# First Project Assignment

Verify the following circuit using Specman Elite

Design: The circuit computes the remainder for ECC CRC-8 with generator x^8+x^2+x+1. The remainder from the generator is a polynomial of degree, at most seven and thus can be encoded as a byte, whose bits are the remainder' coefficient.

Block Diagram

Dividend

1 bit

Generator

8 bits

REM_COMPUTE

Remainder

1 bit

clk
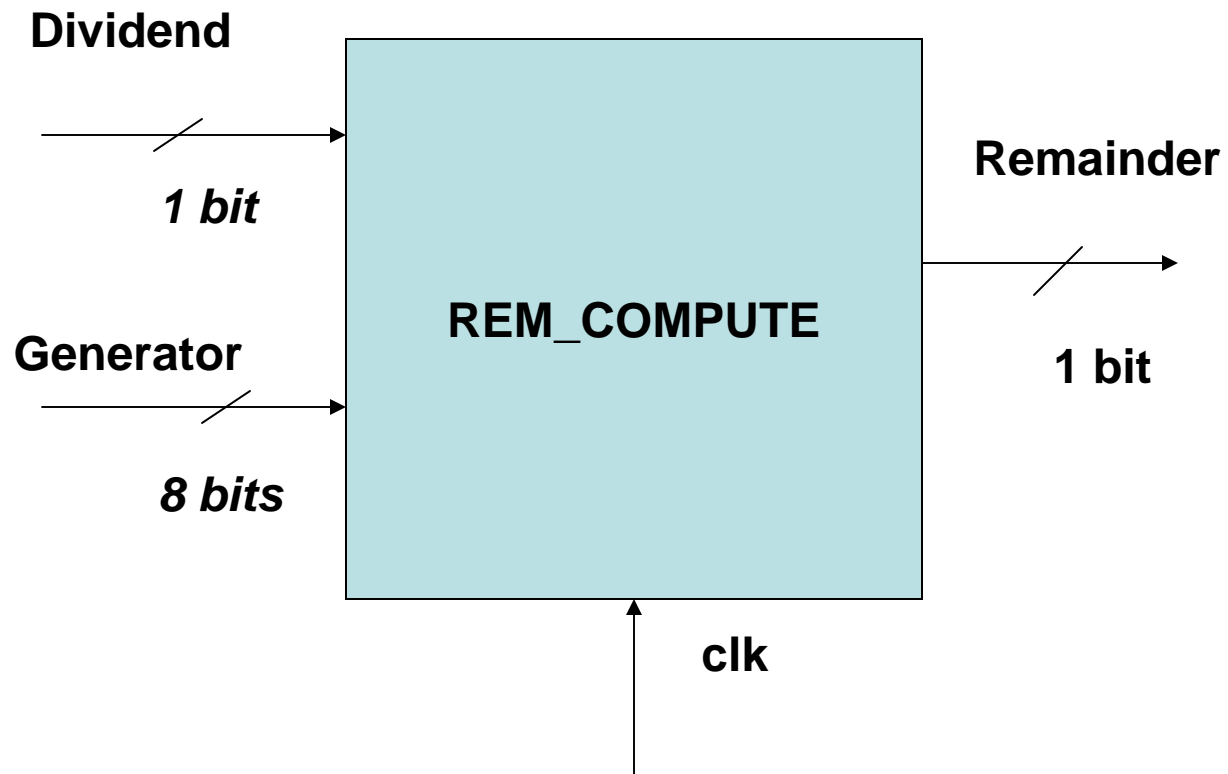
An Example

$$Generator = x^8 + x^2 + x + 1 = (100000111)_2$$

$$Input\ Polynomial = x^{14} + x^{13} + x^{11} + x^9 + x^7 + x^5 + x^2 + 1$$

$$= (110101010100101)_2.$$

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                    1101011 ←――QUOTIENT――
         100000111) 110101010100101
             ↑          100000111
         Generator      --------------
                        101011011
                        100000111
                        --------------
                          101110000
                          100000111
                          --------------
                            111011110
                            100000111
                            --------------
                              110110011
                              100000111
                              --------------
                                10110100 ←――REMAINDER――
```

A Basic Circuit