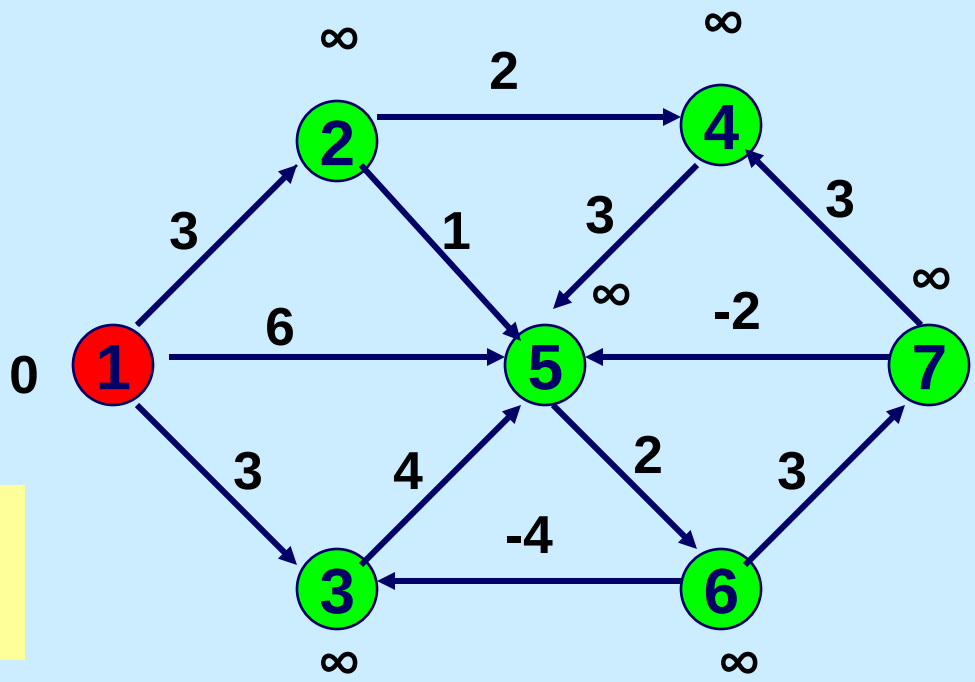
15.082J & 6.855J & ESD.78J
Visualizations

Label Correcting Algorithm

An Example



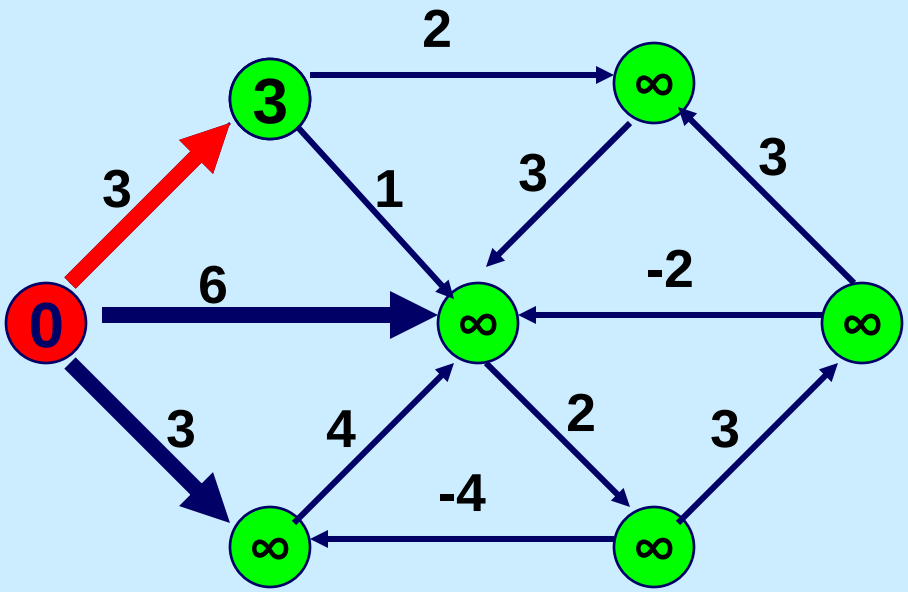
Initialize

d(1) := 0;
d(j) := ∞ for j ≠ 1

In next slides: the number inside the node will be d(j).

