Representation of Signal

using Different Encoding Methods.

(Digital Data to Digital Dignal)

Course Name: Data Communication
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SEC: (1).
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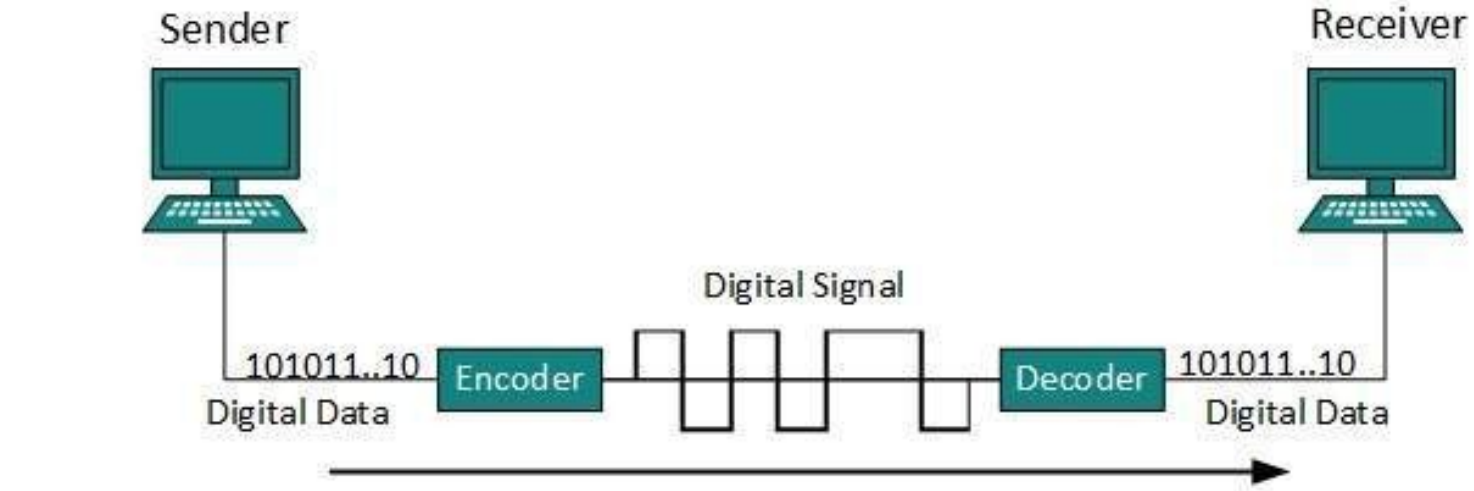
overview

- What transmitter do
- How transmitter convert data to signal
- different Encoding methods
- How receiver convert signal into data
- Signal representation
- How we do that


Sender
Receiver
Digital Signal
101011..10
Digital Data
Encoder
Decoder
101011..10
Digital Data

Transmitter device (encoder)

Data → bit

1 char = 8 bit

ewu → 011001010111011101110101

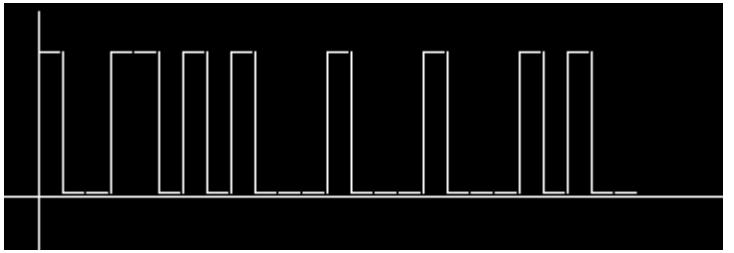
signal → 01110011011010010110011101101110011000010110110 0

