



Sheet 7

1. Consider the subnet of Fig.3 Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The measured delays to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the weight.

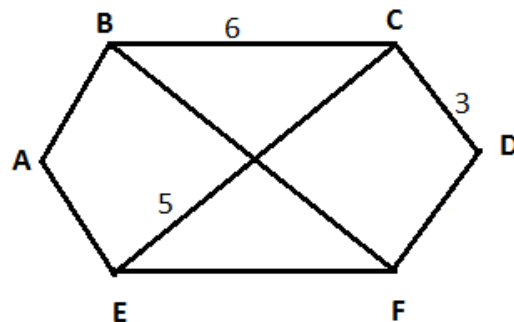
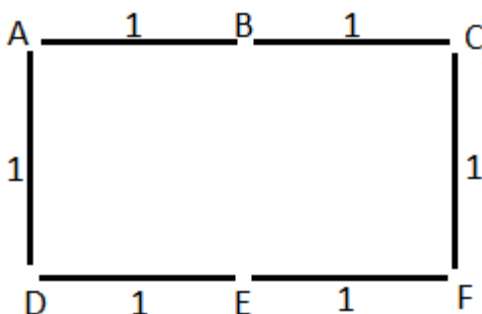


Figure 3

2. In the network in Fig.4 , where distance–vector routing update is used, each link has a cost of 1, and each router initially has entries in its forwarding table only for its immediate neighbors (so A's table contains $\langle A, -, 0 \rangle, \langle B, B, 1 \rangle, \langle D, D, 1 \rangle$ and B's table contains $\langle A, A, 1 \rangle, \langle B, -, 0 \rangle \langle C, C, 1 \rangle$).



- a. Suppose each router creates a report from its initial configuration and sends it to each of its neighbors. What will each router's forwarding table be after one (step) set of exchanges? The exchanges, are all conducted simultaneously; each router first sends out its own report and then processes the reports arriving from its two neighbors.
 - b. What destinations, with corresponding cost values, will be added to each router's table after the simultaneous-and-parallel exchange process of part (a) is repeated the second time?
3. Suppose a network applying the link state protocol LSP and the routers' packets before the discovering step are shown in Fig.7.
 - a. Construct the network.
 - b. Suppose that a host connected to router A wants to send some packet to another host connected to router C, show the steps of choosing the best route from A to C to transmit packets.

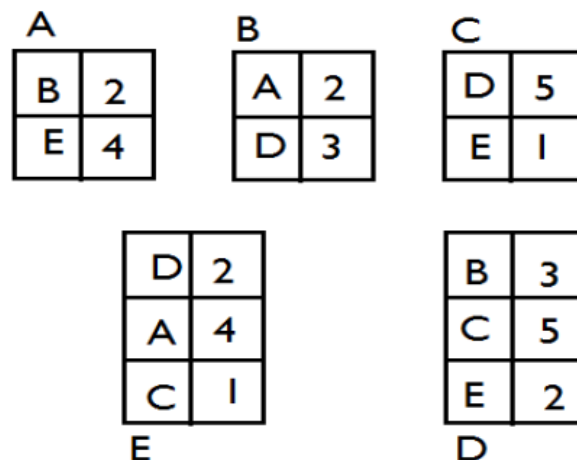


Figure 7

4. Suppose for the same network in Figure 7, and applying the LSP. tell how many hops worth of bandwidth it consumes during the initial network discovery phase assume that all routers do this at the same time.

5. Consider the subnet of Fig.8 and that the Link state routing protocol is used. Suppose that Router C has a previous list of the most recent LSP's showed in the table.

| Source Router ID of LSP | Age | Seq |
|-------------------------|-----|-----|
| A | 50 | 21 |
| B | 45 | 19 |
| D | 52 | 15 |
| E | 52 | 25 |
| F | 23 | 13 |

Suppose the following link state packets have just come in to router C and all of them are not processed yet. Mark each accepted message of them and show which packet will be propagated from C to its neighbors. Show the updated LSP database of router C after processing all the pending LSPs (i.e. after one step in time).

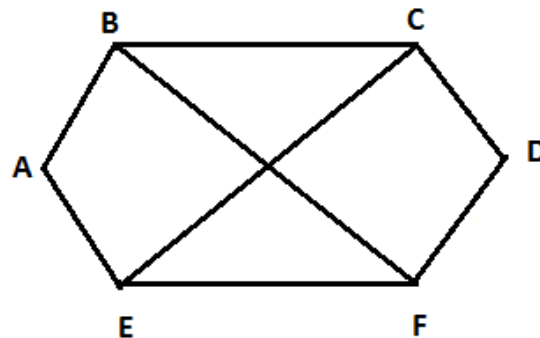


Figure 8

| Source Router ID of LSP | The direct sending router | Age | Seq | Action: accept/reject | ACK to: | Forward to: |
|-------------------------|---------------------------|-----|-----|-----------------------|---------|-------------|
| B | E | 30 | 18 | | | |
| B | B | 59 | 23 | | | |
| A | E | 59 | 22 | | | |

| | | | | | | |
|---|---|----|----|--|--|--|
| A | B | 59 | 22 | | | |
| E | E | 60 | 0 | | | |
| D | D | 60 | 16 | | | |