Tutorial 5

ELEC3506/9506 – Communication Networks

1. What are the differences between classful and classless addressing in IPv4?

2. Explain why most of the addresses in class A are wasted. Explain why a medium or large size organization does not want a clock of class C.

3. What is a mask in IPv4 addressing?

4. What is the network address in a block of addresses? How can we fine the network address if one of the addresses in the block is known?

5. Briefly define subnetting. How does the subnet mask differ from a default mask in classful addressing?

6. What is NAT? How can NAT help in address depletion?

7. What is the difference between connection oriented and connection less services?

8. Define fragmentation and why it is needed?

9. List transition strategies to move from IPv4 to IPv6. Explain the differences between tunneling and dual stack strategies during the transition period.

10. What is the purpose of RIP?

11. What are the functions of a RIP message?

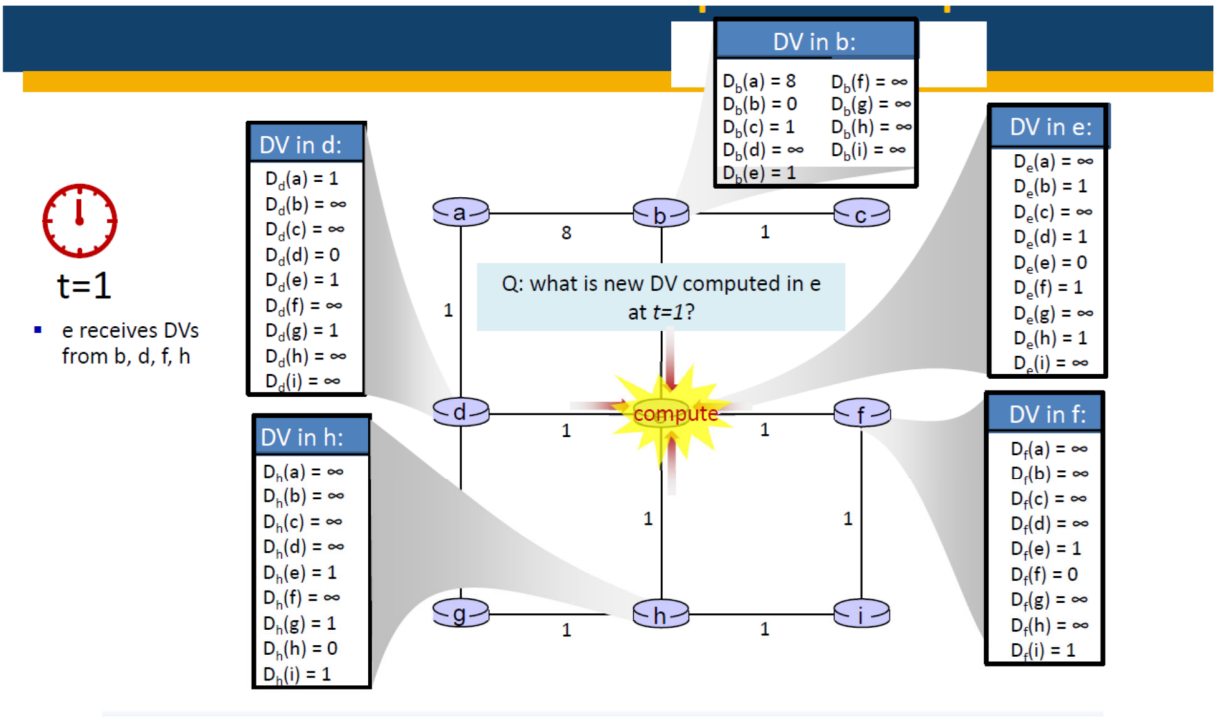
12. Why do OSPF messages propagate faster than RIP messages?

