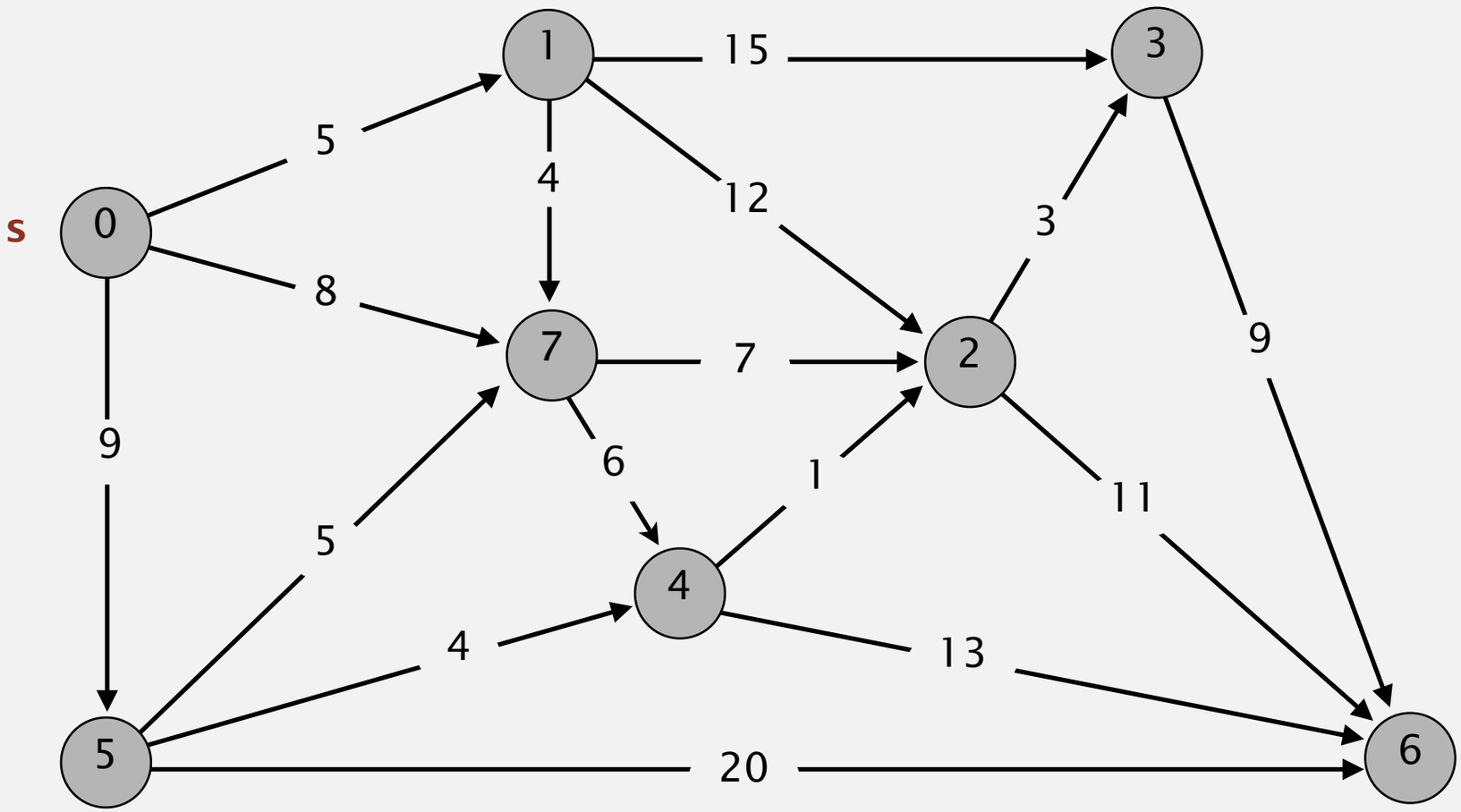
https://algs4.cs.princeton.edu

BELLMAN–FORD DEMO

Last updated on 11/14/19 5:52 AM

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.

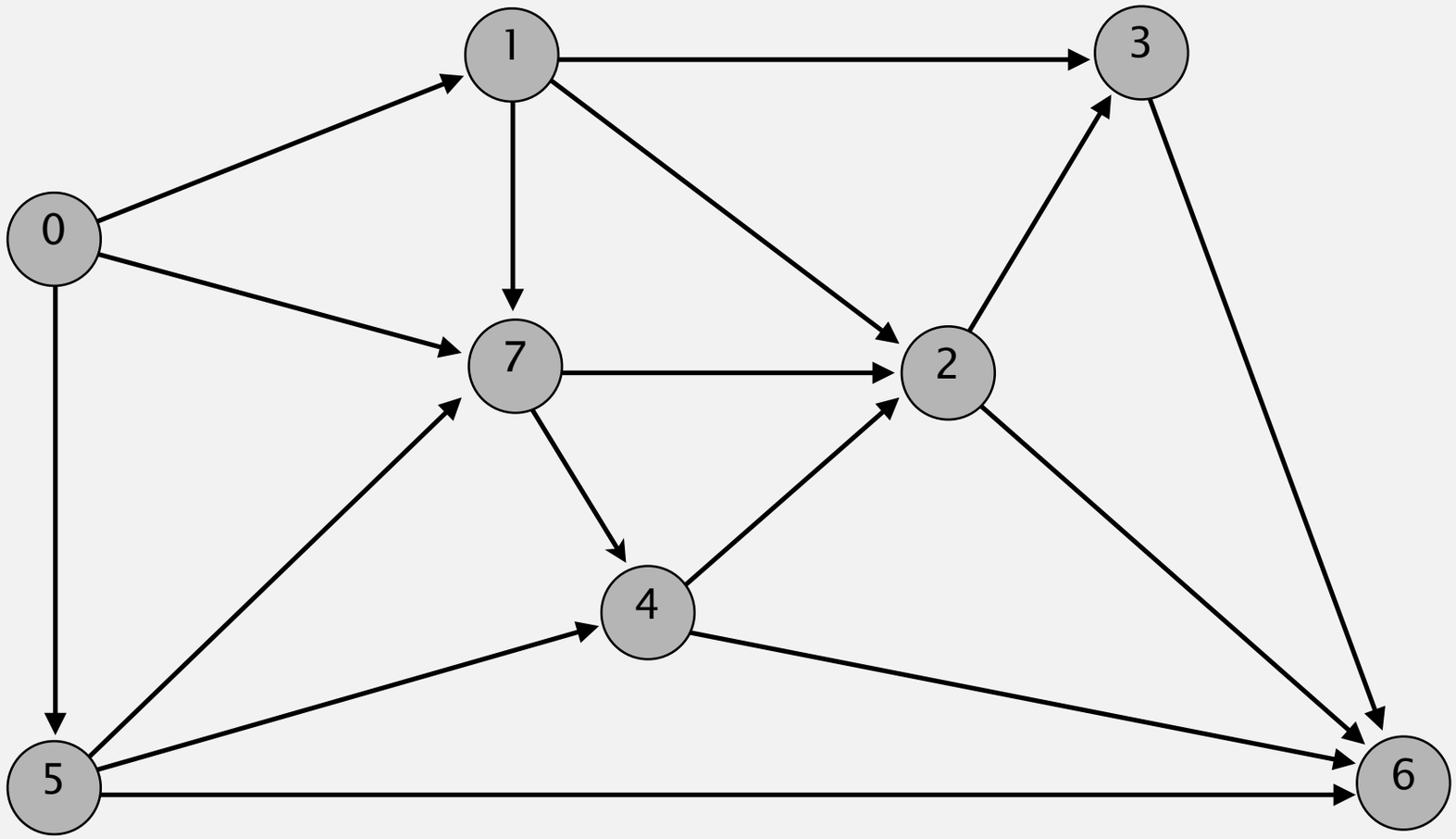


0→1 5.0
0→4 9.0
0→7 8.0
1→2 12.0
1→3 15.0
1→7 4.0
2→3 3.0
2→6 11.0
3→6 9.0
4→2 1.0
4→6 13.0
5→4 4.0
5→6 20.0
5→7 5.0
7→2 7.0
7→4 6.0

an edge-weighted digraph

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.

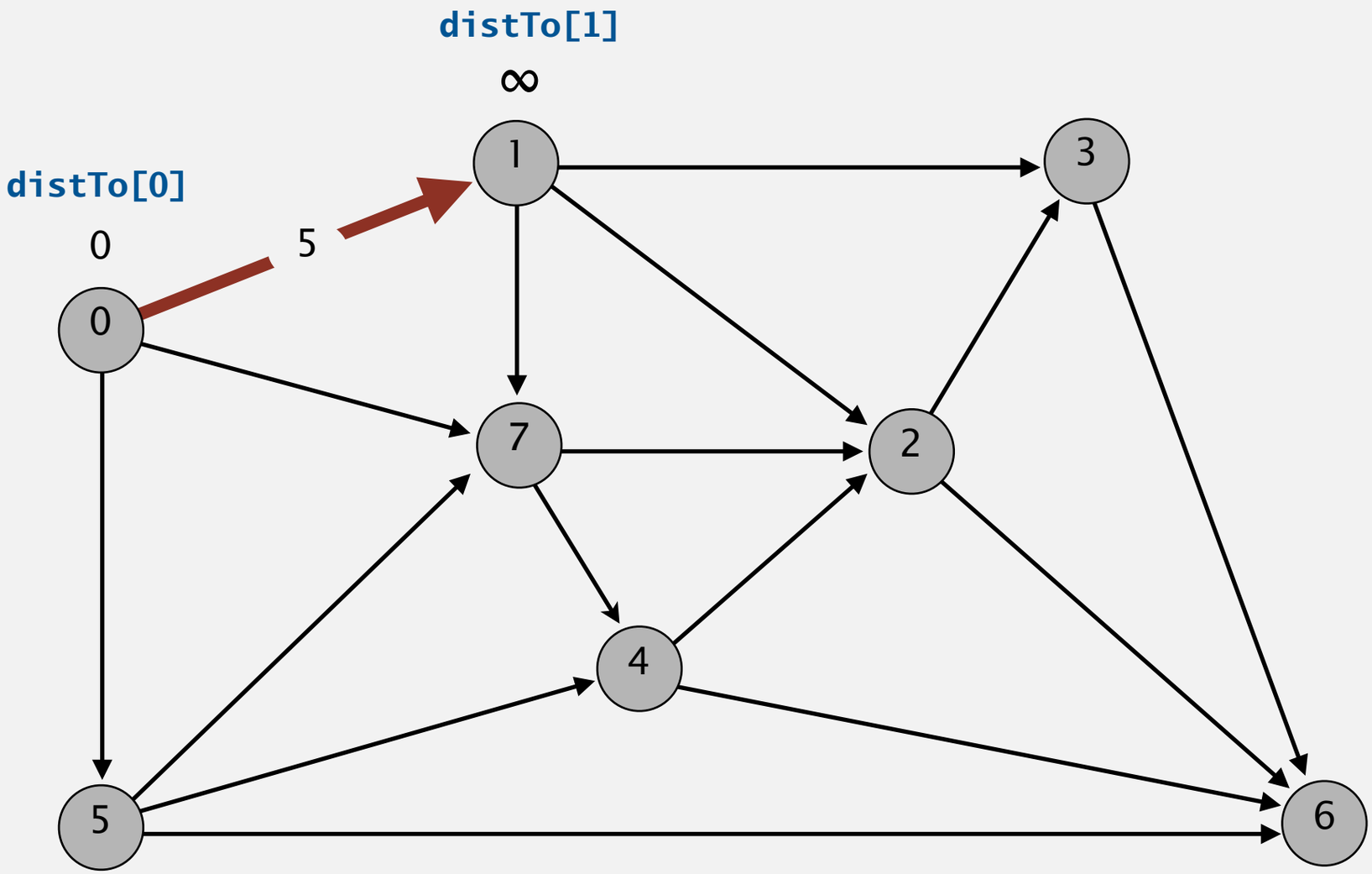


v	distTo[]	edgeTo[]
0	0.0	-
1		
2		
3		
4		
5		
6		
7		

initialize

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



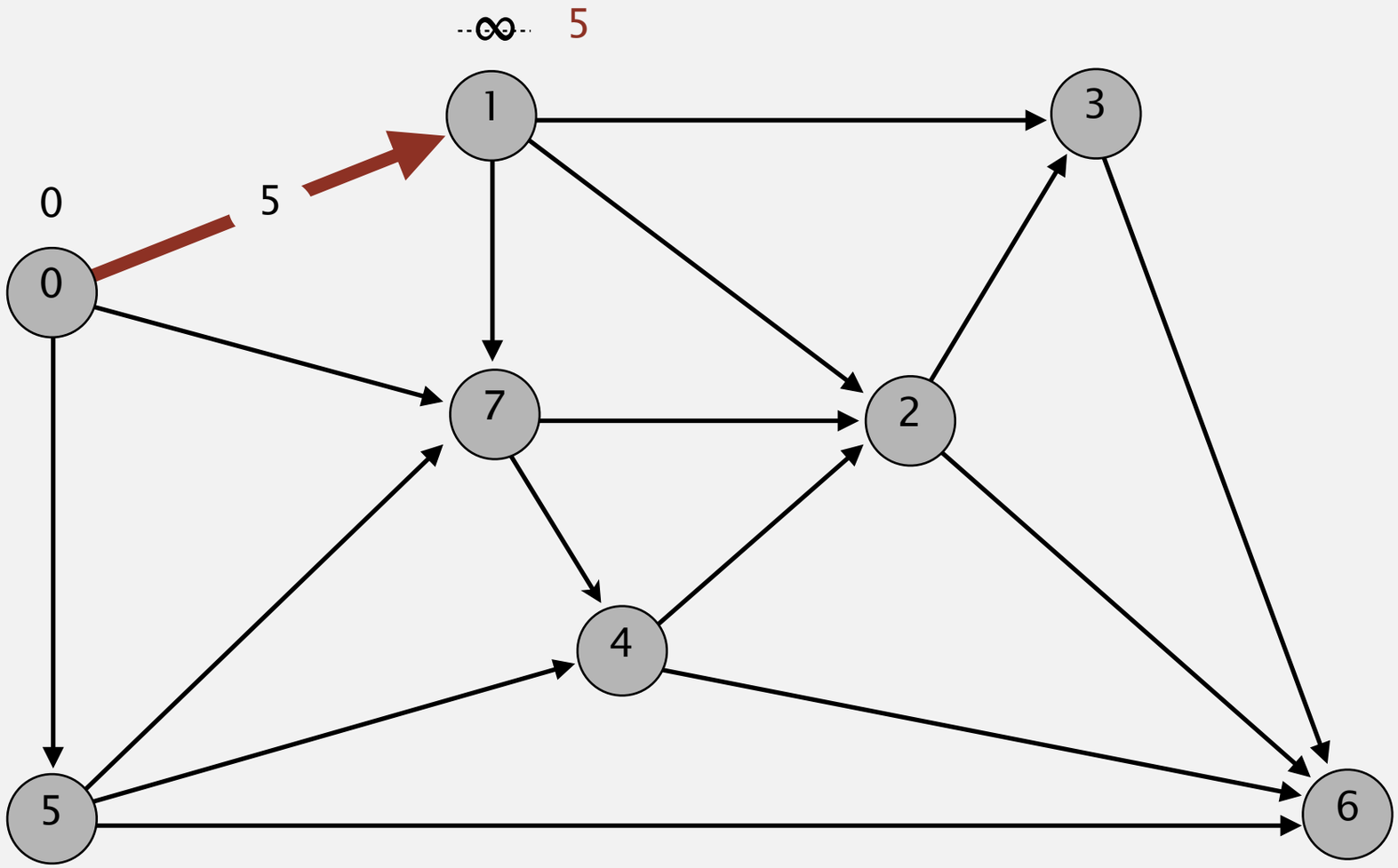
v	distTo[]	edgeTo[]
0	0.0	-
1		
2		
3		
4		
5		
6		
7		

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



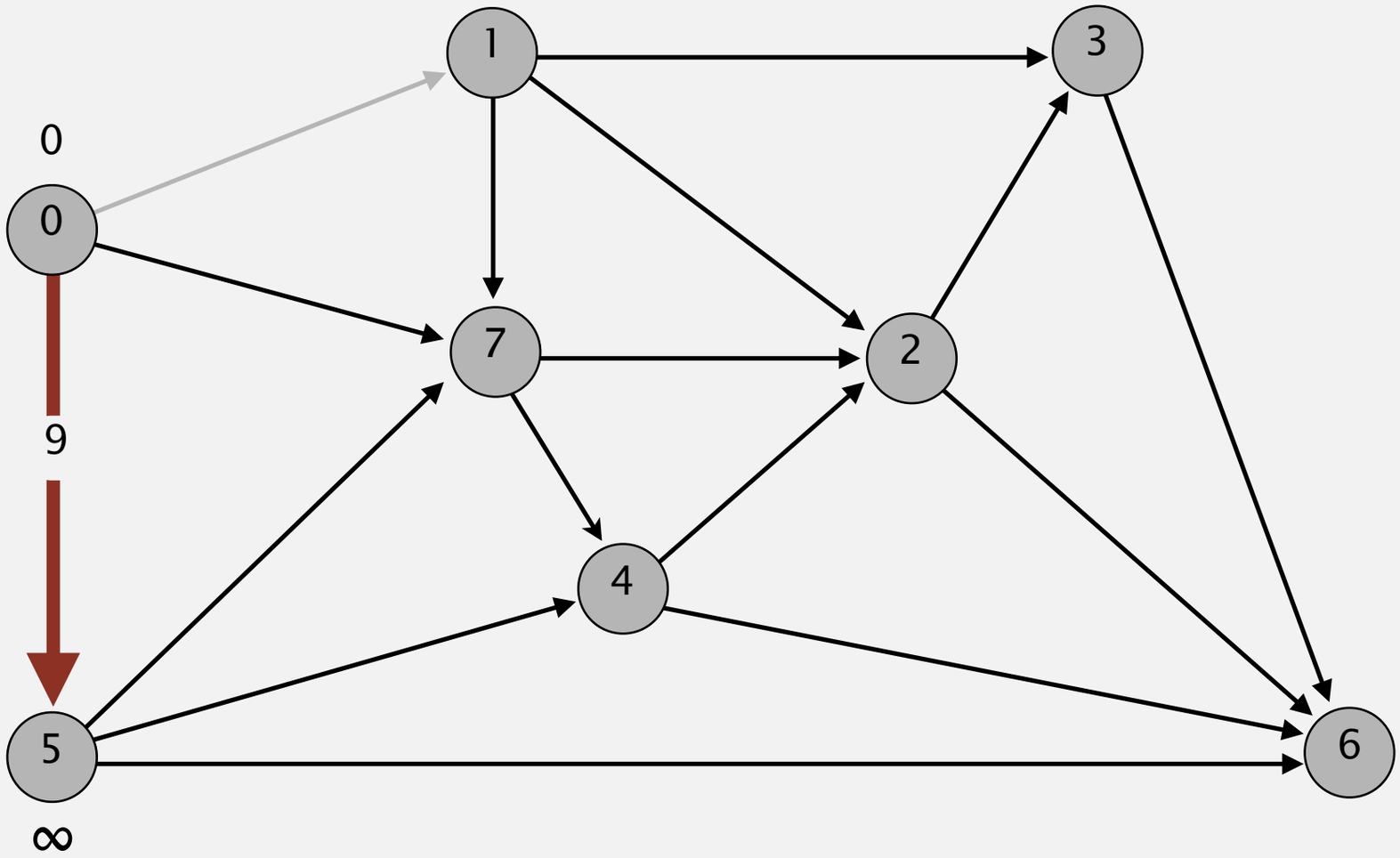
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2		
3		
4		
5		
6		
7		

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



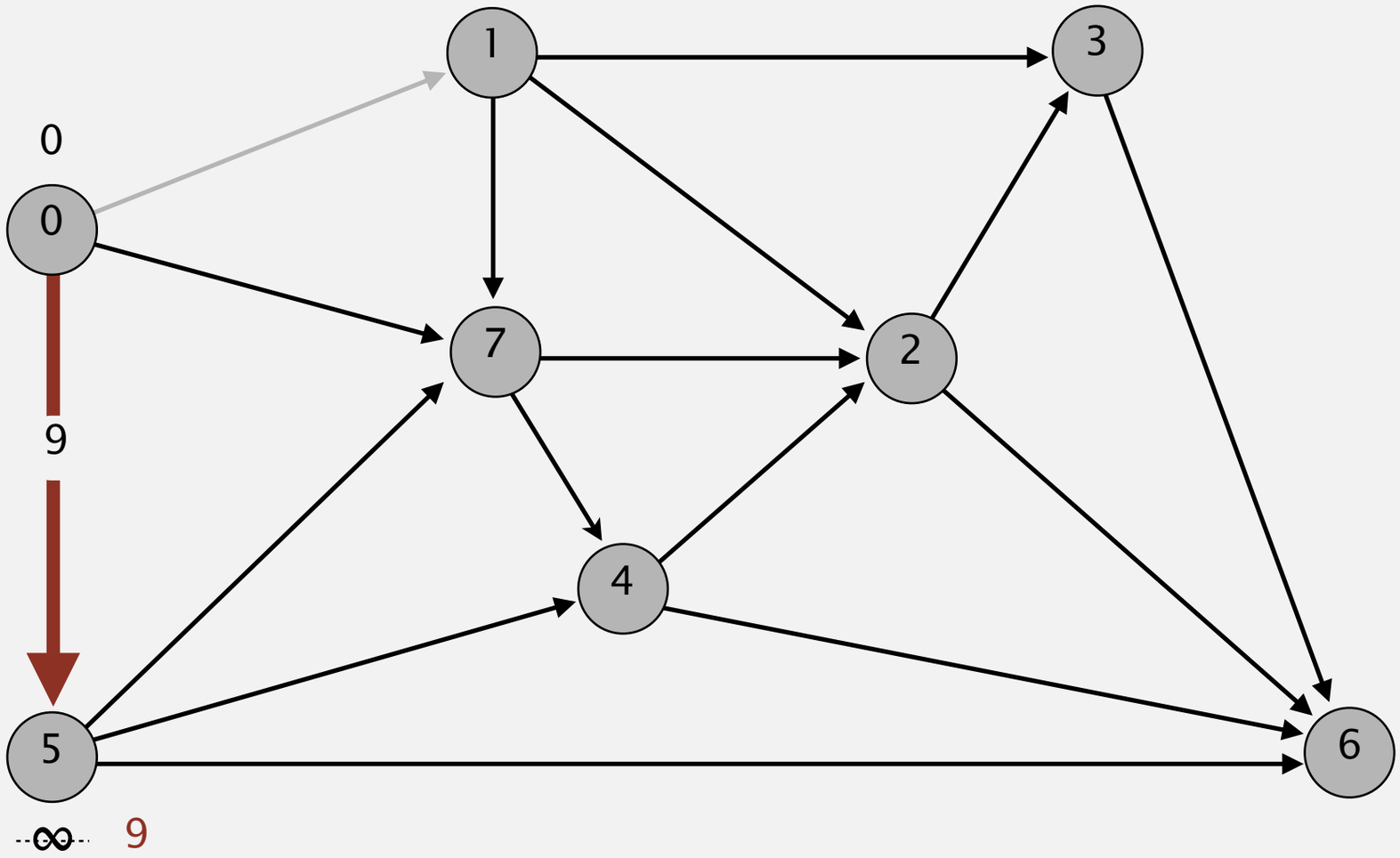
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2		
3		
4		
5		
6		
7		

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



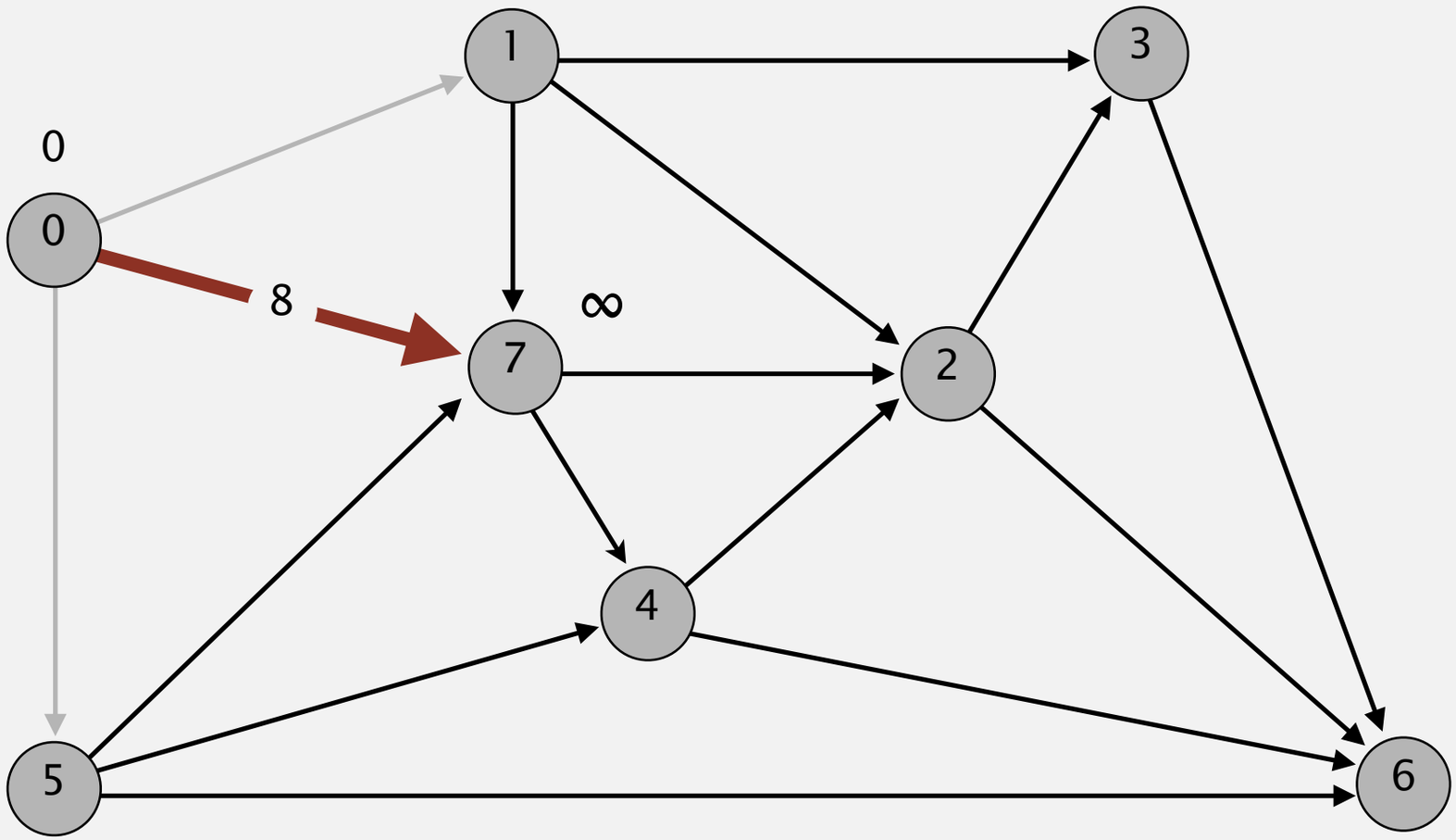
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2		
3		
4		
5	9.0	0→5
6		
7		

