

In the name of God

Network Flows

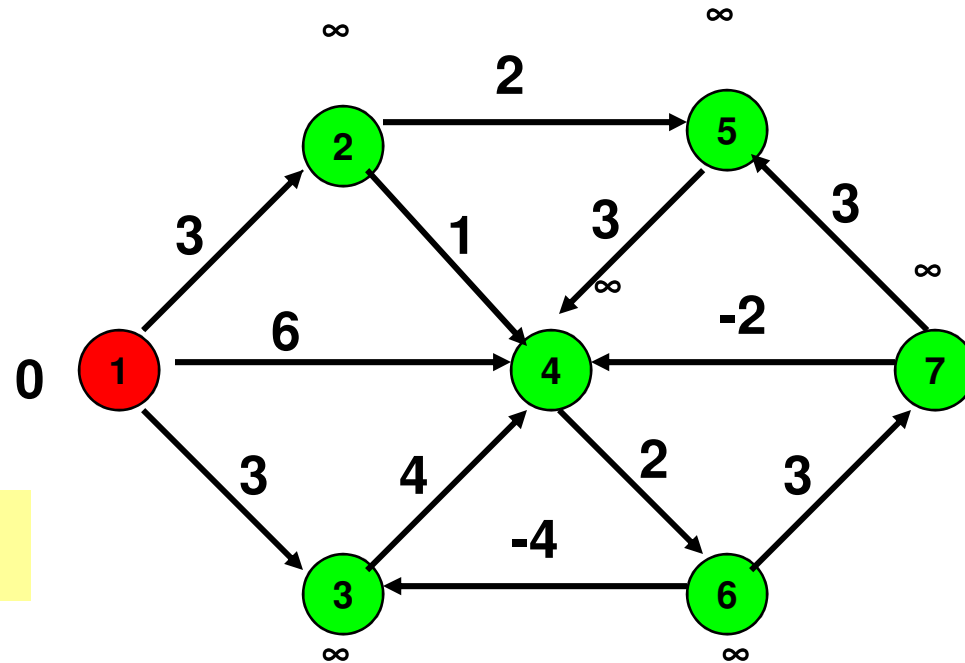
3. Shortest Path Problems

3.7. Modified Label-Correcting Algorithm – An Example

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Instructor: Dr. Masoud Yaghini

The Modified Label Correcting Algorithm



Initialize

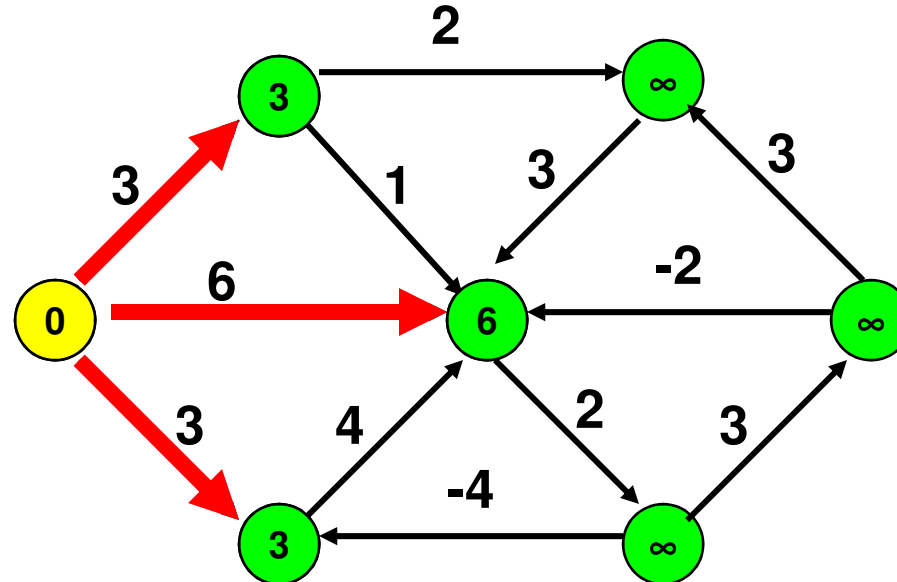
$d(1) := 0;$
 $d(j) := \infty$ for $j \neq 1$

