

National Institute of Technology, Srinagar

Data Communication Assignment

Error detection and correction

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Cyclic Redundancy Check(CRC) and 7-bit Hamming code

1 Objectives

Simulate realistic error detection and correction by implementing Cyclic Redundancy Check (CRC) and 7-bit Hamming code using binary symmetric channel and random error generation.

2 Programming Language

- Programming Language used: C++ and Python
- Libraries Python: Imported **random** module in CRC python code.
- Libraries C++: Used **math.h** library in hamming code.

3 Assumptions

- The user enters binary data i.e a stream of 0's and 1's in hamming code.
- Data stream of random 0's and 1's generated of 32 bit in CRC.
- Standard CRC-8 divisor
$$x^8 + x^2 + x + 1$$
is used in CRC.
- Knowledge about CRC and Hamming Code.

4 References

- <https://www.geeksforgeeks.org/hamming-code-in-computer-network/>
- Medium
- GitHub