first → 011001100110100101110010011100110111010 0

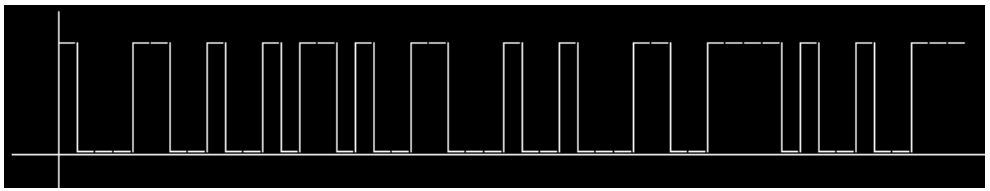
Transmitter program

bit → signal

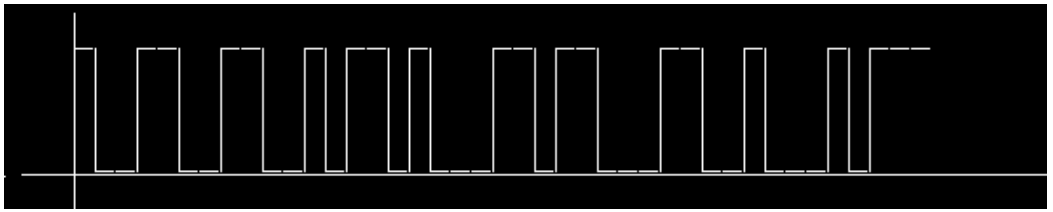
01100101011101110110101 →



01110011011010010110011101101110011000010110110 0

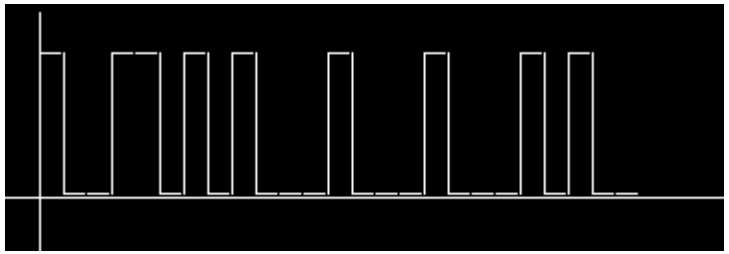


01100110011010010111001001110011011101000

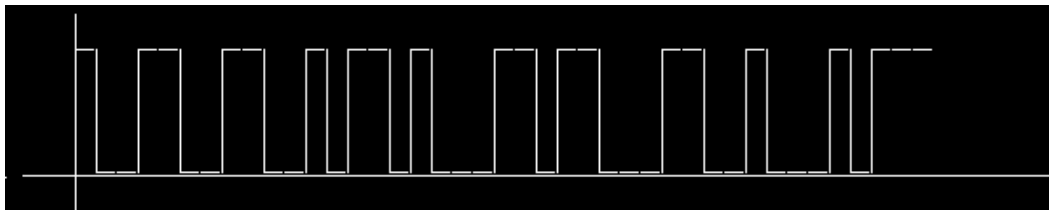


Receiver program (decoder)

