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**UNIVERSITY-BANGLADESH**

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**Lab Report**

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| Assignment Title: | Lab Report | | | |
| Assignment No: | 3 | | Date of Submission: | 16 February 2021 |
| Course Title: | Data Communication | | | |
| Course Code: | 00068 | | Section: | J |
| Semester: | Spring | 2020-21 | Course Teacher: | Md Mehedi Hasan |

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| **No** | **Name** | **ID** | | **Program** | | **Signature** | |
| 1 | Md.Yousuf Afendi | 19-39887-1 | | BSc [CSE] | |  | |
| ***Faculty use only*** | | | | | | |
| FACULTYCOMMENTS | | | **Marks Obtained** | |  | |
|  | | |  | |  | |
|  | | |  | |  | |
|  | | | **Total Marks** | |  | |
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|  | | |  | |  | |

2.d)

Id:19-39887-1

A=1,B=9,C=3,D=9,E=8,F=8,G=7,H=1

A1=GD=79, A2=AF=18

pkg load communications

fs = 10000;

t = -1:1/fs:100-1/fs;

C=3;

F=8;

A1=79;

A2=18;

x1 = 20\*cos(2 \* pi \*(C \* 100)\*t ) ;

x2 = 16\*cos(2 \* pi \*(F \* 100)\*t ) ;

x3 = x1 + x2 ;

sig=x3(1:200);

time=t(1:200);

xmin=min(x3);

xmax=max(x3);

line=linspace(xmin,xmax,6);

partition=[(line(1)+line(2))/2,(line(2)+line(3))/2,(line(3)+line(4))/2,(line(4)+line(5))/2,(line(5)+line(6))/2];

codebook=linspace(xmin,xmax,6);

[index,quants]=quantiz(sig,partition,codebook);

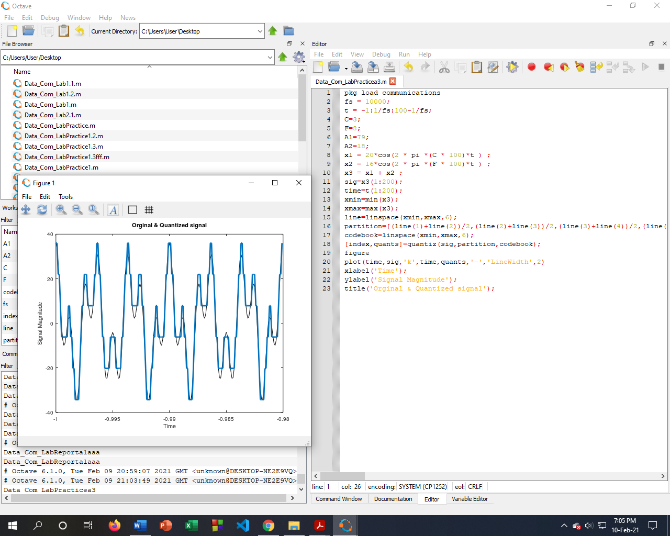
figure

plot(time,sig,'k',time,quants,'-','LineWidth',2)

xlabel('Time');

ylabel('Signal Magnitude');

title('Orginal & Quantized signal');



3. Id:19-39887-1

x1(t) = A1 cos(2π(CDE\*100)t )

A=1,B=9,C=3,D=9,E=8,F=8,G=7,H=1

1. A1=GD=79, A2=AF=18

b)

(1) A1=79;

A2=18;

CDE=398;

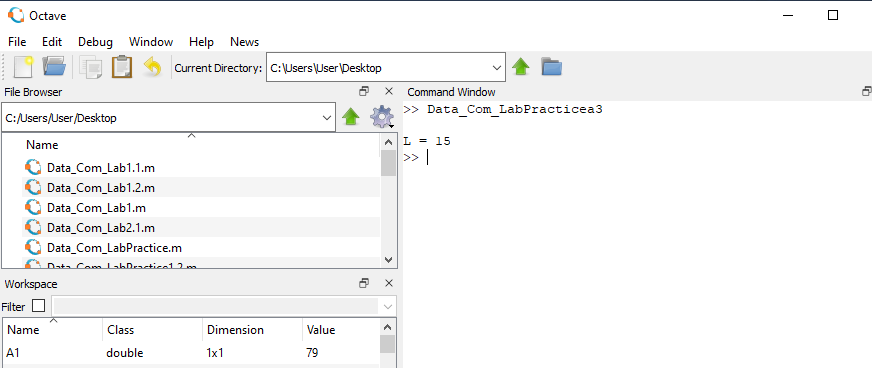
fs=40000;

t=0:5/fs:5-5/fs;

x1=A1\*cos(2\*pi\*(398\*100)\*t);

n=4;

