Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering

Semester: (Spring, Year: 2021), B.Sc. in CSE (Day)

Lab Report No: 03

Course Title: Data Communication Lab

Course Code: CSE 308 **Section:** PC-DD

Lab Experiment Name: Implement Differential Manchester for both cases.

Student Details

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Submission Date: 13.08.2022

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[For Teachers use only: Don't Write Anything inside this box]

Lab Report Status	
Marks: ……	Signature:.....
Comments:.....	Date:.....

Title of the Lab Experiment: Implement Differential Manchester for both cases.

Objectives / Aim:

We learn about Differential Manchester from this experiment. We can take user input as a string and we can perform various operations on this input and show the result as output and we can see the output signal for this input.

Introduction:

In telecommunication and data storage, Manchester code is a line code in which the encoding of each data bit is low then high, or high then low, for equal time. Normally when the bit is 1 it is start from high and then goes to low, when the bit is 0 it is start from low and then goes to 1. Although the opposite coding is also Manchester coding.

Problem:

Implementing Encoding and Decoding Scheme Using Differential Manchester.

Problem analysis:

Conversion from bit stream to signal is called encoding.

Conversion from signal to bit stream is called decoding.

Code:

```
bits = [1 0 1 1 1 0 0 1];
bitrate = 1;
n = 1000;
T = length(bits)/bitrate;
N = n*length(bits);
dt = T/N;
t = 0:dt:T;
x = zeros(1,length(t));
lastbit = 1;
for i=1:length(bits)
  if bits(i) == 0
    x((i-1)*n+1:(i-1)*n+n/2) = -lastbit;
    x((i-1)*n+n/2:i*n) = lastbit;
  else
    x((i-1)*n+1:(i-1)*n+n/2) = lastbit;
    x((i-1)*n+n/2:i*n) = -lastbit;
    lastbit = -lastbit;
  end
```

```
  end
plot(t, x, 'Linewidth', 3);
counter = 0;
lastbit = 1;
for i = 1:length(t)
  if t(i)>counter
    counter = counter + 1;
    if x(i)==lastbit
      result(counter) = 1;
      lastbit = -lastbit;
    else result(counter) = 0;
    end
    end
end
disp('Differential Manchester Decoding:');
disp(result);
```

Output:

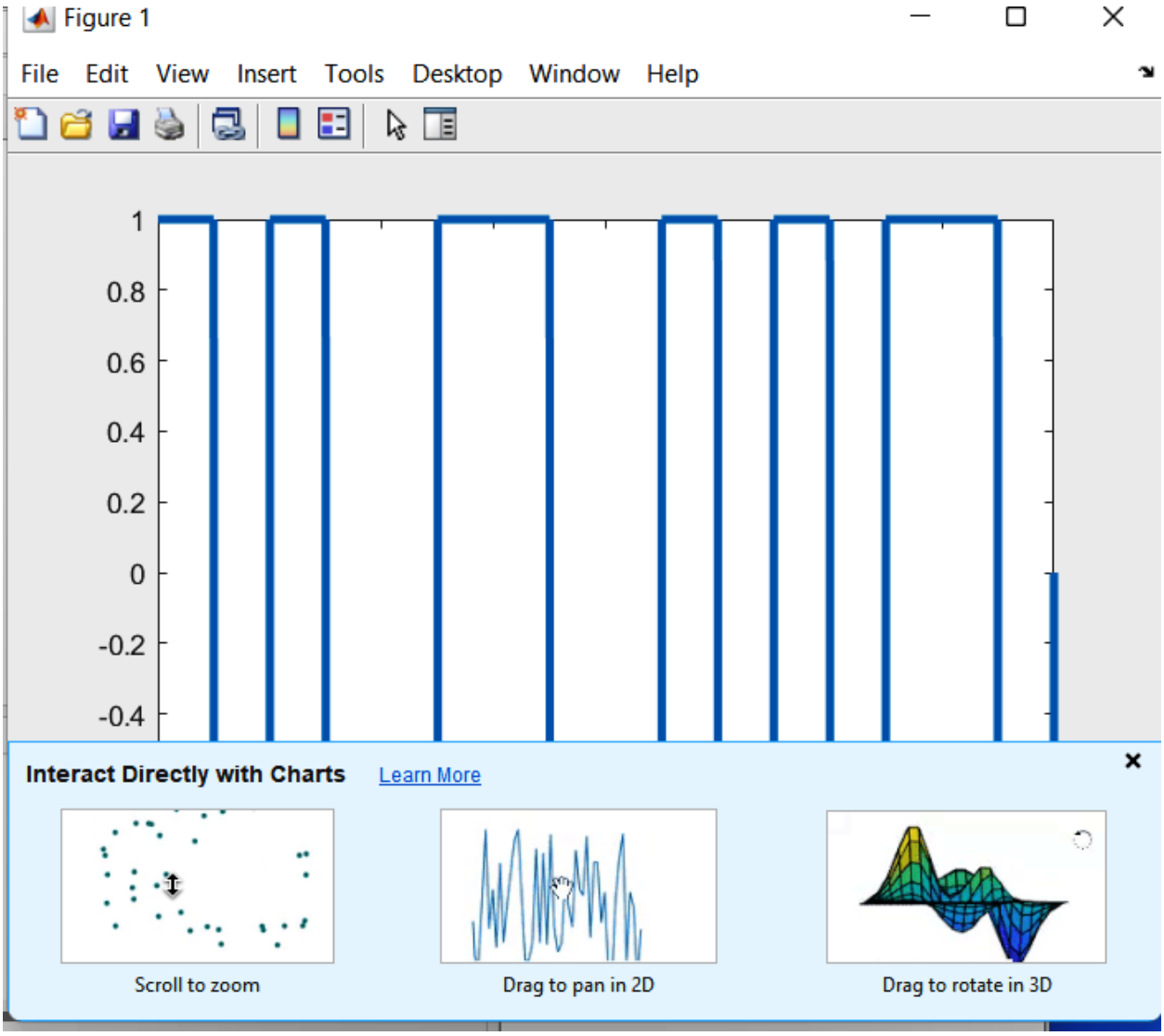
Figure 1
File Edit View Insert Tools Desktop Window Help
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
Interact Directly with Charts
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Analysis and Discussion:

1. From this lab, we knew Differential Manchester and the working system. This technique gives some signal as output. That's why it is very interesting.

2. Due to temperature problem in our classroom, we can't do this lab with proper attention. So, we have some theoretical problem.

3. This lab is completely based on software. So it may have some Software and Mechanical errors.

4. We use MATLAB application. That is new for us. That's why we face some many some to understand it.

5. From this problem, we use bit as input signal. When we operate with bit, we facing some problem to understanding it.

6. Based on the focused objective(s) to understand about the algorithms, the additional lab exercise made me more confident towards the fulfillment of the objectives(s).

7. Compile error.