Signal → bit



011001010111011101110101



01110011011010010110011101101110011000010110110 0

Receiver program

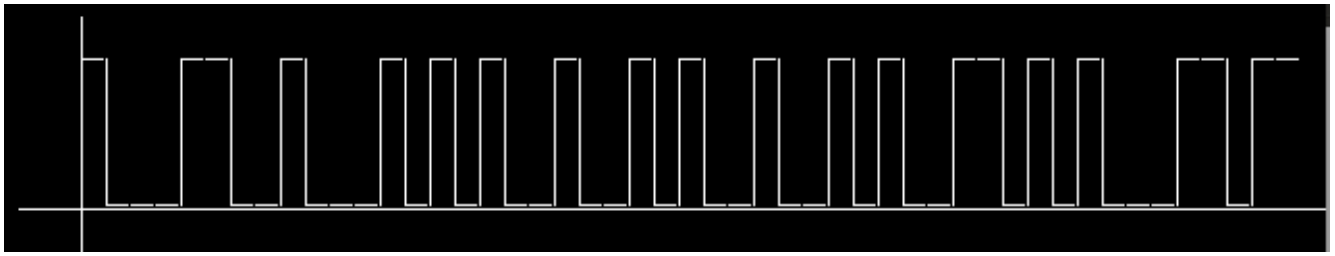
bit → Data

011001010111011101110101 → ewu

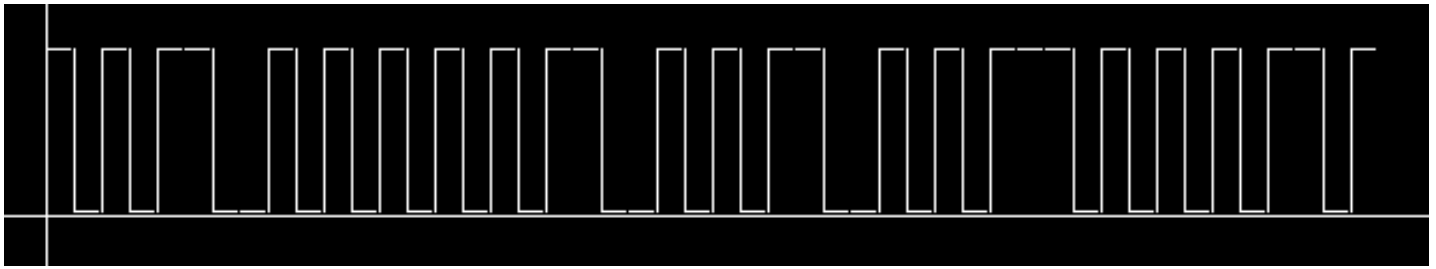
011100110110100101100111011011100110000101101100 → signal

NRZ-L encoding

INPUT : **summer**
Bit: 01110011011101010110110101101101011001010111001 0

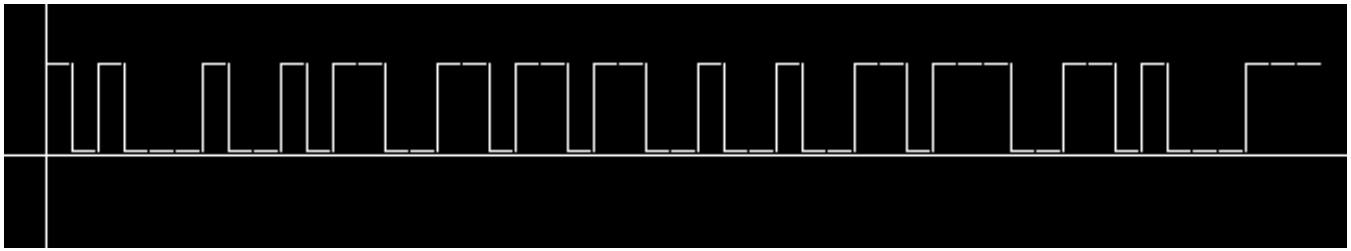


INPUT : **SUMMER**
Bit: 01010011010101010100110101001101010001010101001 0



NRZ-I encoding

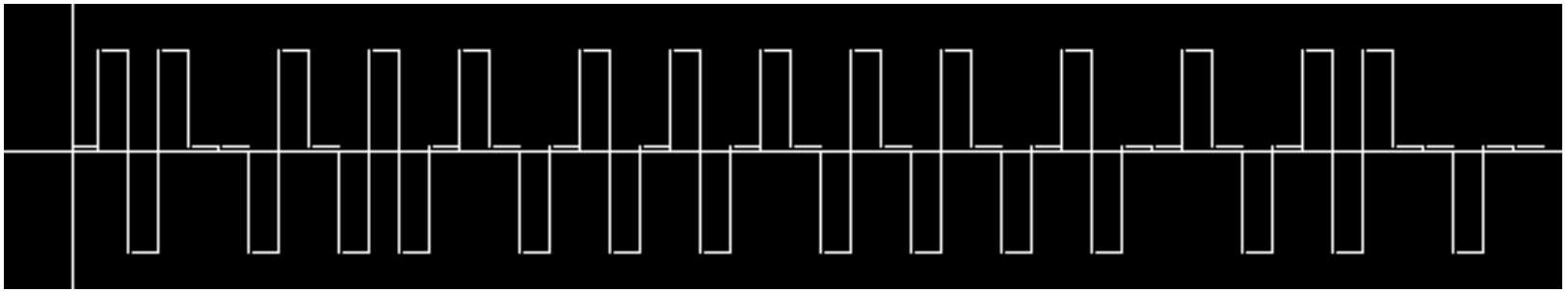
INPUT : **summer**
Bit: 01110011011101010110110101101101011001010111001 0