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



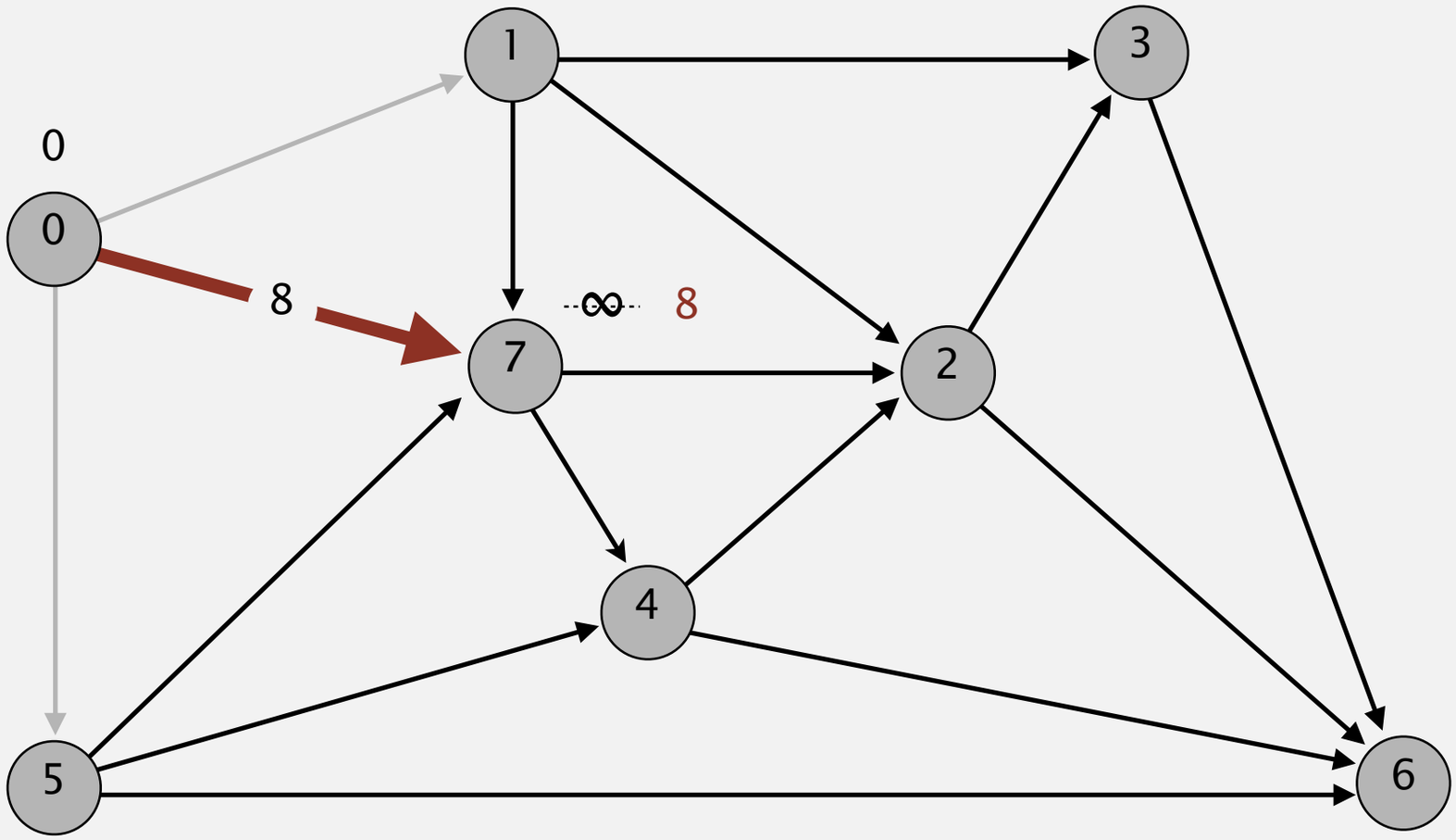
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2		
3		
4		
5	9.0	0→5
6		
7		

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



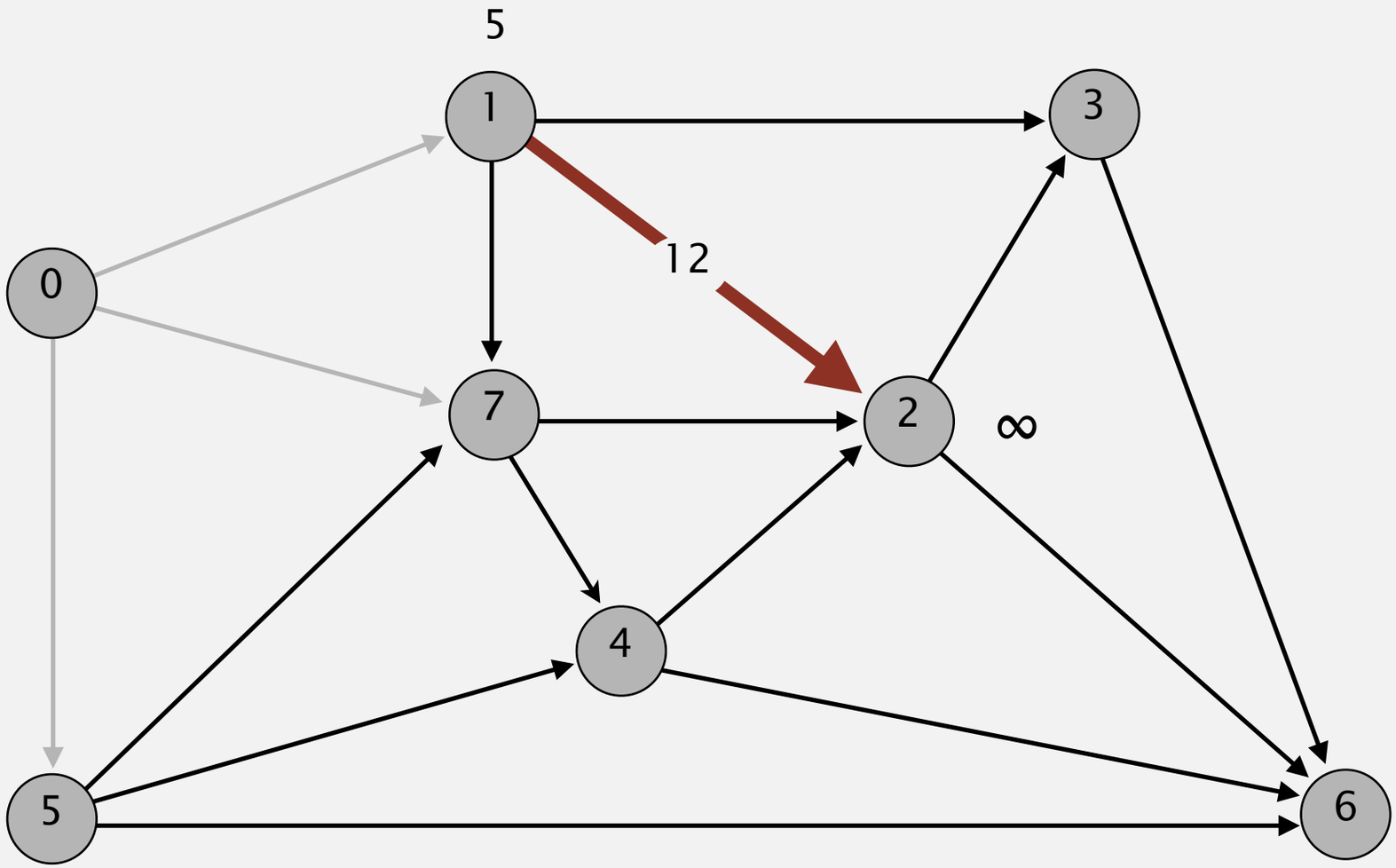
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2		
3		
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



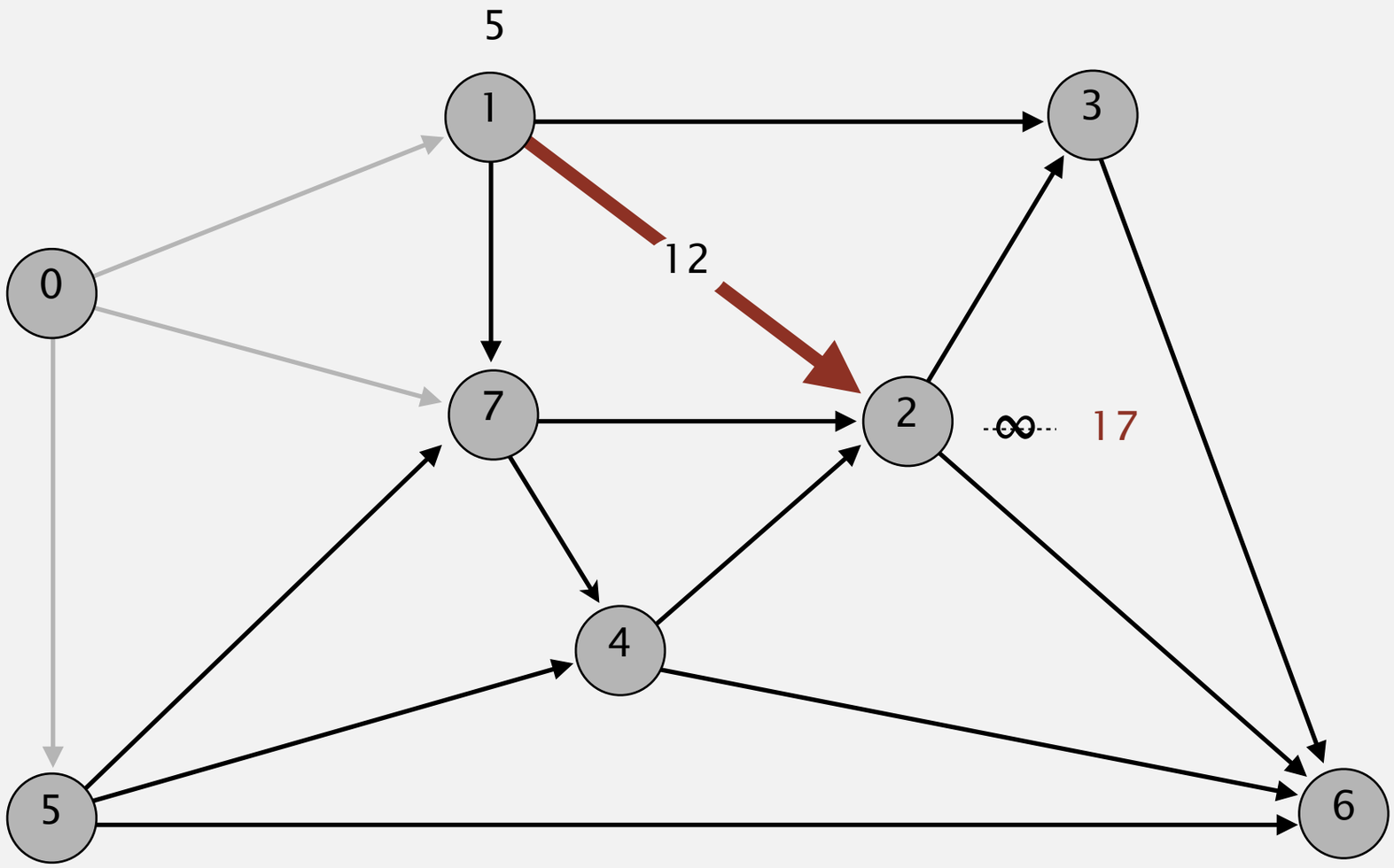
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2		
3		
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



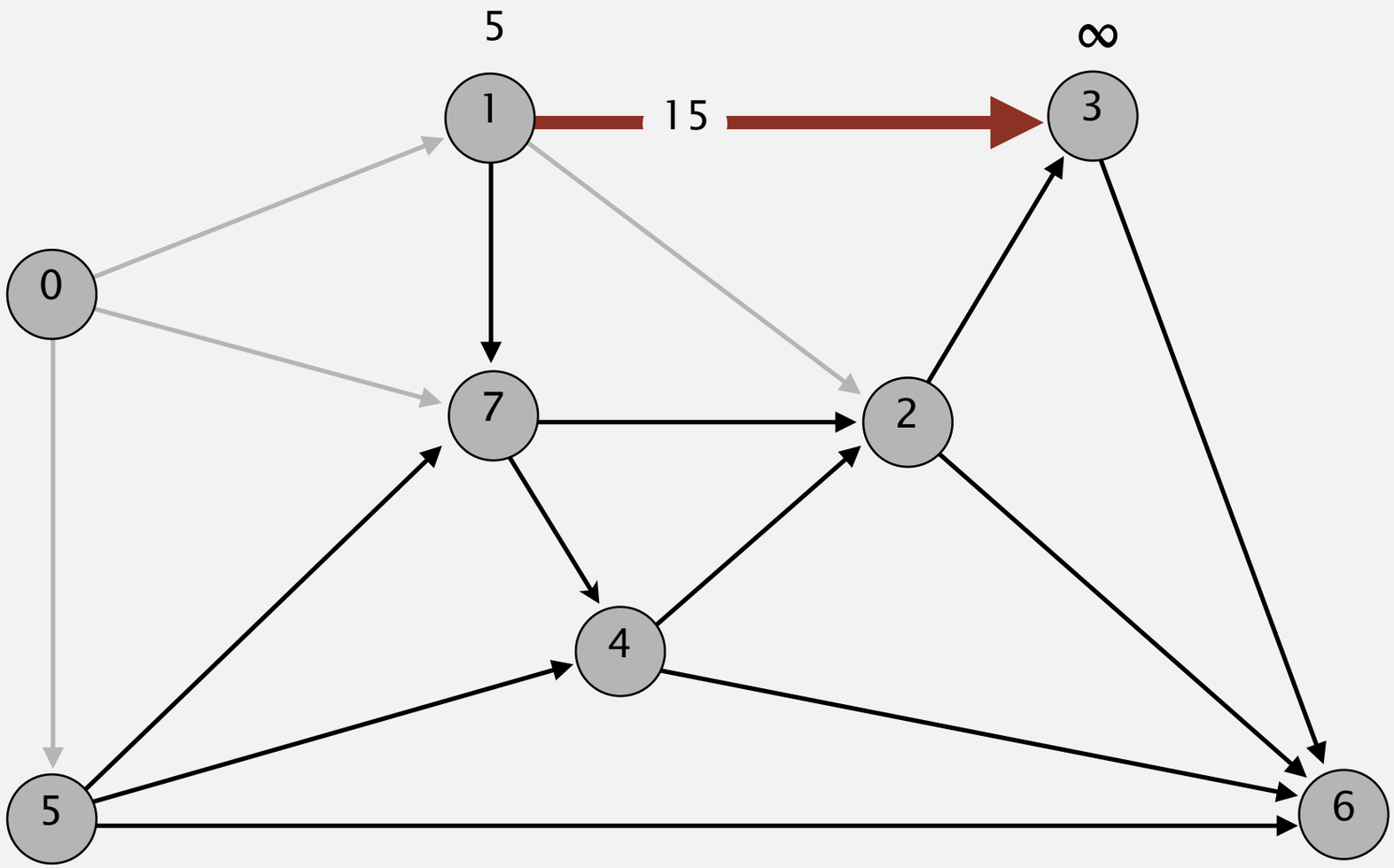
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3		
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



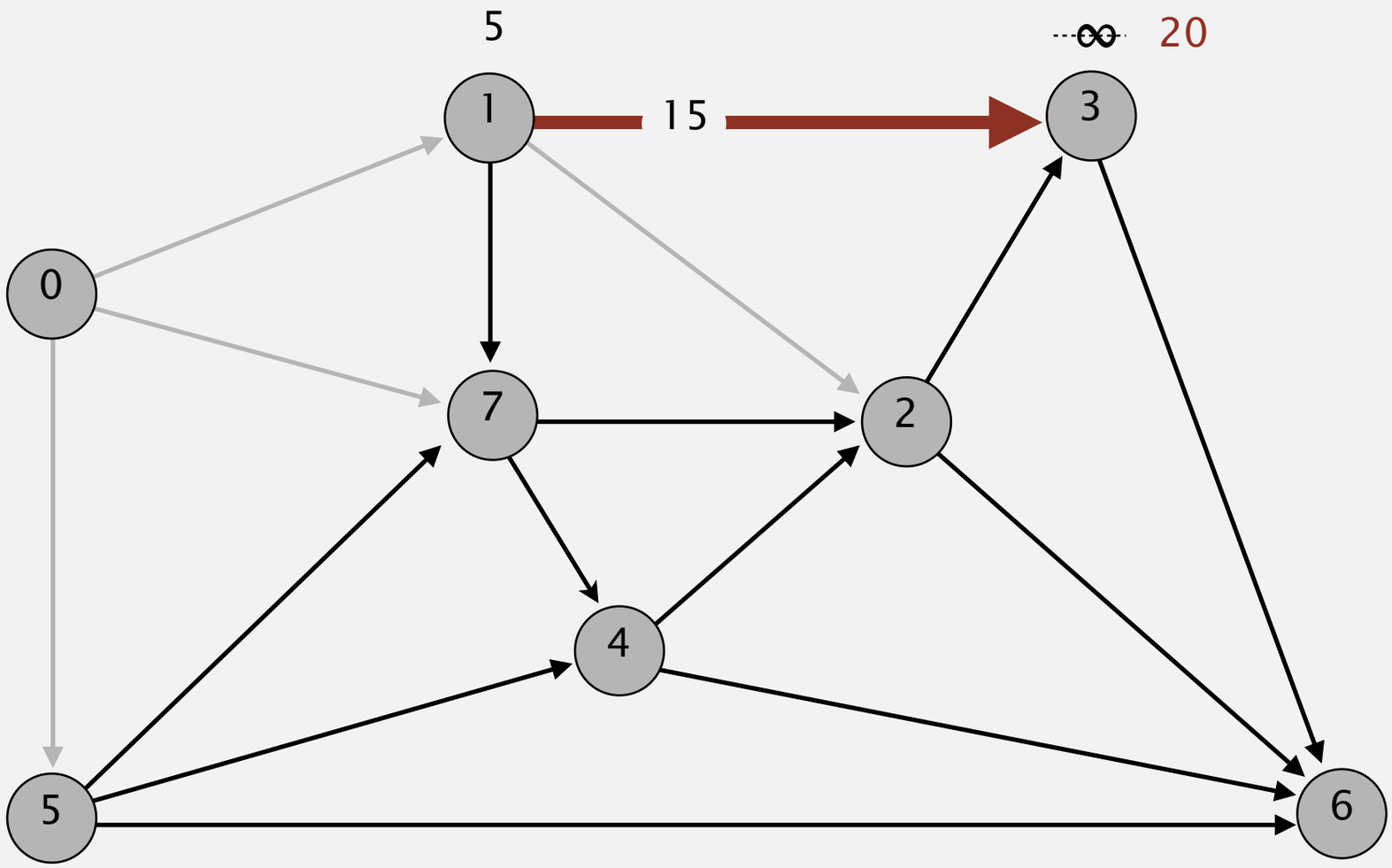
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3		
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



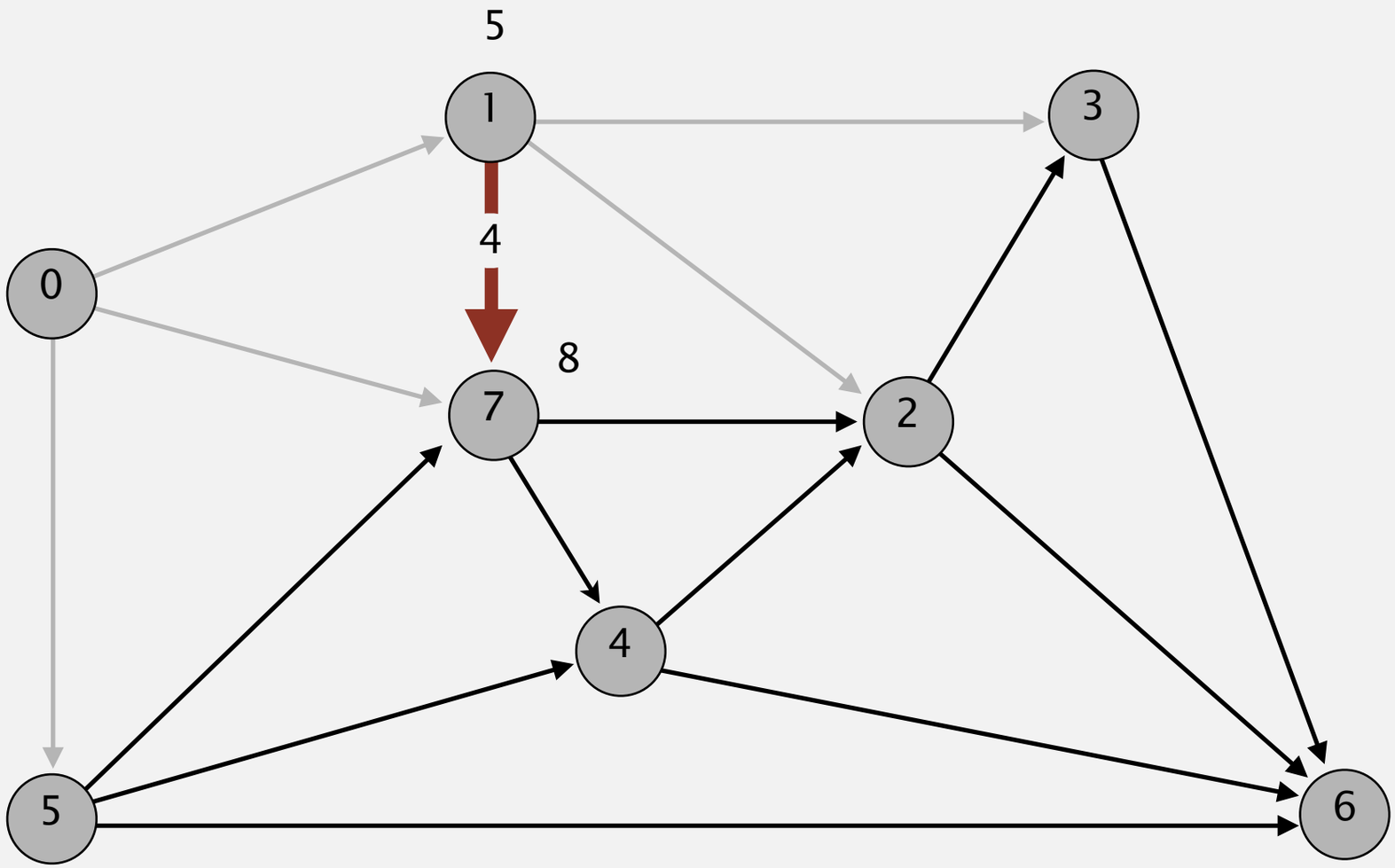
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



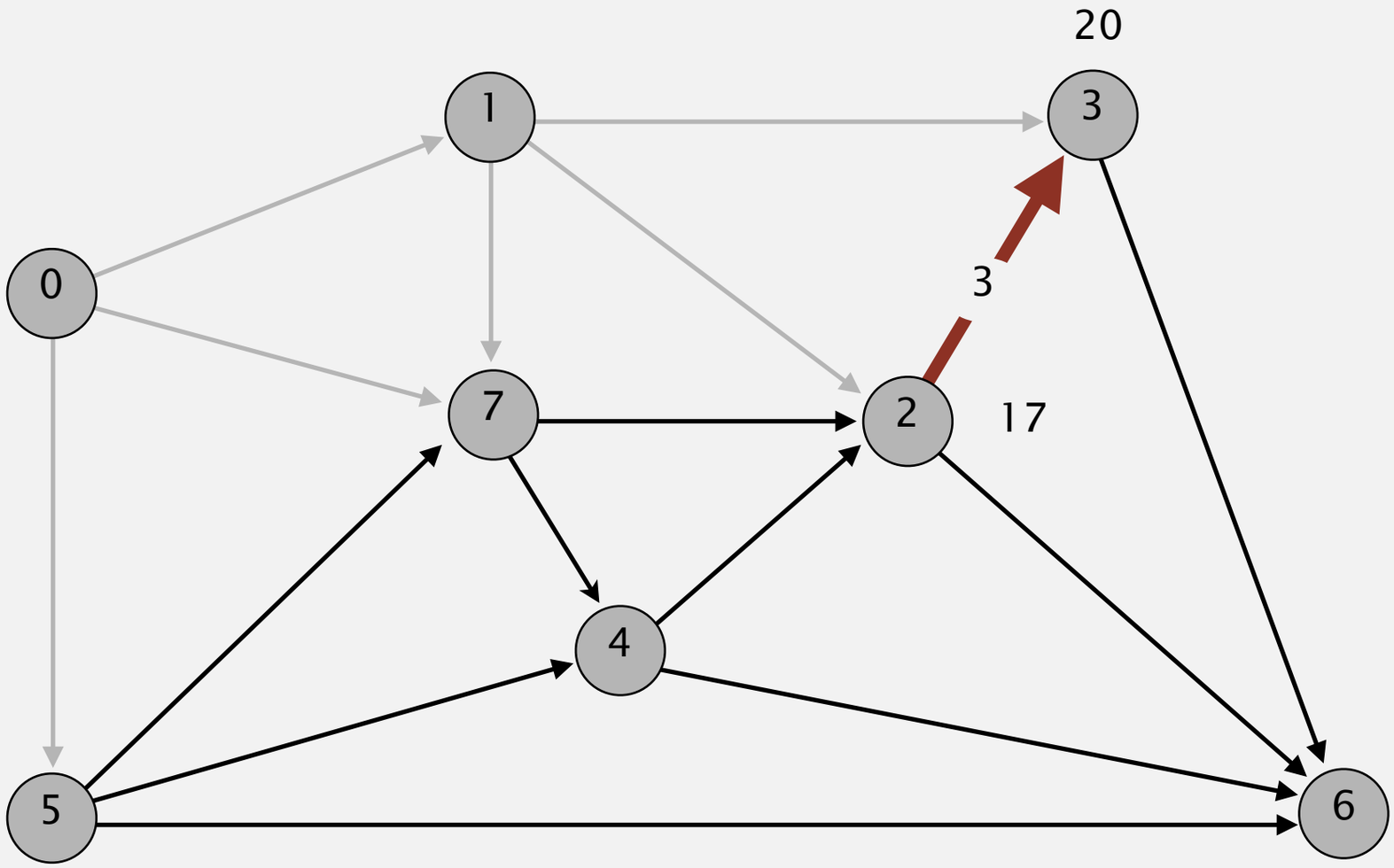
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



