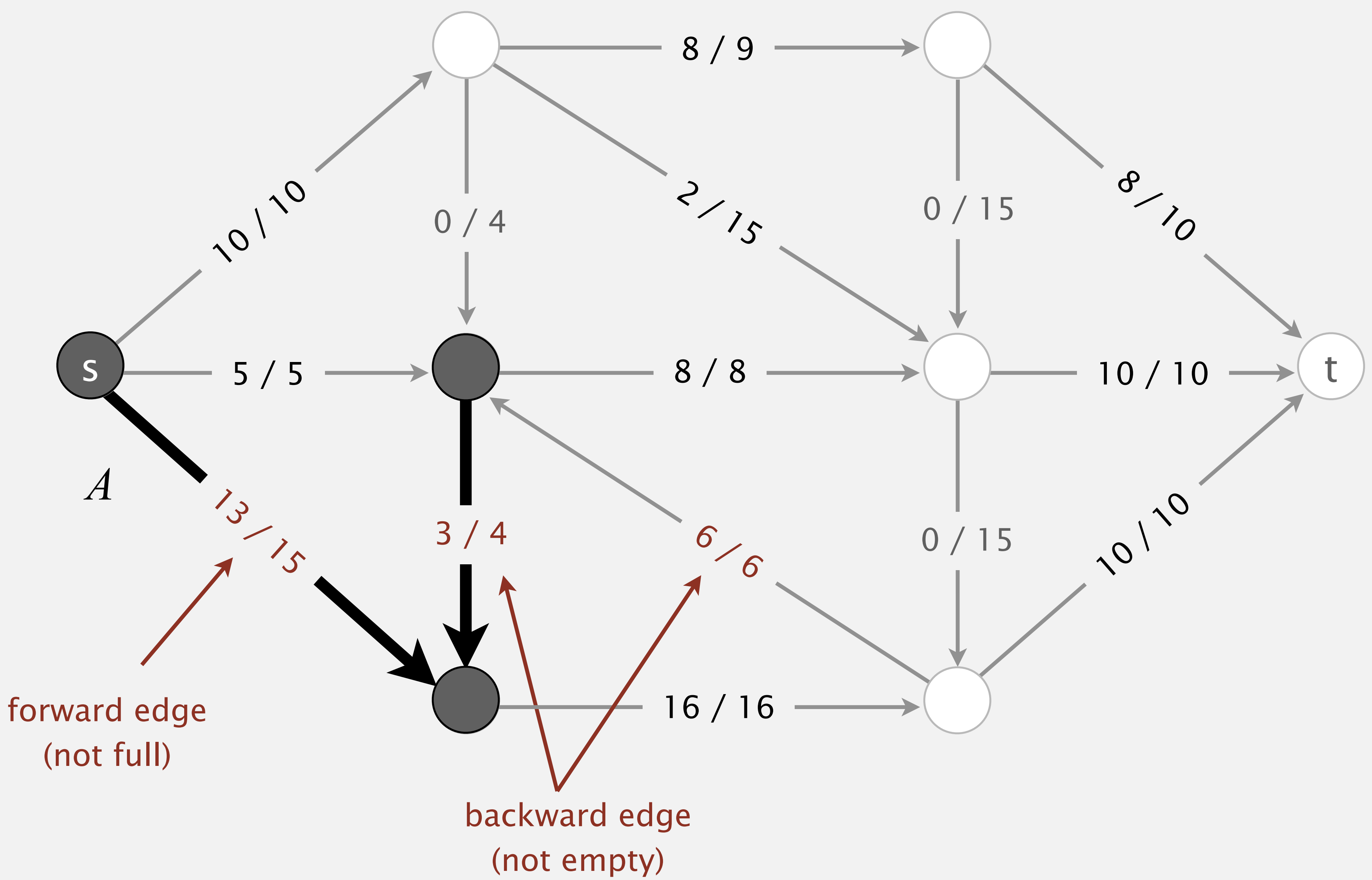

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