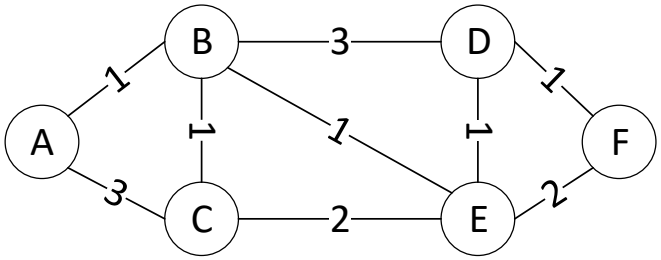
CS164- Computer Networks

Homework #4 - 11/27/2019

Due:12/04/2019-11:59pm

Kai Wen Tsai
Ktsai017
861261944

1. Based on the following network topology, indicate the steps followed by Dijkstra's algorithm for getting the shortest path from A to all the other graph nodes. Then fill the forwarding table by using the outcome. Also, draw the shortest path tree. (25 points)



Step	N'	D(B), p(B)	D(C), p(C)	D(D), p(D)	D(E), p(E)	D(F), p(F)
0	A	**1, A**	3, A	Inf	Inf	Inf
1	AB		**2, B**	4, B	2, B	Inf
2	ABC			4, B	**2, B**	Inf
3	ABCE			**3, E**		4, E
4	ABCED					**4, E**
5	ABCEDF					

Destination	Link
B	(A,B)
C	(A,B)
D	(A,B)
E	(A,B)
F	(A,B)

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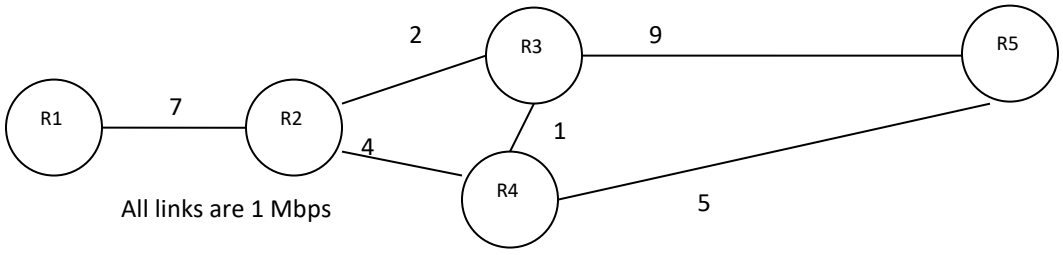
2. Show the start-up steps of the Distance Vector protocol for this graph. Then, starting from time 0, show the transferred DV packets and changes in algorithm tables for each time slot until reaching the consistent state when further updates do not change the shortest path.



	R1	R2	R3	R4	R5
R1	0	7	9	10	15
R2	7	0	2	3	8
R3	9	2	0	1	6
R4	10	3	1	0	5
R5	15	8	9	5	0

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Finally show the **routing table** at R2:

	R1	R3	R4
R1	7	11	14
R3	16	2	5
R4	17	3	4
R5	22	8	9

Good Luck!