Homework 3

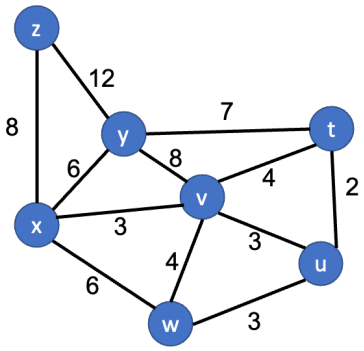
CSE 310 Fall 2021

Due date: **November 9, 2021; 11:59 PM**

Submission via Blackboard.

1. Dijkstra's algorithm

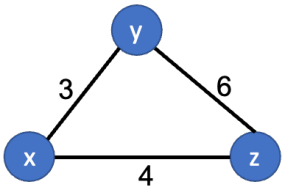
A. Consider the following network. With the indicated link costs, use Dijkstra's shortest-path algorithm to compute the shortest path from *x* to all network nodes. Show how the algorithm works by computing a table similar to the ones discussed in class. **(15 points)**



B. For the same network as part A, using Dijkstra's algorithm, and showing your work similar to part A, compute the shortest path from *t* to all network nodes. **(10 points)**

2. Distance vector

A. Consider the three-node topology shown below. Compute the distance tables after the initialization step and after each iteration of a synchronous version of the distance-vector algorithm, similar to our discussion in class. **(10 points)**



B. 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* for each iteration. **(15 points)**