COSC 290

Class Exercises #5

1. Using the CRC polynomial 1011 (= x3 + x + 1),
   1. How many bits a sender append to this information before computing CRC code word?
   2. compute the CRC code word for the information word 1011101
   3. Check the division performed at the receiver with the cord word of the result of b.
2. Using the CRC polynomial 10101 (= x4 + x3 + 1),
   1. How many bits a sender append to this information before computing CRC code word?
   2. compute the CRC code word for the information word 101101001
   3. Check the division performed at the receiver with the cord word of the result of b.
   4. If a receiver received a code word, 1011011001010112, does an error in the transmission of information? (Show your work.)
3. Suppose we want an error-correcting code that will allow all single-bit errors to be corrected for memory words of length 10.
   1. How many parity bits are necessary?
   2. Assuming we are using the Hamming algorithm presented in this chapter to design our error-correcting code and an **odd** parity , find the code word to present the 10-bit information word:

1 0 0 1 1 0 0 1 1 1

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* 1. We now receive the following code word:

1 0 1 0 1 1 0 0 0 0 1 0 1 1

Is this a legal code word, assuming an **odd** parity? If not, what is the corrected code word? (Which bit is the error bit?)