L=(2^n)-1



(2) A1=79;

A2=18;

CDE=398;

fs=40000;

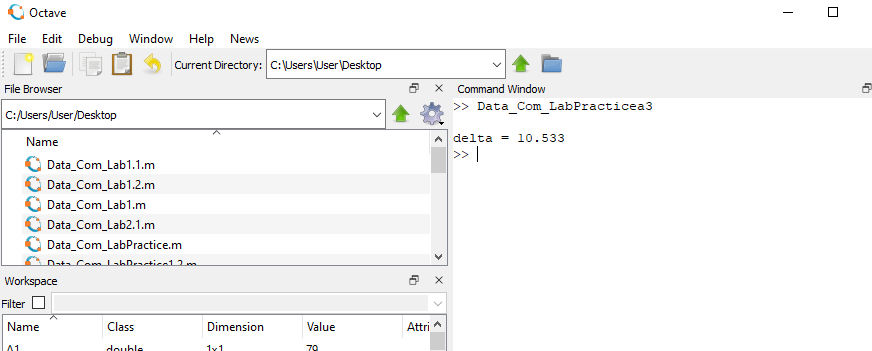
t=0:5/fs:5-5/fs;

x1=A1\*cos(2\*pi\*(CDE\*100)\*t);

n=4;

L=(2^n)-1;

delta= (max(x1)-min(x1))/L



(3) A1=79;

A2=18;

CDE=398;

fs=40000;

t=0:5/fs:5-5/fs;

x1=A1\*cos(2\*pi\*(CDE\*100)\*t);

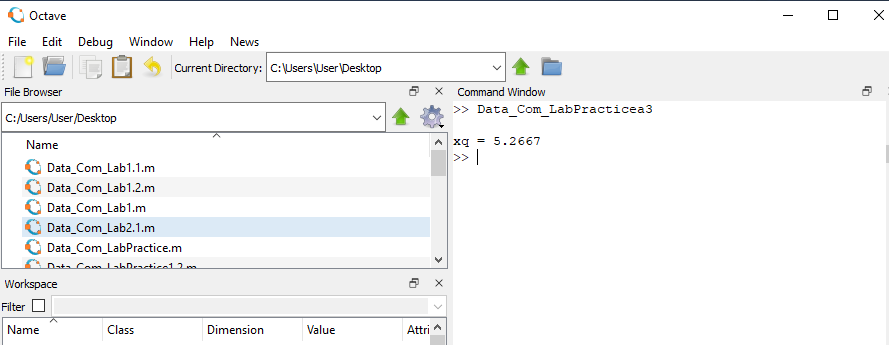
x=3.2;

n=4;

L=(2^n)-1;

delta= (max(x1)-min(x1))/L;

xq=min(x1)+(round((x-min(x1))/delta)).\*delta



(d) A1=79;

A2=18;

CDE=398;

fs=80000;

t=0:1/fs:0.005;

x1=A1\*cos(2\*pi\*(CDE\*100)\*t);

x=3.2;

n=4;

L=(2^n)-1;

delta= (max(x1)-min(x1))/L;