Violating arcs will be in thick lines.

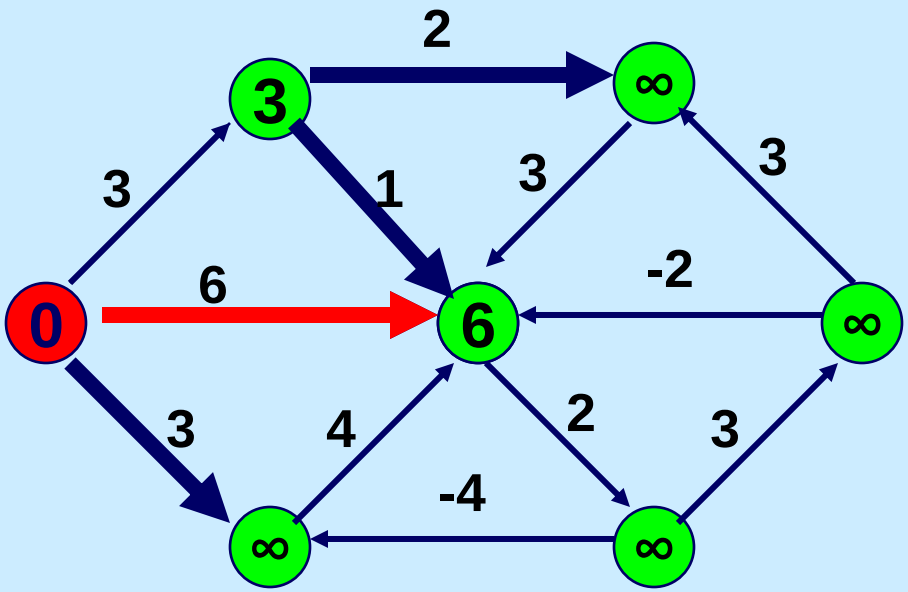
Generic Step



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

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

Generic Step

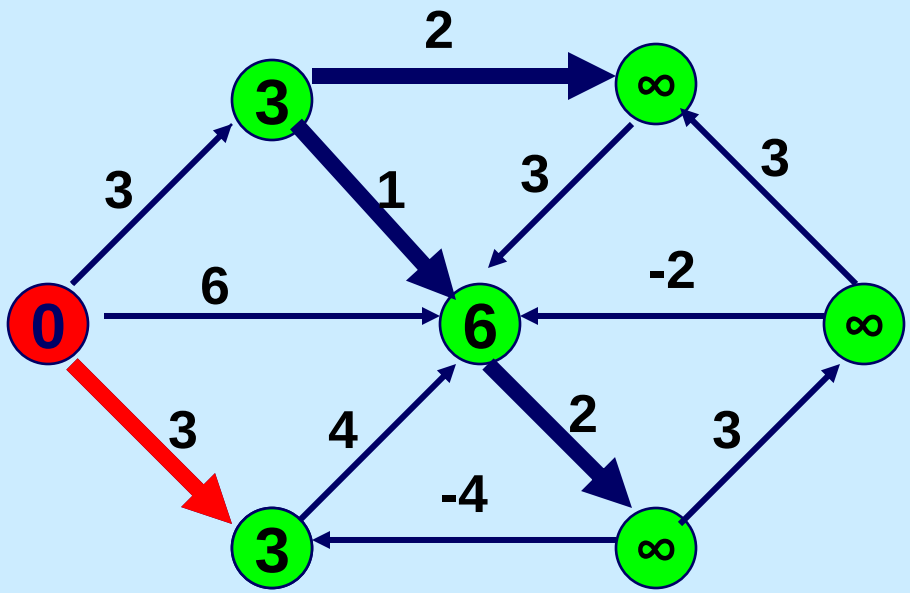


An arc (i,j) is **violating** if $d(j) > d(i) + c_{ij}$.