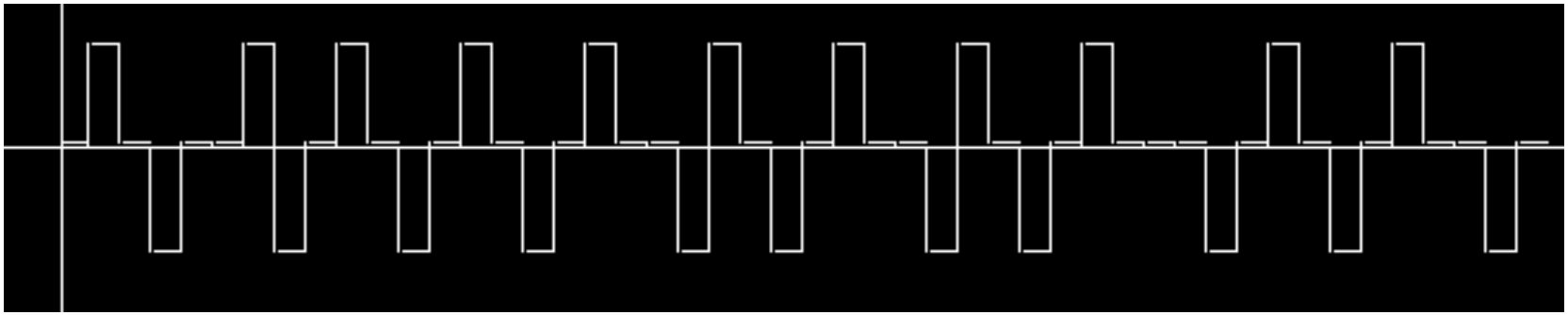
INPUT : **SUMMER**
Bit: 01010011010101010100110101001101010001010101001 0

