

Exercises on Hamming Code

- ⊙ Given the 11-bit data word 00100111010, generate the corresponding 15-bit Hamming Code word.
- ⊙ A 12-bit Hamming code word contains 8 bits of data and 4 parity bits is read from the memory. What was the original 8-bit data word that was written into memory if the 12-bit word read out is:
a) 000010101010, b) 111110010110, and c) 100111110100.
- ⊙ How many parity check bits must be included with the data word to achieve single error correction and double error detection when the data word contains: a) 16 bits, b) 32 bits, and c) 64 bits.

- ⦿ **It is necessary to formulate the Hamming code for 4 data bits D3, D5, D6, D7 together with 3 parity bits P1, P2, and P4.**
 - a) Evaluate the 7-bit composite code word for the data word 0101.**
 - b) Evaluate the 3 check bits C1, C2, and C4, assuming no error.**
 - c) Assume an error in bit D5 during storage into memory. Show how the error in the bit is detected and corrected.**
 - d) Add a parity bit P to include double error detection in code. Assume that errors occurred in bits P2 and D5. Show how this double error is detected.**