CRC 8 AUTOSTAR

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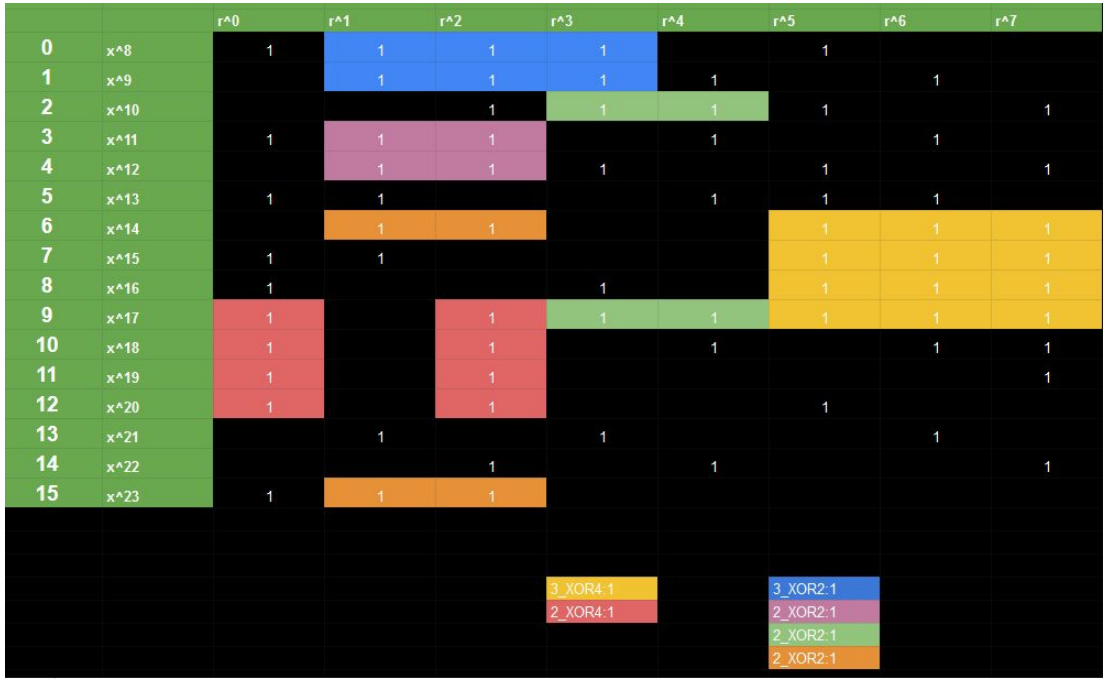
CRC-8-ENCODER



To encode the message we used the following formula

CRC=Mod[(M(x)∗x^n)/B(x)]

M(x) is the message polynomial, B(x) is the generator polynomial and n is the degree of polynomial B(x)

B(x)=x^8+x^5+x^3+x^2+x+1

In a worst case scenario we would need 64 xors so the color coded groupings were reused to minimize the amount of xors needed.

A parallel approach was used in the design of the encoder

CRC-8-Checker

We can confirm the correctness if the message sent by comparing the CRC Checksum of the sent message with the one calculated from the message received. If they don't match there has been a error in the message transmission.

A serial approach was used in the design of the checker, the encoder inside it is parallel

There is a clk,reset,data inputs and a error output,the data input starts with most significant bit of the message, the error will be displayed 1 cycle after the last bit introduced which is r(0)”the least significant bit of the correct checksum”, it will show for only 1 cycle and then be set to 0