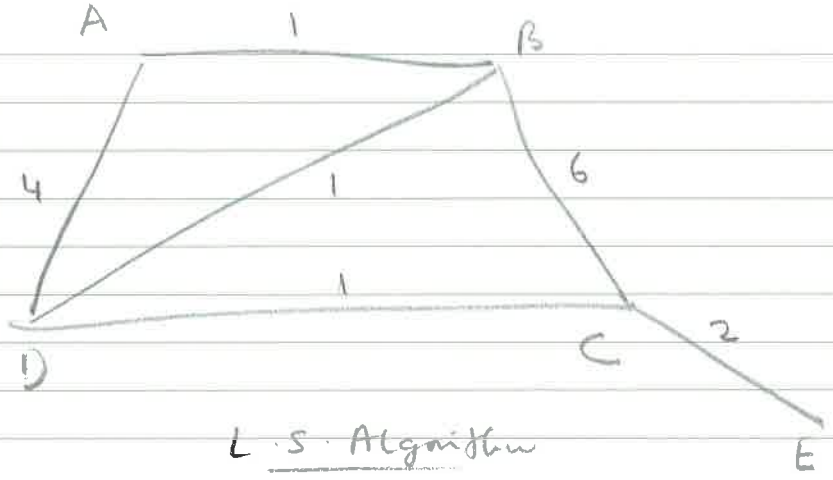
C-432 01/25/2016

Worked out Example 4.2B

Network Graph



L.S. Algorithm

Link State Algorithm at A

Iteration	Set M	Path
1	{A}	ABC(1), ADC(4)
2	{A, B}	ABD(2), ABC(7)
3	{A, B, D}	ABDC(3),
4	{A, B, D, C}	ABDCE(5)

Forwarding table at A

To Node	Next Hop
B	B
C	B
D	B
E	B

Run similarly at other nodes

D·V Algorithm

Distance Vector Algorithm — run at all nodes concurrently

Iteration 1

Node	Neighbors	To A	To B	To C	To D	To E
A	B, D	0	1	∞	4	∞
B	A, C, D	1	0	6	1	∞
C	B, D, E	∞	6	0	1	2
D	A, B, C	4	1	1	0	∞
E	C	∞	∞	2	∞	0

A gets DVs from neighbors B, D

	To A	To B	To C	To D	To E
A	0	1	∞	4	∞
B	1	0	6	1	∞
D	4	1	1	0	∞

B gets distance vector from A, C, D

B	1	0	6	1	∞
A	0	1	∞	4	∞
C	∞	6	0	1	2
D	4	1	1	0	∞

C gets distance vectors from B, D, E

C	∞	6	0	1	2
B	1	0	6	1	∞
D	4	1	1	0	∞
E	∞	∞	2	∞	0

D gets distance vectors from A, B, C

D	4	1	1	0	∞
A	0	1	∞	4	∞
B	1	0	6	1	∞
C	∞	6	0	1	2

E gets distance vector from C

E	∞	∞	2	∞	0
C	∞	6	0	1	2

Iteration 2

All nodes update their own dvs using dvs of neighbors

A	0	1	5_D	2_B	∞
B	1	0	2_D	1	8
C	5_D	2_D	0	1	2
D	2_B	1	1	0	3_C
E	∞	8	2	3	0

All changed dvs are sent to neighbors

At A

A	0	1	5_D	2_B	∞
B	1	0	2_D	1	8
D	2_B	1	1	0	3_C

At B

B	1	0	2_D	1	∞
A	0	1	5_D	2_B	∞
C	5_D	2_D	0	1	2
D	2_B	1	1	0	3_C

At C

C	5_D	2_D	0	1	2
B	1	0	2_D	1	8
D	2_B	1	1	0	3_C
E	∞	8	2	3	0

At D

D	2_B	1	1	0	3_C
A	0	1	5_D	2_B	∞
B	1	0	2_D	1	∞
C	5_D	2_D	0	1	2

At E

E	∞	8_C	2	3_C	0
C	5_D	2_D	0	1	2

Iteration 3

A	0	1	3_B	2_B	7_D
B	1	0	2_D	1	4_C
C	3_D	2_D	0	1	2
D	2_B	1	1	0	3_C
E	7_C	4_C	2	3_C	0

Unchanged

At A

A	0	1	3_B	2_B	9_D
B	1	0	2D	1	4_C

At B

B	1	0	2_D	1	4_C
A	0	1	3_B	2_B	9_D
C	3_B	2_D	0	1	4_C

At C

C	3_B	2_D	0	1	2
B	1	0	2_D	1	4_C
E	7_C	4_C	2	3_C	0

At D

D	2_B	1	1	0	3_C
A	0	1	3_B	2_B	9_D
B	1	0	2_D	1	4_C
C	3_B	2_D	0	1	2

At E

E	7_C	4_C	2	3_C	0
C	3_B	2_D	0	1	2

Iteration 4

A	0	1	3_B	2_B	5_B	
B	1	0	2_D	1	4_C	unchanged
C	3_B	2_D	0	1	2	unchanged
D	2_B	1	1	0	3_C	unchanged
E	5_C	4_C	2	3_C	0	

Algorithm Converged