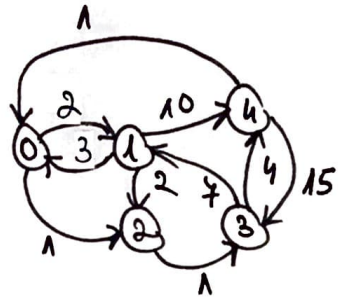
Bellman Ford Algorithm



$s = 0$, $t = 4$

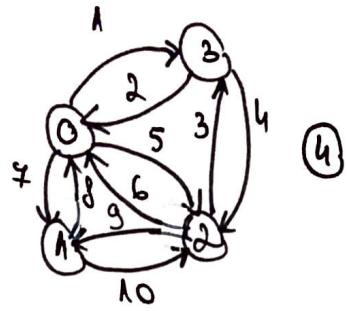
	changed	edge (x,y)	distance	predecessors
iteration	true		0 1 2 3 4 0 ∞ ∞ ∞ ∞	0 1 2 3 4 -1 -1 -1 -1 -1
iteration 1	false			
	true	(0,1) →	0 3 ∞ ∞ ∞	-1 0 -1 -1 -1
	true	(0,2) →	0 3 1 ∞ ∞	-1 0 0 -1 -1
	true	(1,0) →	0 3 1 ∞ ∞	-1 0 0 -1 -1
	true	(1,2) →	0 3 1 ∞ ∞	-1 0 0 -1 -1
	true	(1,4) →	0 3 1 ∞ 13	-1 0 0 -1 1
	true	(2,3) →	0 3 1 2 13	-1 0 0 2 1
	true	(3,1) →	0 3 1 2 13	-1 0 0 2 1
	true	(3,4) →	0 3 1 2 6	-1 0 0 2 3
	true	(4,0) →	0 3 1 2 6	-1 0 0 2 3
	true	(4,3) →	0 3 1 2 6	-1 0 0 2 3
iteration 2	false			
		(0,1) →	0 3 1 2 6	-1 0 0 2 3
		(0,2) →	0 3 1 2 6	-1 0 0 2 3
		(1,0) →	0 3 1 2 6	-1 0 0 2 3
		(1,2) →	0 3 1 2 6	-1 0 0 2 3
		(1,4) →	0 3 1 2 6	-1 0 0 2 3
		(2,3) →	0 3 1 2 6	-1 0 0 2 3
		(3,1) →	0 3 1 2 6	-1 0 0 2 3
		(3,4) →	0 3 1 2 6	-1 0 0 2 3
		(4,0) →	0 3 1 2 6	-1 0 0 2 3
		(4,3) →	0 3 1 2 6	-1 0 0 2 3

STOP

The minimum cost walk from $s=0$ to $t=4$ has the cost distance[4] = 6 and it's build backward from predecessors dictionary

$t=4$, prev[4] = 3, prev[3] = 2, prev[2] = 0 = s

walk: $0 \xrightarrow{1} 2 \xrightarrow{1} 3 \xrightarrow{4} 4$



$s=0$, $t=4$

	changed	edge (x,y)	distance	predecessors
initialization	true		0 1 2 3 4 0 ∞ ∞ ∞ ∞	0 1 2 3 4 -1 -1 -1 -1 -1
iteration 1	false		0 1 2 3 4	0 1 2 3 4
	true	(0,1) →	0 4 ∞ ∞ ∞	-1 0 -1 -1 -1
	true	(0,2) →	0 4 5 ∞ ∞	-1 0 0 -1 -1
	true	(0,3) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(1,0) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(1,2) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(2,0) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(2,1) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(2,3) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(3,0) →	0 4 5 1 ∞	-1 0 0 0 -1
	true	(3,2) →	0 4 5 1 ∞	-1 0 0 0 -1
iteration 2	false		0 1 2 3 4	0 1 2 3 4
		(0,1) →	0 4 5 1 ∞	-1 0 0 0 -1
		(0,2) →	0 4 5 1 ∞	-1 0 0 0 -1
		(0,3) →	0 4 5 1 ∞	-1 0 0 0 -1
		(1,0) →	0 4 5 1 ∞	-1 0 0 0 -1
		(1,2) →	0 4 5 1 ∞	-1 0 0 0 -1
		(2,0) →	0 4 5 1 ∞	-1 0 0 0 -1
		(2,1) →	0 4 5 1 ∞	-1 0 0 0 -1
		(2,3) →	0 4 5 1 ∞	-1 0 0 0 -1
		(3,0) →	0 4 5 1 ∞	-1 0 0 0 -1
		(3,2) →	0 4 5 1 ∞	-1 0 0 0 -1

STOP

The distance from $s=0$ to $t=4$ is distance[4] = ∞ =>

=> There doesn't exist a minimum cost walk from $s=0$ to $t=4$