15.082J & 6.855J & ESD.78J
Visualizations

Label Correcting Algorithm
An Example

Initialize
\[
d(1) := 0;
d(j) := \infty \text{ for } j \neq 1
\]

In next slides: the number inside the node will be \(d(j)\). Violating arcs will be in thick lines.
Generic Step

An arc \((i,j)\) is violating if \(d(j) > d(i) + c_{ij}\).

Pick a violating arc \((i,j)\) and replace \(d(j)\) by \(d(i) + c_{ij}\).
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\[ d(j) > d(i) + c_{ij}. \]

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Generic Step

An arc \((i,j)\) is **violating** if
\[ d(j) > d(i) + c_{ij}. \]

Pick a violating arc \((i,j)\) and replace \(d(j)\) by \(d(i) + c_{ij}\).
Generic Step

An arc \((i,j)\) is violating if \(d(j) > d(i) + c_{ij}\).

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Generic Step

An arc \((i,j)\) is violating if \(d(j) > d(i) + c_{ij}\).

Pick a violating arc \((i,j)\) and replace \(d(j)\) by \(d(i) + c_{ij}\).

No arc is violating

The distance labels are optimal

We now show the predecessor arcs.