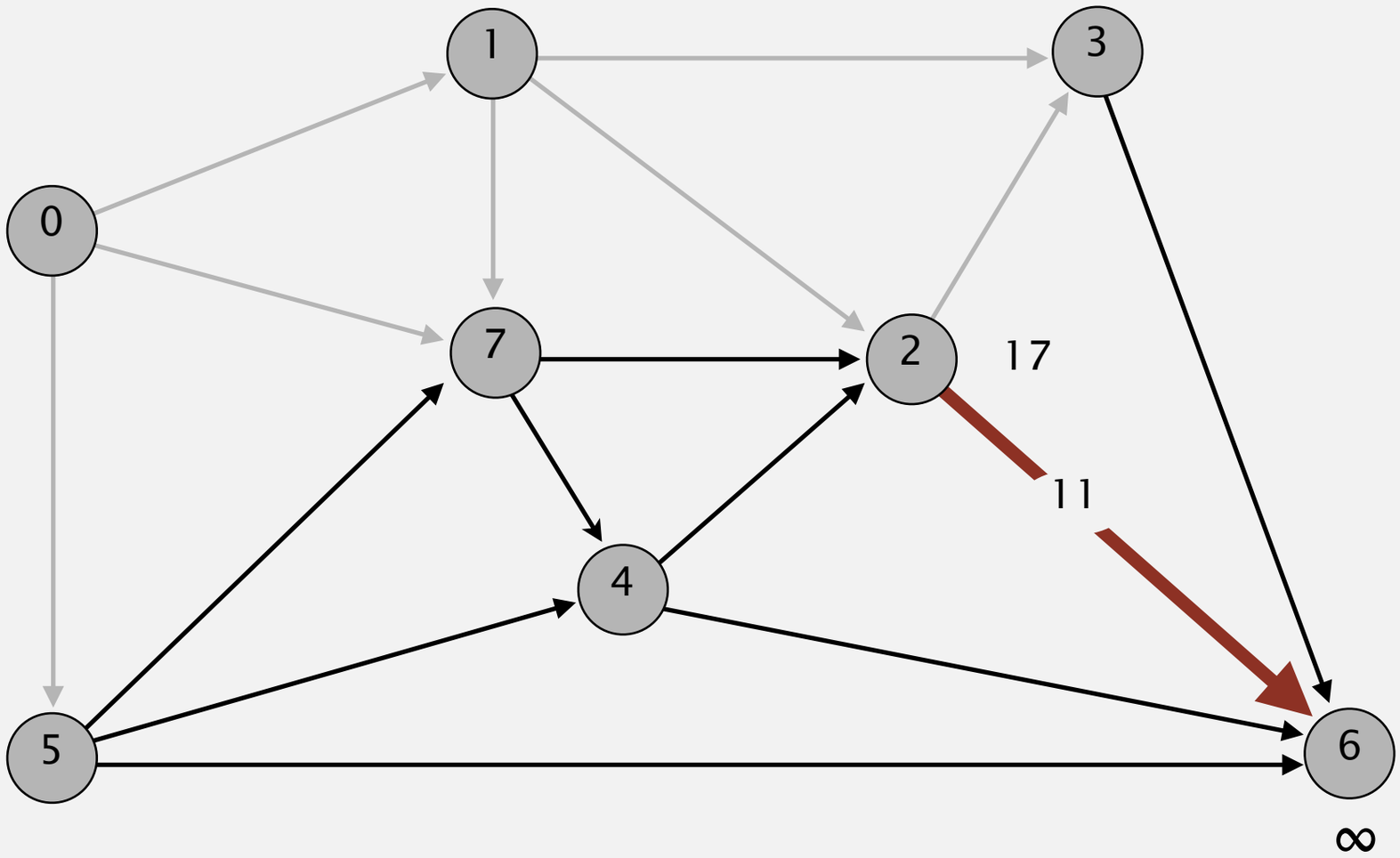
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



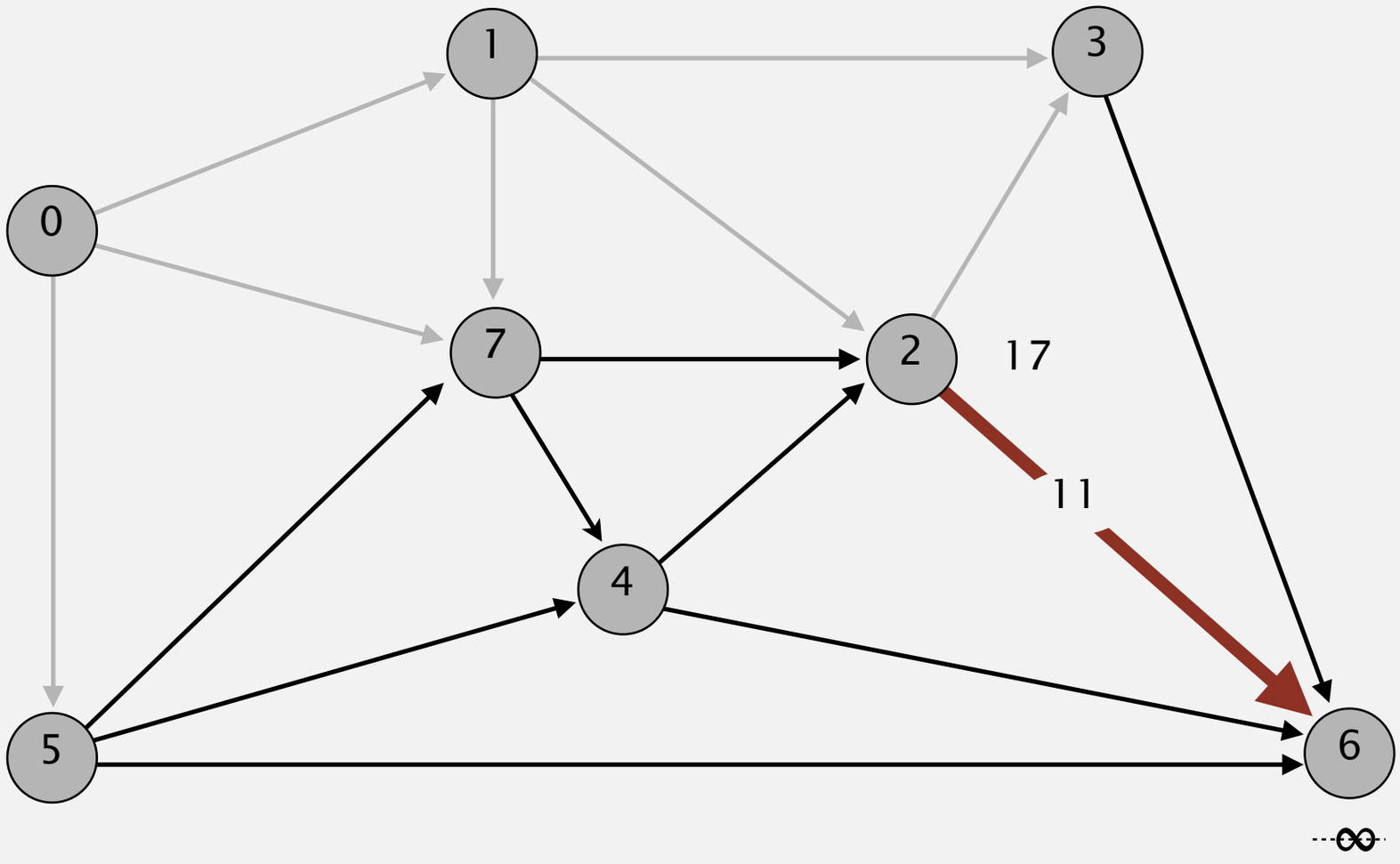
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6		
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



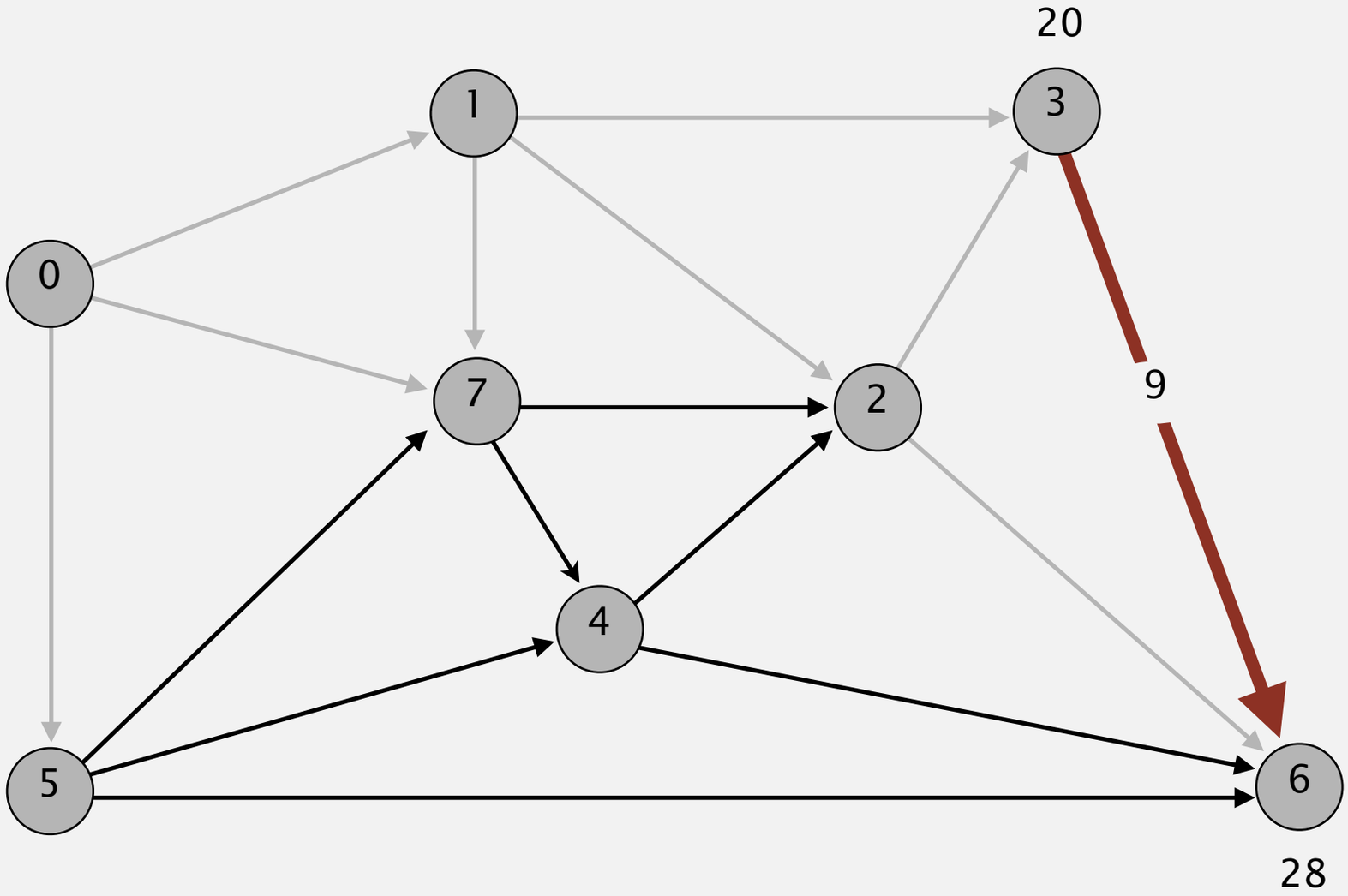
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



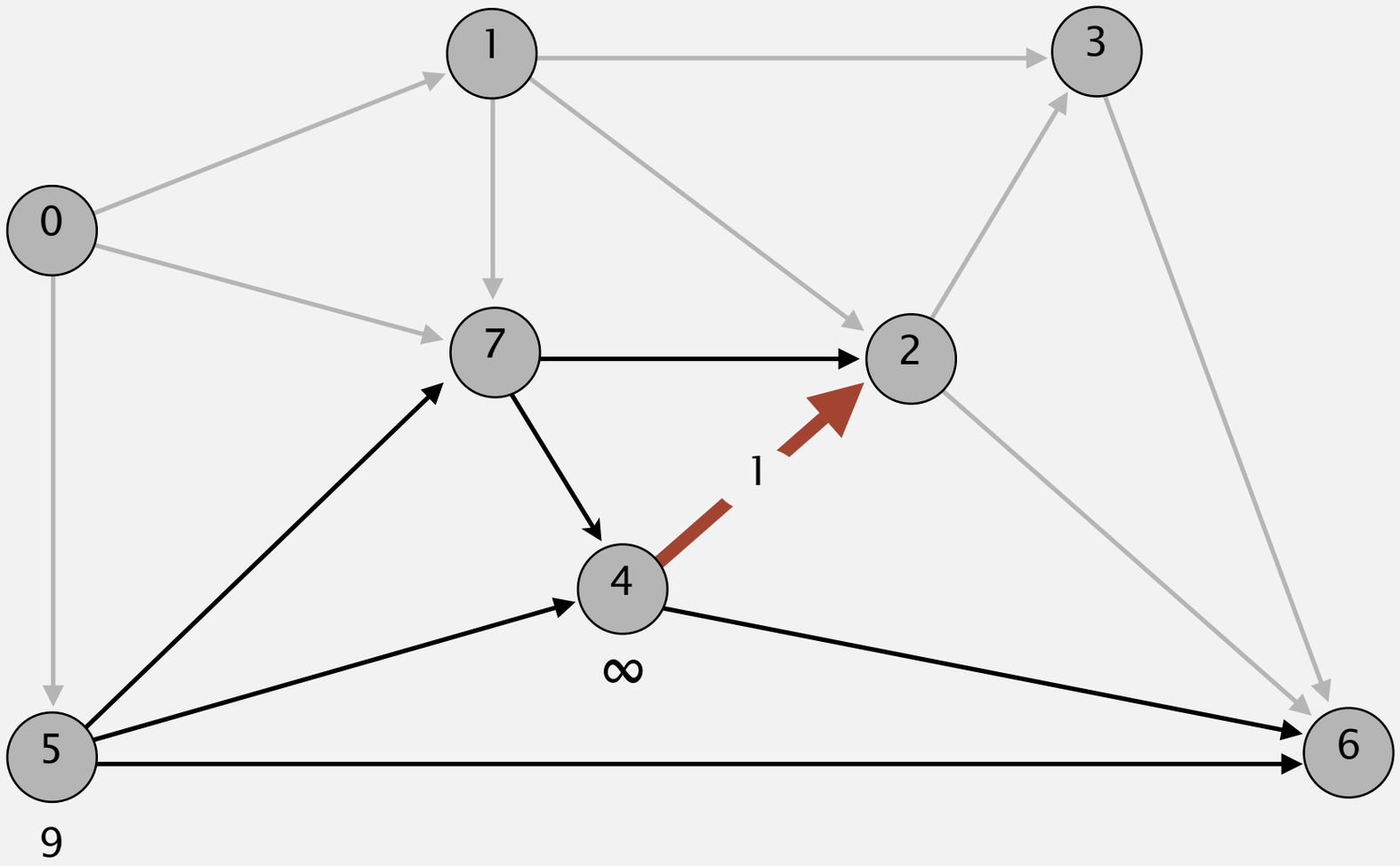
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



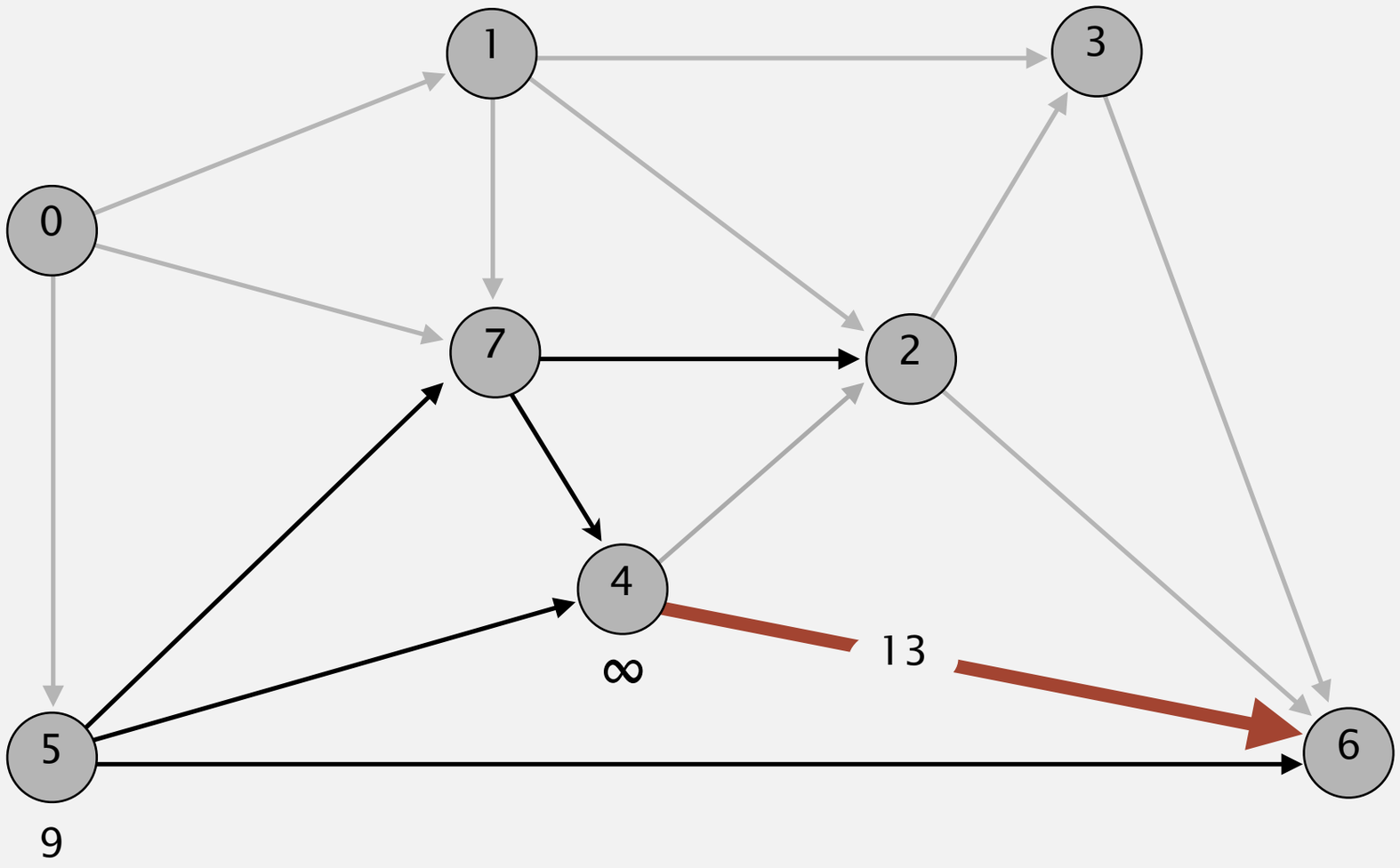
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



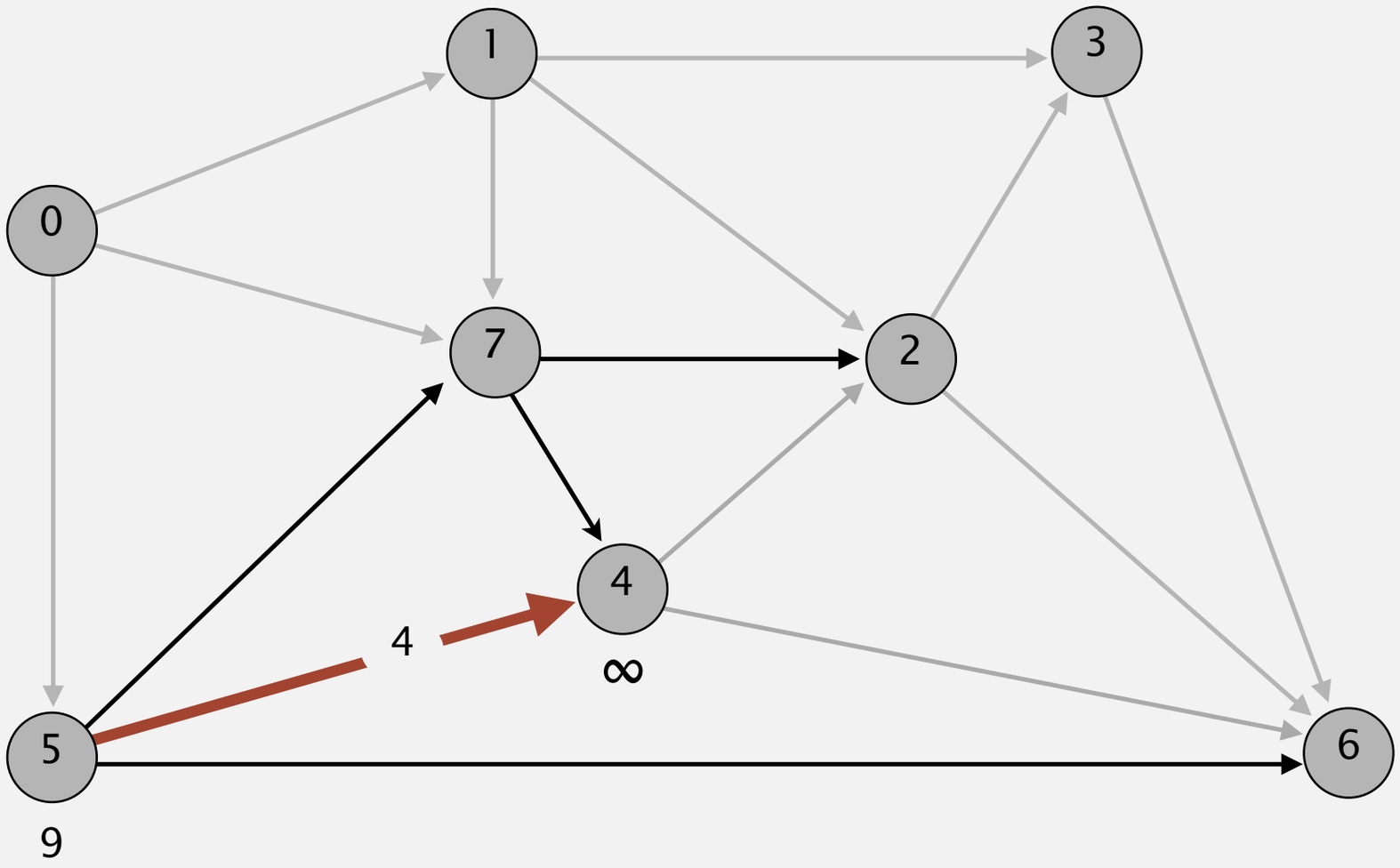
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4		
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



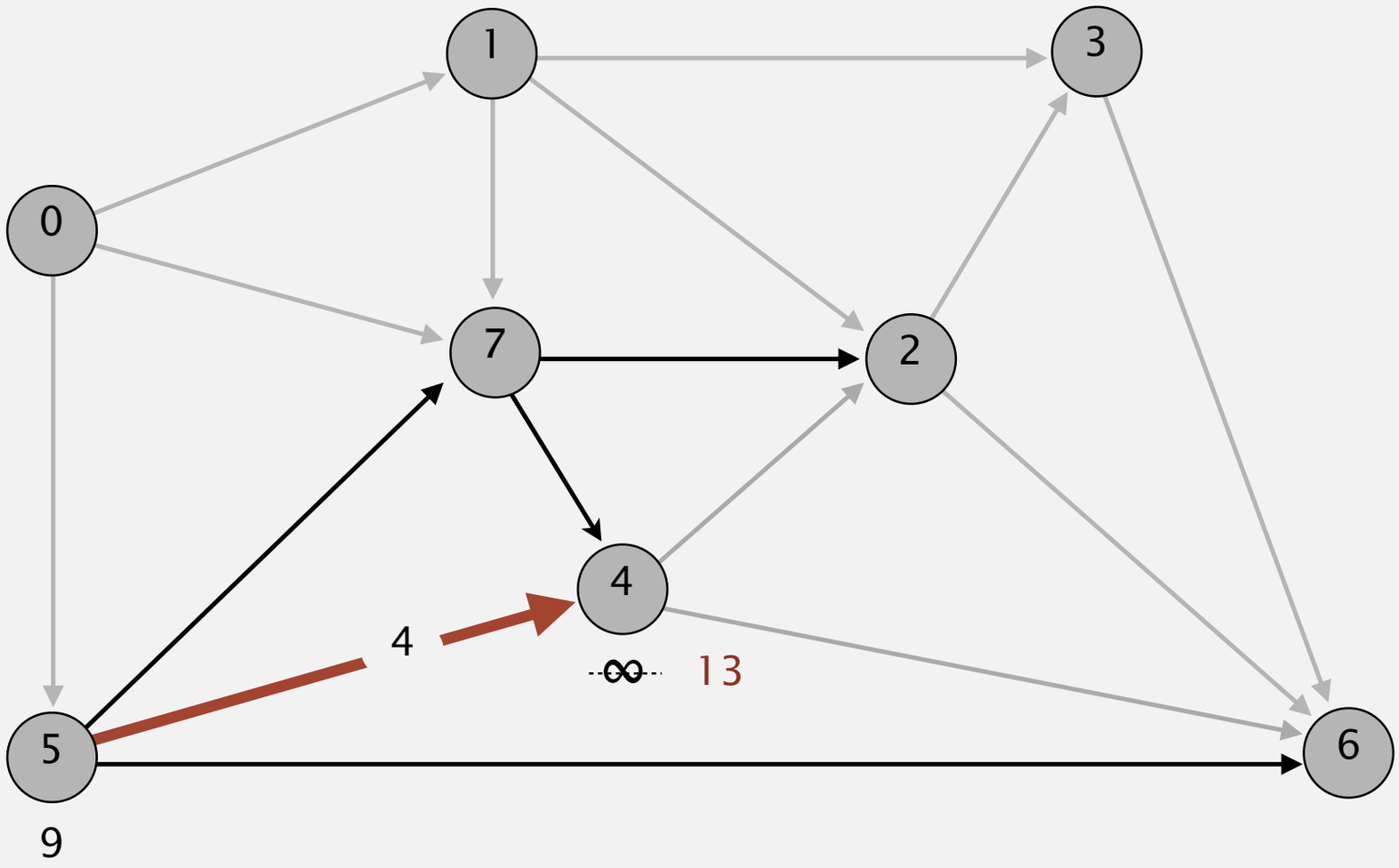
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