LIST := {1}

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

An Example

LIST := { 2, 3, 4 }



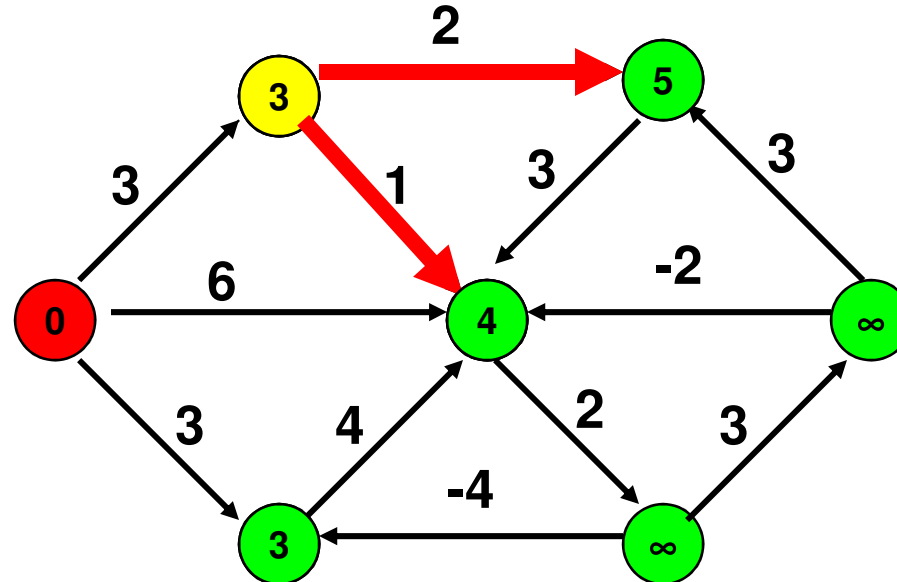
Generic Step

Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { 3, 4, 5 }

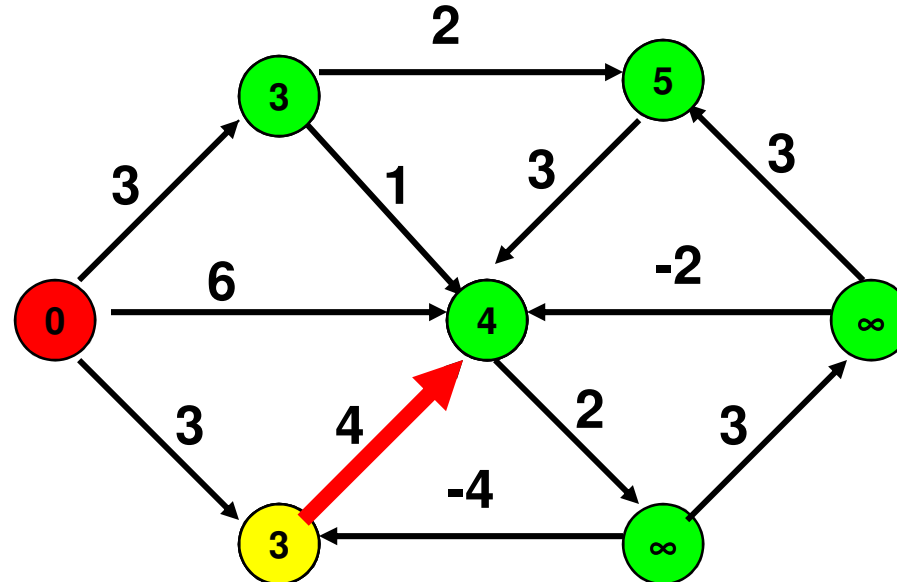


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { 4, 5 }

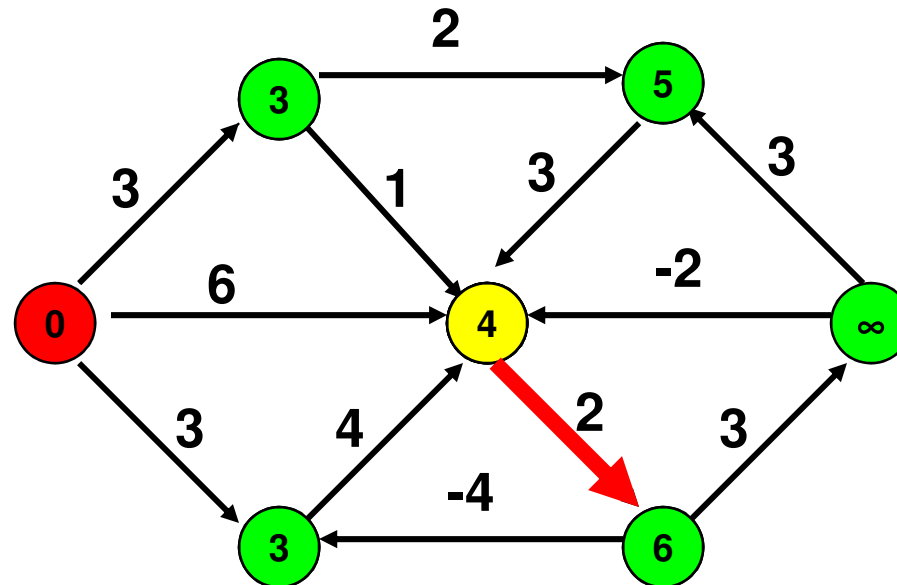


