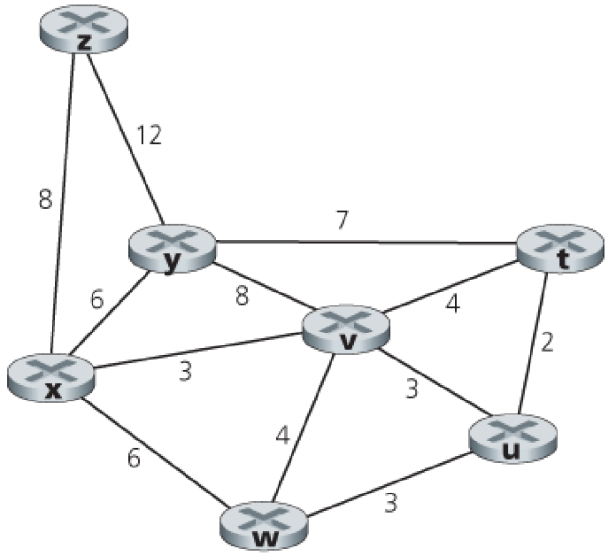
**[简答题]**

Chapter5 P3. Consider the following network. With the indicated link costs, use Dijkstra's shortest-path algorithm to compute the shortest path from x to all network nodes. Show how the algorithm works by computing a table similar to Table 5.1 .



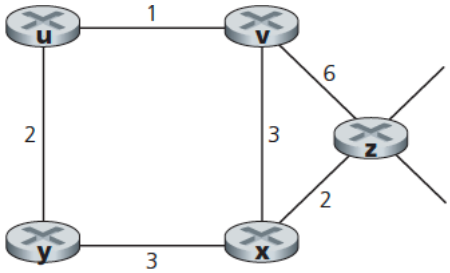

**[参考答案]**

如下表所示：

| Step | N | D(t),p(t) | D(u),p(u) | D(v),p(v) | D(w),p(w) | D(y),p(y) | D(z),p(z) |
|---|---|---|---|---|---|---|---|
| 0 | x | ∞ | ∞ | 3,x | 6,x | 6,x | 8,x |
| 1 | xv | 7,v | 6,v | | 6,x | 6,x | 8,x |
| 2 | xvu | 7,v | | | 6,x | 6,x | 8,x |
| 3 | xvuw | 7,v | | | | 6,x | 8,x |
| 4 | xvuwy | 7,v | | | | | 8,x |
| 5 | xvuwyt | | | | | | 8,x |
| 6 | xvuwytz | | | | | | |

**[简答题]**

Chapter5 P5. Consider the network shown below, and assume that each node initially knows the costs to each of its neighbors. Consider the distance-vector algorithm and show the distance table entries at node z . Showing your work using a table similar to Fig. 5.6.



