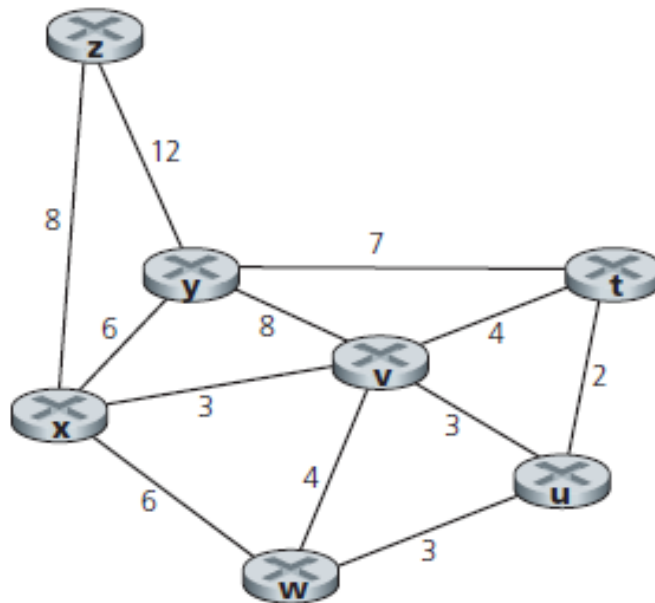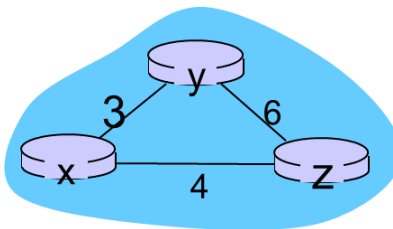Problem1. Consider the network topology shown below. Please use Dijkstra's shortest-path algorithm to compute the shortest path from x to all network nodes. Also, draw the resulting shortest-path-tree from node x to all the network nodes.

Problem 2. Consider the three-node topology shown below. The link costs are c(x,y) = 3, c(y,z) = 6, c(z,x) = 4. Compute the distance tables after the initialization step and after each iteration of a synchronous version of the distance-vector algorithm.

Problem 3. Consider the network shown below. X has only two attached neighbors, w and y. w has a minimum-cost path to destination u (not shown) of 5, and y has a minimum-cost path to u of 6. The complete paths from w and y to u (and between w and y) are not shown. Give x's distance vector for destinations w, y, and u after the first iteration of the distance-vector algorithm.