1.3.3: Number of Students undertaking project work/field work/internship during last year

Dept: M.E. VLSI Design **Academic Year-2023-2024**

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PRINCIPAL
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DESIGN AND IMPLEMENTATION OF HAMMING CODE WITH TRIPLICATION ERROR CORRECTION USING XILINX

PHASE II REPORT

Submitted by

SIMRAN A

in partial fulfillment for the award of the degree of

MASTER OF ENGINEERING IN

VLSI DESIGN

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ANNA UNIVERSITY, CHENNAI

AUGUST - 2024

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this Report titled "**DESIGN AND IMPLEMENTATION OF HAMMING CODE WITH TRIPLICATION ERROR CORRECTION USING XILINX**" is the bonafide work of **SIMRAN A (812422419001)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

Present energy efficient error control code MBRBEC that can correct any type of error patterns including random errors, burst errors and combination of random and burst errors that count up to five and simultaneously avoids crosstalk. The proposed MBRBEC encoder uses SEC–DED extended Hamming code (39,32) to encode the initial message bits. Triplication error correction scheme is one of the standard error correction schemes used in communication system to correct errors. We propose triplication error correction scheme to correct the errors in on chip interconnection link. Using triplication error correction scheme, each of the encoded message bit is triplicated. Thus if the initial SEC–DED extended Hamming code is (n,l), where n is the encoded message and l is the original message, then the final number of bits in the triplication message is 3n. The triplication of the message bit is used to correct the errors and simultaneously avoids crosstalk.

CHAPTER 9

CONCLUSION

9.1 CONCLUSION

The proposed MBRBEC encoder uses SEC–DED extended Hamming code (39,32) to encode the initial message bits. In this paper, we have seen how to use an even parity check method for any sequence of information and we have shown it for the 7-bit information signal. It speeds up the communication as we can encode the total information as a whole and send as one, there is no need for splitting. By using the same parity method at the destination we can successfully recover the original information sequence. We can also detect the errors by using no error, single error, and double error method. We have implemented the hamming code in VHDL and DSCH tool. The hamming code is widely used in computing memory, data compression & other application of telecommunication.