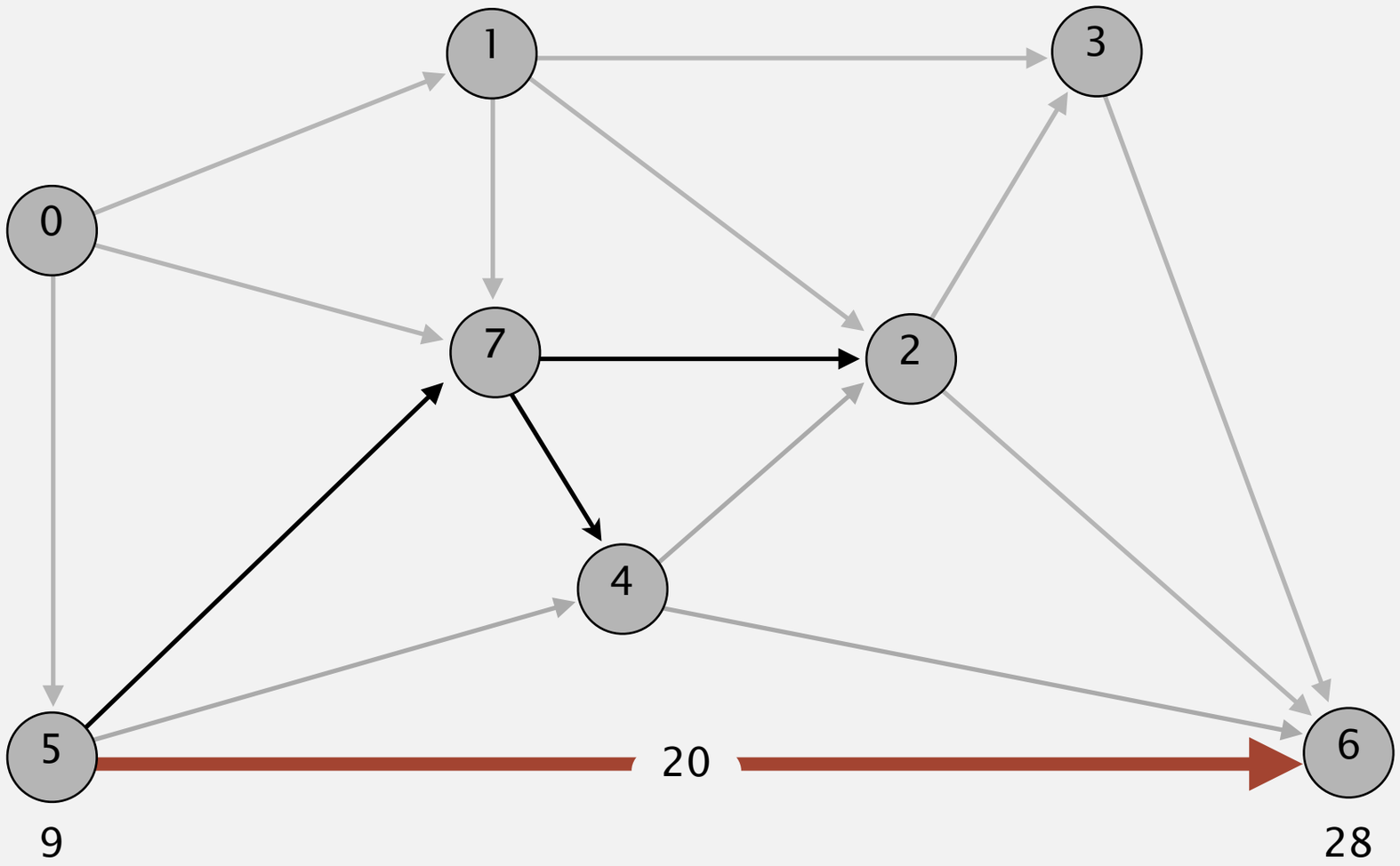
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



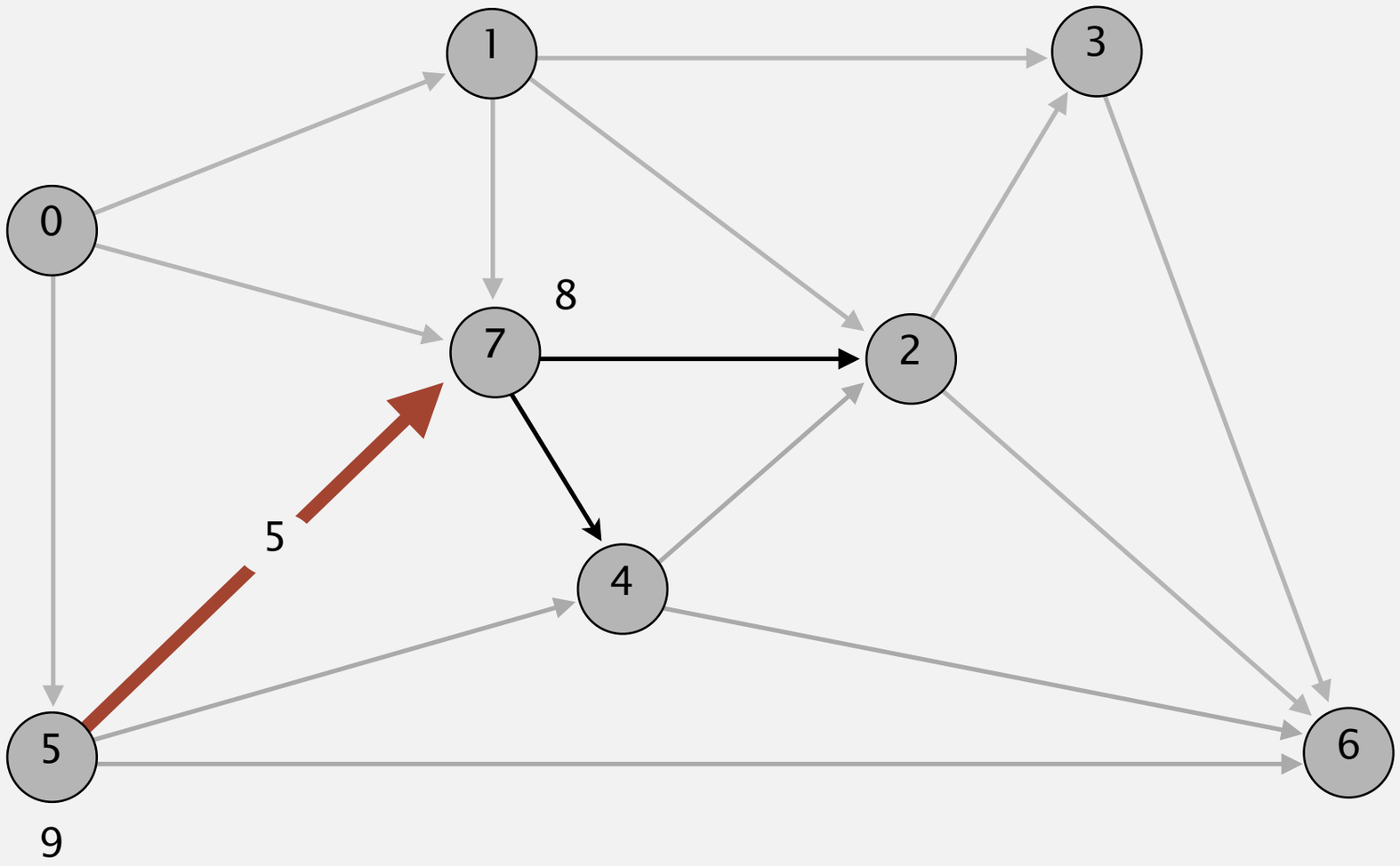
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



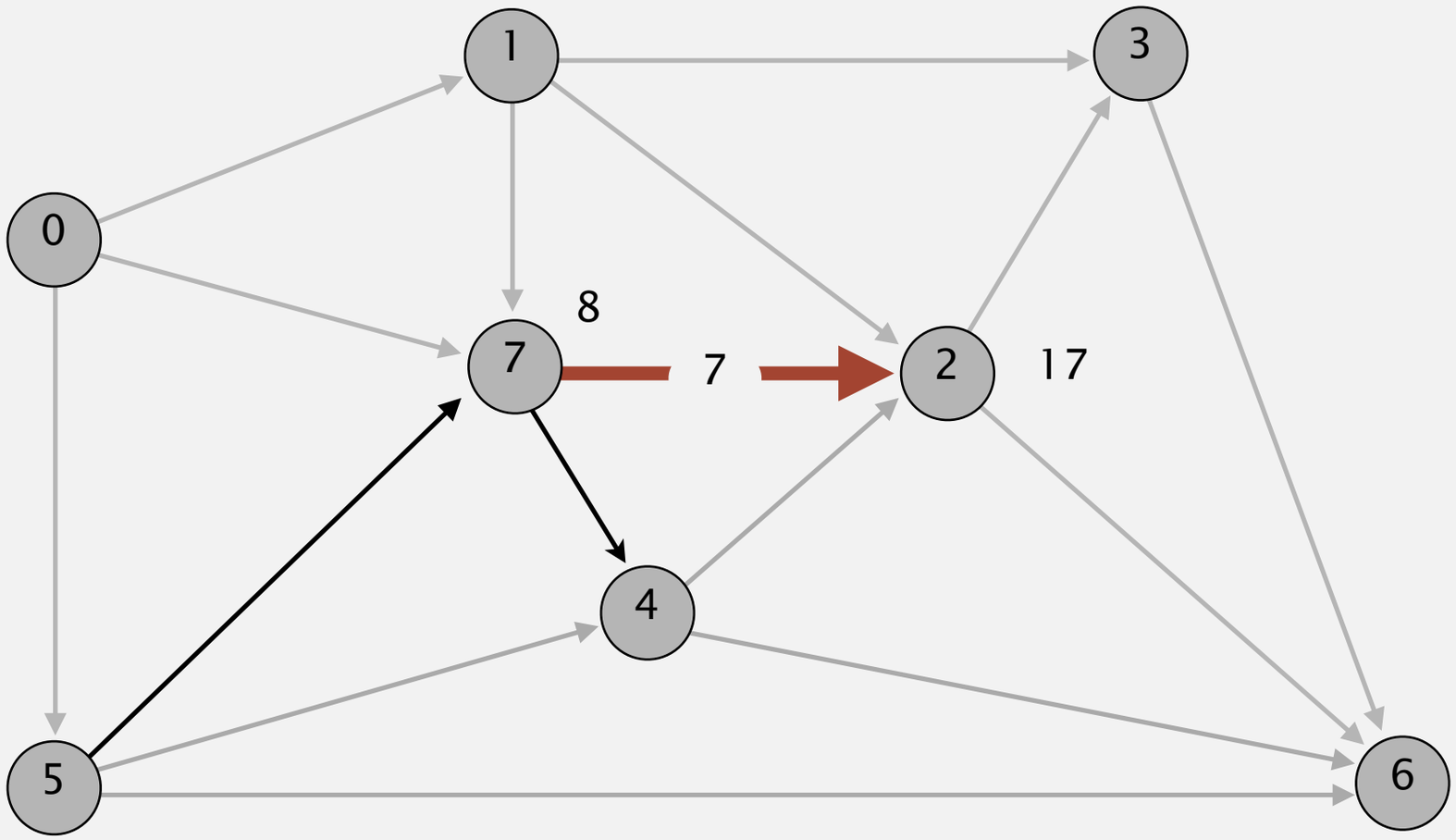
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



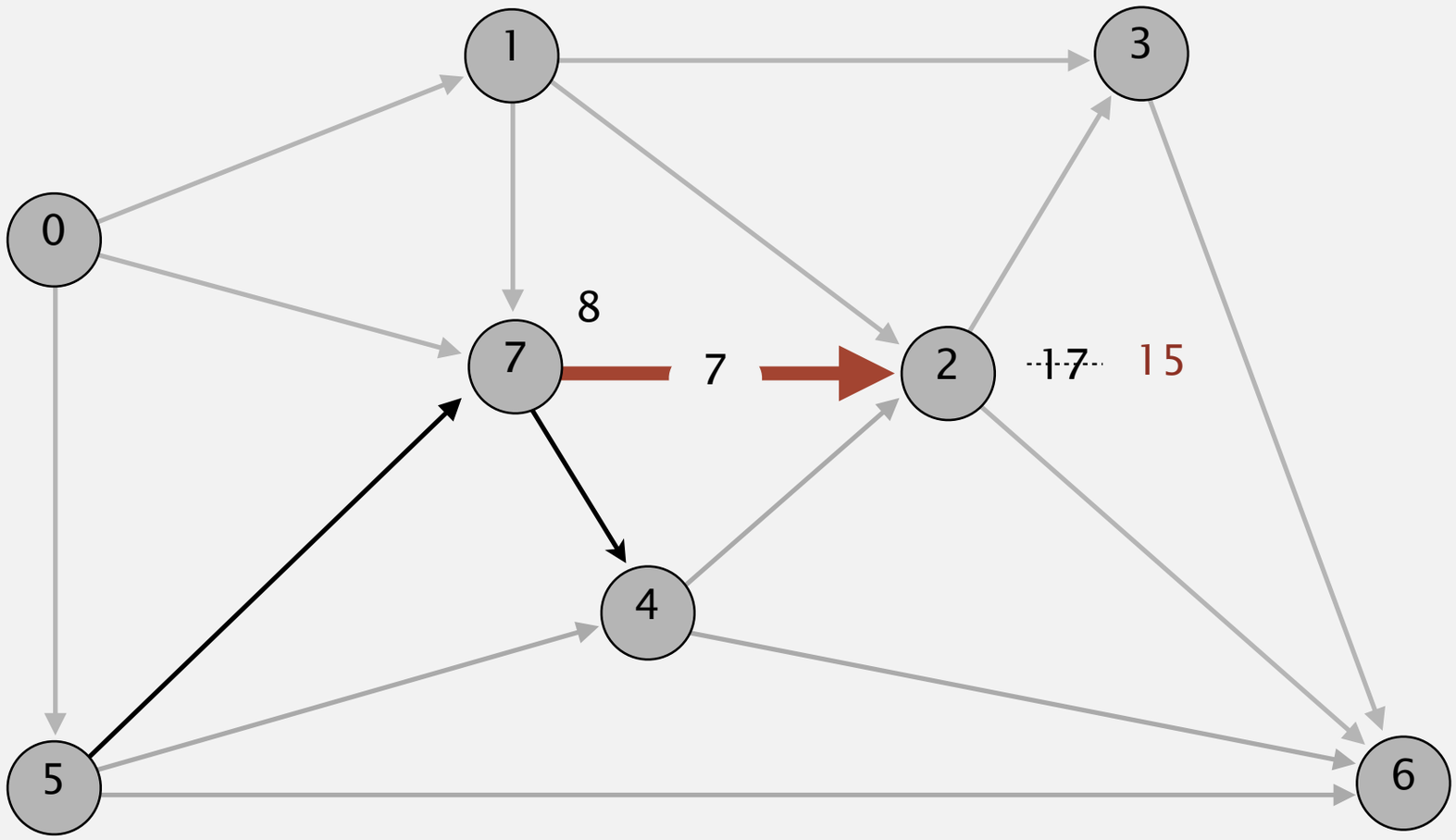
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	17.0	1→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



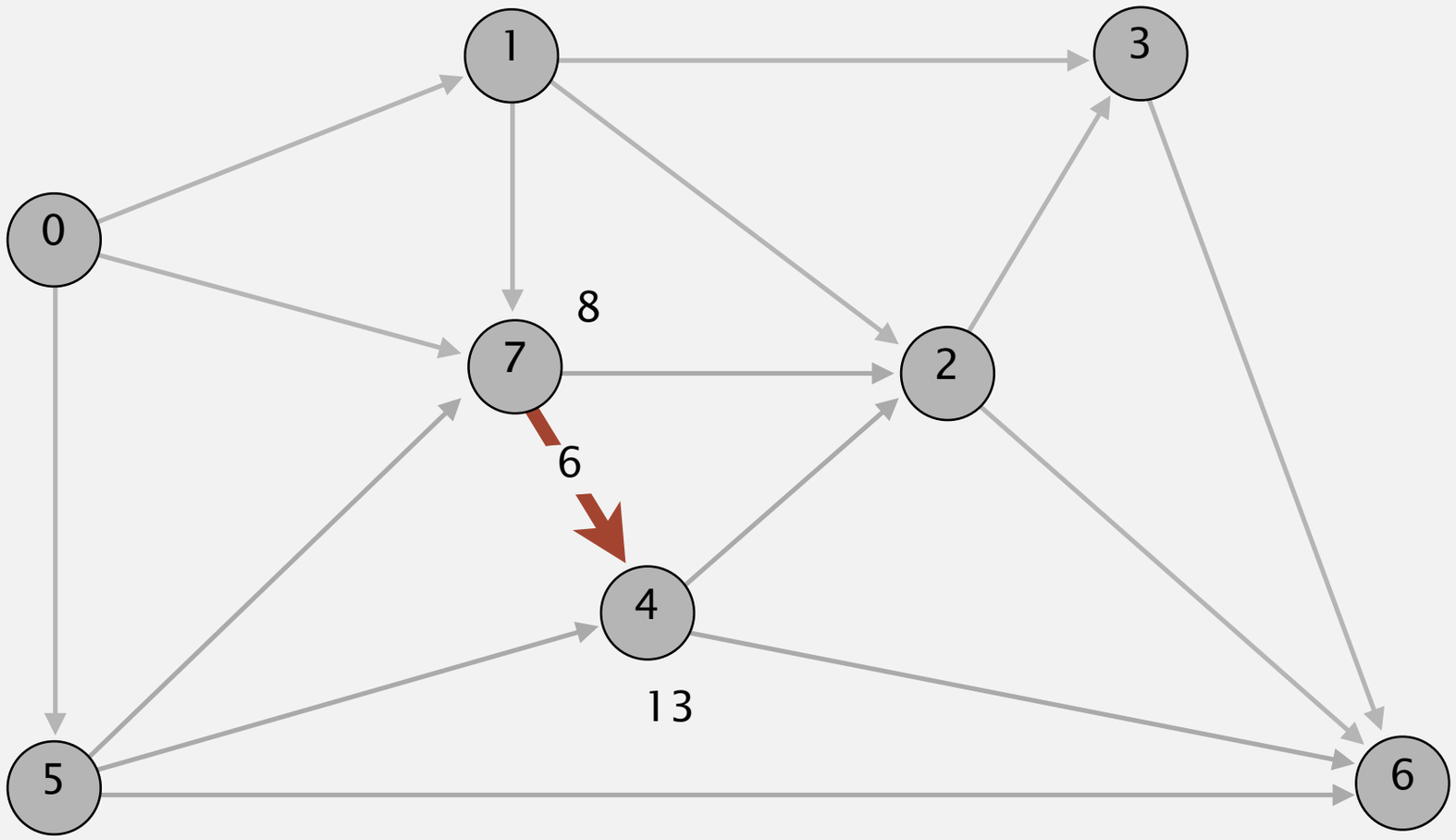
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



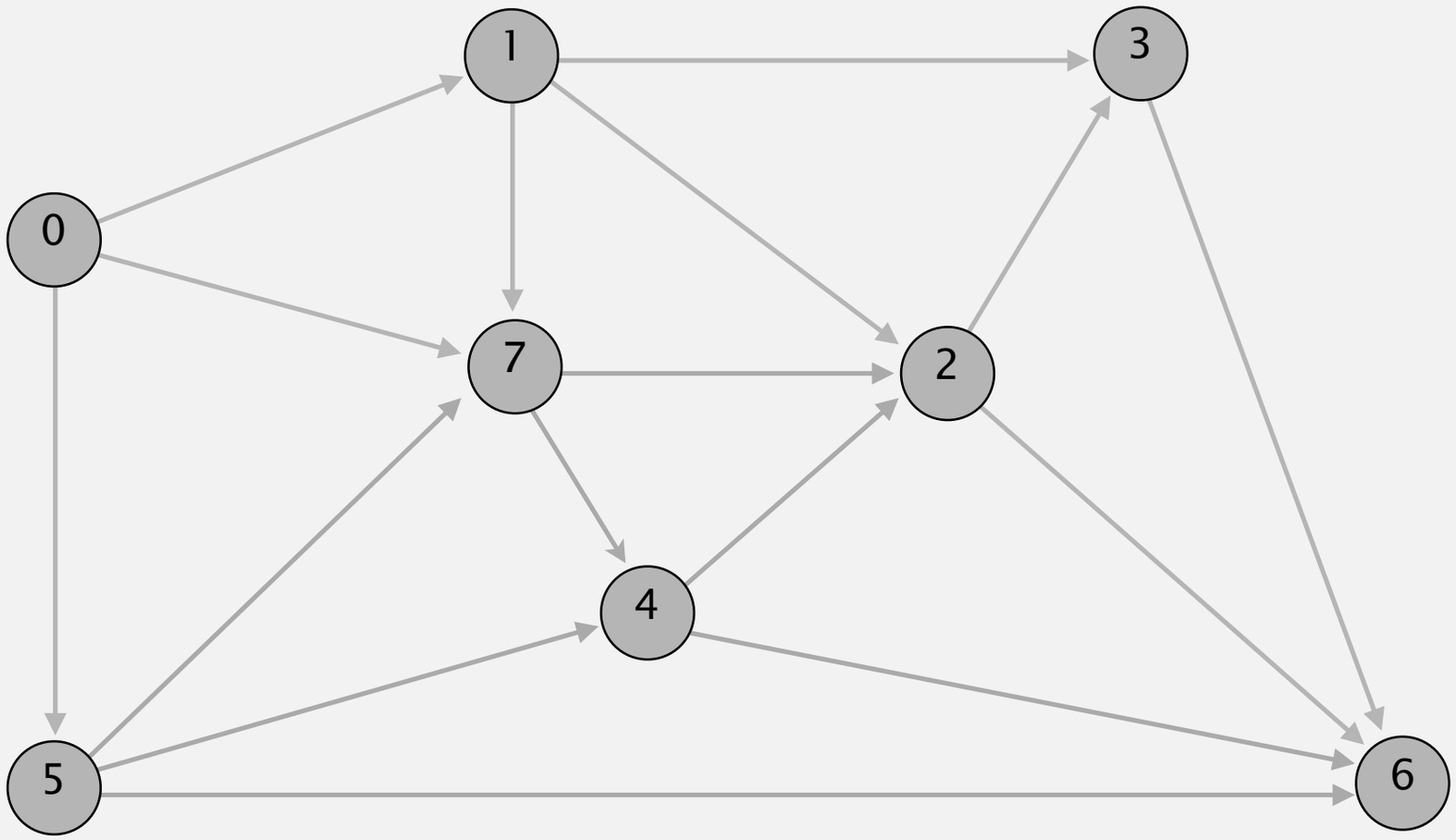
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



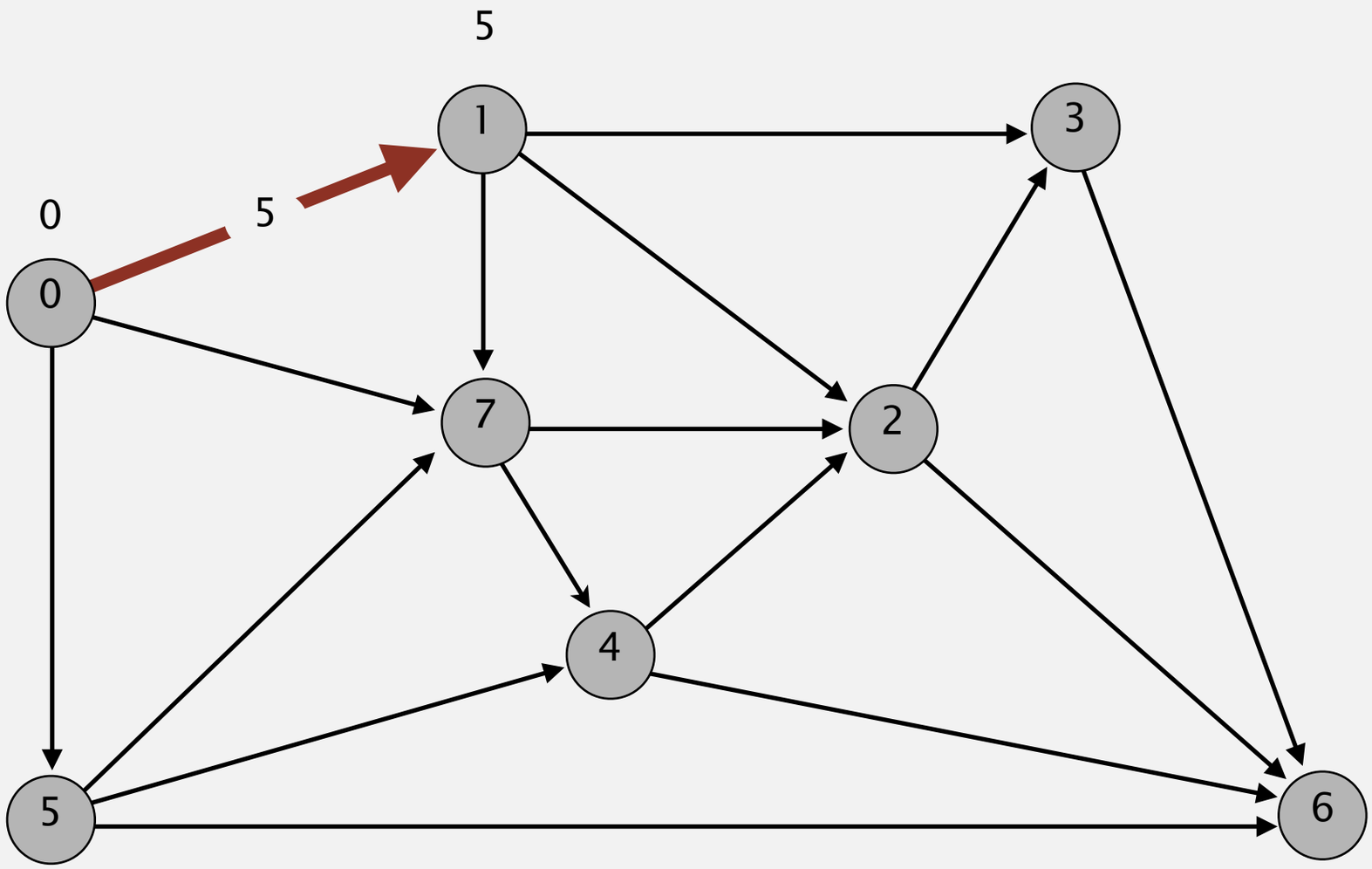
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 1

