

Solutions to selected problems on chapter 20.

20.7

initial

	A	B	C	D
A	0	3	5	6
B	3	0	2	5
C	5	2	0	4
D	6	5	4	0

after change

	A	B	C	D
A	0	3	5	1
B	3	0	2	5
C	5	2	0	4
D	1	5	4	0

A updates B and D

	A	B	C	D
A	0	3	5	1
B	3	0	2	4
C	5	2	0	4
D	1	4	4	0

D updates A, B, C

	A	B	C	D
A	0	3	5	1
B	3	0	2	4
C	5	2	0	4
D	1	4	4	0

C updates neighbours

B updates neighbours

⋮
⋮
⋮
⋮
⋮

already converged

20.9

We just show the forwarding table

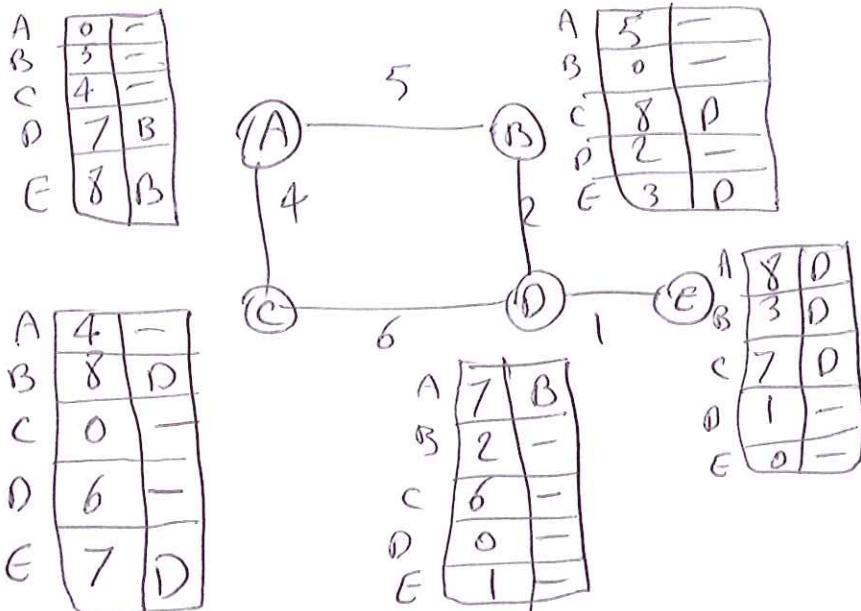
Destination	cost	next hop
A	0	—
B	2	—
C	7	B
D	3	B
E	6	B
F	8	B
G	9	B

20.13.

We just show the forwarding table

Destination	cost	next hop
A	2	—
B	0	—
C	5	—
D	5	A
E	4	—
F	6	E
G	8	E

20.18 as we can only reach nod E via D we can form the routing table



P. 20.3 Router R1 by means of its OSPF forwarding table, knows how to forward a packet destined for N4. R1 uses an eBGP session to announce this reachability to R5. R5 adds an entry to its RIP forwarding table that shows R1 as next router for any packet destined for N4.

P. 20.5: number of searches: $n + n - 1 + n - 2 + n - 3 + \dots + 3 + 2 + 1 = \frac{n(n+1)}{2}$

$$O(n^2)$$

P. 20.6

Destination	cost	next hop
A	0	—
B	4	—
C	5	—
D	3	—
E	6	D
F	7	B
G	8	B

~~XXXXXXXXXX~~

P. 20.12

	(A)	(B)	(C)	(D)
	A 0 B 3 C ∞ D 6	3 0 2 5	∞ 2 0 4	6 5 4 0
A updates B & D	A 0 B 3 C ∞ D 6	3 0 2 5	∞ 2 0 4	6 5 4 0
B updates A, C, D	A 0 B 3 C 5 D 6	3 0 2 5	5 2 0 4	6 5 4 0
C updates B and D	A 0 B 3 C 5 D 6	3 0 2 5	5 2 0 4	6 5 4 0
D updates A, B, C	A 0 B 3 C 5 D 6	3 0 2 5	5 2 4 0	6 5 4 0
A updates B & D	A 0 B 3 C 5 D 6	3 0 2 5	5 2 4 0	6 5 4 0
C updates B and D	~	~	~	~

no more updates needed. system has converged.

P. 20. 15.

- a) from A to B $(A, 0, A), (C, 4, A)$
- b) from C to D $(A, 4, C), (C, 0, C)$
- c) from D to B $(C, 6, D), (D, 0, D)$
- d) from C to A. $(B, 8, D), (C, 0, C), (D, 6, C)$
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