

CSE 963: Computer Networks I
Homework-3
Due date: Friday 03/03/2024

PROCEDURE:

1. **(20 points)** Write a program (in any language) that generates an n -bit frame for transmission from a k -bit data block D and a $(n - k + 1)$ bit CRC divisor P . Compile and run the program with at least two set of inputs to confirm that this program is generating CRC patterns correctly.

Now, modify the program that performs the following steps:

- (a) Generates a message of $k = 10$ bits.
- (b) Uses the previous code with $P = 110101$ to generate the corresponding 15-bit frame T for transmission.
- (c) Generates transmission errors at any bit positions of T .
- (d) Applies CRC to the received frame (i.e. frame T after introducing errors) to determine if the frame should be accepted or discarded.

Attach your code with your report, and also put comments stating the instructions of how to run it.

2. **(20 points)** (a). In a CRC error-detecting scheme, choose $P(x) = X^4 + X + 1$. Encode the bits 10010011011.
(b). Suppose the channel introduces an error pattern 100010000000000 (i.e., a flip from 1 to 0 or from 0 to 1 in position 1 and 5). What is received? Can the error be detected?
(c). Repeat part (b) with error pattern 100110000000000.