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



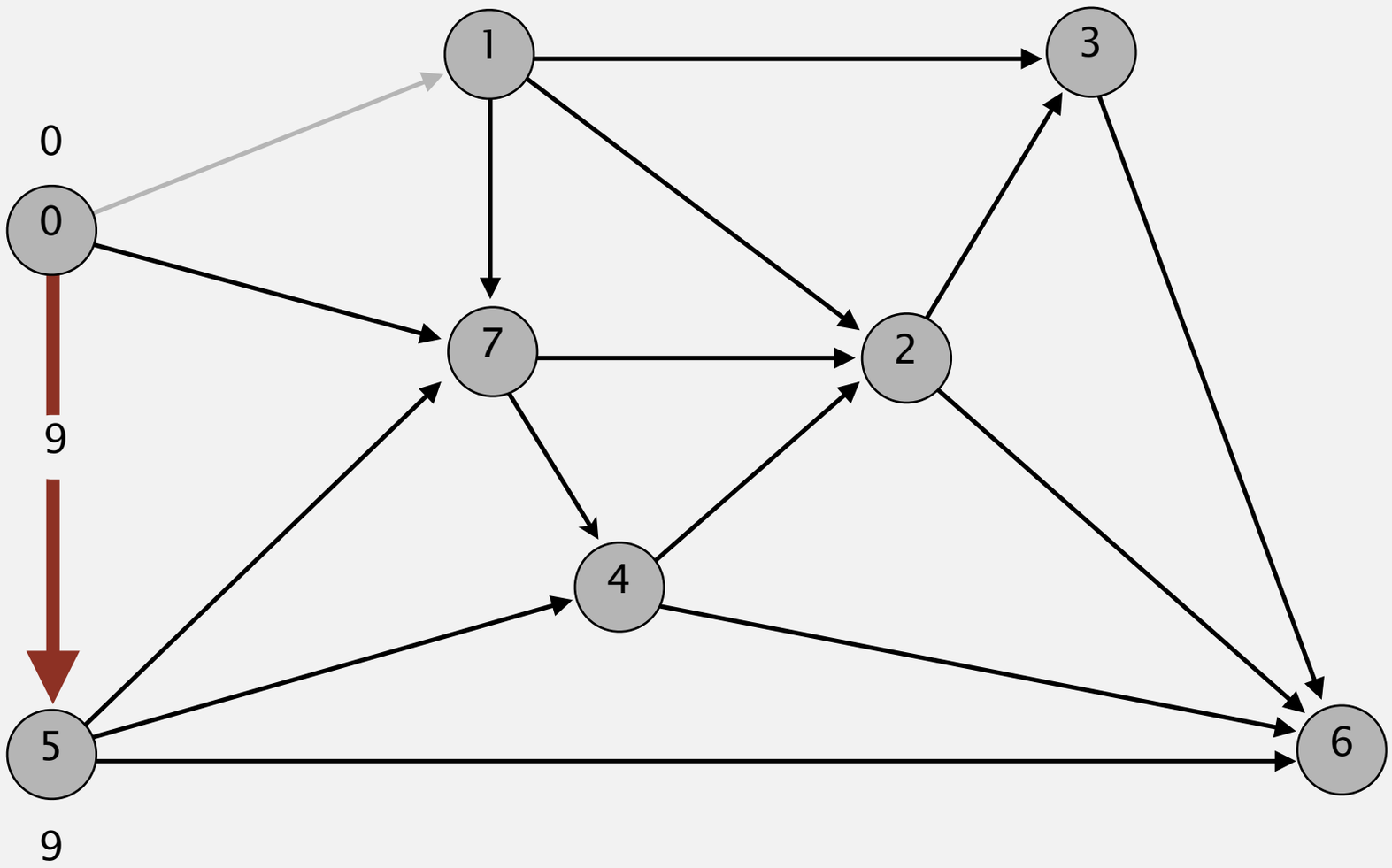
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



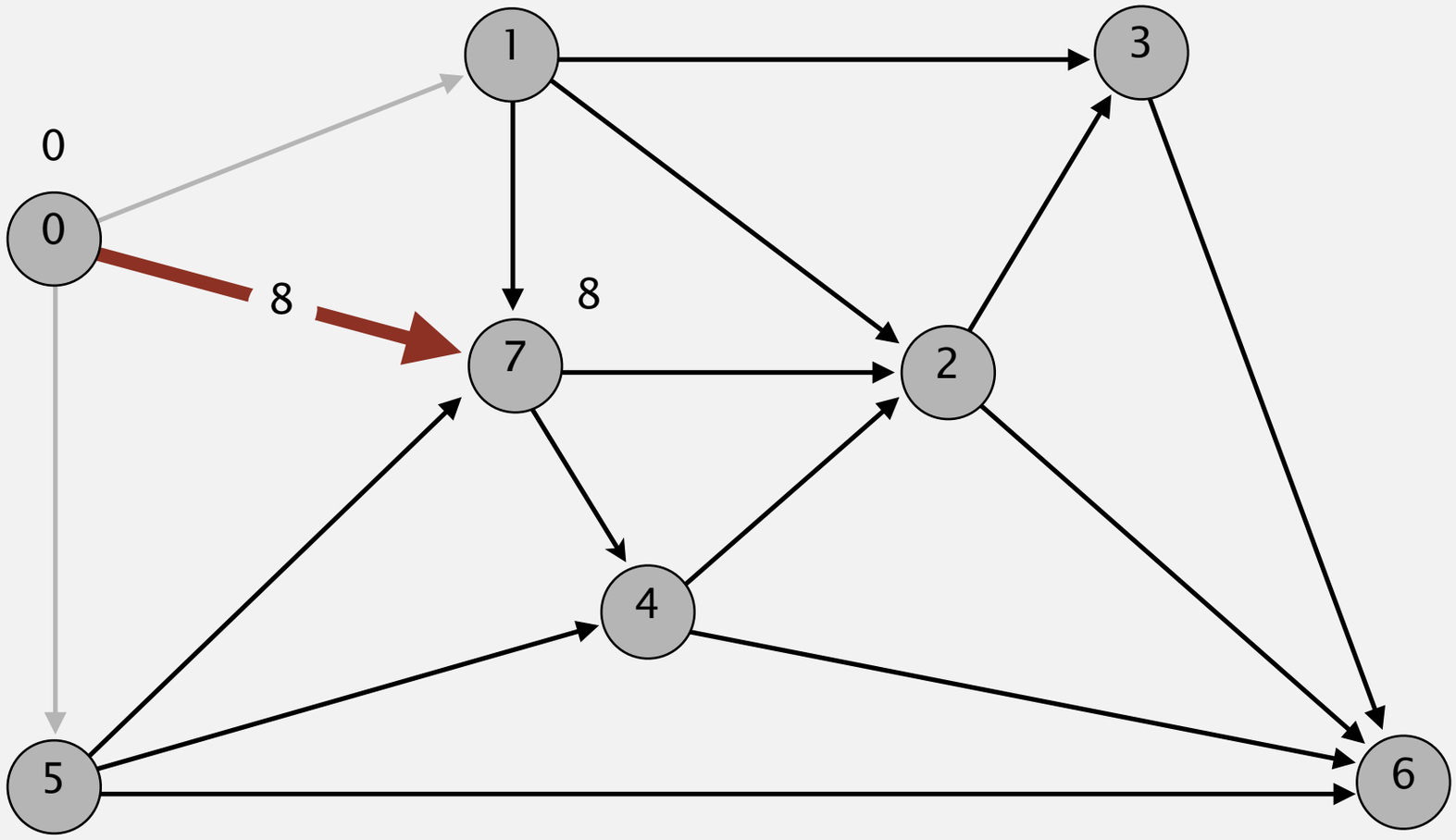
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



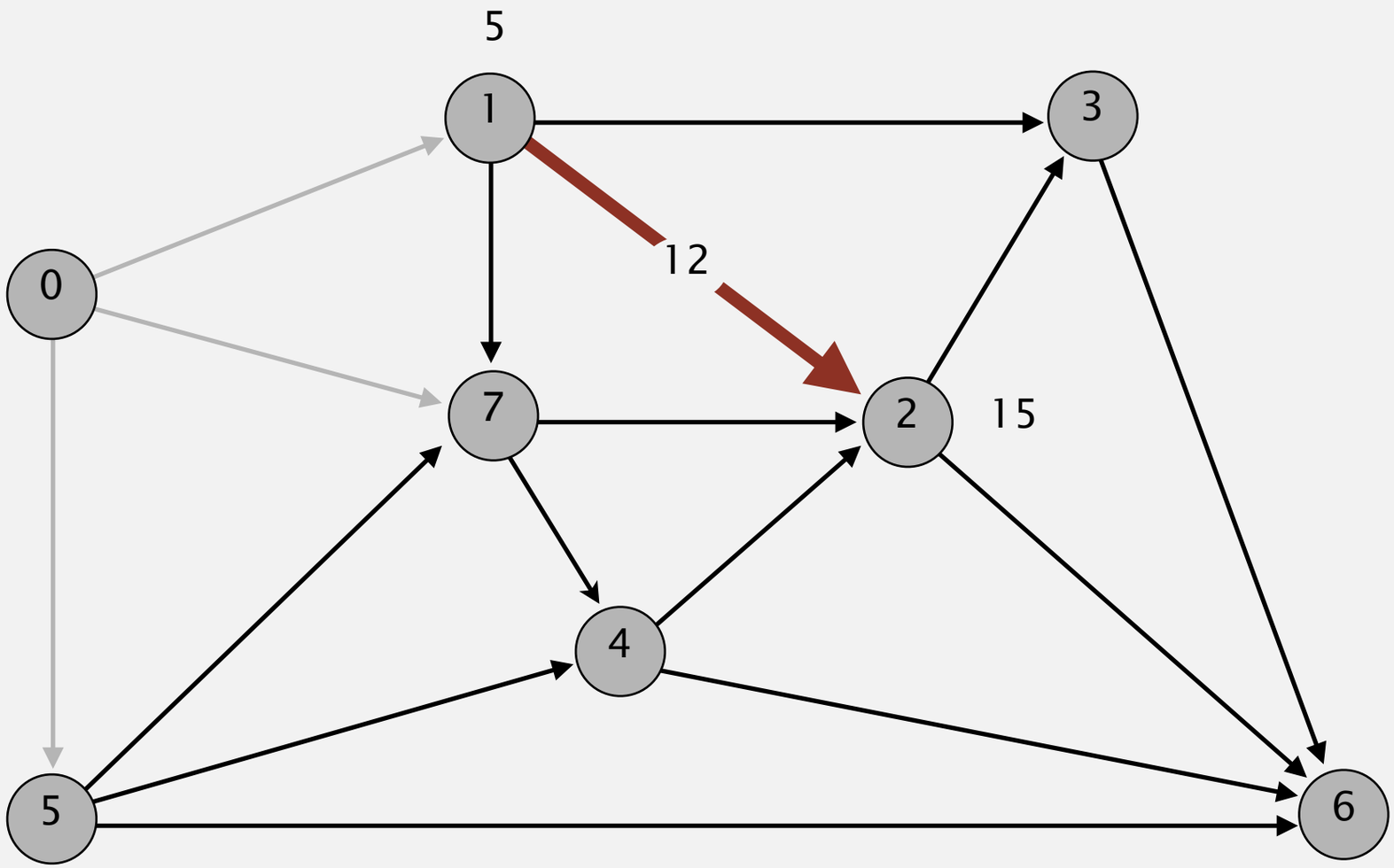
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



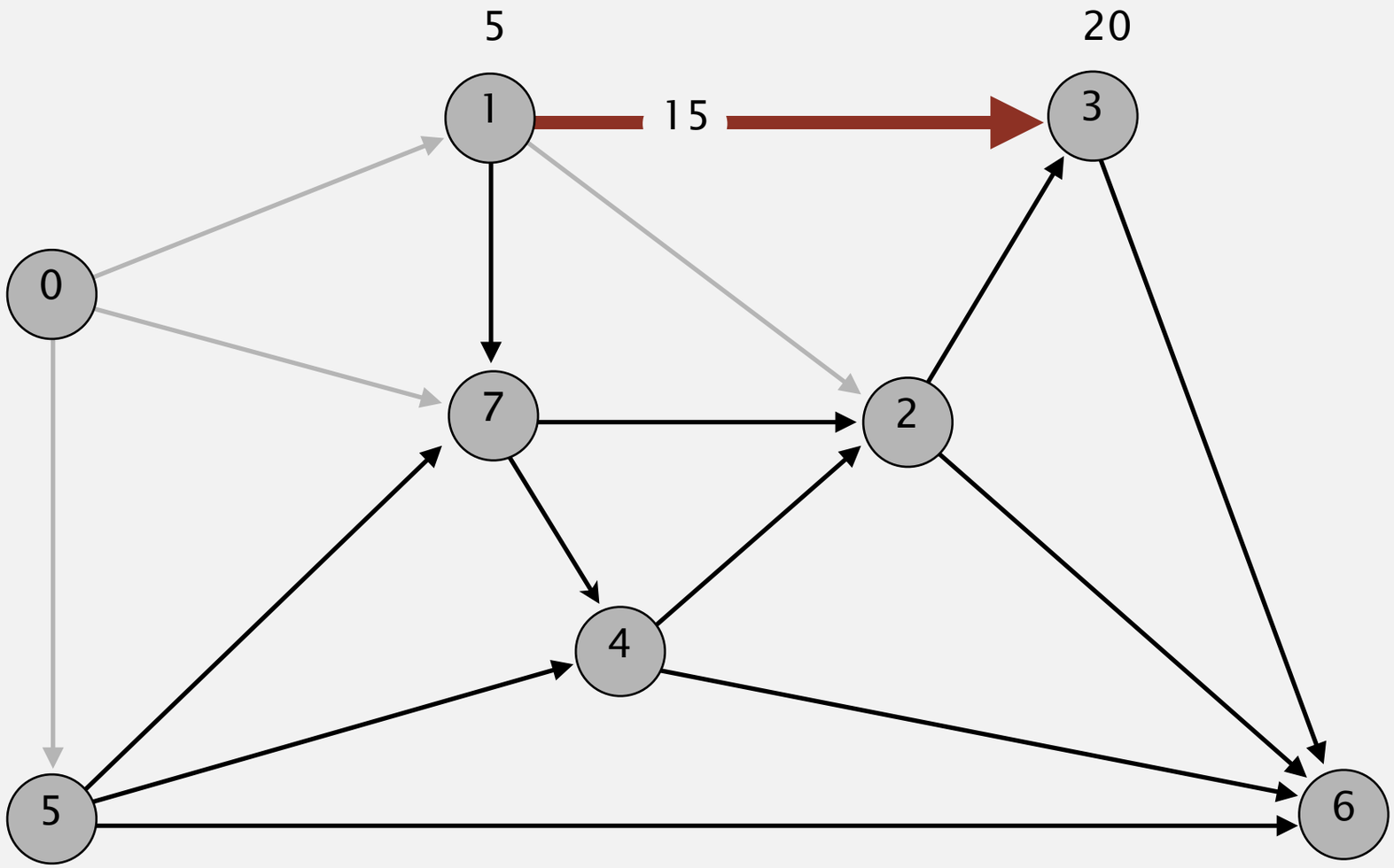
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



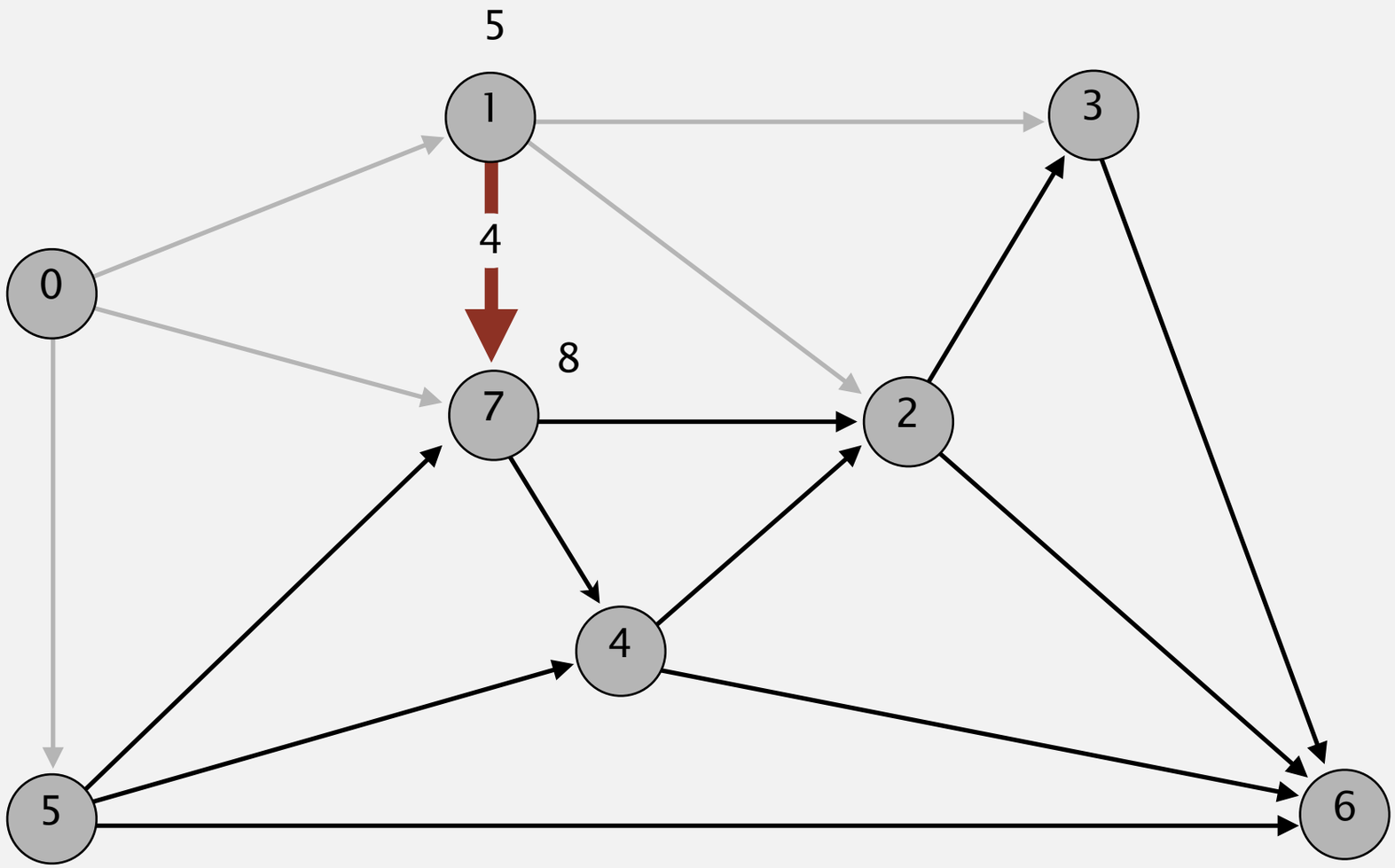
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



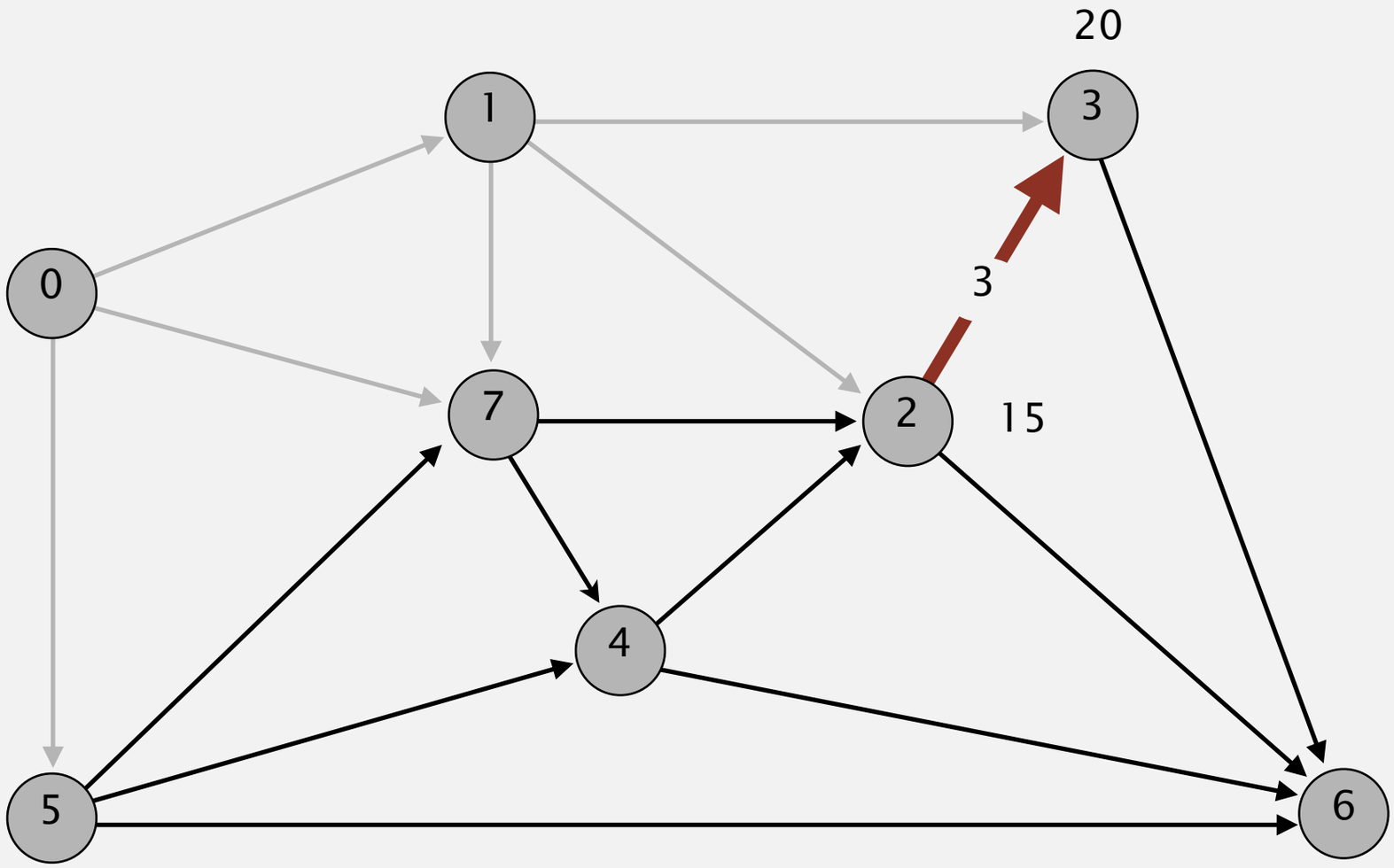
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



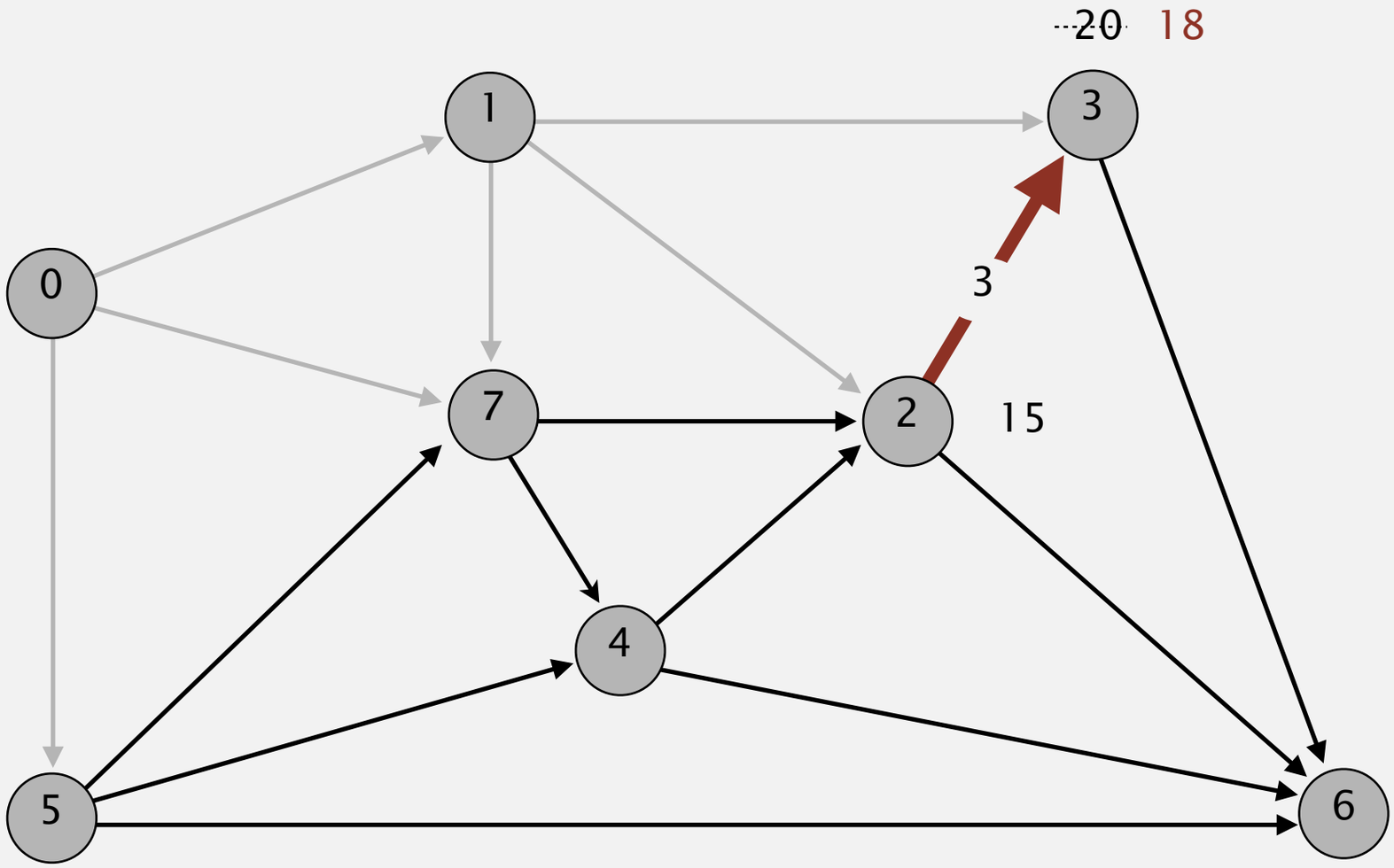
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	20.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



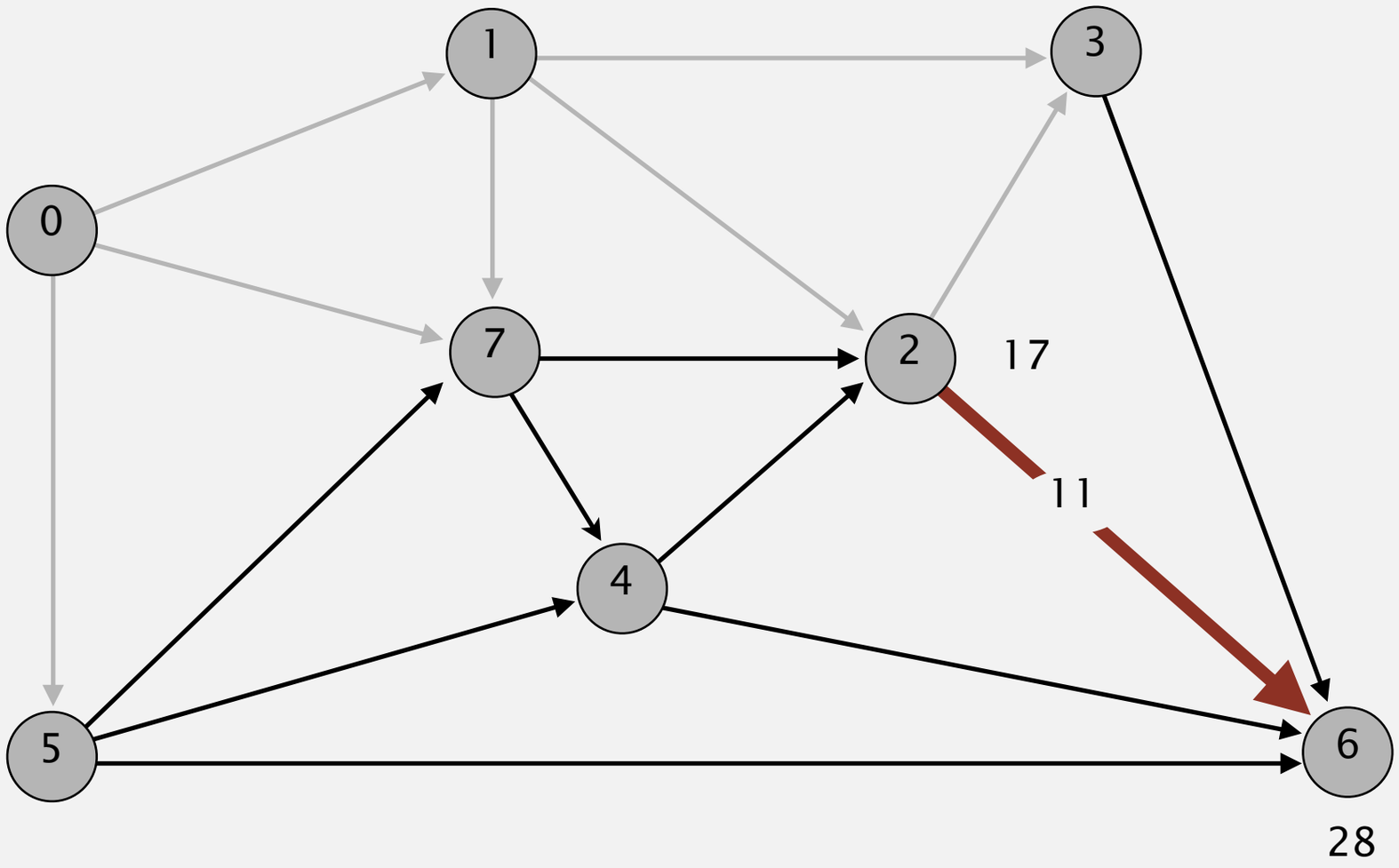
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	18.0	2→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



