

Tutorial 3

ELEC3506/9506 – Communication Networks

1. Briefly describe the services provided by the data link layer.
2. Define framing and the reason for its need.
3. Compare and contrast byte-oriented and bit-oriented protocols. Which category has been popular in the past (explain the reason)? Which category is popular now (explain the reason)?
4. Compare and contrast between the three most common error detection methods (as discussed in the lecture).
5. Compare and contrast flow control and error control. How does error control complement flow control?
6. Standard Ethernet defines several Physical layer implementations. Discuss the most common implementation categories?
7. What is switched Ethernet?
8. What are the advantages of token passing?
9. In the event of failure, how does the FDDI network automatically reconfigure?
10. Compare and contrast between a hub (repeater) and a bridge.
11. Compare and contrast between a bridge and a switch (Layer 2).
12. What do we mean when we say that a bridge can filter traffic? Why is filtering important?
13. How does a repeater extend the length of a LAN?
14. How does a VLAN reduce network traffic?
15. For a CSMA/CD network with 1 Gbps bandwidth, if a frame size of 512 bits is used, what is the maximum possible distance between nodes? Assume zero processing delay and EM propagation delay is 2×10^8 m/s.
16. How collision can be detected in CSMA/CA networks?
17. Consider 3 network configurations below. Assuming the cables/lines provide a capacity of 100 Mbps. What will be the throughput for each configuration?