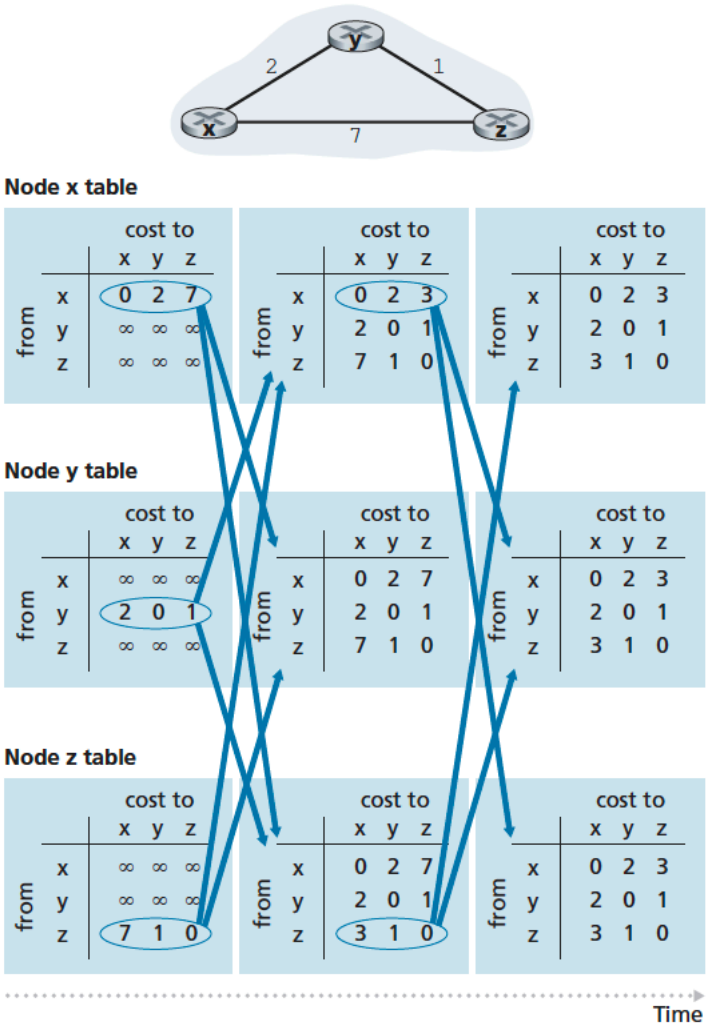
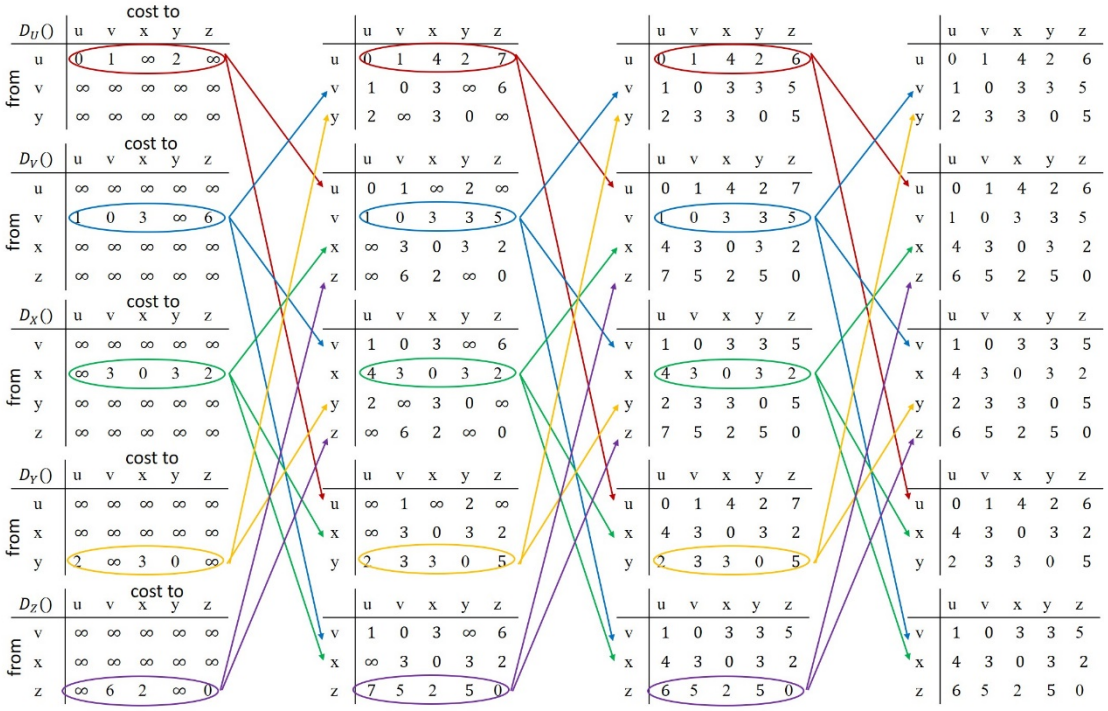



Fig. 5.6 Distance-vector (DV) algorithm in operation.

**[参考答案]**

迭代步骤如下：




**[简答题]**

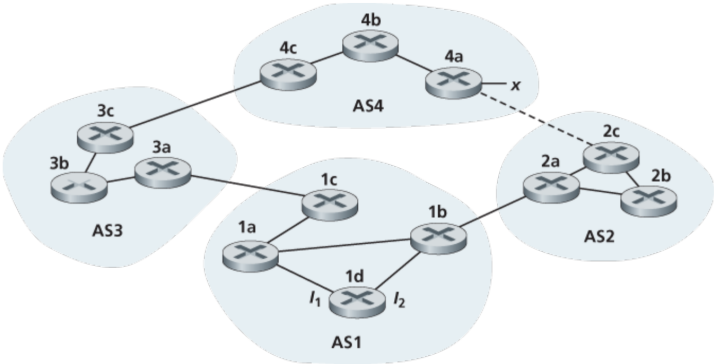
Chapter5 P14. Consider the network shown below. Suppose AS3 and AS2 are running OSPF for their intra-AS routing protocol. Suppose AS1 and AS4 are running RIP for their intra-AS routing protocol. Suppose eBGP and iBGP are used for the inter-AS routing protocol. Initially suppose there is no physical link between AS2 and AS4.

a. Router 3c learns about prefix x from which routing protocol: OSPF, RIP, eBGP, or iBGP?

b. Router 3a learns about x from which routing protocol?

c. Router 1c learns about x from which routing protocol?

d. Router 1d learns about x from which routing protocol?




**[参考答案]**

AS4 和 AS3 是两个不同的 AS，所以他们之间互相学习路由需要通过 BGP，3c 与 AS4 相邻，跨越两个 AS，所以 3c 通过 eBGP（external BGP session）学习到 x，3a 和 3b 并不与 AS4 相邻，需要通过 iBGP（internal BGP session）才可以学习到 x。

同理，1c 与 3a 有 eBGP 邻居关系所以 1c 通过 eBGP 学习到 x，1a、1d 和 1b 则通过 iBGP 学习到 x。因此：

a. 3c 通过 eBGP 学习到 x。

b. 3a 通过 iBGP 学习到 x。

c. 1c 通过 eBGP 学习到 x。

d. 1d 通过 iBGP 学习到 x。