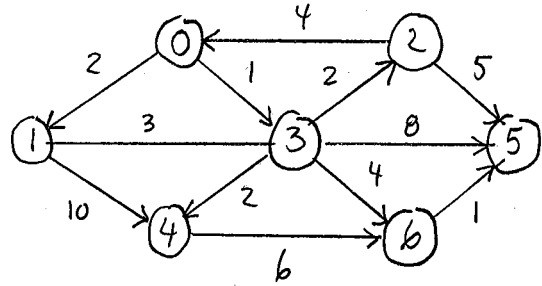


## CS302 HW7

### Problem 1

Consider the weighted digraph  $V = \{0, 1, 2, 3, 4, 5\}$ ,  $E = \{[0,1:2], [0,3:1], [1,3:3], [1,4:10], [2,0:4], [2,5:5], [3,2:2], [3,4:2], [3,5:8], [3,6:4], [4,6:6], [6,5:1]\}$  where  $(i,j:w)$  means directed edge  $[i,j]$  has weight  $w$ .



Apply Dijkstra's algorithm to determine the distance from vertex 1 to all other vertices. Process the lowest numbered vertex first in case of a tie. Show your work by creating a table similar to the one shown for distances from vertex 0.

V	0	1	2	3	4	5	6
Init	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
0		2	$\infty$	1	$\infty$	$\infty$	$\infty$
1		2	3		3	9	5
2			3		3	9	5
3					3	8	5
4						8	5
5						6	

distance(0) = { 0 2 3 1 3 6 5 }

V	0	1	2	3	4	5	6
Init	$\infty$	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
0							
1							
2							
3							
4							
5							

distance(1) =

### Problem 2

Repeat Problem 1 this time assuming that the graph is *undirected*. That is  $V = \{0, 1, 2, 3, 4, 5\}$ ,  $E = \{(0,1:2), (0,3:1), (1,3:3), (1,4:10), (2,0:4), (2,5:5), (3,2:2), (3,4:2), (3,5:8), (3,6:4), (4,6:6), (6,5:1)\}$ .

V	0	1	2	3	4	5	6
Init	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
0		2	4	1	$\infty$	$\infty$	$\infty$
1		2	3		3	9	5
2			3		3	9	5
3					3	8	5
4						8	5
5						6	

distance(0) = { 0 2 3 1 3 6 5 }

V	0	1	2	3	4	5	6
Init	$\infty$	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
0							
1							
2							
3							
4							
5							

distance(1) =