EXPERIMENT #11 Cyclic Redundancy Check CRC

INTRODUCTION

Cyclic Redundancy Check (**CRC**) is an error-detecting code commonly used in digital networks and storage devices to detect accidental changes to raw data. CRCs are based on the theory of cyclic error-correcting codes. The use of systematic cyclic codes, which encode messages by adding a fixed-length check value, for the purpose of error detection in communication networks. Cyclic code is well suited for the detection of burst errors.

CRC code requires definition of a so-called generator polynomial. This polynomial becomes the divisor in a polynomial long division, which takes the message as the dividend and in which the quotient is discarded and the remainder becomes the result

Laboratory Procedure

- Set up the system Figure 1.
- The encoder (9,6) is built using CRC block (top path) and using basic components (delay unit and XOR). Verify the operation of the encoder using different message block of 6-bits.
- Set CRC encoder to add more redundancy like 4 bits. Use the generator polynomial $g(x)=x^4+x^3+x+1$.

Cyclic Redundancy Check Encoding



Figure 1: CRC Encoder.

Report:

- 1. Discuss the results.
- 2. How to detect the errors using CRC.