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

Generic Step

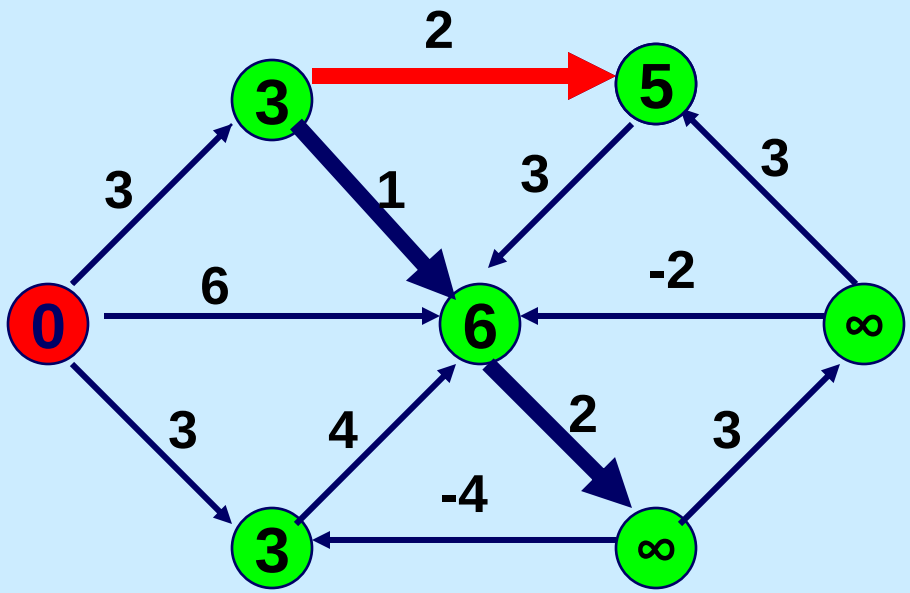
An arc (i,j) is **violating** if $d(j) > d(i) + c_{ij}$.



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

Generic Step

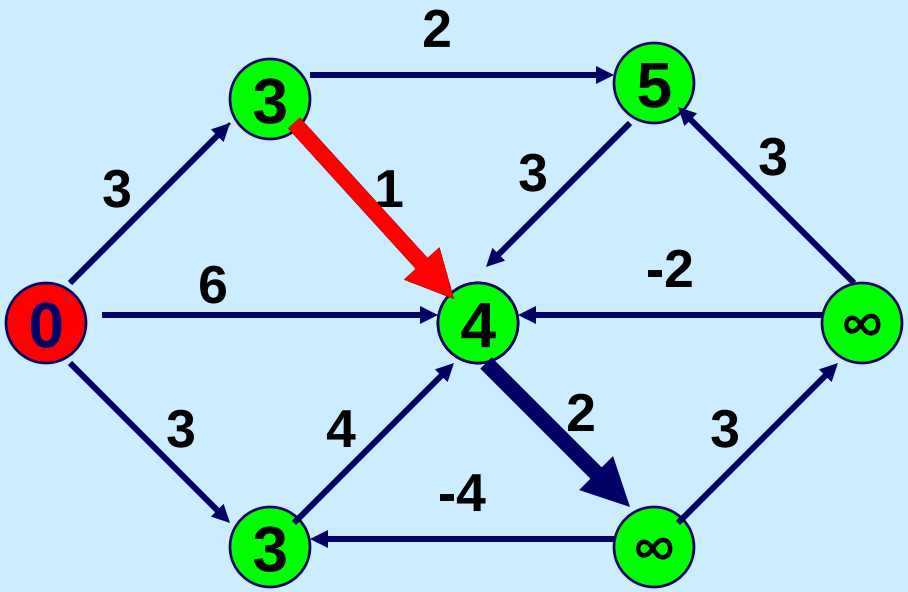
An arc (i,j) is **violating** if $d(j) > d(i) + c_{ij}$.