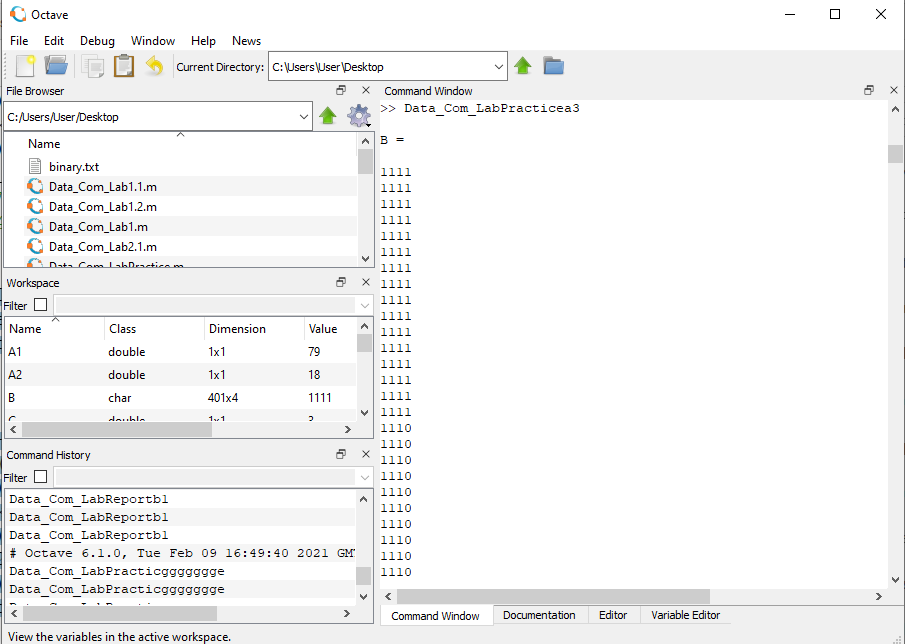
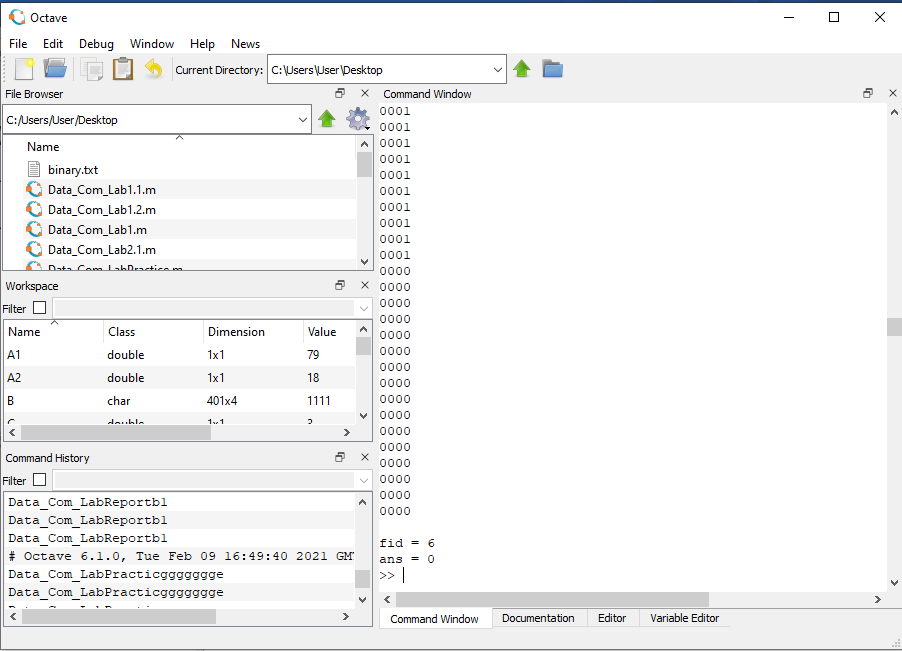
xq=min(x1)+(round((x1-min(x1))/delta)).\*delta;

B = dec2bin((round((x1-min(x1))/delta)))

fid = fopen('binary.txt' , 'w')

fprintf(fid, [repmat('%c',1,size(B,2)) '\r\n'], B.')

fclose(fid)

(5) A1=79;

A2=18;

CDE=398;

fs=80000;

t=0:1/fs:0.005;

x1=A1\*cos(2\*pi\*(CDE\*100)\*t);

x=3.2;

n=4;

L=(2^n)-1;

delta= (max(x1)-min(x1))/L;

xq=min(x1)+(round((x1-min(x1))/delta)).\*delta;

subplot(3,1,1)

plot(t,x1,'r');

subplot(3,1,2);% breaking the window figure to plot both graphs

stem(t,x1,'k');% plot of discrete time signaltitle('Discrete time representation')% title of the figure

xlabel('time(s)')% label on the x-axis of the plot

ylabel('X[n]')% label on the y-axis of the plot

subplot(3,1,3);

stairs(t,xq,'b');% the quantized output

title('Quantized Signal')% title of the figure

xlabel('time')% label on the x-axis of the plot

ylabel('amplitude')% label on the y-axis of the plot

