P1:

Take the Figure 4.27 in the text book.

The following  paths from 'y' to 'u' that do not contain any loops:

![Text, letter

Description automatically generated]()

**So, there are total 15 paths that do not form cycles from path “y” to path “u”.**

P3:

**Dijkstra’s Algorithm:**

• Dijkstra’s algorithm is a Link-state algorithm which computes the least-cost path from one node to all other nodes in the network.

• Dijkstra’s algorithm is iterative.

• The least-cost paths are known to k destination nodes after the  iteration of the algorithm. These k paths will have the k smallest costs among the least-cost paths to all destination nodes.

The following terms are used in the algorithm:

D(v) = least cost of the path from the source to the destination for the node v.

p(v) = previous node along the current path with least cost from source to node v.

N’ = subset of nodes.

**The following table represents the computation of shortest path from source x to all the nodes in the network is as follows:**

Table

Description automatically generated

Therefore, the following are shortest paths from x along with their costs: t: xvt = 7; u: xvu = 6; v: xv = 3; w: xw = 6; y: xy = 6; z: xz = 8

If you found this answer helpful, please upvote and share with other students in your network.

P5:

Distance vector routing algorithm exchanges the information with the neighbors and works asynchronously.

According to the distance vector algorithm, any node m computes the distance vector using the following formulas:

Text

Description automatically generated

Note: NA is used when there is no distance value.

Construct the distance vector table for node z from the network diagram:

A picture containing crossword puzzle

Description automatically generated

Now update the table with costs of all the neighboring nodes.

A picture containing text, crossword puzzle

Description automatically generated

Update the table with minimum costs using the distance vector routing algorithm:

Example: v to y, two paths are available. v-u-y and v-x-y with costs 3 and 6 respectively. So, v-u-y is the path with minimum cost. Hence update the table with this value.

A picture containing text, crossword puzzle

Description automatically generated

Therefore, at node z, the above table will be computed by the distance vector routing algorithm.

P8:

Consider the cost of the links as follows:



Construct the matrix as follows:

A picture containing shoji, crossword puzzle, shrimp

Description automatically generated

According to the distance vector algorithm, any node *m* computes the distance vector using the following formulas:

Text

Description automatically generated

Note: NA is used when there is no distance.

The distance tables at the node *x* after initialization step are as follows:

Table

Description automatically generated

The distance tables at the node *y* after initialization step are as follows:

Table

Description automatically generated

The distance tables at the node *y* after initialization step are as follows:

Table

Description automatically generated

P10:

Text, letter

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