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Exercise Sheet 8

Computer Engineering and Communication Networks

Handout: 22.11.2019
Discussion: 28.11.2019 (start 10:00 a.m.)

1. Reliable Transmissions

1.1. Using the High-level Data Link Control (HDLC) protocol, what would be the received data if *011110 1111* is the message to be transmitted?

1.2. Explain how sliding windows are used in flow control.

1.3. A receiver immediately sends a stop message to the sender if it determines that it no longer complies with the processing of the data. What is the minimum size of the recipient's buffer so that the recipient never has to discard packets? The bandwidth is 1000 Mbit /s and the delay 21 ms.

1.4. Specify the parity bit for the following blocks (odd parity):

a) 0100000
b) 0101011
c) 1110011
d) 1000001

1.5.Which layer of OSI model covers error controlling? What are the key concepts and methods of error controlling?

1.6. Which statement is correct?
Using block check parities in transmitting 5 data blocks with 4-bits in each block ------.

a) Two errors can be recognized
b) Only one error is recognizable
c) In any case, all errors are recognizable
d) Single and double errors are corrected in each time

1.7. If the Cyclic Redundancy Check (CRC) is used for error detection in a data transmission, what would be the data received at the receiver side if the data to be transmitted is 10100011. The G(x) is x^3+1.

1.8. Name and explain the deferences of acknowledgement types used in data retransmission in error controlling mechanisms.

1.9. Based on the Forward Error Correction (FEC) scheme shown on Slide M8-75, calculate the missing blocks (indicated by ?) based on the received blocks:

1.3.1. Received: D=11, B=01 A=?

1.3.2. Received: C=10, D=10 A=?, B=?

1.10. What is the advantage of Forward Error Correction (FEC) over error detection?

a) less delay in case of error
b) lower delay normally
c) requires lower bandwidth

1.11. What are the side effects of the FEC method?