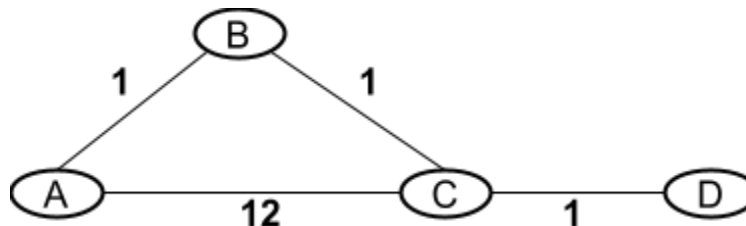


**Quiz 3**  
**CSE232 Computer Networks**  
**Duration-30min, Full marks-11**

December 5, 2022

**Q.1.** Suppose you have a topology with routers A, B, C, and D that implement DVR (distance vector routing) based protocol for routing. The link weights represent the cost between the corresponding routers.



**(a)** Complete the routing table at each router assuming that all the routes have converged. Write your answers within the space provided in the table. **[4]**

Routing table: A			Routing table: B			Routing table: C			Routing table: D		
Dest	Cost	Next hop	Dest	Cost	Next hop	Dest	Cost	Next hop	Dest	Cost	Next hop
A	0	-	A	1	A	A	2	B	A	3	C
B	1	B	B	0	-	B	1	B	B	2	C
C	2	B	C	1	C	C	0	-	C	1	C
D	3	B	D	2	C	D	1	D	D	0	-

**(b)** Suppose that the link **cost for B–C changes to 20**. After the link cost changes, what will be the routing table entries after the first exchange? **[3]**

Note: The entries should reflect the DVR algorithm computation after the first exchange of updates have been sent by all the routers.

Alternative answer 1: Each node stores the DV received previously

Routing table: A			Routing table: B			Routing table: C			Routing table: D		
Dest	Cost	Next hop	Dest	Cost	Next hop	Dest	Cost	Next hop	Dest	Cost	Next hop
....	....	....	....	....	....	....	....	....	....	....	....
C	4	B	C	3	A	B	3	D	C	1	C
D	5	B	....	....	....	D	1	D	....	....	....

Roll. No.: \_\_\_\_\_ Name: \_\_\_\_\_ Section: \_\_\_\_\_

OR

Alternative answer 2: Each node does not store the DV received previously & the periodic update messages have not been received at nodes B and C

Routing table: A			Routing table: B			Routing table: C			Routing table: D		
Dest	Cost	Next hop	Dest	Cost	Next hop	Dest	Cost	Next hop	Dest	Cost	Next hop
....	....	....	....	....	....	....	....	....	....	....	....
C	12	C	C	3	A	B	3	D	C	1	C
D	3	B	....	....	....	D	1	D	....	....	....

**Q.2.** The routing table of a router is shown below: **[1+1+1]**

Destination	Subnet mask	Interface
10.129.41.0	255.255.128.0	2
10.129.32.0	255.255.224.0	3
192.168.116.0	255.255.252.0	4
192.168.116.0	255.255.255.0	5
Default		0

On which interface will the router forward packets addressed to the following destinations?  
Explain how you obtain the answer. **Note that you will NOT be awarded partial points for correct answers without explanation.**

- (a) 10.129.41.150
- (b) 192.168.119.31
- (c) 10.129.116.10

**Ans:**

**(a) 3**

$10.129.41.150 \wedge 255.255.128.0 = 10.129.0.0 \Rightarrow$  does not match the dest network "10.129.41.0" ;  
 $10.129.41.150 \wedge 255.255.224.0 = 10.129.32.0 \Rightarrow$  matches the dest network "10.129.32.0"

**(b) 4**

$192.168.119.31 \wedge 255.255.252.0 = 192.168.116.0 \Rightarrow$  matches the dest network "192.168.116.0"  
 $192.168.119.31 \wedge 255.255.255.0 = 192.168.119.0 \Rightarrow$  does not match dest net "192.168.116.0"

**(c) 0 OR 2**

**"0"**

$10.129.116.10 \wedge 255.255.128.0 = 10.129.0.0 \Rightarrow$  does not match the dest network "10.129.41.0" ;  
 $10.129.116.10 \wedge 255.255.224.0 = 10.129.96.0 \Rightarrow$  does not match the dest network "10.129.32.0";

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Therefore, the packet is forwarded via the default interface.

**“2”**

**Since 10.129.41.0 and mask of 255.255.128.0 is not possible, one can consider the network to be 10.129.0.0**

$10.129.116.10 \wedge 255.255.128.0 = 10.129.0.0 \Rightarrow$  matches the dest network “10.129.41.0” ;

**Q.3.** Mark the one(s) that is (are) TRUE from the following. **[1]**

- (a) LSR has higher computational complexity compared to DVR
- (b) DVR has higher computational complexity compared to LSR
- (c) DVR suffers from route oscillations and LSR suffers from the count-to-infinity problem
- (d) LSR suffers from route oscillations and DVR suffers from the count-to-infinity problem

**Ans: (a) and (d)**

-----THE END-----