Bipolar AMI encoding

INPUT : **summer**
Bit: 011100110111010101101101011011010110010101110010

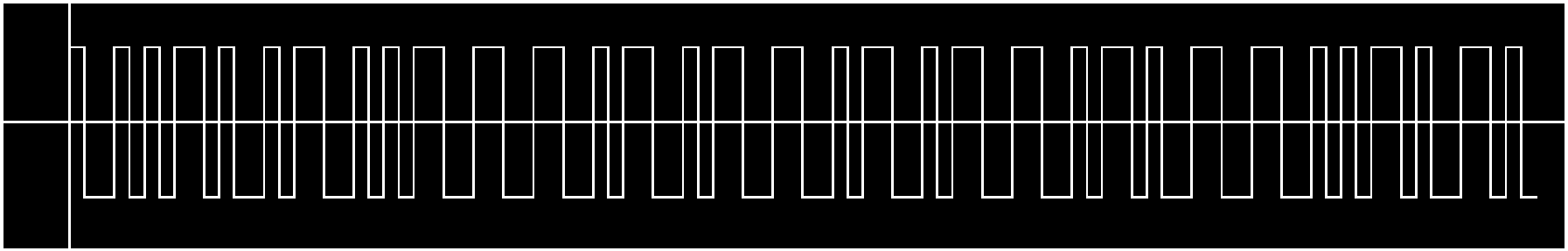


INPUT : **SUMMER**
Bit: 010100110101010101001101010011010100010101010010

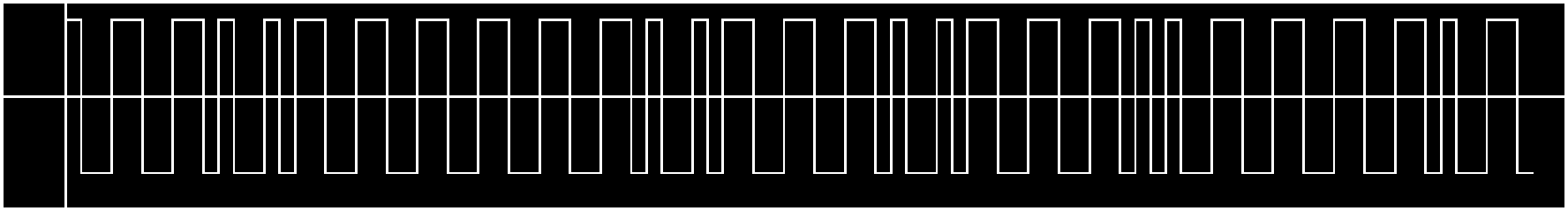


Manchester encoding

INPUT : **summer**
Bit: 01110011011101010110110101101101011001010111001 0



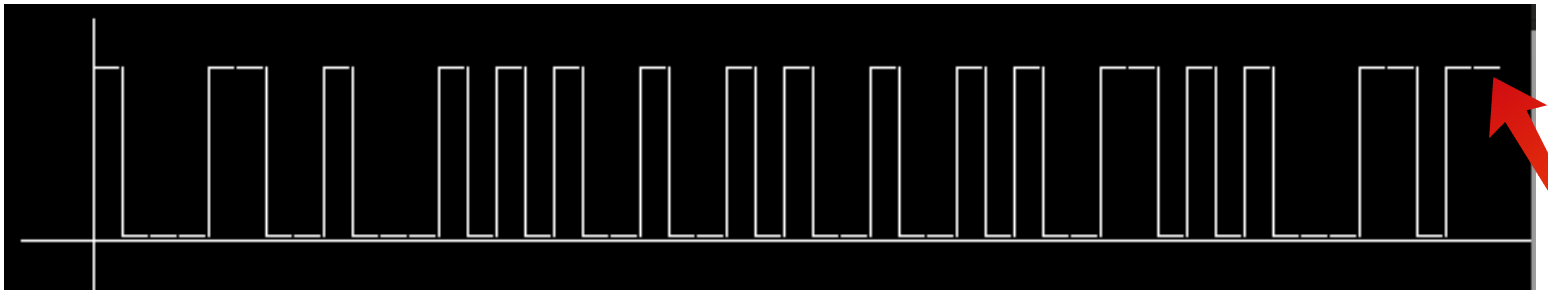
INPUT : **SUMMER**
Bit: 01010011010101010100110101001101010001010101001 0



Problem and solution

Last bit of data stream repeat once and generate signal.

Transmitted bit : 0111001101110101011011010110110101100101011100 10



Extra signal

Error detection

Receiver (decoder) convert signal into bit , the additional last bit still here. Now receiver Convert the bit stream into data text. It take 8 bit at a time to convert into character. The additional bit will ignored by program cause it can't found 8 bit in a row, then program detect there are additional bit and terminate successfully .

01110011 01110101 01101101 01101101 01100101 01110010 0

s u m m e r

Received data : summer

Files and diagrams

```
Source  text : Ban 420/2.

  bit stream : 0100001001100001011011100010000000110100001100100011000000101111001100100010111 0

 using NRZ- L Encoding teachnic.
```

Cont..

Text files

receiverBitStream.txt (~/Documents/cse350datacom/code/DCOMPROJECTCODE/textfiles) - gedit

Open Save

```
0100001001100001011011100010000000110100001100100011000000101111001100100010111100
```

transmitedBitStream.txt (~/Documents/cse350datacom/code/DCOMPROJECTCODE/textfiles) - gedit

Open Save

```
0100001001100001011011100010000000110100001100100011000000101111001100100010111110
```

enteredDataFile.txt (~/Documents/cse350datacom/code/DCOMPROJECTCODE/textfiles) - gedit

