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COLLEGE OF ENGINEERING AND COMPUTER SCIENCE
Department of Computer Science

CSc/CpE 138 Computer Networks and Internets
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STUDY QUESTIONS WITH SOME SOLUTIONS FOR MIDTERM1 EXAM IT IS GIVEN AS PART OF THE STUDY GUIDE TO HELP YOU PREPARE FOR EXAM1 (MIDTERM).

The following problems are from Kurose and Ross Text. In the following X.Yn, X is the chapter number, Y = {R, P} where R is Review and P is Problems; n is a number. Note that Yn is exactly as specified in the textbook.

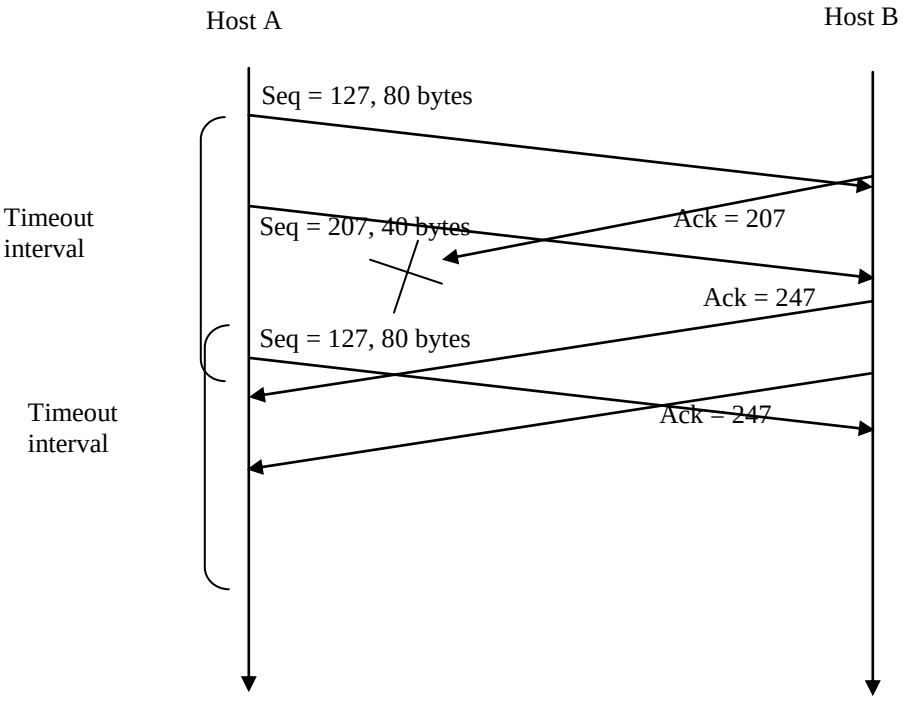
1. 3.R14

a) false b) false c) true d) false e) true f) false g) false

2. 3.R15 a) 20 bytes b) ack number = 90

3. 3.P27

a) In the second segment from Host A to B, the sequence number is 207, source port number is 302 and destination port number is 80.
b) If the first segment arrives before the second, in the acknowledgement of the first arriving segment, the acknowledgement number is 207, the source port number is 80 and the destination port number is 302.
c) If the second segment arrives before the first segment, in the acknowledgement of the first arriving segment, the acknowledgement number is 127, indicating that it is still waiting for bytes 127 and onwards.
d)



SOME STUDY QUESTIONS WITHOUT ANSWERS

1. The Internet protocol stack contains the following layers _____:

2. A network protocol defines:_____

3. The Internet is made of:
   (a) Network edge: hosts and applications
   (b) Access network and physical media: wired, wireless communication links
   (c) Network core: interconnected routers, network of networks
   (d) All of above

4. Compare FDM and TDM

5. Compare circuit-switched and packet switched networks

6. Sources of packet (data) delay include:_____

7. Node A sends data to Node C via intermediate node B. Suppose the throughput of the link between A and B is 200Mbps and that between B and C is 100 Mbps, what is the effective throughput of the logical link between A and C?