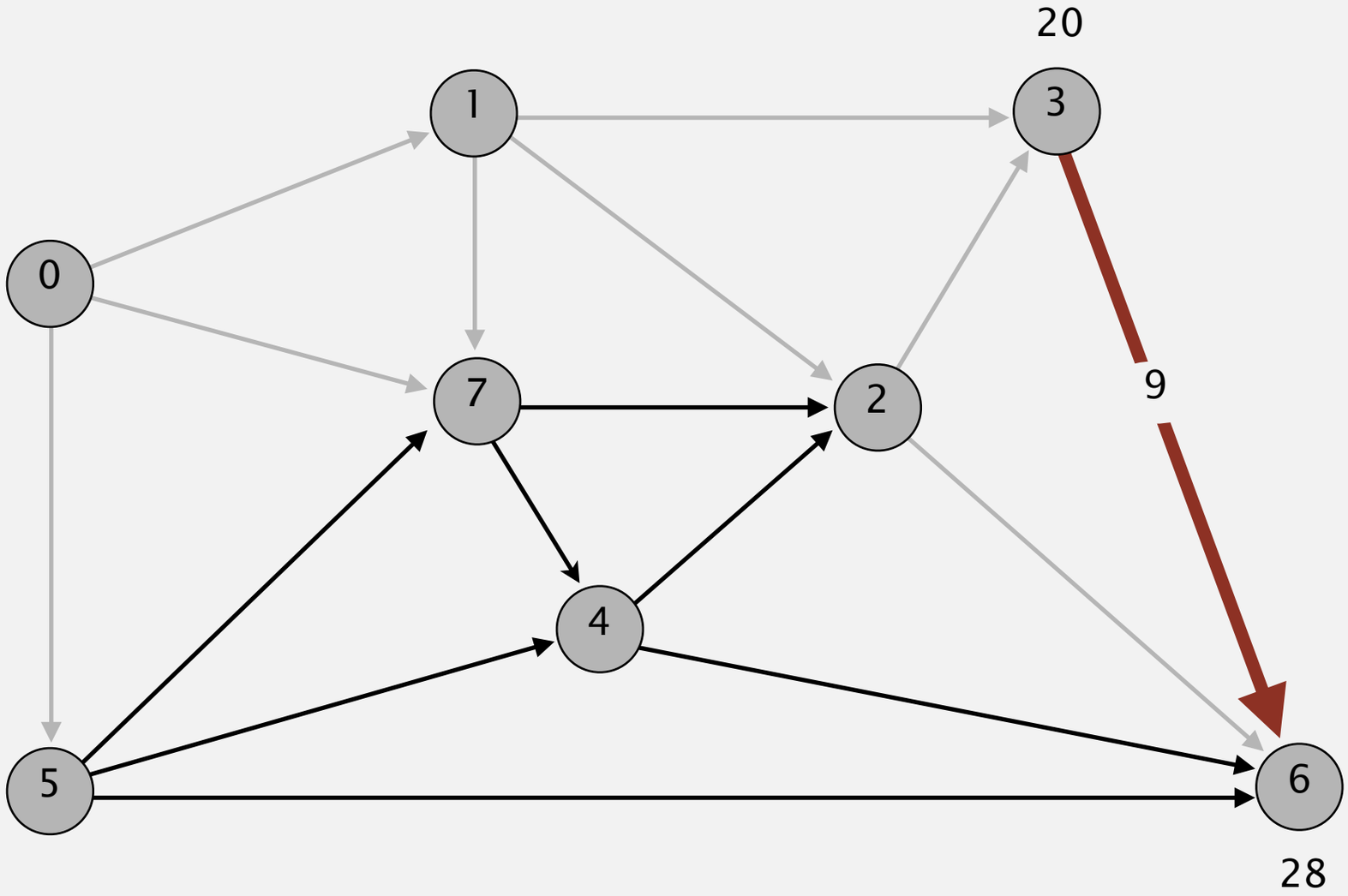
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



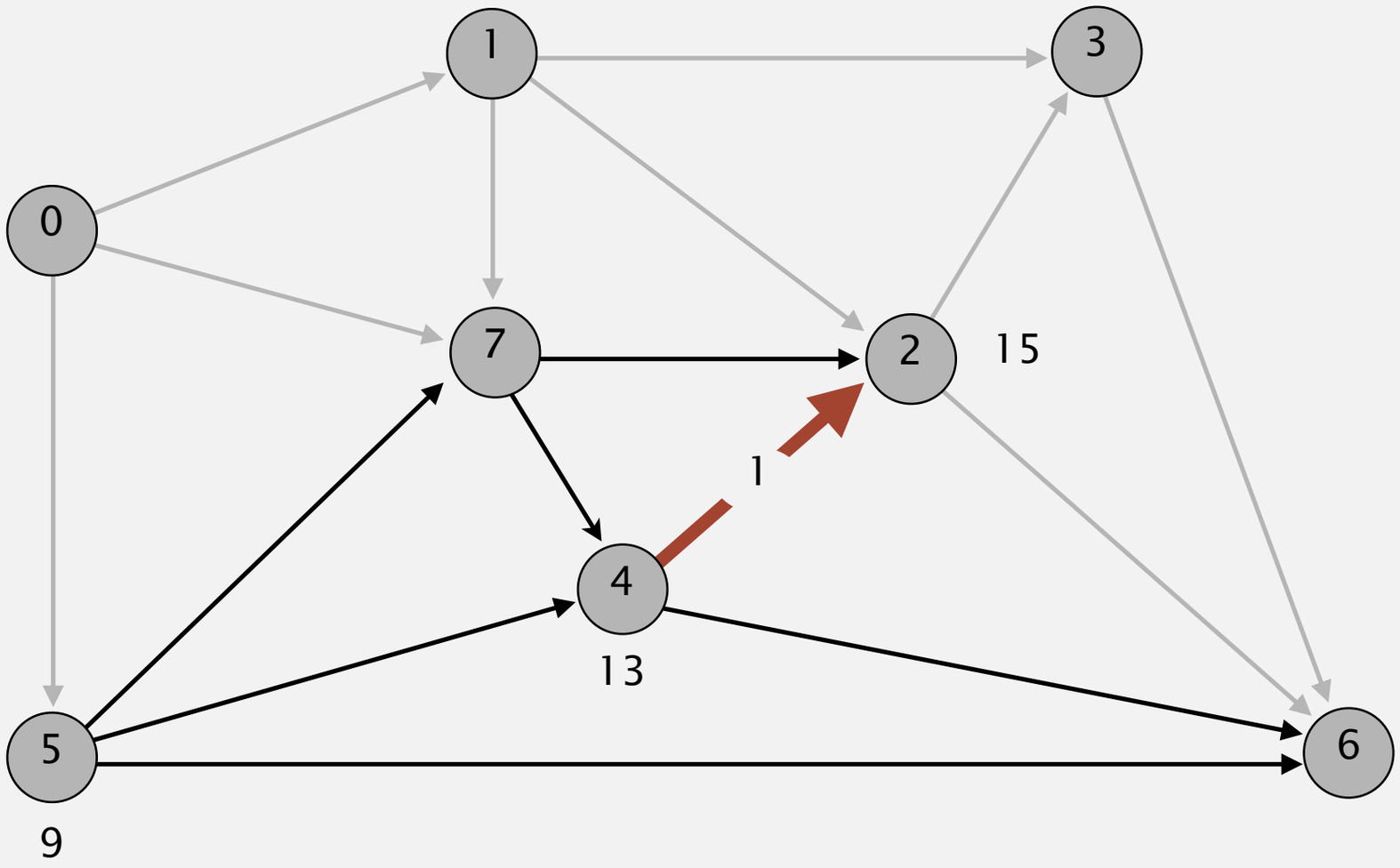
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



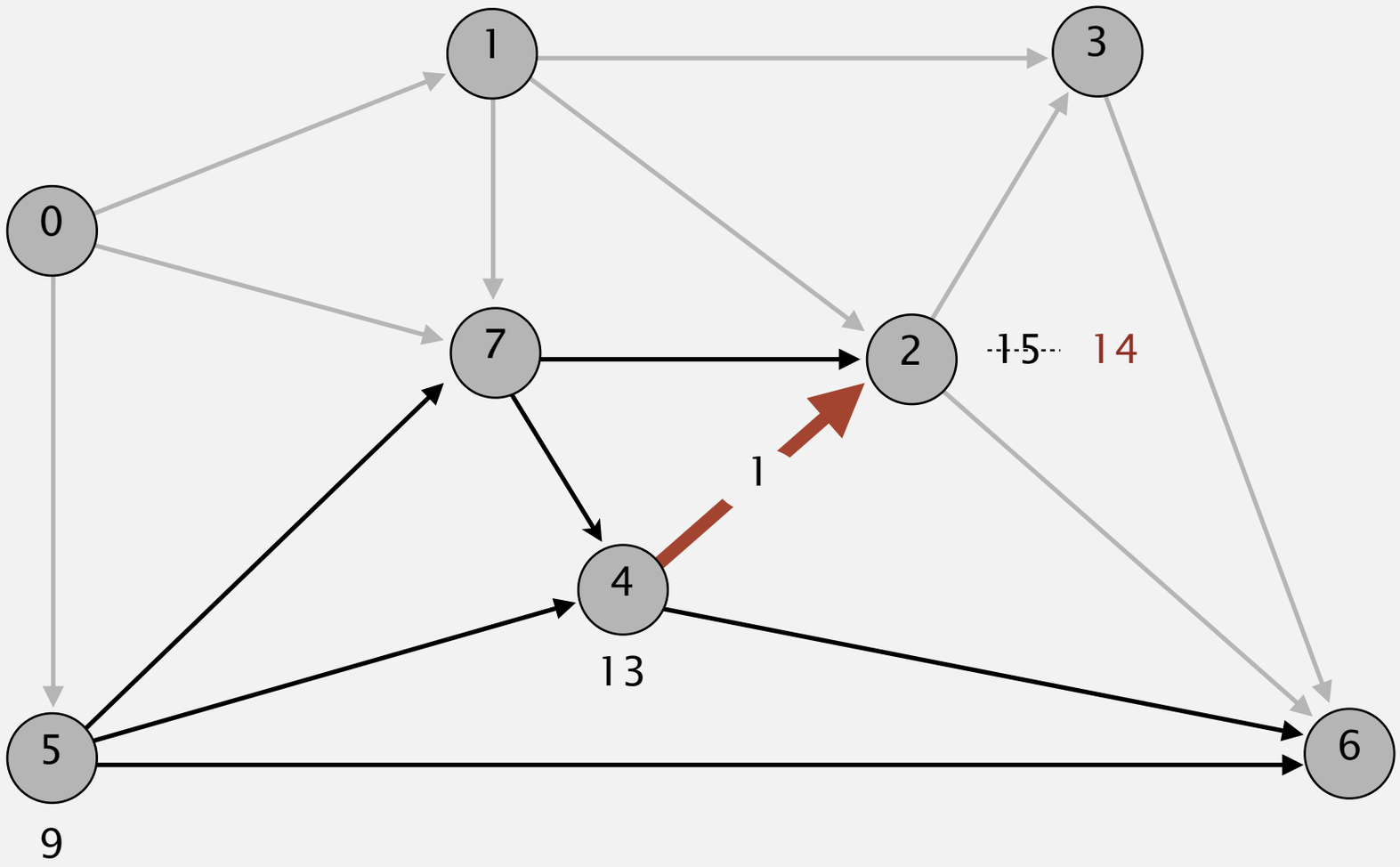
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	15.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



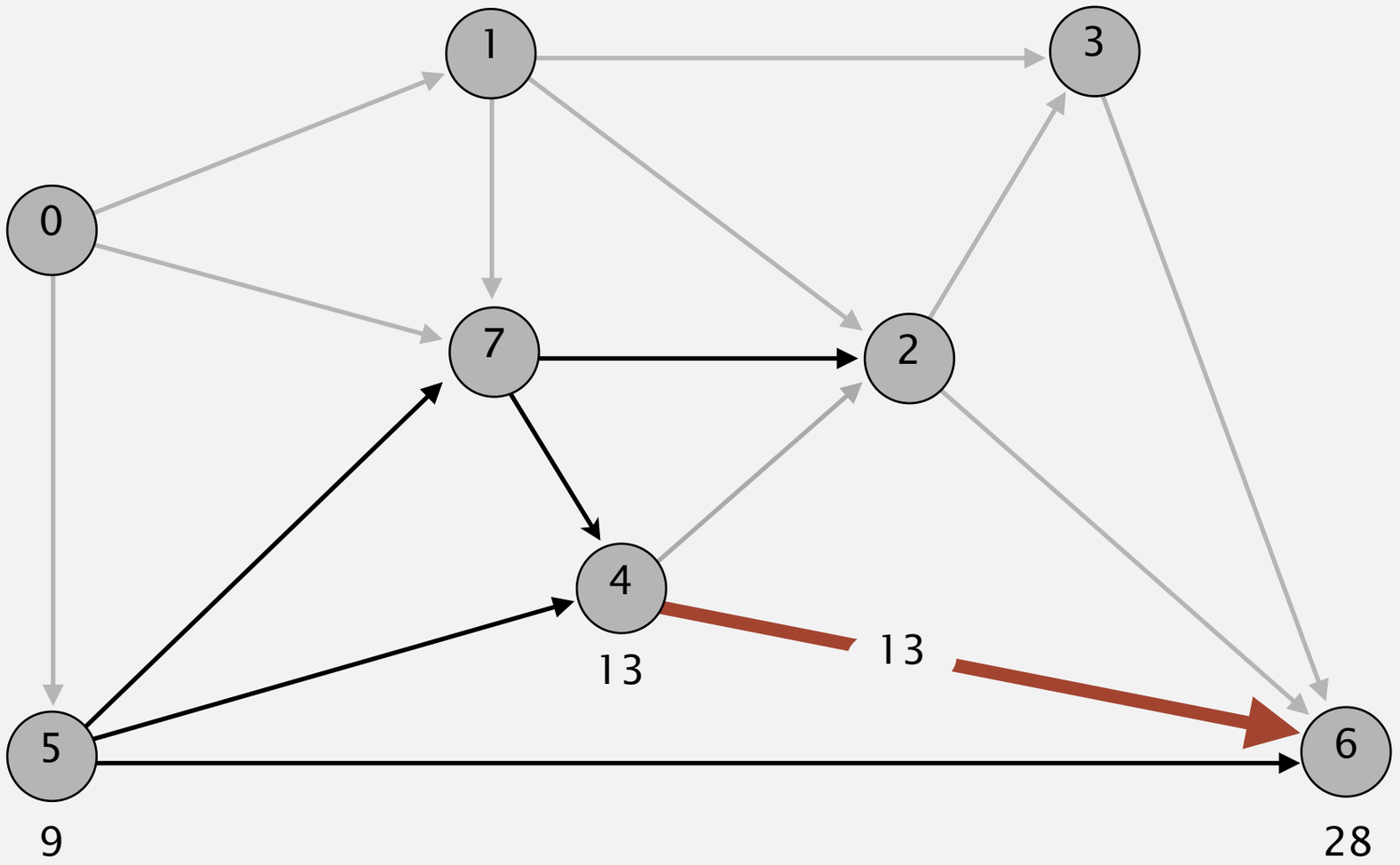
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	4→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



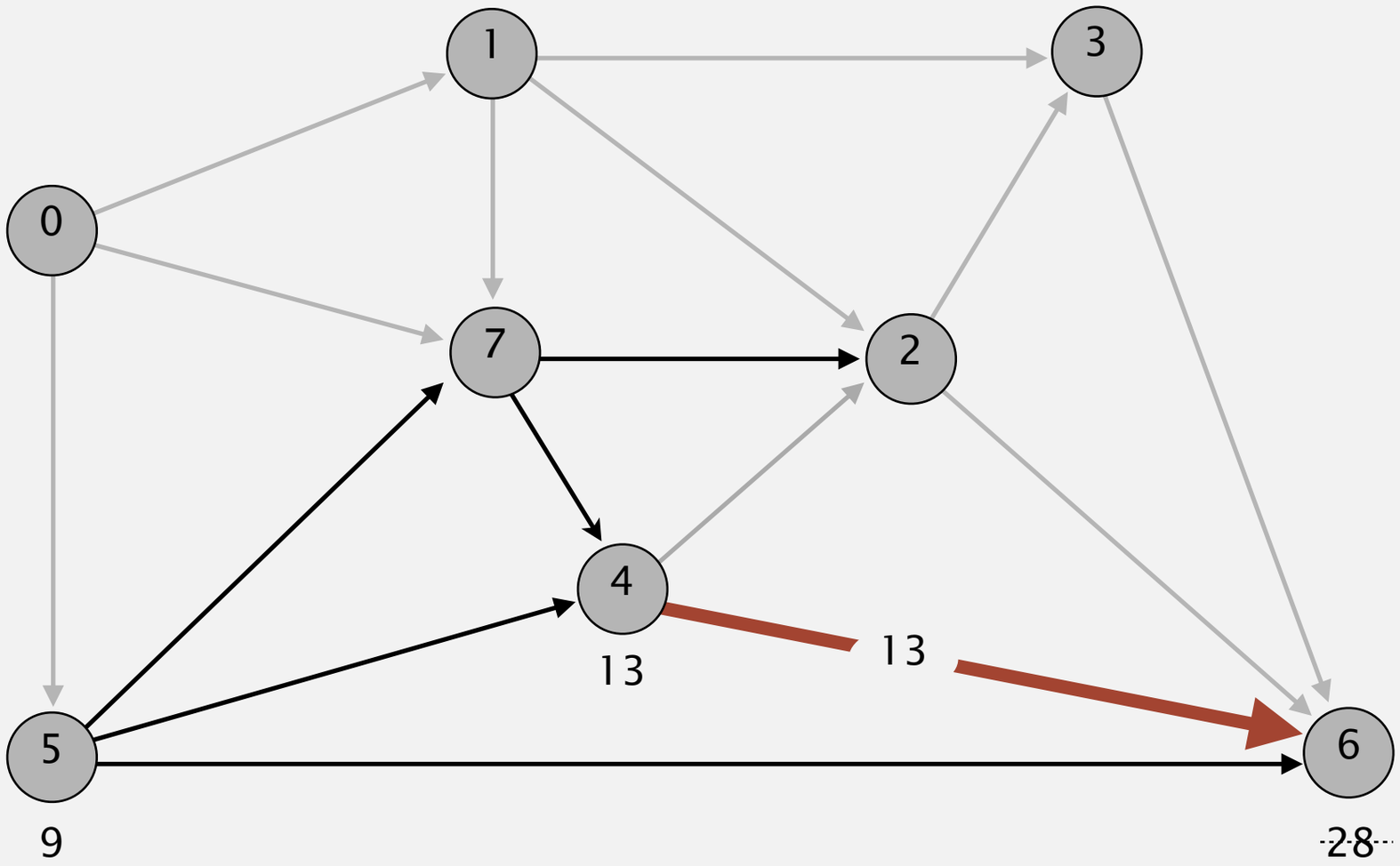
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	28.0	2→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



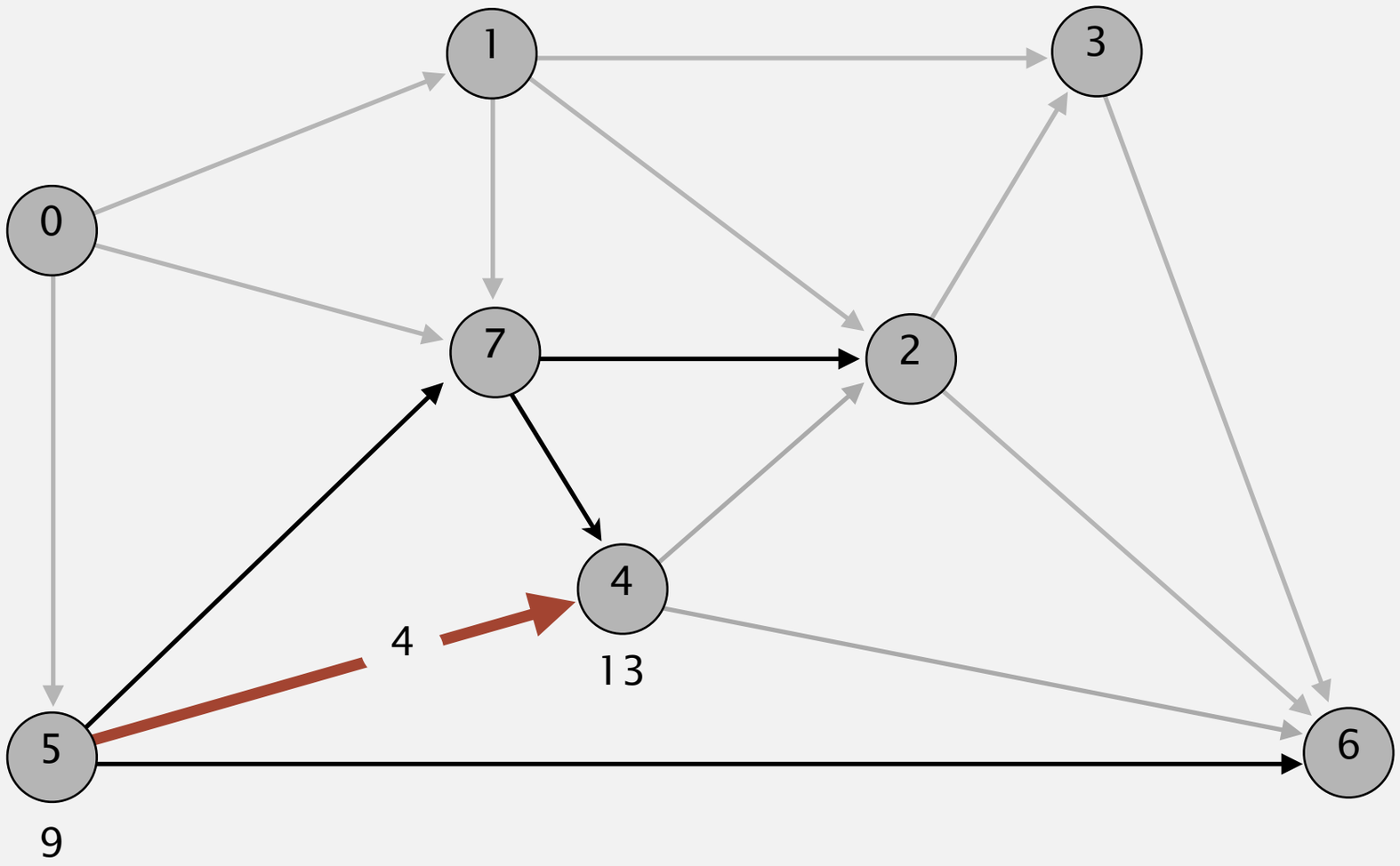
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



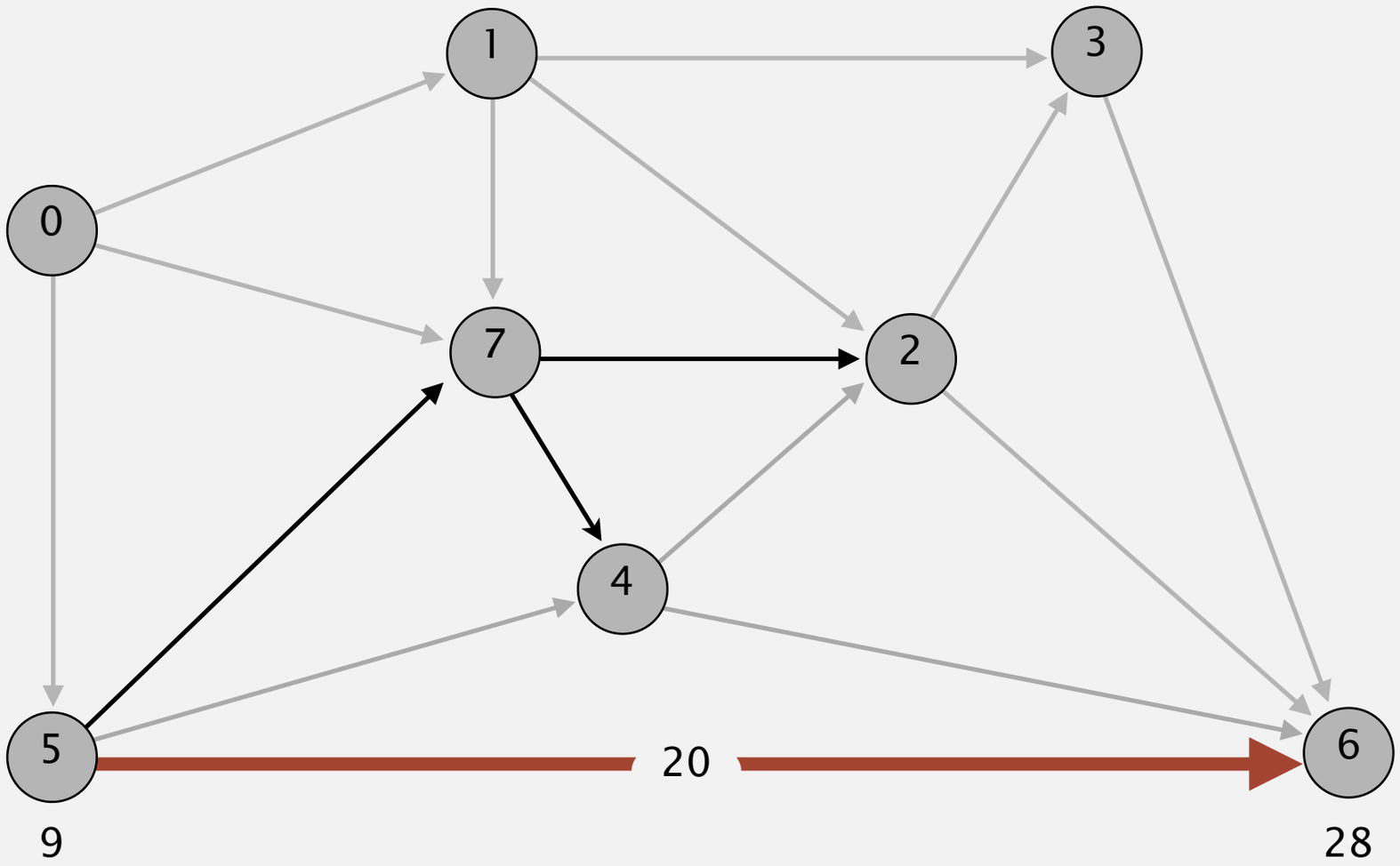
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