Open Save

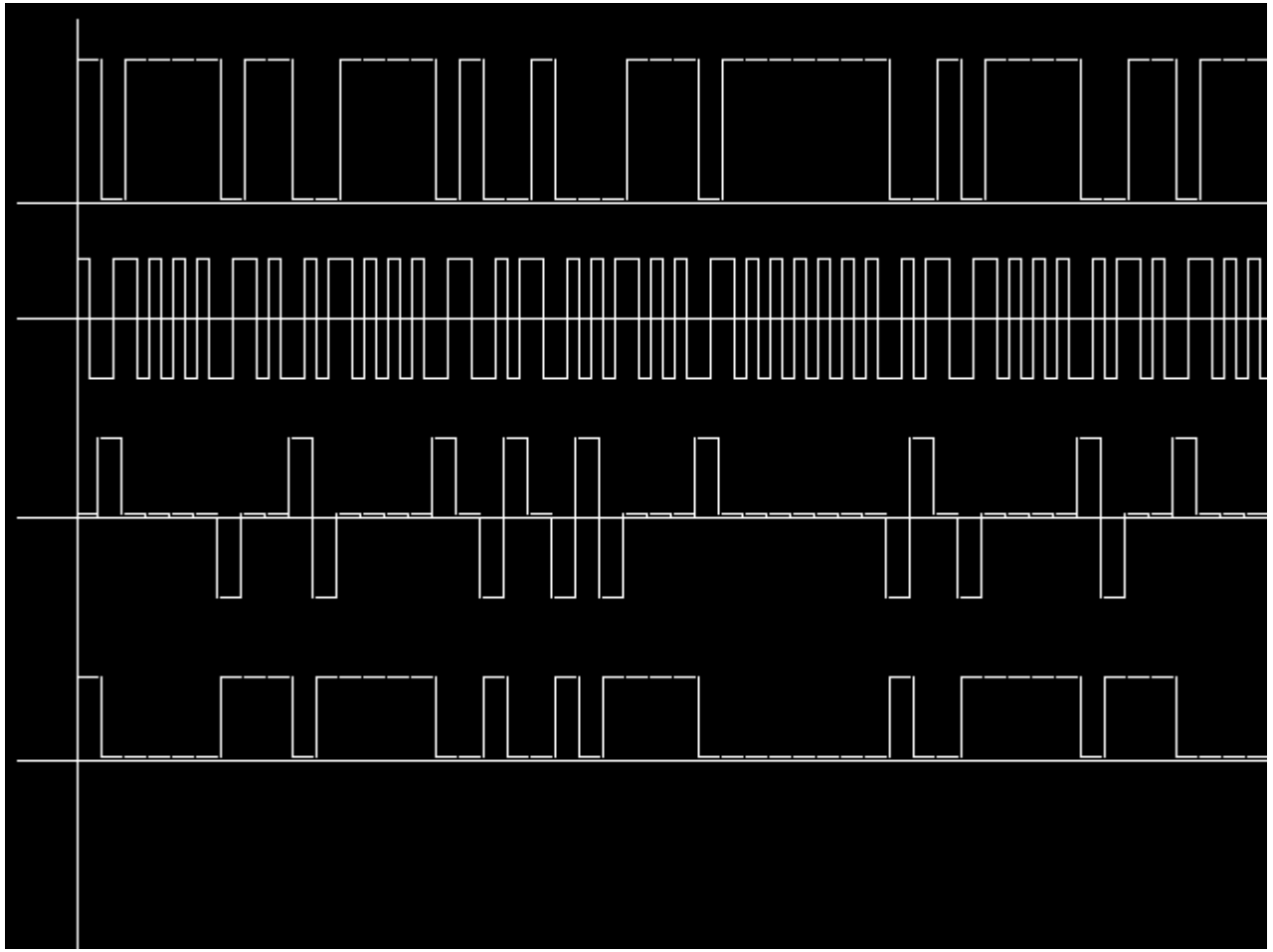
```
Ban 420/2.~
```

bitToText.txt (~/Documents/cse350datacom/code/DCOMPROJECTCODE/textfiles) - gedit

Open Save

```
Ban 420/2.
```

All signal figure



NRZ-L

Manchester

bipolarAMI

NRZ-I

bit : 01110011011101010110110101101101011 00

thank you!