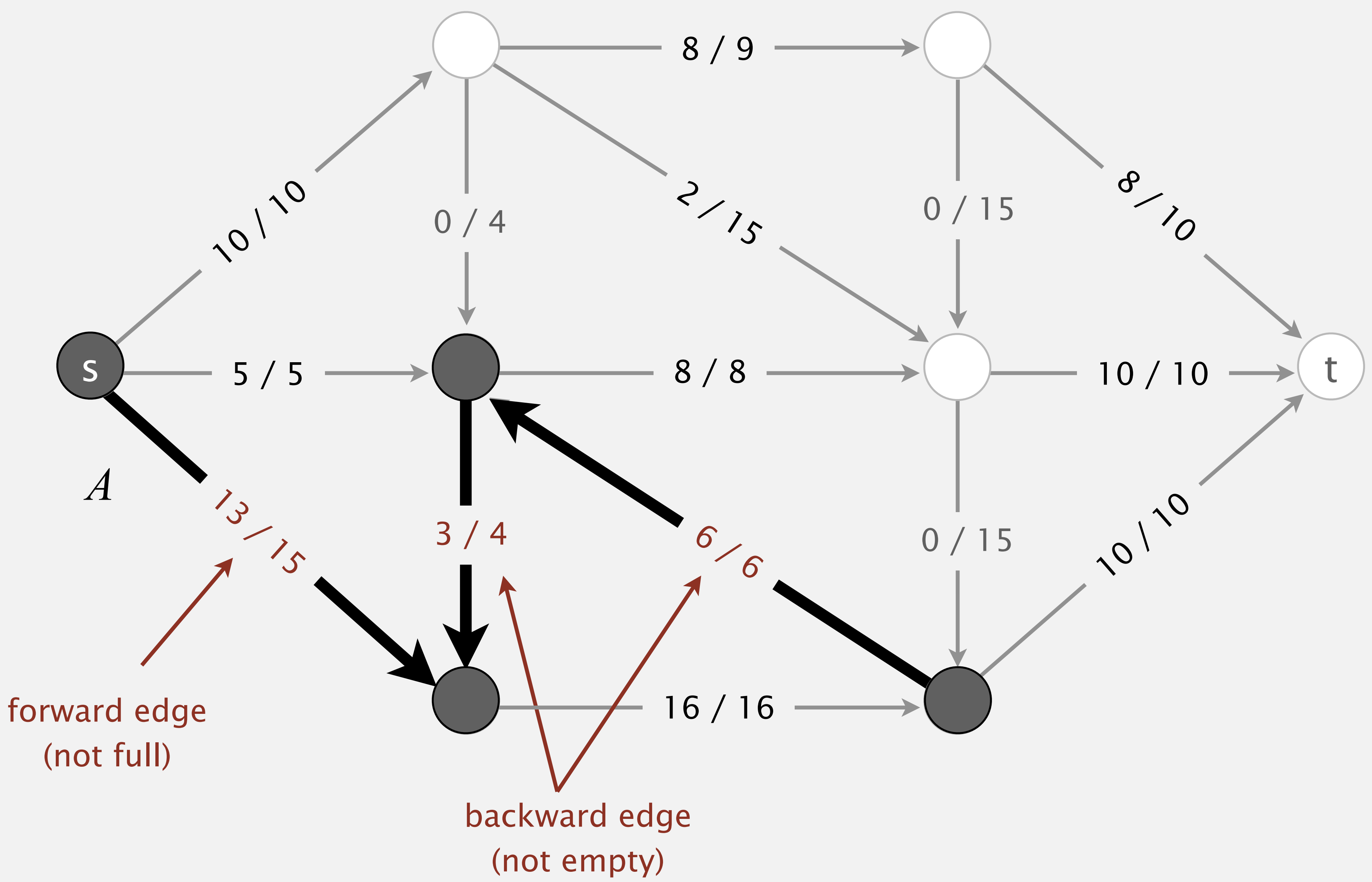

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