Error detection and correction -

The Hamming code

Lab Report

Introduction:

The Hamming code is a block code that is capable of detecting up to two simultaneous bit errors and correcting single-bit errors. The Hamming distance is being calculated for two vectors of equal length (4 bit or 8 bit etc.). It is given by the number of positions for which vect0r bits are different and indicates the number of errors between them. This is the case in computer memory, where bit errors are extremely rare and Hamming codes are widely used.

Method:

The code works for 4 bit strings and 8 bit strings, with parity bit included. The main part of the site asks the user to input 4 or 8 bits in a drop down list, with 4 bits being the default option. Then, the user inputs a string of 1's and 0's as the boxes light up green:



After the code is ran, it outputs a bit of text pointing out the error:



The main chunk of this exercise is represented by an if statement which consists of choices 4 and 8 bits respectively. Each possibility then calculates its respective control bits

Results

* Print screens
* Notes

Analysis

Please answer the following questions (as *short as possible / one phrase*):

* What is Hamming distance?
* How many errors can be corrected using double error detection Hamming code?
* What is a parity bit?