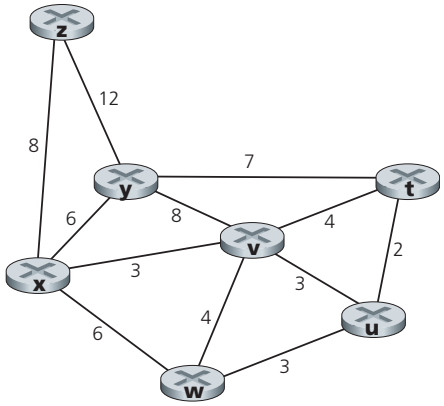
Network Architectures 3329 **Name:** _____
Spring 2018 **Homework 5**
04/18/2018 **Due 04/25/2018**

- **Print** your name.

Problem	Points	Score
1	2	
2	2	
3	2	
4	2	
5	2	
Total:	10	



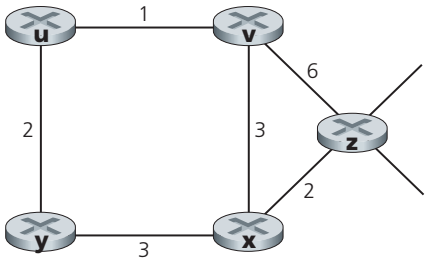
1. Consider the network shown in the above. Using Dijkstras algorithm, and showing your work using a table similar to the following table, do the following:

step	*N'*	*D(v),p(v)*	*D(w),p(w)*	*D(x),p(x)*	*D(y),p(y)*	*D(z),p(z)*
0	u	2,u	5,u	1,u	∞	∞
1	ux	2,u	4,x		2,x	∞
2	uxy	2,u	3,y			4,y
3	uxyv		3,y			4,y
4	uxyvw					4,y
5	uxyvwz					

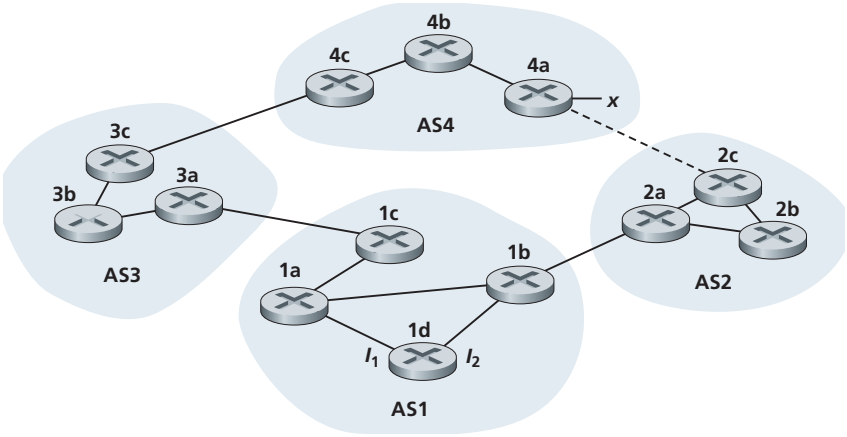
(a) (1 point) Compute the shortest path from x to all network nodes.

(b) (1 point) Compute the shortest path from w to all network nodes.

2. (2 points) 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 at the 3rd iteration of computation (The initial distance table is counted as the 1st iteration).

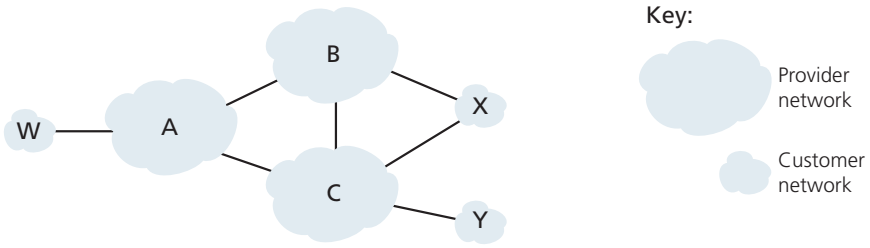


3. Consider the network shown below. Suppose AS3 and AS2 are running OSPF for their intra-AS routing protocol. Suppose AS1 and AS4 are running RIP for their intra-AS routing protocol. Suppose eBGP and iBGP are used for the inter-AS routing protocol. Initially suppose there is no physical link between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

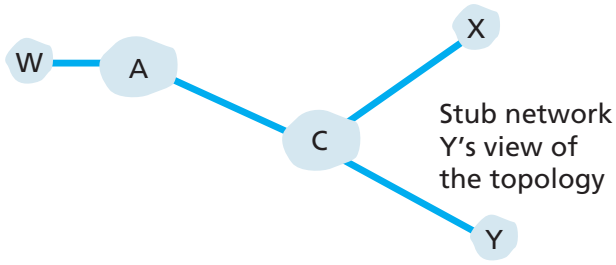


(a) (1 point) Router 3c learns about prefix x from which routing protocol: OSPF, RIP, eBGP, or iBGP?

(b) (1 point) Router 1c learns about x from which routing protocol?



4. (2 points) In the above figure, consider the path information that reaches stub networks W, X, and Y. Based on the information available at W and X, what is X's view of the network topology? Justify your answer. The topology view at Y is shown below.



5. (2 points) Still consider the Figure of Problem 4, suppose that there is another stub network V that is a customer of ISP A. Suppose that B and C have a peering relationship, and A is a customer of both B and C. Suppose that A would like to have the traffic destined to W to come from B only, and the traffic destined to V from either B or C. How should A advertise its routes to B and C? What AS routes does C receive?