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { 5, 6 }

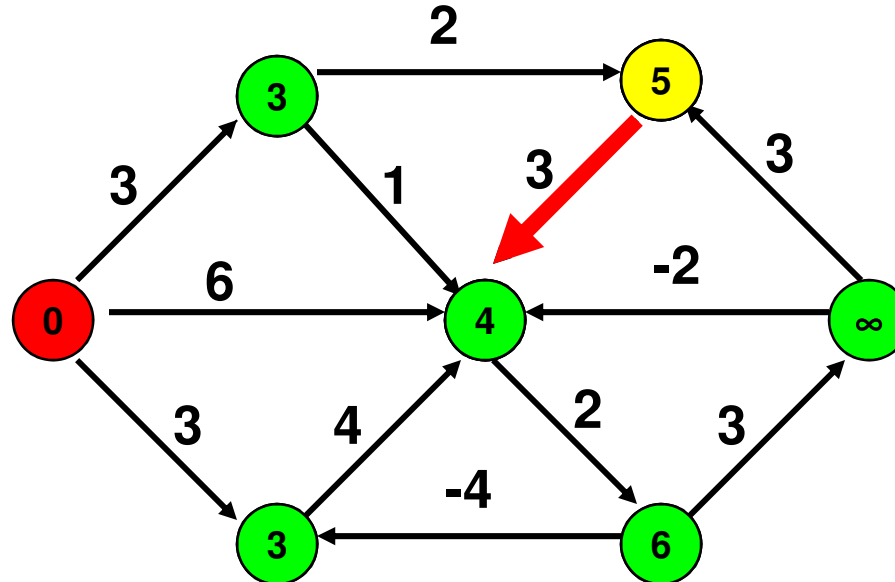


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { 6 }

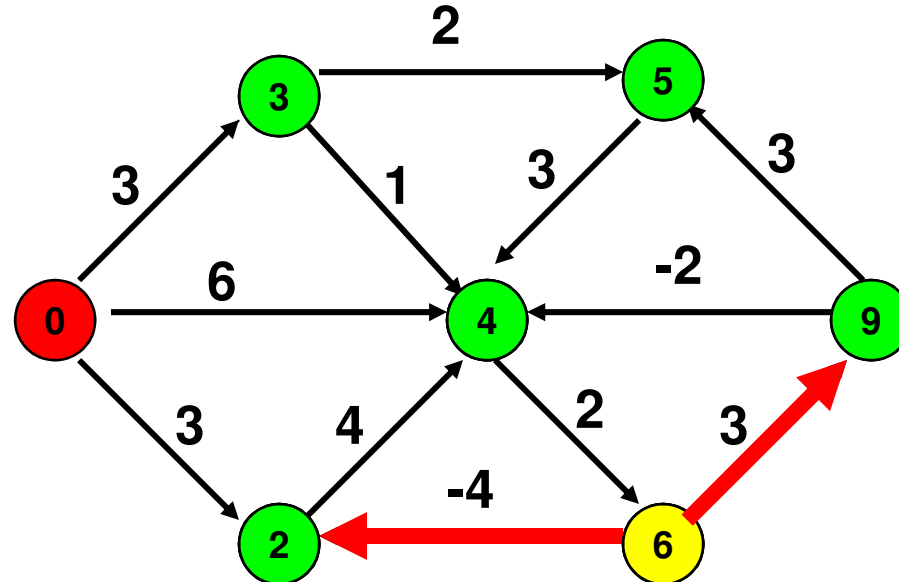


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { 3, 7 }

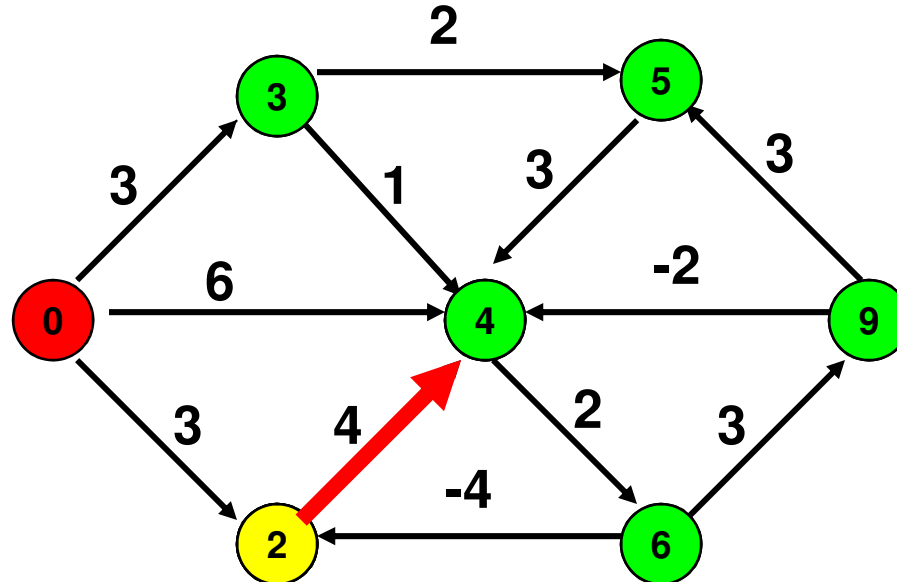


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { 7 }