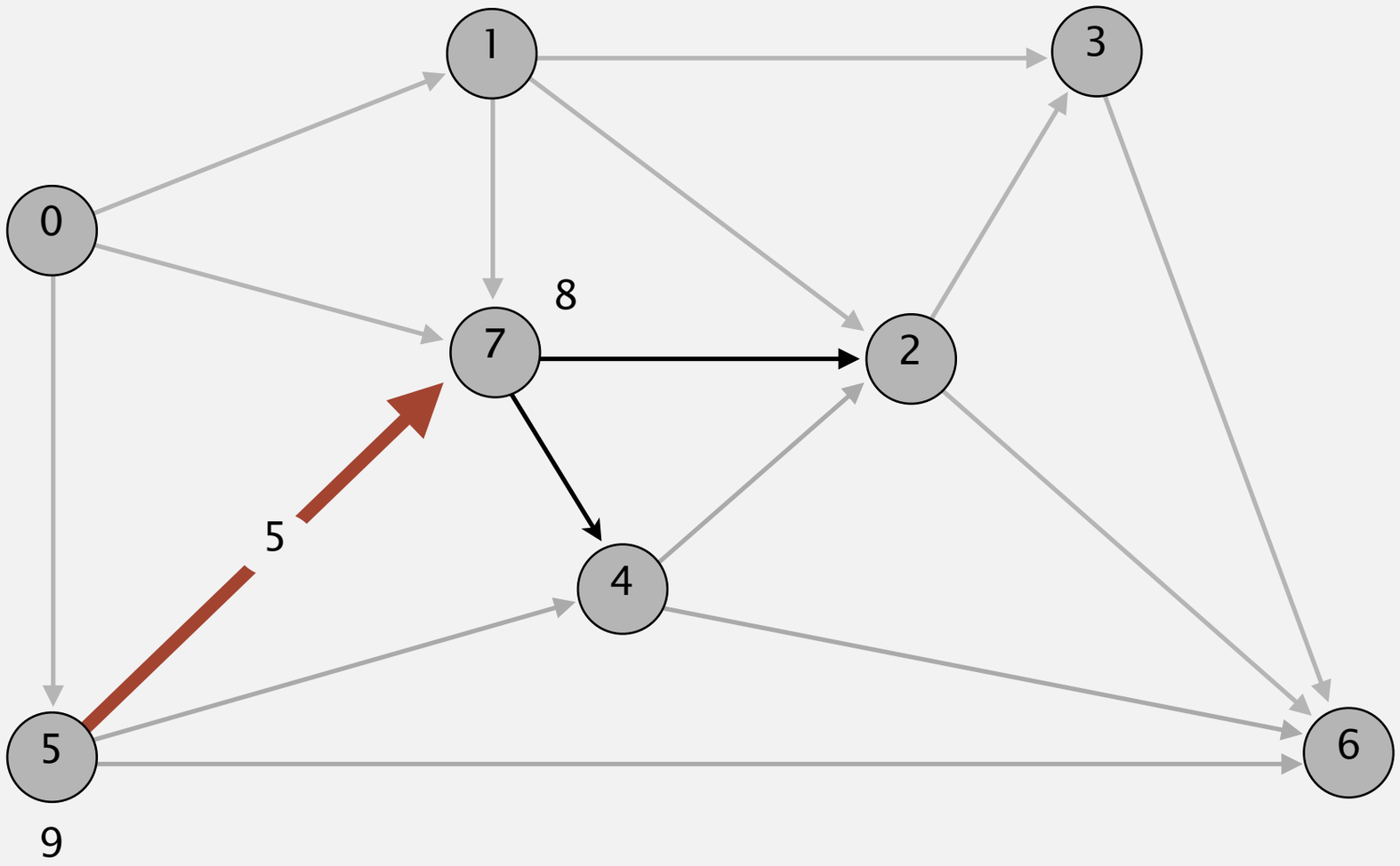
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



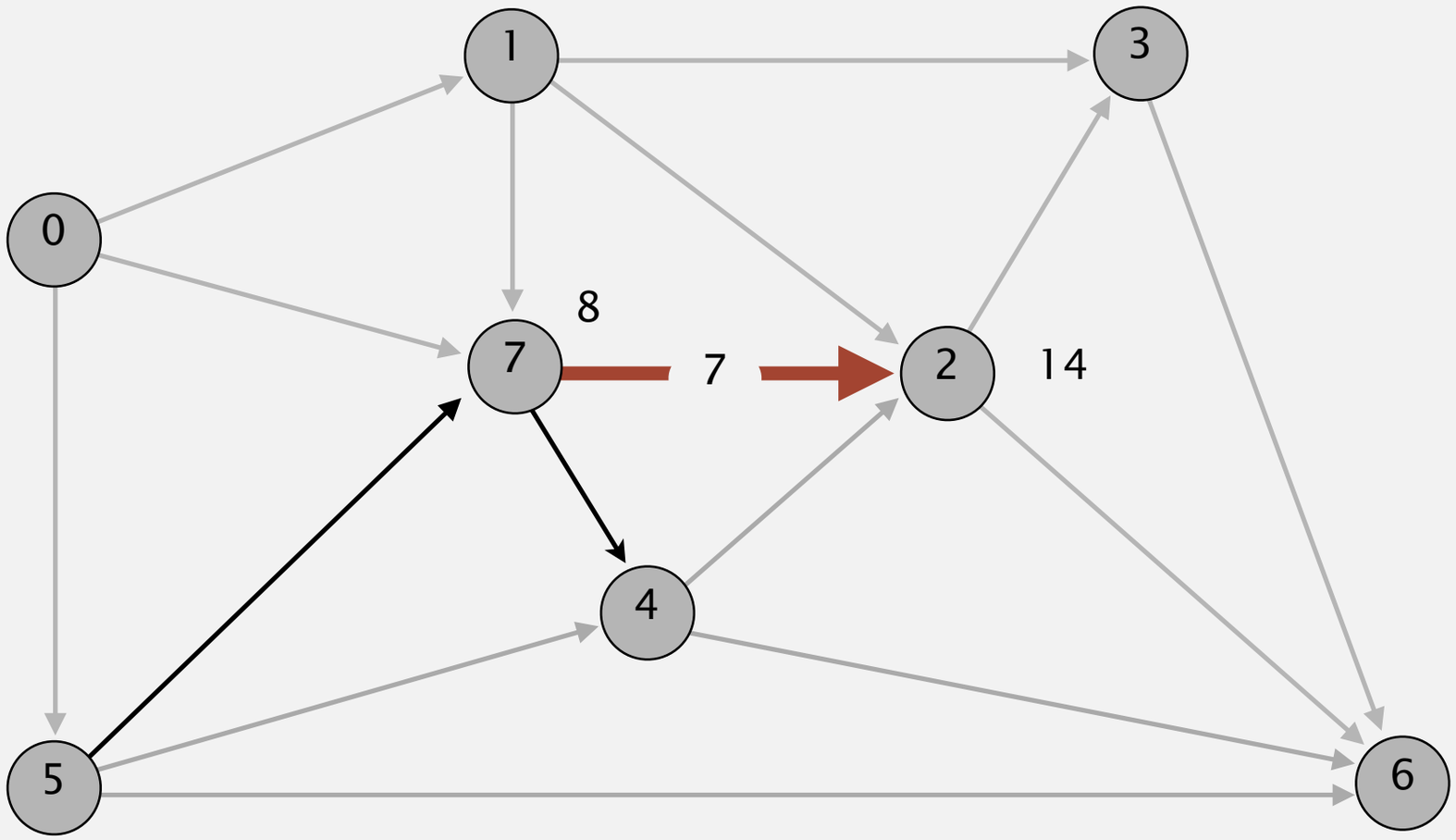
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



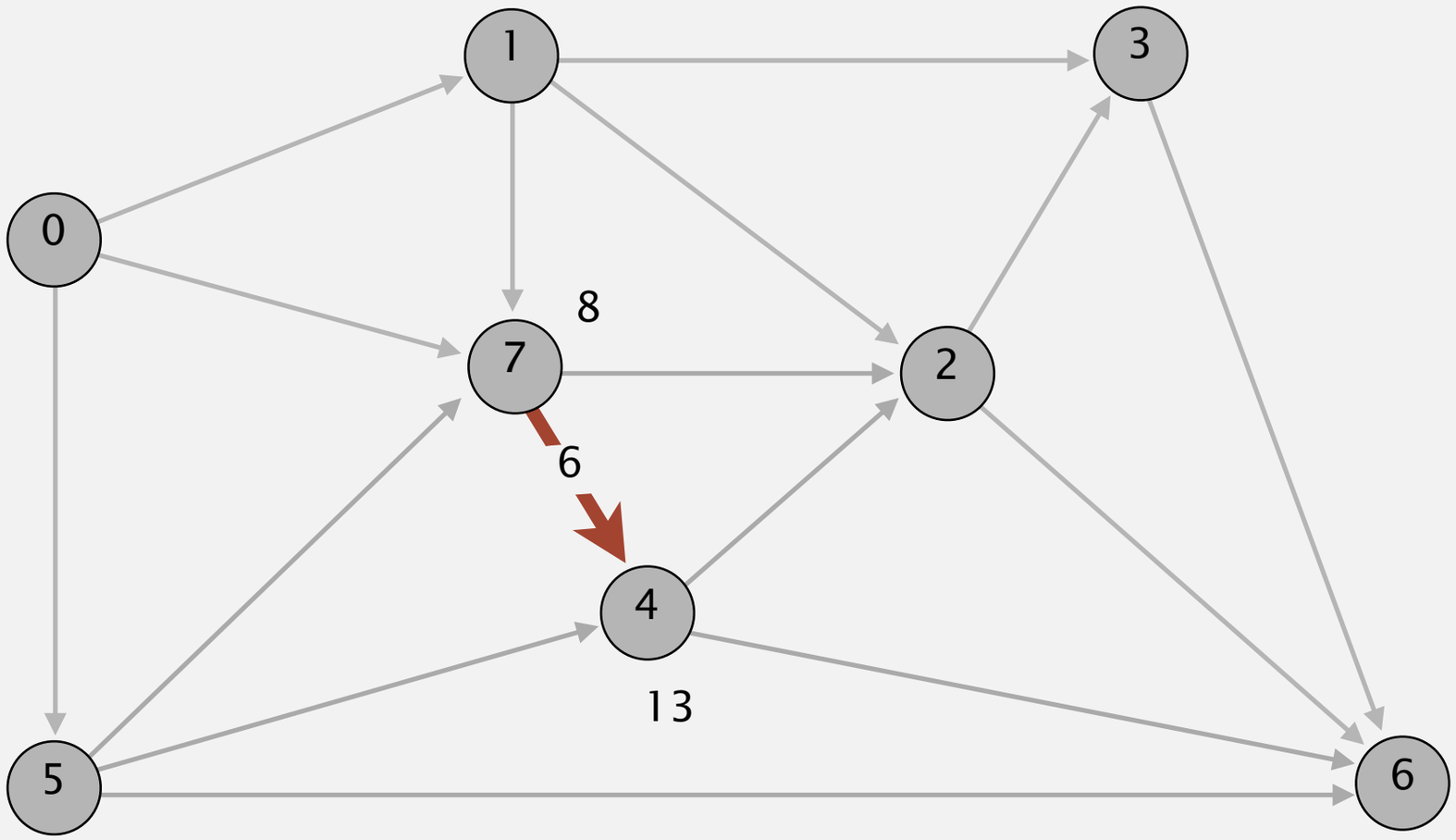
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



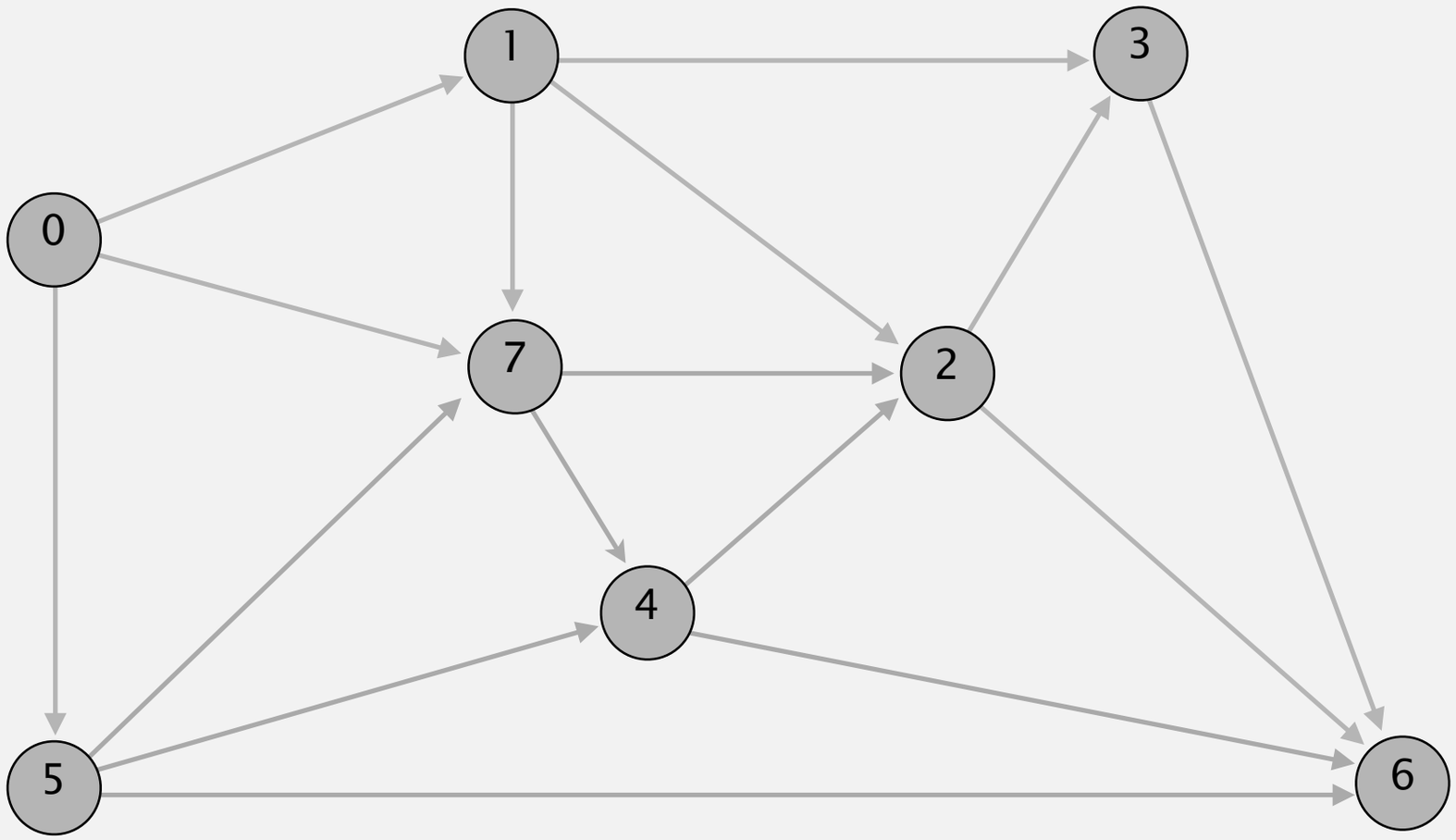
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



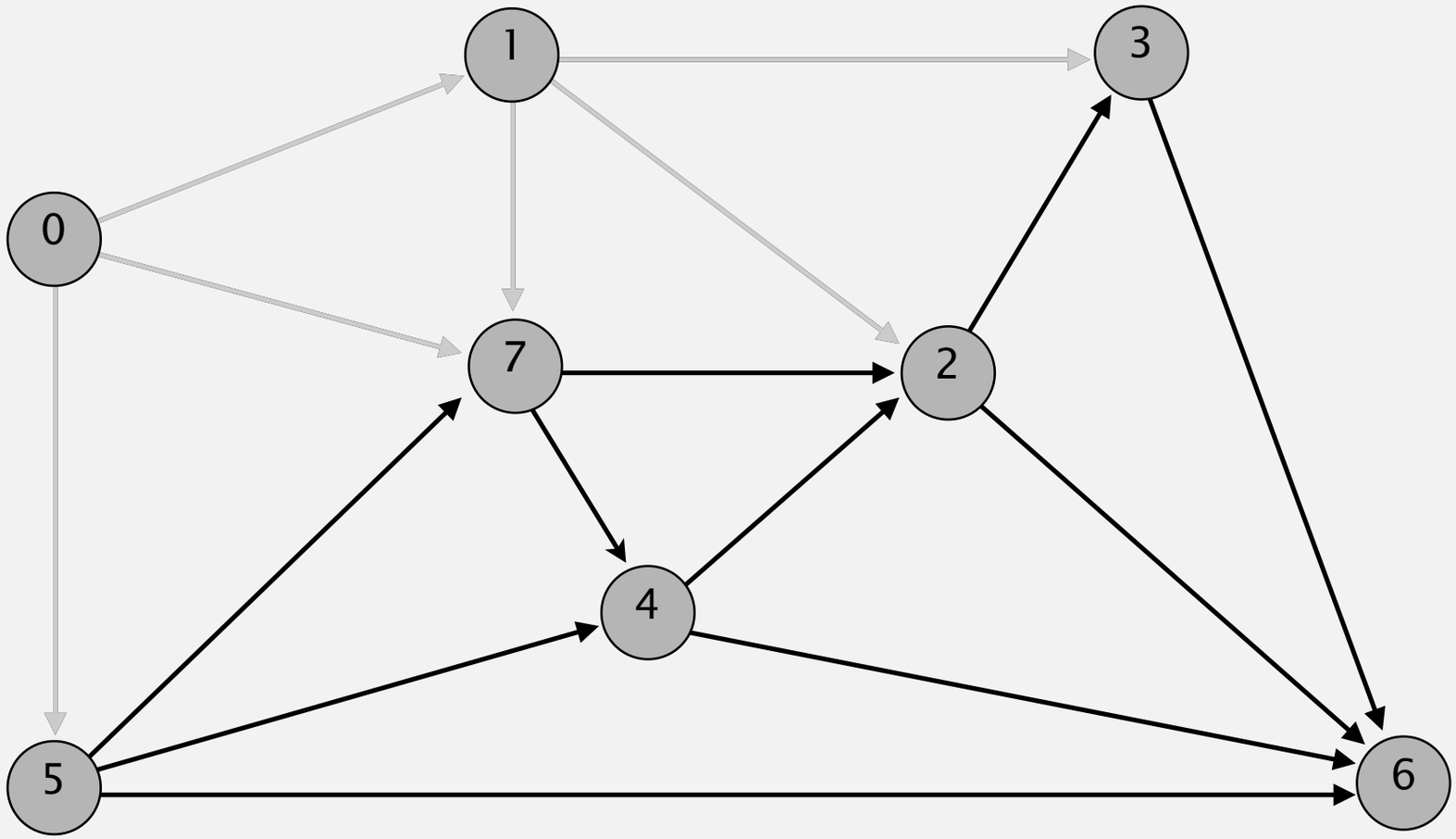
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 2

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



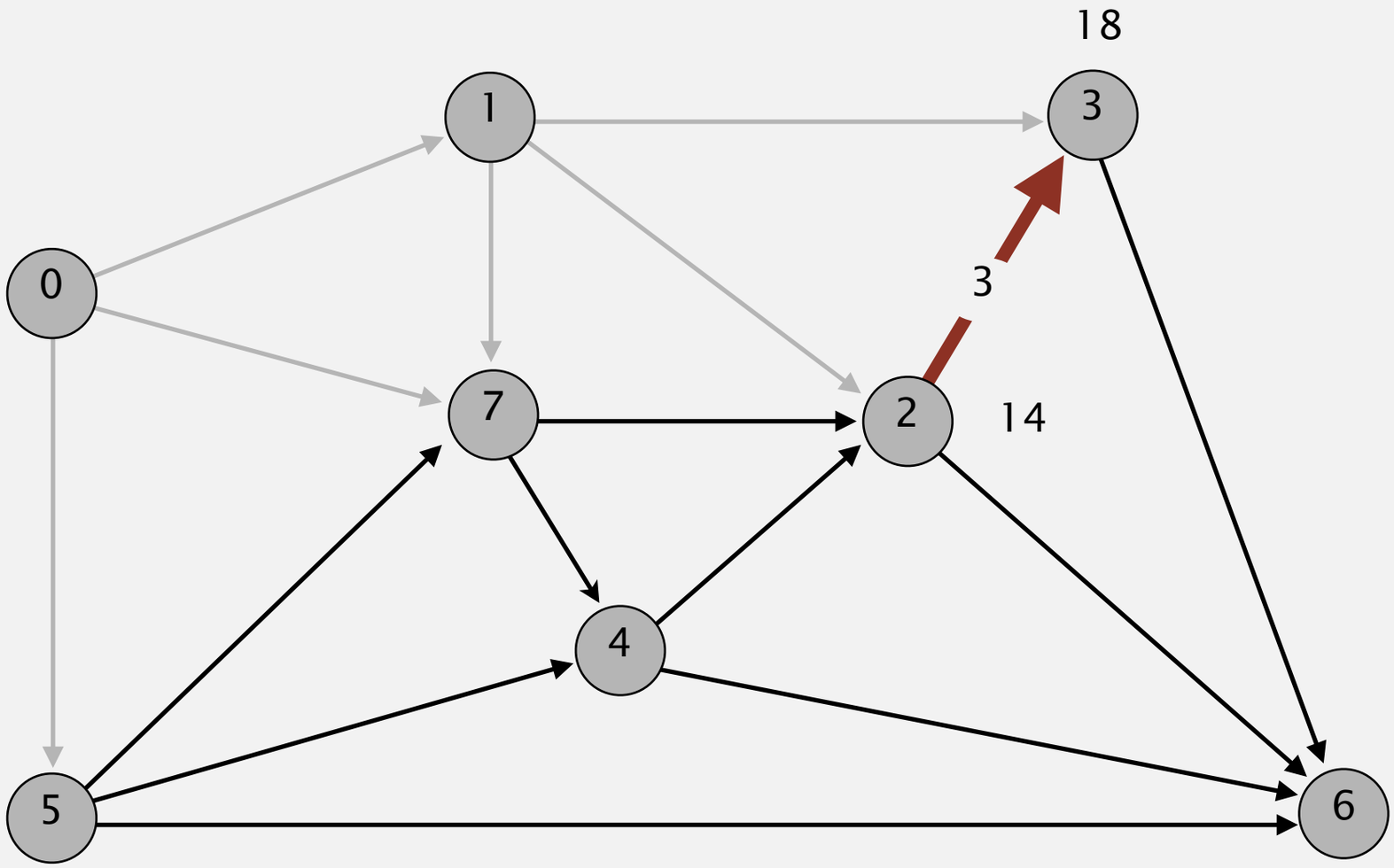
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



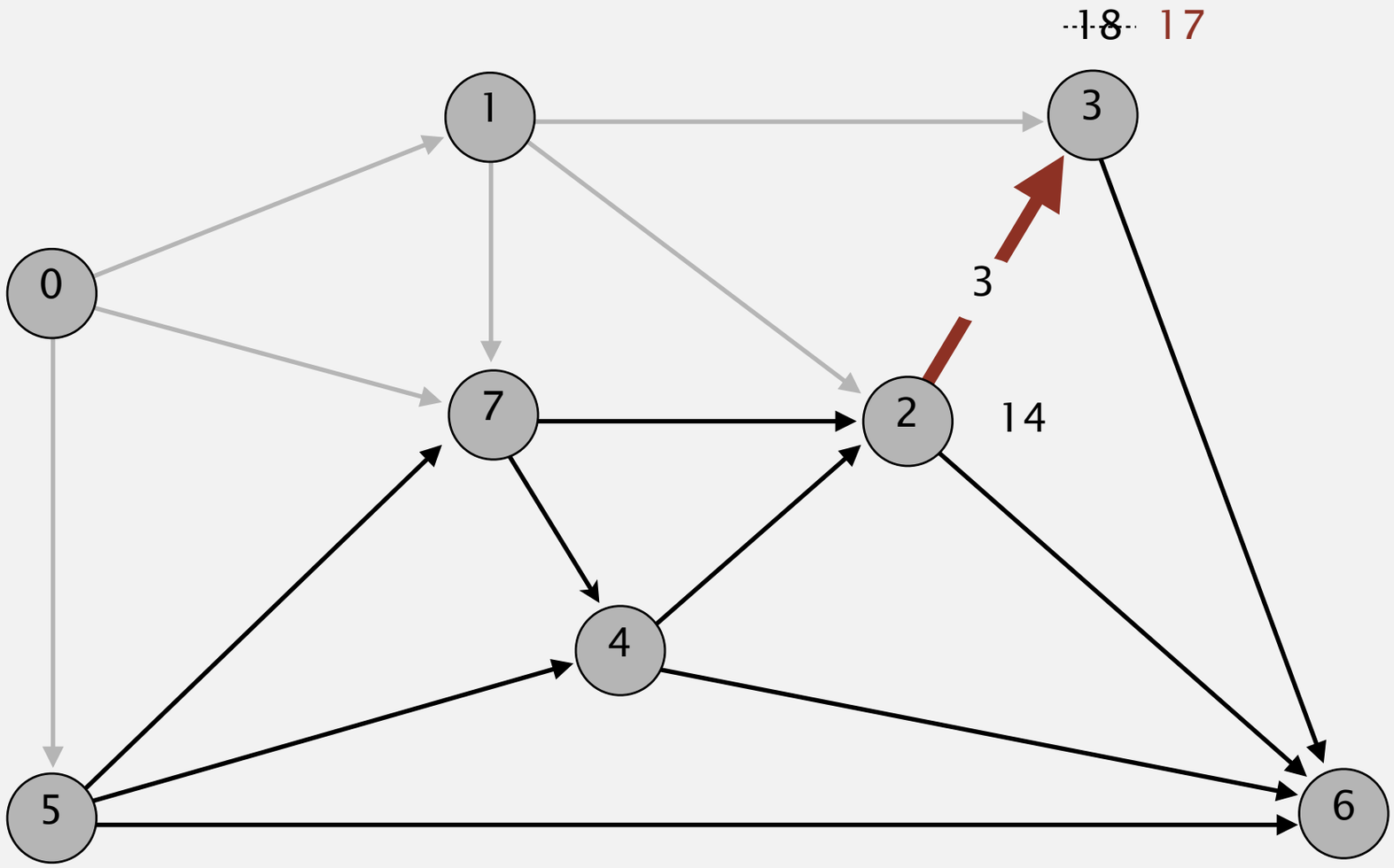
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	18.0	1→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