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

Generic Step

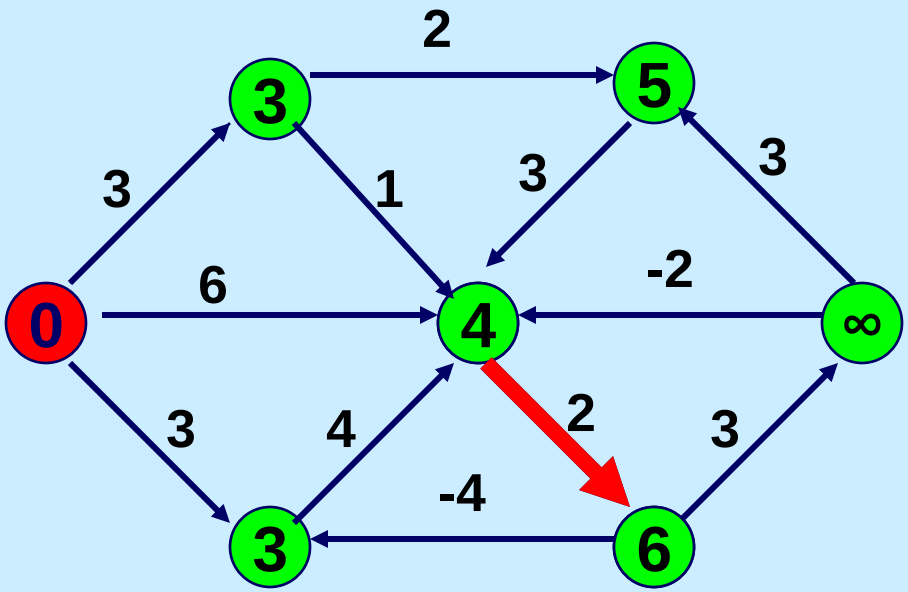
An arc (i,j) is **violating** if $d(j) > d(i) + c_{ij}$.



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

Generic Step

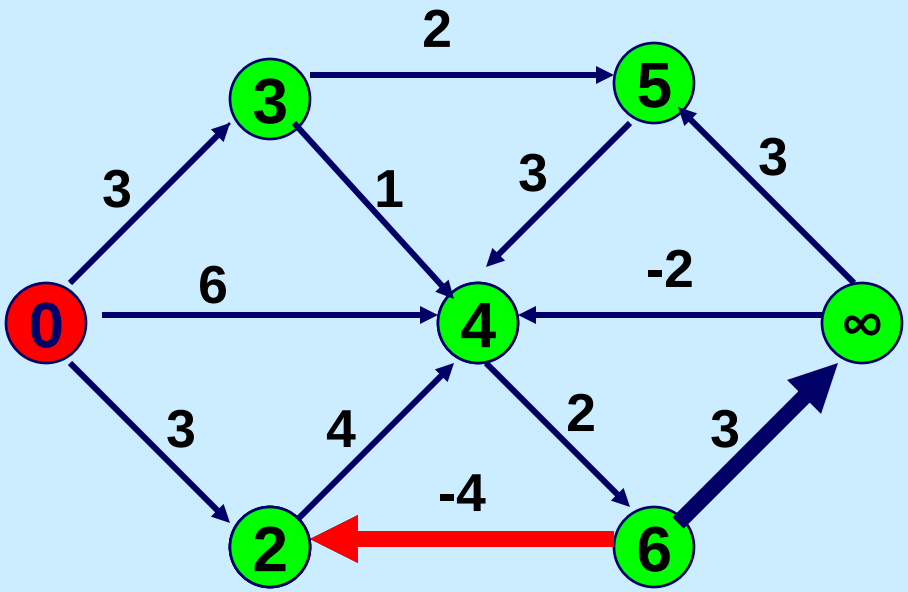
An arc (i,j) is **violating** if $d(j) > d(i) + c_{ij}$.



