

ERROR DETECTION AND CORRECTION USING HAMMING CODE

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ABSTRACT

In this rapidly changing world, were every morning we getup can hear about a new technology developed, percentage of occurrence of error also increases. To meet the present need in the electronic world, a hamming code based system is designed as a project which can be implemented in error detection and correction. The project's aim is to control the error automatically and avoid mistake.

In this project, data is entered through PC interface or by BIT switch which is connected to Xilinx. When 4-bit data is entered it is changed to 7-bit data by adding parity bits. This 7-bit data is sent to checker logic which generates syndrome vector. This syndrome vector gives the exact location of error bit. Thus work becomes easier just to alter the value of that position and we get the correct data bit. Every bit can be seen on LED display. Each of these steps is performed in Xilinx and Modelsim using VHDL coding to display compiled output on monitor.

In addition the system was tested to examine the validity and the results shows that system was able to achieve the aim of this project. This system can be implemented for error detection and correction. Furthermore this design can be improved by using multiple coding languages, and then in place of using LED display 7-segment display can be used to figure out exact bit 0 or 1.

Keywords: Hamming code, Xilinx, Modelsim, VHDL,