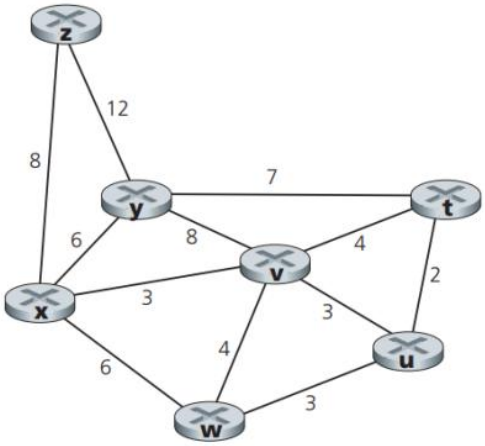
Homework4

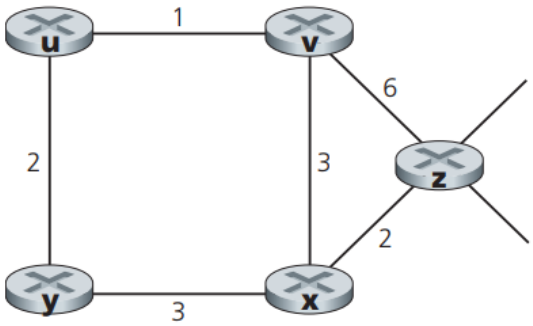
CS 664-Computer Networks

1. Consider the following network with the indicated link costs, use Dijkstra's shortest-path algorithm, and showing your work using a table similar to our lecture table for Dijkstra's shortest-path algorithm, compute the shortest path from 't' to all network nodes.



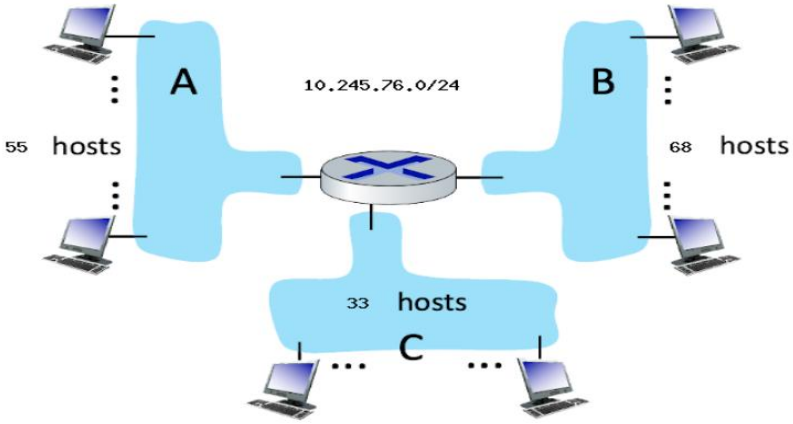
35 points

2. 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.



20 points

3. Consider the router and the three attached subnets below (A, B, and C). The number of hosts is also shown below. The subnets share the 24 high-order bits of the address space: 10.245.76.0/24. Assign subnet addresses to each of the subnets (A, B, and C) so that the amount of address space assigned is minimal, and at the same time leaving the largest possible contiguous address space available for assignment if a new subnet were to be added. Then answer the questions below.



35 points

a. Is the address space public or private? How many hosts can there be in this address space?
b. What is the Subnet address (or Network address), Host range and Broadcast address of subnet A?
c. What is the Subnet address (or Network address), Host range and Broadcast address of subnet B?
d. What is the Subnet address (or Network address), Host range and Broadcast address of subnet C?

4. Consider the count-to-infinity problem in the distance vector routing. Will the count-to-infinity problem occur if we decrease the cost of a link? Why? How about if we connect two nodes which do not have a link? 10 points