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

Generic Step

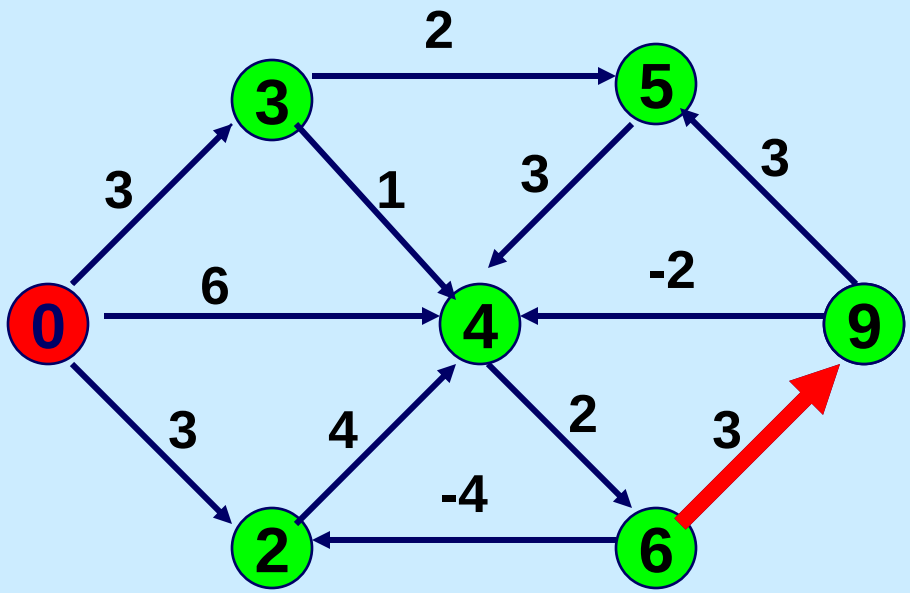
An arc (i,j) is **violating** if $d(j) > d(i) + c_{ij}$.



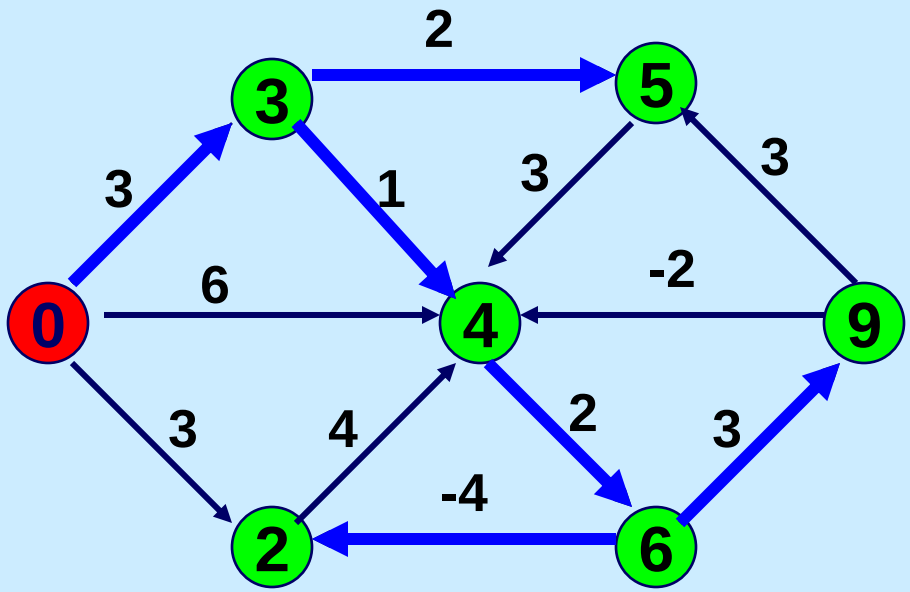
Pick a violating arc (i,j) and replace d(j) by $d(i) + c_{ij}$.

Generic Step

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



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



Generic Step

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

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.

15.082J / 6.855J / ESD.78J Network Optimization

Fall 2010