8. The network layer protocol supports:_____

9. Characteristics about HTTP include _____

10. Characteristics of FTP include_____

11. Characteristics of SMTP include_____

12. Compare POP and IMAP

13. Characteristics of DNS include _____

14. Examples of DNS clients include_____

15. In socket programming a socket address consists of _____

16. Which of the following service is performed by the following protocols: TCP

a. Connection establishment and termination
b. Error detection
c. Flow and congestion control
d. All of the Above

ERROR DETECTION AND RETRANSMISSION. Consider hosts A and B communicating using a reliable data transfer (RDT) protocol. A has three data packets to send to B. Packets have 2-bit sequence numbers (Go Back N Protocol). Ie sequence numbers are 0, 1, 2, etc and the receiver in B, if necessary, acknowledges packets with the number of the last packet received correctly.

17. Assuming the channel between A and B is reliable (no garbled, lost, or delayed packets of any kind), which of the following is true?
    a. Each packet from A will be acknowledged with sequence number 0
    b. The packets from A will be acknowledged with sequence numbers in the following order: 0, 1, 0
    c. Because the channel is reliable, No packets should be acknowledged by B
    d. Each packet from A will be acknowledged with sequence number 1

18. Assuming an unreliable channel (garbled packet only) such that all three packets are received correctly, and each arriving packet is acknowledged individually, the acknowledgement number of each of the received packets from B will be
    a. 0, 1, 0
    b. 0, 0, 1
    c. 1, 0, 1
    d. 0, 1, 2

19. Assuming an unreliable channel (garbled packet only) such that 1st and 3rd packets are received correctly but 2nd packet is received in error, and each arriving packet is acknowledged individually, the acknowledgement number of each of the received packets from B will be
    a. 1, 0, 1
    b. 0, 0, 0
    c. 1, 0, 1
    d. 0, 1, 1

20. In the previous question the sequence numbers of the first three packets from A will be
    a. 1, 0, 1
    b. 0, 0, 1
    c. 1, 0, 1
    d. 0, 1, 2

TCP ERROR CONTROL Host A sends three TCP segments back to back to back to Host B over a TCP connection. The first segment is of size 1000B and has initial sequence number (ISN) = 0; the second is of size 1000B; and the third is of size 2000B. After host A sends these three segments host B acknowledges with a cumulative ACKnowledgement.

21. Suppose the 2nd segment is lost but the 1st and 3rd segments arrive at B correctly. In the acknowledgement that B sends to A (cumulative ACK) the acknowledgement number will be ___

22. Suppose the 3rd segment is lost but the 1st and 2nd segments arrive at B correctly. In the acknowledgement that B sends to A (cumulative ACK) the acknowledgement number will be ___

23. Suppose the 1st segment is lost but the 2nd and 3rd segments arrive at B correctly. In the acknowledgement that B sends to A (cumulative ACK) the acknowledgement number will be ___

24. Suppose all three segments arrive at B correctly. In the acknowledgement that B sends to A (cumulative ACK), the acknowledgement number will be ___

TCP FLOW CONTROL. Consider the scenario similar to above except that Host A has two segments each of size 4000B to send to host B. There are no lost segments in this scenario.

25. Host A sends 1st segment with Initial Sequence Number (ISN) = 0, B responds with 1st ACK and Advertized_Window (AWin) = 1000. The Acknowledgement sequence number and AWin values sent by B will be ___

26. Given the scenario stated above the sequence number and maximum size of 2nd segment from host A will be ___

27. Suppose B responds to the 2nd segment from A above with a 2nd ACK segment and this segment includes Advertized window = 1000B. The 3rd segment from A will have the follow sequence number segment size pair ___

28. 3.R18
False, it is set to half of the current value of the congestion window.

29. 2.R13
Web caching can bring the desired content "closer" to the user, possibly to the same LAN to which the user's host is connected. Web caching can reduce the delay for all objects, even objects that are not cached, since caching reduces the traffic on links.

30. 2.R19
Yes an organization's mail server and Web server can have the same alias for a host name. The MX record is used to map the mail server's host name to its IP address.

31. 2.P1

a) F
b) T
c) F
d) F
e) F