**Example: From node A to D**

A 1 3 0 B 1 1

0 2 0 C

2

6 1 2 1

0

0

E 4 1 D

2

From above diagram

* We defined no. of nodes as 5
* We defined cost matrix as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | a | b | c | d | e |
| a | 0 | 3 | 99 | 99 | 6 |
| b | 3 | 0 | 1 | 99 | 2 |
| c | 99 | 1 | 0 | 2 | 99 |
| d | 99 | 99 | 2 | 0 | 4 |
| e | 6 | 2 | 99 | 4 | 0 |

* We defined matrix for interface as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | a | b | c | d | e |
| a | 99 | 1 | 99 | 99 | 0 |
| b | 0 | 99 | 1 | 99 | 2 |
| c | 99 | 0 | 99 | 1 | 99 |
| d | 99 | 99 | 0 | 99 | 1 |
| e | 0 | 1 | 99 | 2 | 99 |

Put input (source): **a**

**It shows shortest path from a to all nodes**

**a - a = 0**

**a – b = 3**

**a – b – c = 4**

**a – b – c – d = 6**

**a – b – e = 5**

* Put input (destination): **d**

**It shows routing table for path a -> d**

|  |  |  |  |
| --- | --- | --- | --- |
| Source | Interface | Next Hope | Cost |
| A | 1 | B | 3 |
| B | 1 | C | 4 |
| C | 1 | D | 6 |

* Explanation for routing and forwarding table:
  + First starting node is **a**, so it will check neighbors of node **a.**
  + Neighbors of node **a** are **b** and **e** but cost of **a-b** is less than cost of **a-e** so next node will be **b** and interface for path **a-b** is **1**
  + Now neighbors of node **b** are **a, c, and e.** Cost from **b-c** is less than other path so next node will be **c** and interface for path **b-c** is **1**
  + Again it will check the path from node **c,** shortest path from node **c** is **c-d** and interface for path **c-d** is **1.** At the end node **d** is destination.
* Final path is **a 1 b 1 c 1 d** and total cost is **6**