NATIONAL INSTITUTE OF TECHNOLOGY, SRINAGAR

Hazratbal -190006

Data Communication

Programming Assignment 1 - Line Coding Schemes

SPECIFICATION REPORT

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Introduction

Line coding is the process of converting digital data to digital signals. We assume that data, in the form of text, numbers, graphical images, audio, or video, are stored in computer memory as sequences of bits. Line coding converts a sequence of bits to digital signal. At the sender, digital data are encoded into a digital signal; at the receiver, the digital data are recreated by decoding the digital signal.

The following line coding schemes are used in the program:

1. **NRZ-L**
2. **NRZ-I**
3. **Manchester**
4. **Differential Manchester**
5. **AMI**

Language Used

- Python

Libraries Used

- Matplotlib

Instructions

- To select encoding scheme or type of scrimbling, type the option number of the encoding scheme diaplayed on the prompt,as input.
  ex.

  1. NRZ-L
  2. NRZ-I
  3. Manchester
  4. Differential Manchester
  5. AMI

  To select NRZ-I as encoding scheme, digit 2 should be entered as input.

- Data stream entered as input should have each bit seperated by a single space.

  Note: No space should be entered after the last bit.

Assumptions

1. The *amplitude* of each signal generated is considered to be 1 unit.
2. The digital signal is considered to have a *positive logic*.