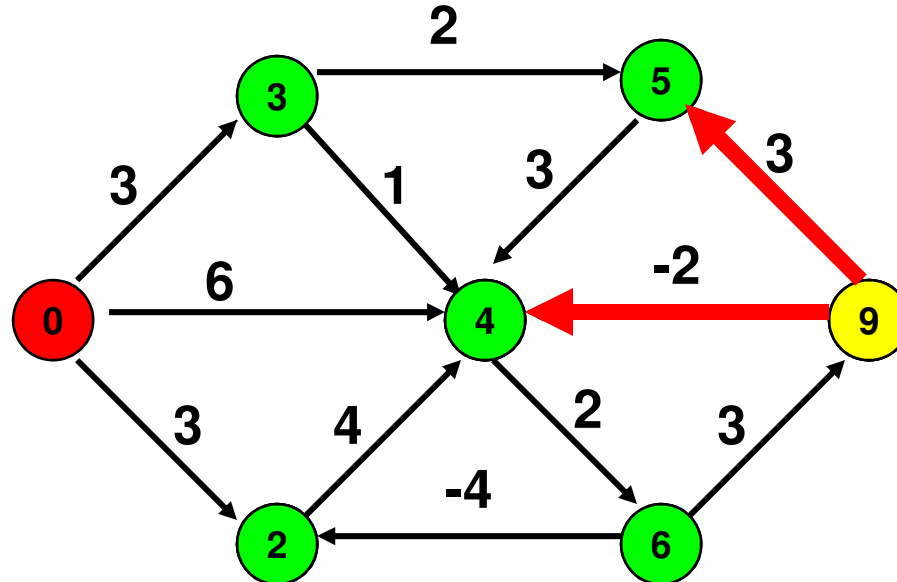


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { }

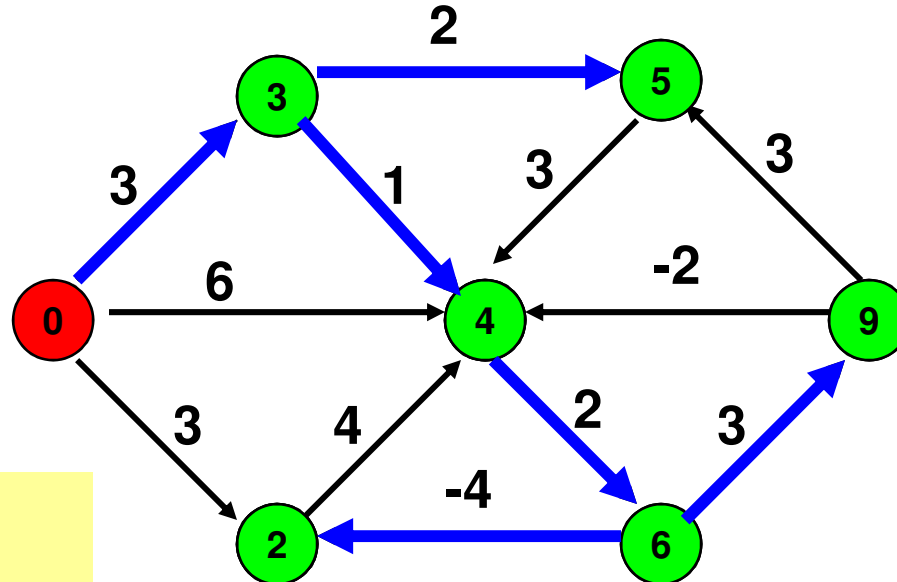


Take a node i from LIST

Update(i): for each arc (i,j) with $d(j) > d(i) + c_{ij}$
replace $d(j)$ by $d(i) + c_{ij}$.

An Example

LIST := { }



LIST is empty.

The distance labels are optimal

Here are the predecessors



The End