IS8055556: Data and Computer Communications	**Recitation 4**
Semester 2 5785	**22 April 2025**
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CRC

1 CRC Calculations

Suppose we want to transmit the message 1011 0010 0100 1011 and protect it from errors using the CRC-8 polynomial $x^8 + x^2 + x^1 + 1$.

(a) Use polynomial long division to determine the message that should be transmitted.

(b) Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred?

2 CRC Creation and Validation

A and B communicate using the following CRC polynomial to protect their messages: $x^{10}+x^8+x^7+x^5+x^2+1$. We will use the polynomial for the following calculations.

(a) A received the following message from B:

    1111 1011 1110 0100 0111 11

The message consists of a message body followed by a CRC remainder. There is no demarcation between the two fields - A just needs to check if the message received is correct. Write if the message and remainder are correct or not. Show your calculations.

(b) A wants to send the following message to B:

    1011 0010 0110 1111

Calculate the CRC remainder for the message. Write the complete message that A will send to B. Show your calculations.