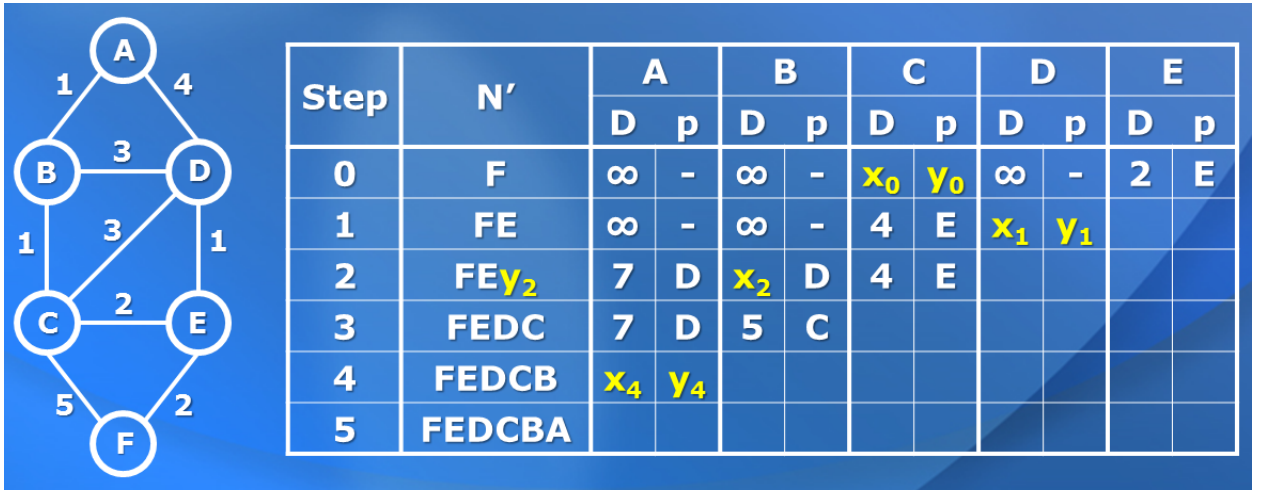
Bookmark

4.3 QUIZ QUESTION 1 (6/8 points)

Consider the network shown below, as well as the partial computation of Dijkstra's algorithm to find the best path to each node from node F.



Step	N′	A		B		C		D		E	
		D	p	D	p	D	p	D	p	D	p
0	F	∞	-	∞	-	x_0	y_0	∞	-	2	E
1	FE	∞	-	∞	-	4	E	x_1	y_1		
2	FEy_2	7	D	x_2	D	4	E				
3	FEDC	7	D	5	C						
4	FEDCB	x_4	y_4								
5	FEDCBA										

Give the value for each of the unknown quantities, marked in yellow.

x_0?

5 ✔ **Answer:** 5

Week 2 Quiz due Feb 01, 2016 at 15:30 UTC

4.4 Summary of Routing Algorithms
Week 2 Quiz due Feb 01, 2016 at 15:30 UTC

4.5 Lab 2: Network Layer
Lab due Feb 01, 2016 at 15:30 UTC

▸ MATLAB download and tutorials

y_0?

C ▾ ✔ **Answer:** C

x_1?

3 ▾ ✔ **Answer:** 3

y_1?

E ▾ ✔ **Answer:** E

x_2?

6 ▾ ✔ **Answer:** 6

y_2?

D ▾ ✔ **Answer:** D

x_4?

7 ▾ ✘ **Answer:** 6

y_4?

D ▾ ✖ **Answer:** B

EXPLANATION

At step 0, the table is initialized with node F's neighbors. Node C is a neighbor with link cost 5.

At step 1, node E is added to N'. The nodes reachable from node E are C, D and F. Thus, the existing cost estimates of going to those nodes from step 0 are compared to the costs going through node E. It turns out that going through E results in a lower cost for both nodes C and D. Thus their entries are updated wiht the new costs, and the predecessor node C. The cost of going to D through E is 2 + 1.

At step 2, we look across all nodes still not in N' from step 1. Node D can be reached with the lowest cost. Thus, we add it to N' and check the costs to nodes A, B, C and E. We can reach node B through D with a cost of 3 (the cost to reach node D found in step 1) + 3 (the cost to reach node B from D). Thus, the cost to reach node B is 6 with predecessor node D. The previous cost was infinity (the algorithm did not know whether B was reachable from F).

At step 4, we have added node B to N'. When we check the cost to go to node A, we note that the cost to get to A through B (6), is lower than our current estimate. Thus, we update the entry for node A.

You have used 2 of 2 submissions