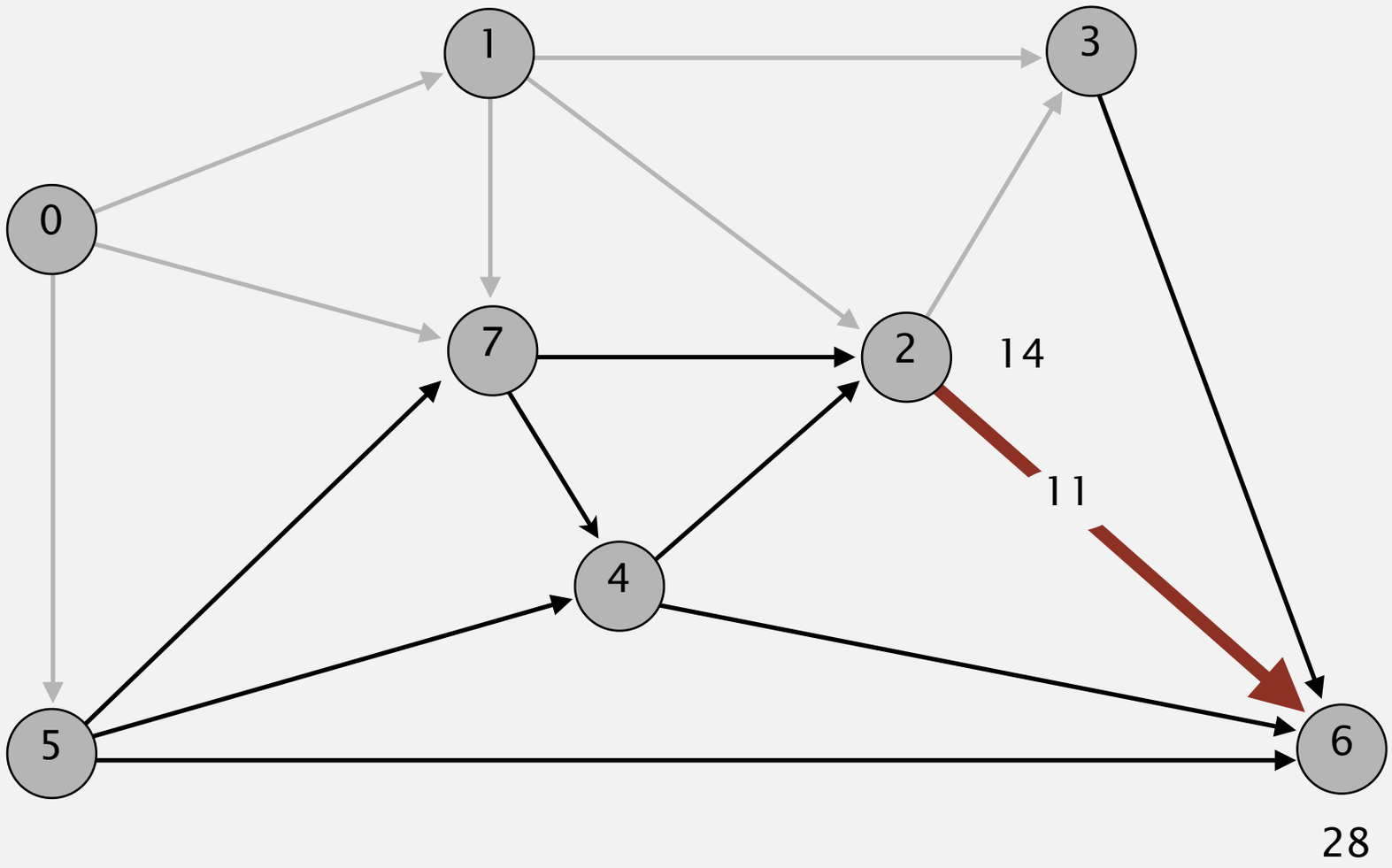
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



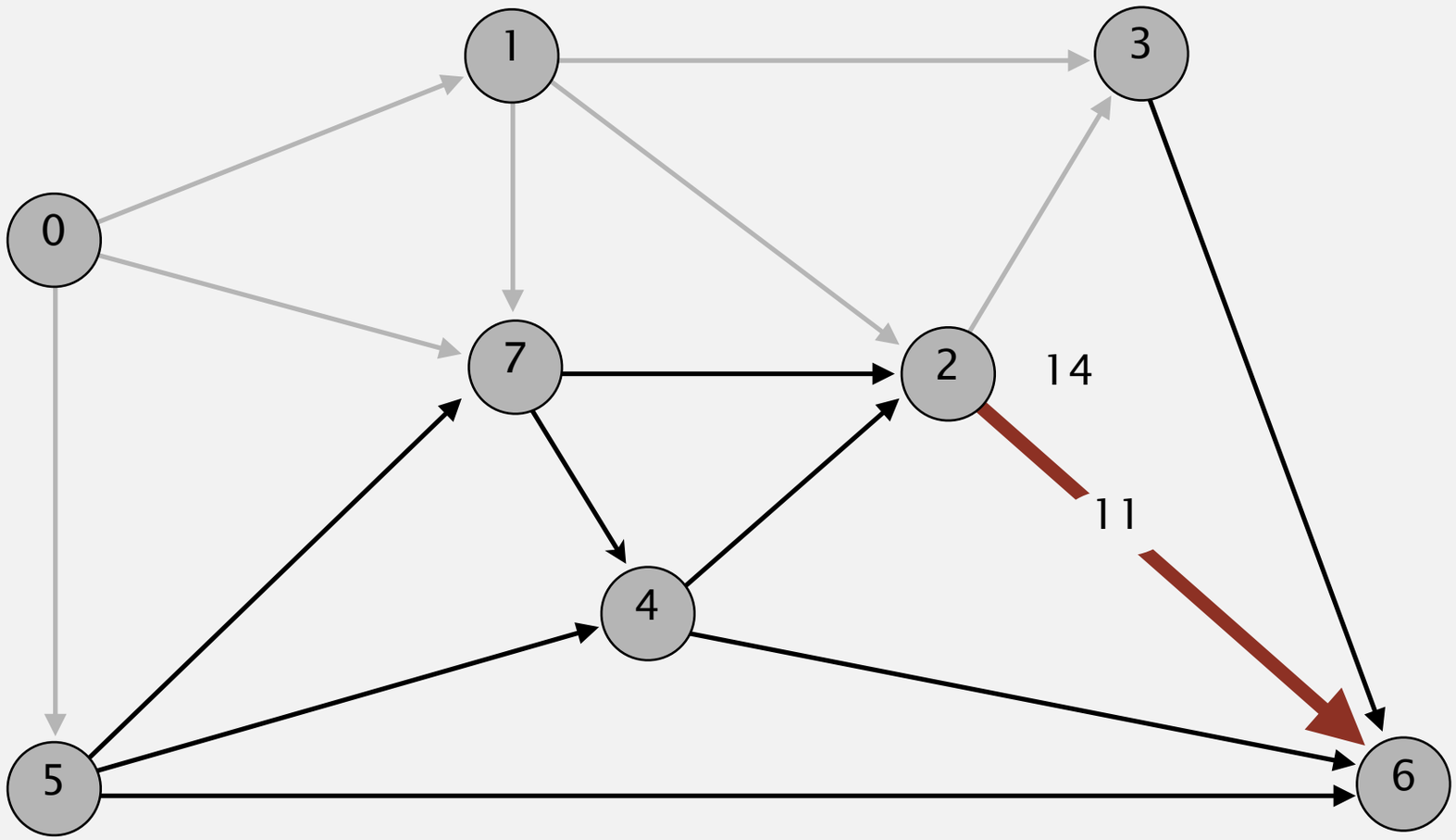
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	26.0	4→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman-Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



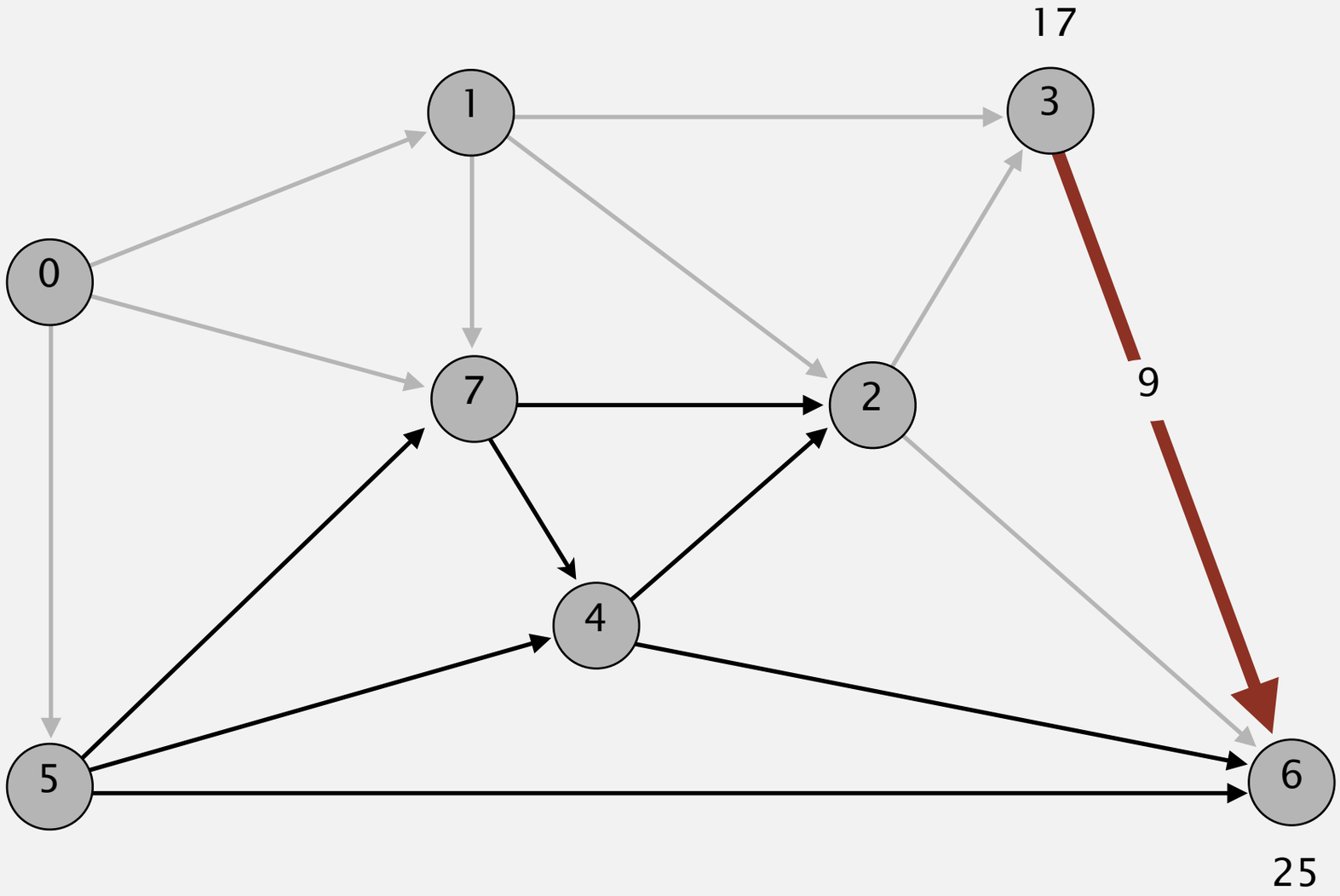
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	25.0	2→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



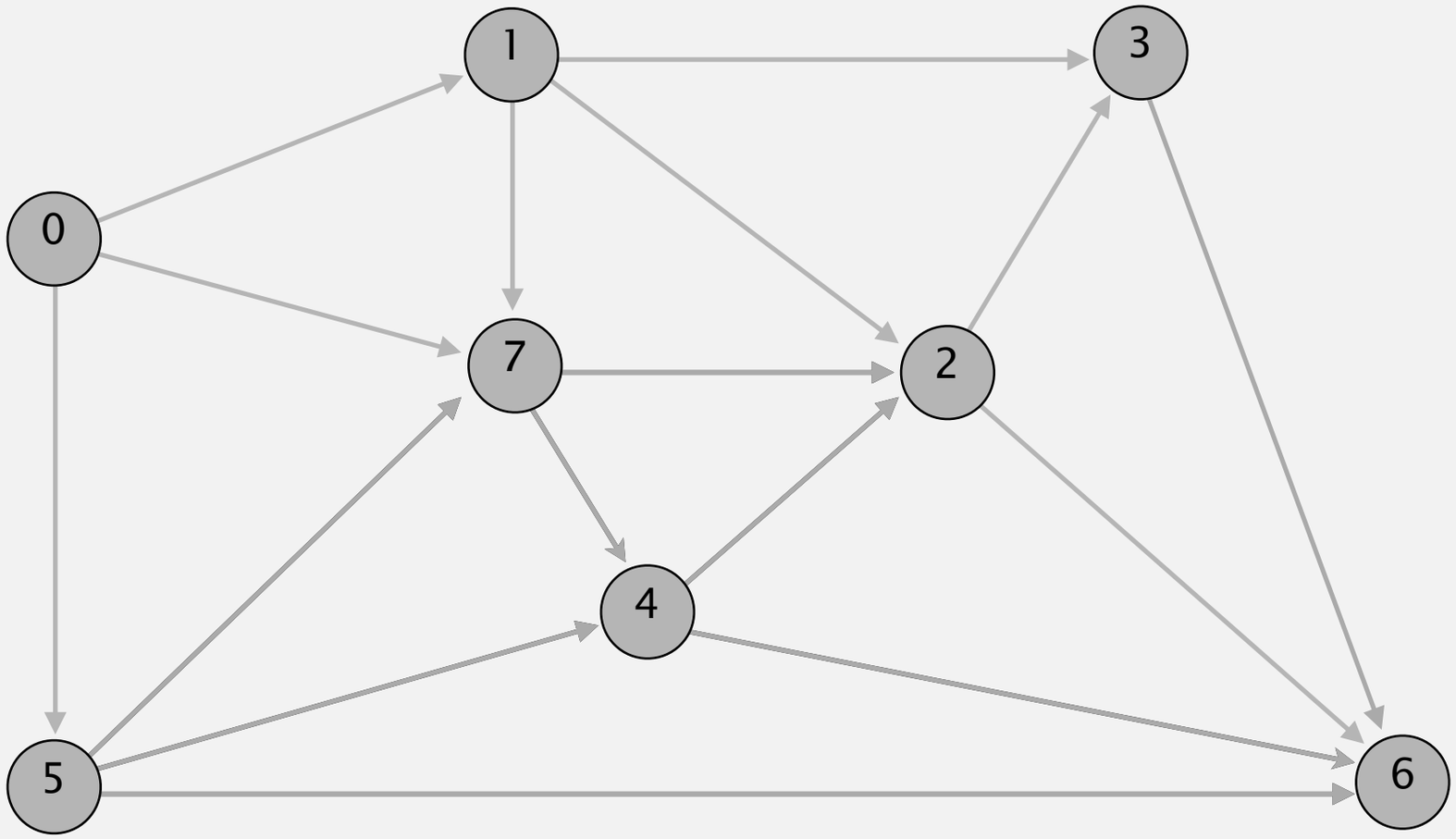
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	25.0	2→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



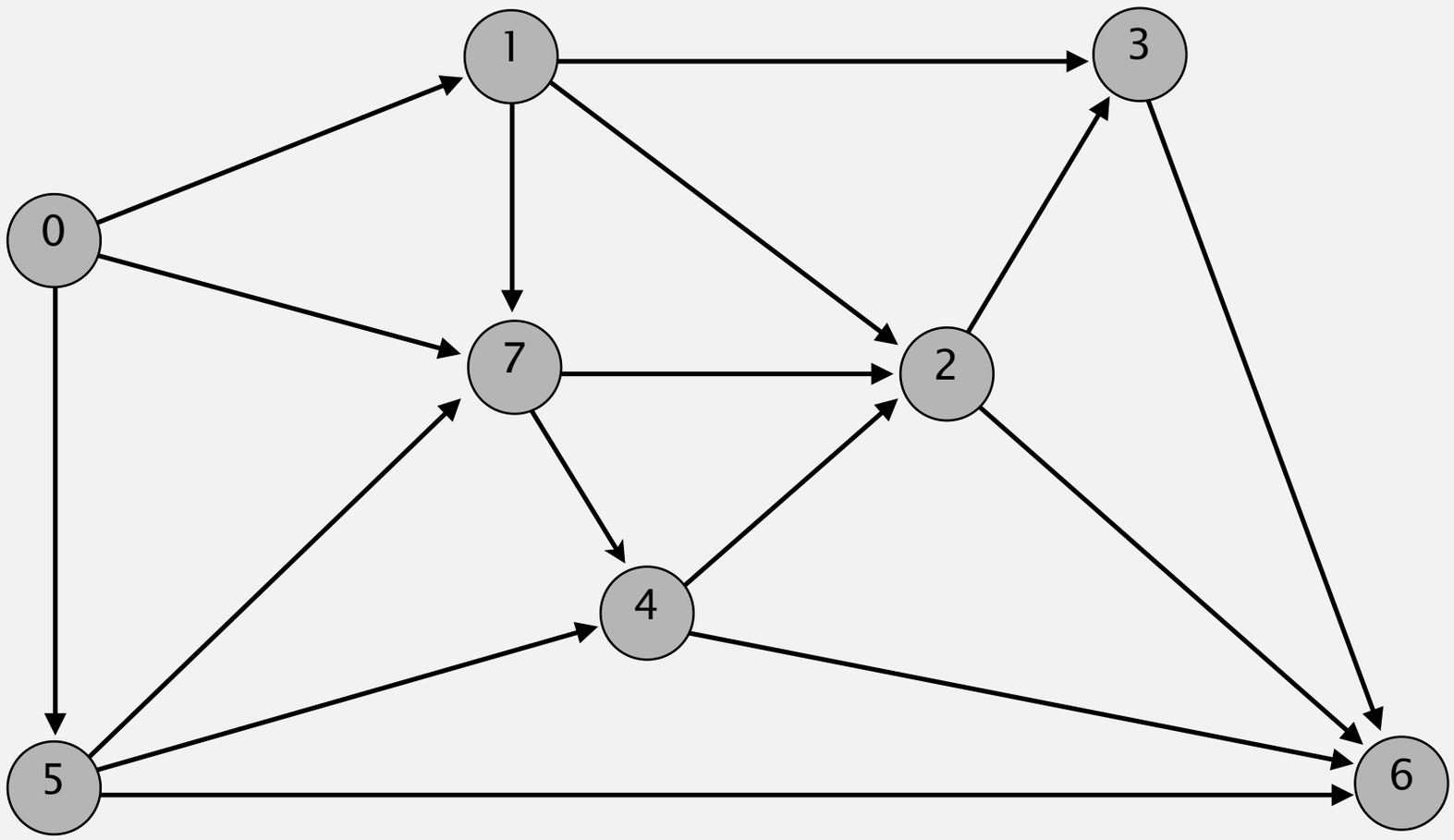
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	25.0	2→6
7	8.0	0→7

pass 3

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



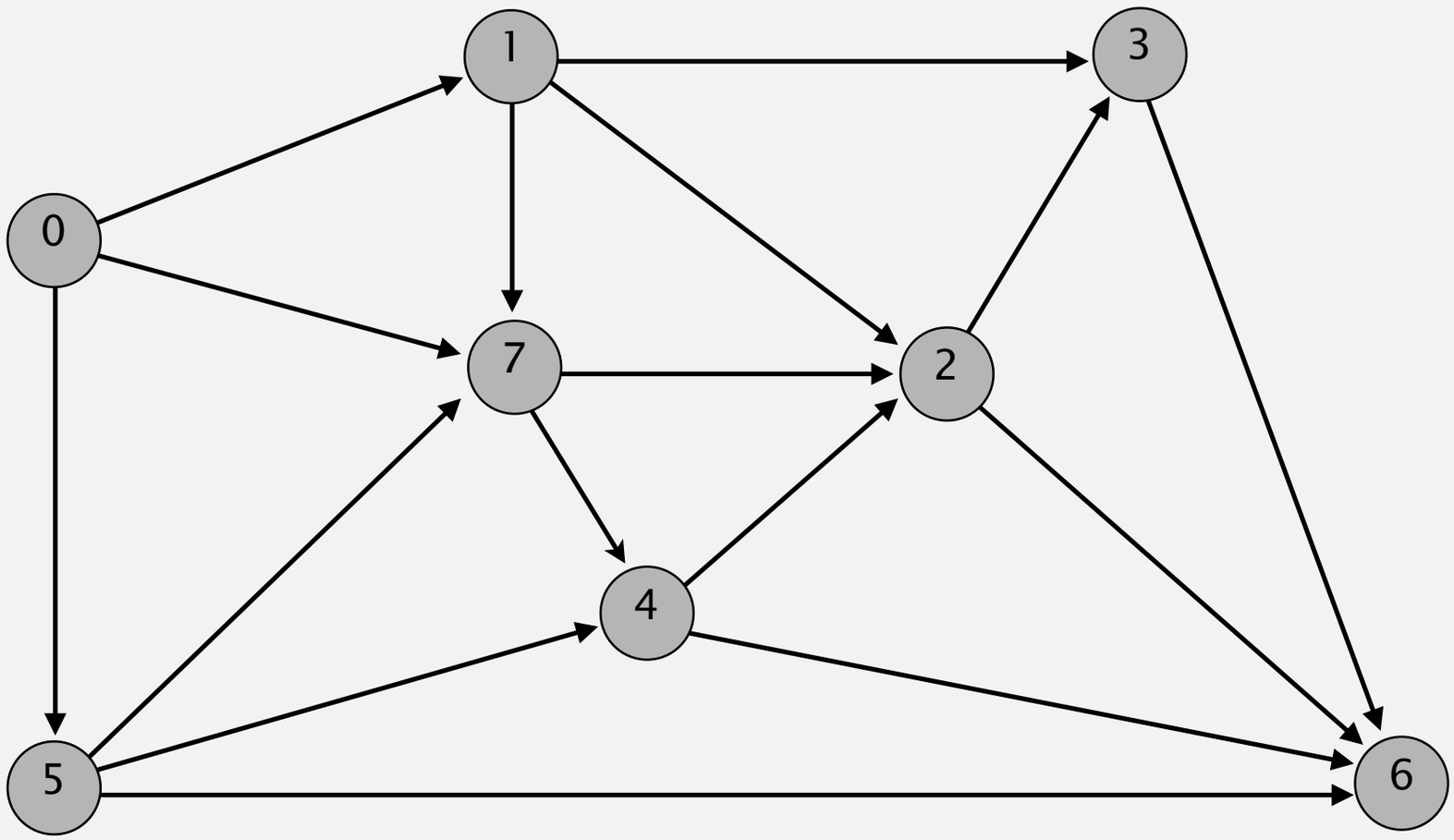
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	25.0	2→6
7	8.0	0→7

pass 4 (no changes)

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



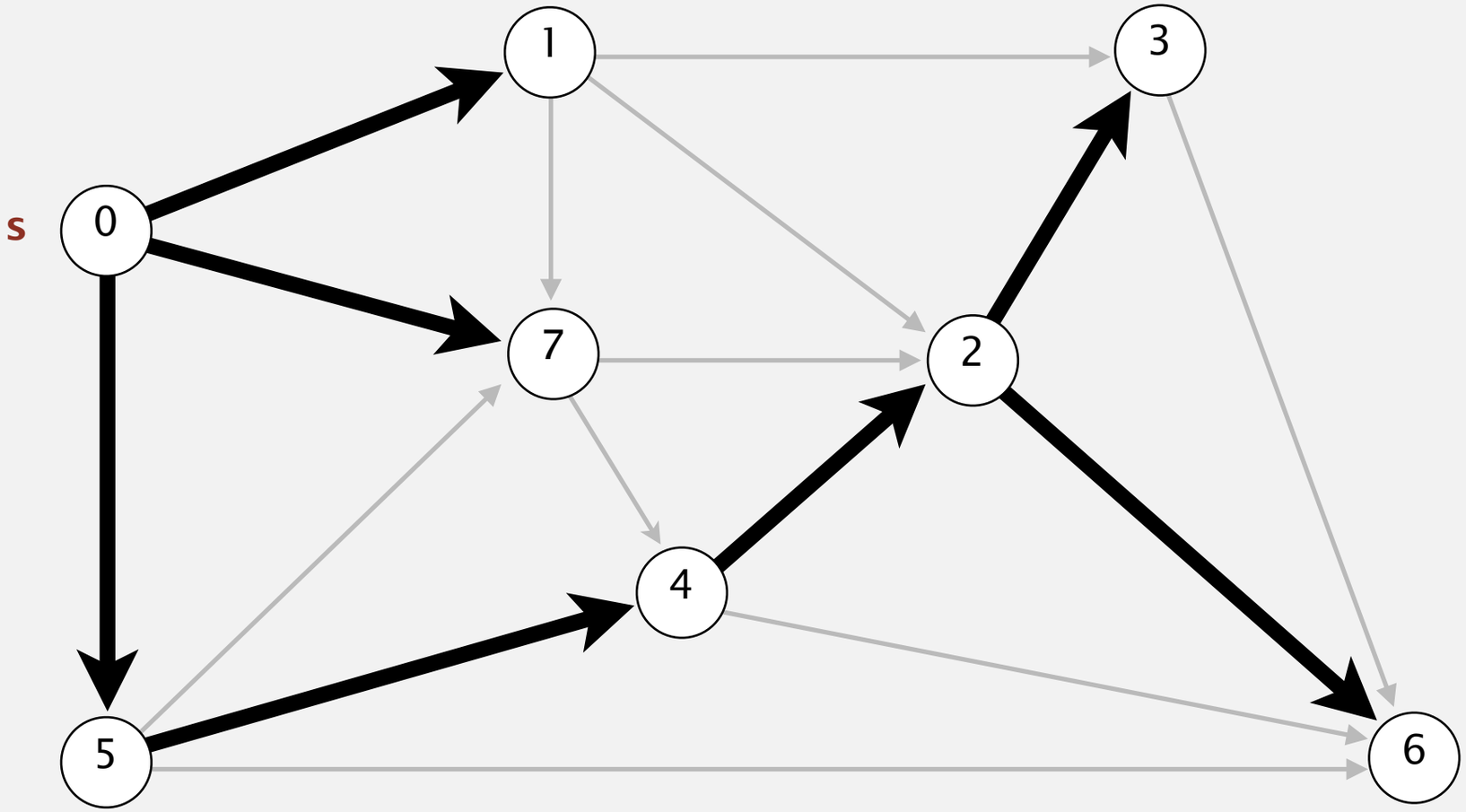
v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	25.0	2→6
7	8.0	0→7

passes 5, 6, and 7 (no changes)

0→1 0→5 0→7 1→2 1→3 1→7 2→3 2→6 3→6 4→2 4→6 5→4 5→6 5→7 7→2 7→4

Bellman–Ford algorithm demo

Repeat $V - 1$ times: relax all E edges.



v	distTo[]	edgeTo[]
0	0.0	-
1	5.0	0→1
2	14.0	7→2
3	17.0	2→3
4	13.0	5→4
5	9.0	0→5
6	25.0	2→6
7	8.0	0→7

shortest-paths tree from vertex s