

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: 05

Course Title: Data Communication Lab

Course Code: CSE 308

Section: PC-DD

Lab Experiment Name: Implement Delta modulation with Delta value is 0.4.

Student Details

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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 Delta modulation with Delta value is 0.4.

Objectives / Aim:

We learn about Delta modulation 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 signal output.

Introduction:

Delta modulation is a process mainly used in the transmission of voice information. It is a technique where analog-to-digital and digital-to-analog signal conversions are seen. Delta modulation (DM) is an easy way of DPCM. In this technique, the difference between consecutive signal samples is encoded into n-bit data streams. In DM, the data which is to be transmitted is minimized to a 1-bit data stream. This modulation is also called one bit two-level version of Differential pulse code modulation. It provides a staircase approximation of over-sampled base-band signal. It was found that at lower bit rates Delta Modulation is better than the standard PCM. In a Delta modulation system, operating on voice signals under optimum conditions, the SNR is increased by 9dB by doubling the bit rate.

Problem:

Implement Delta modulation with Delta value is 0.4.

Problem analysis:

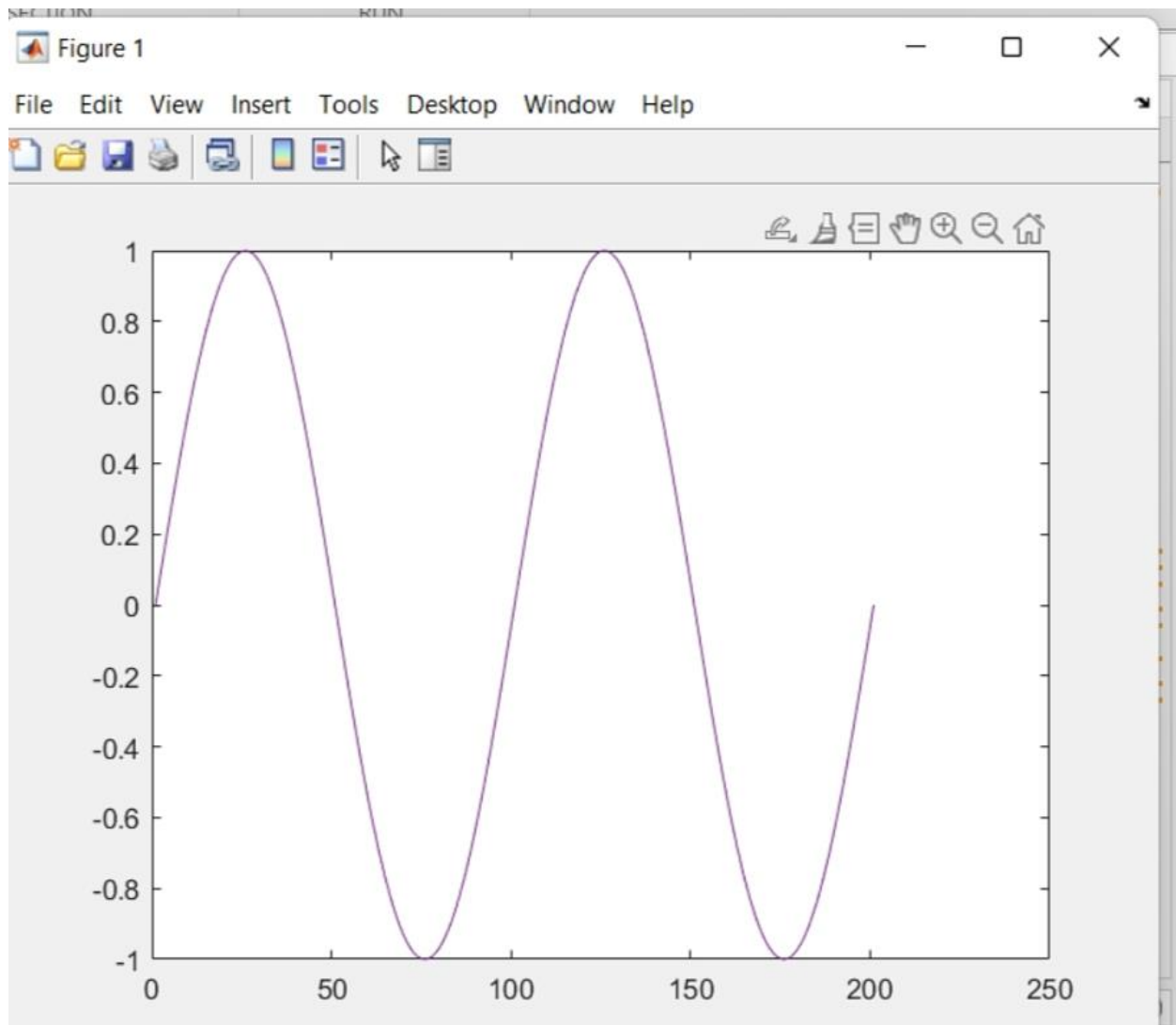
By this experiment we will learn about the Delta Modulation. Different encoding techniques are used in data communication to analog to digital conversion. Delta modulation is the analog to digital conversion technique. We will implement the Delta modulation by MATLAB.

Code:

```
bits = [1 1 0 1 1 0 0 1 1 0 0 ];
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;
FS=100;
t=0:1/FS:2;
m=sin(2*pi*t);
plot(m);
hold all;
AM=0.4;
FM=0.4;
d=2*pi*FM*AM/FS;
for n=1:length(m);
if n==1;
e(n)=m(n);
eq(n)=d*sin{ e(n)};
mq (n)=eq(n);
else
e(n)=m(n)-mq(n-1);
eq(n)=d*sin(n);
mq(n)=mq(n-1)+eq(n);
end
end
```

```
disp(result);
```

Output:



Analysis and Discussion:

1. From this lab, we knew Delta Modulation. And the working system of Delta Modulation. From this experiment, we saw some signal across the input. Those are very important for analysis signal.
2. This lab is completely based on software. So it may have some Software and Mechanical errors.
3. From this problem, we calculated in bit. When we operate with it, we facing some problem to understanding it.
4. Delta Modulation transmits only one bit per sample. Hence, the present sample value is compared with the previous sample value and this results in whether the amplitude is increased or decreased is transmitted. Input signal $x(t)$ is approximated to step signal by the delta modulator.
5. From this experiment Delta value is fixed. That's are another problem for future.
6. Compile error.