13. What is the purpose BGP?

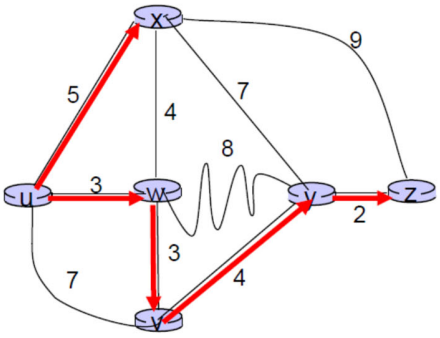
14. What is an autonomous system?

15. Compare and contrast distance vector routing method against link state routing method.

16. Workout with your tutor the answers for the following slides 28 and 45 from the lectures.



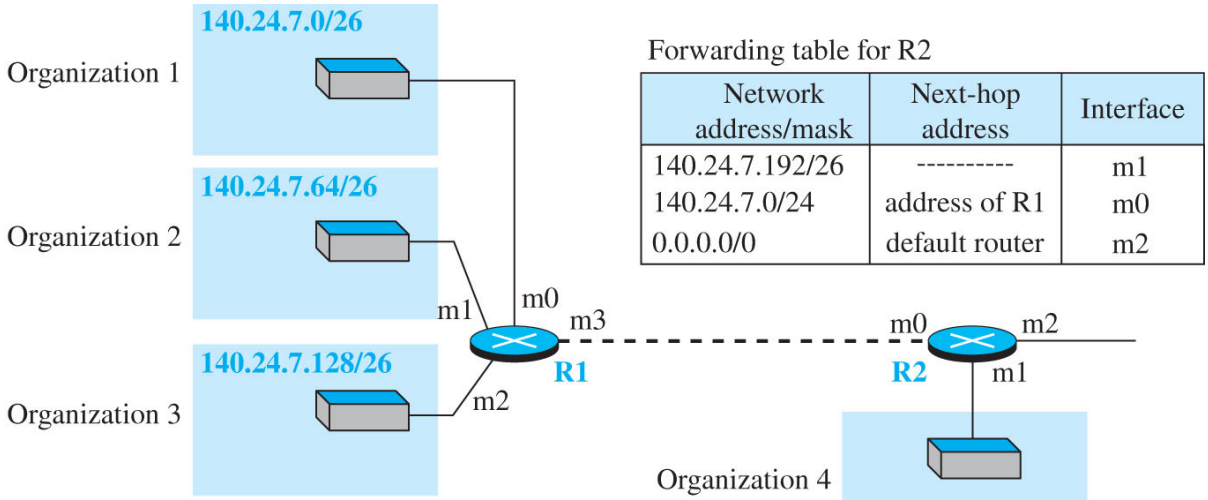
Step	N'	D(v), p(v)	D(w), p(w)	D(x), p(x)	D(y), p(y)	D(z), p(z)
0	u	7,u	3,u	5,u	∞	∞
1						
2			?			
3						
4						
5						



resulting forwarding table in u? resulting least-cost-path tree from u?

17. Workout with your tutor the answers for the Lecture 5, slides 30 and 31.
18. Can Router R1 in the figure below receive a packet with destination address 140.24.7.194. How is the packet routed to its final destination?
19. Assume Router R2 in the figure below receive a packet with destination address 140.24.7.42. How is the packet routed to its final destination?

20. In IPv4 datagram, the value of total-length field is $(00A0)_{16}$ and the value of the header length (HLEN) is $(5)_{16}$. How many bytes of payload are being carried by the datagram? What is this datagram's efficiency (ratio of the payload length to the total length)?
21. A packet has arrived in which the offset value is 100, the value of HLEN is 5, and the total length value is 100. What are the numbers of the first and last bytes?



Forwarding table for R2

Network address/mask	Next-hop address	Interface
140.24.7.192/26	----------	m1
140.24.7.0/24	address of R1	m0
0.0.0.0/0	default router	m2

Forwarding table for R1

Network address/mask	Next-hop address	Interface
140.24.7.0/26	----------	m0
140.24.7.64/26	----------	m1
140.24.7.128/26	----------	m2
0.0.0.0/0	default router	m3