

Haorui Zhang

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CS 455

HW5

1.

a.

Step	N'	D(t), p(t)	D(u), p(u)	D(w),p(w)	D(x), p(x)	D(y), p(y)	D(z), p(z)
1	v	4,v	3,v	4,v	3, v	8, v	∞
2	vx	4,v	3,v	4,v	3,v	8,v	11,x
3	vxu	4,v	3,v	4,v	3,v	8,v	11,x
4	vxut	4,v	3,v	4,v	3,v	8,v	11,x
5	vxutw	4,v	3,v	4,v	3,v	8,v	11,x
6	vxutwy	4,v	3,v	4,v	3,v	8,v	11,x
7	vxutwyz	4,v	3,v	4,v	4,v	8,v	11,x

b.

Step	N'	D(t), p(t)	D(u), p(u)	D(w),p(w)	D(x),p(x)	D(y),p(y)	D(v),p(v)
1	z	∞	∞	∞	8,z	12,z	∞
2	zx	∞	∞	14,x	8,z	12,z	11,x
3	zxy	19, y	∞	14,x	8,z	12,z	11,x
4	zxyv	15, v	14, v	14, x	8,z	12,z	11,x
5	zxyvu	15, v	14, v	14, x	8,z	12,z	11,x
6	zxyvuw	15, v	14, v	14,x	8, z	12, z	11, x
7	zxyvuwt	15, v	14, v	14, x	8, z	12, z	11, x

2. In the algorithm, the shortest distance to each node would be updated to all of its neighbor nodes in each iteration. For node A and B, which is A's neighbor node, B's neighbor would know the shortest path to A after one iteration. Assume the longest simple path between two nodes is d in the network. It means the longest path would be updated by the d-1th iteration, and all others path info would be updated by the max of d-1 th iteration. Therefore, the network would converge by the max of d-1 iterations.

3.

a. Node X

From/Cost	X	Y	Z
X	0	3	4
Y	∞	∞	∞
Z	∞	∞	∞

From/Cost	X	Y	Z
X	0	3	4

Y	3	0	6
Z	4	6	0

b. Node Y

From/Cost	X	Y	Z
X	∞	∞	∞
Y	3	0	6
Z	∞	∞	∞

From/Cost	X	Y	Z
X	0	3	4
Y	3	0	6
Z	4	6	0

c. Node Z

From/Cost	X	Y	Z
X	∞	∞	∞
Y	∞	∞	∞
Z	4	6	0

From/Cost	X	Y	Z
X	0	3	4
Y	3	0	6
Z	4	6	0

Final:

From/Cost	X	Y	Z
X	0	3	4
Y	3	0	6
Z	4	6	0

4.

- a. eBGP
- b. iBGP
- c. eBGP
- d. iBGP

5.

- a. I1 since the shortest path from 1c to 1d is through I1.
- b. I2 since AS1 has same AS-path length to AS2 and AS3 but I2 has the closest hop distance.
- c. I1 since I1 has the path that has shortest AS-path length.