American International University- Bangladesh
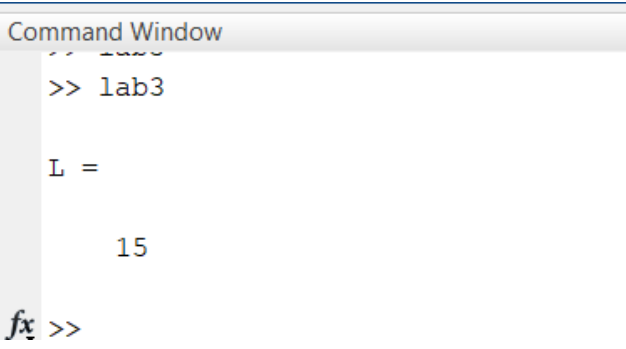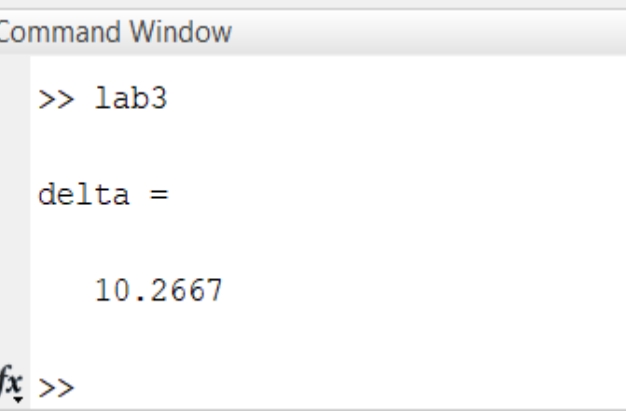## Department of Computer Science

Lab Report Cover Sheet

Course Name	Data Communication
Lab Report No.	03
Lecturer Name	Md. Navid Bin Anwar
Semester	Fall 2020-21
Submission Date	5/11/2020
Section	B
Group No.	10
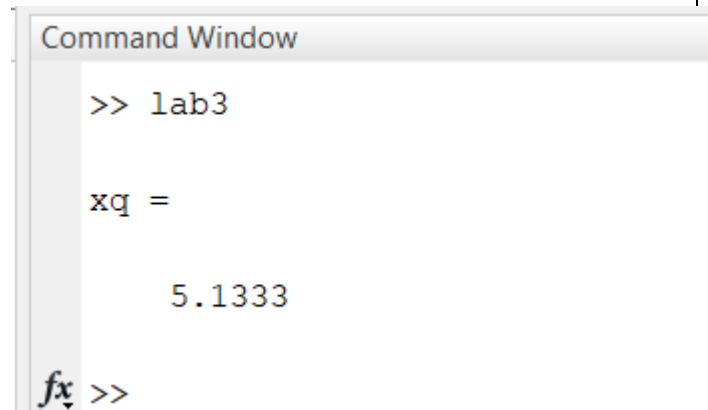
Student Name	Student ID	Contribution (out of 100%)
1. Nusrat Alam Chaiti	18-37417-1	20%
2. MD. Sibbir Hossain	18-38828-3	20%
3. Kaif Al Kabid	18-38144-2	20%
4. Fahim Mahtab	18-38626-2	20%
5. Tanvir Ahamed	18-37519-1	20%
Lecturer Remarks (Only for teacher)		

CODE	PLOTTING
A. x1(t) = A1 cos(2π(CDE*100)t) Here, ID:18-37417-1 A1=GD=77 A2=AF=11	

B.
 	
1.`%18-37417-1`
`%CDE=374`
`A1=77;`
`A2=11;`
`fs=40000;`
`t=0:5/fs:5-5/fs;`
`x1=77*cos(2*pi*(374*100)`
`*t);`
`n=4;`
`L=(2^n)-1`
	B.
	
	1.
	
	Command Window
	>> lab3
	
	L =
	
	    15
	
	fx >>

2.
 	
`%18-37417-1`
`%CDE=374`
`A1=77;`
`A2=11;`
`fs=40000;`
`t=0:5/fs:5-5/fs;`
`x1=77*cos(2*pi*(374*100)`
`*t);`
`n=4;`
`L=(2^n)-1;`
`delta= (max(x1)-`
`min(x1))/L`
	2.
	
	Command Window
	>> lab3
	
	delta =
	
	    10.2667
	
	fx >>

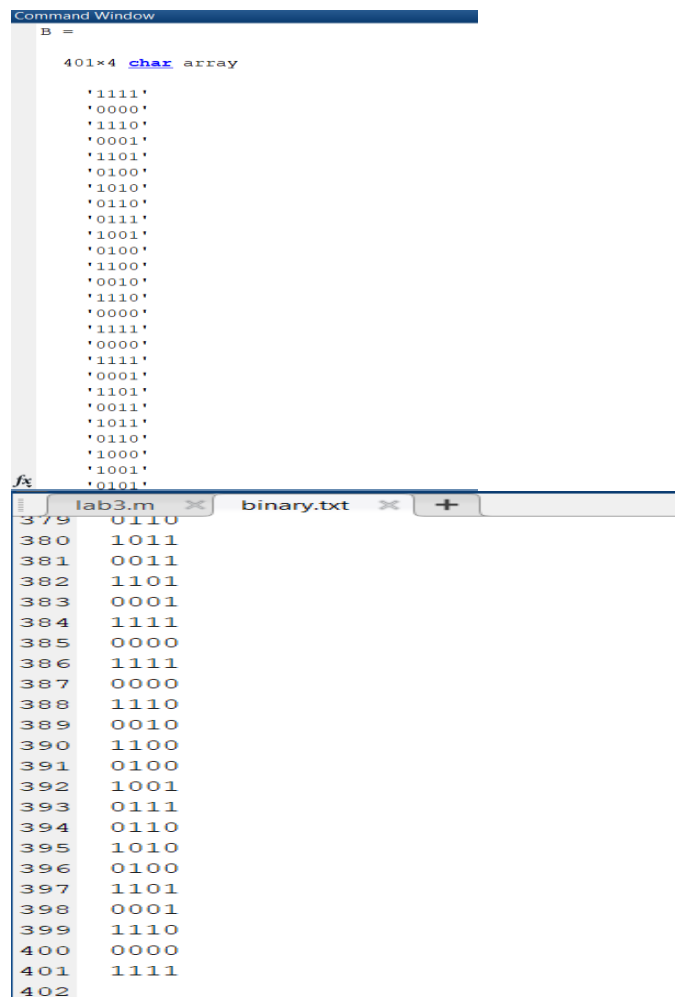|	

3.
 	
``matlab
%18-37417-1
%CDE=374
A1=77;
A2=11;
fs=40000;
t=0:5/fs:5-5/fs;
x1=77*cos(2*pi*(374*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
``
	3.
	
	Command Window
	>> lab3
	
	xq =
	
	    5.1333
	
	_fx_ >>

4. ```matlab
%18-37417-1
%CDE=374
A1=77;
A2=11;
fs=80000;
t=0:1/fs:0.005;
x1=77*cos(2*pi*(374*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)
``
 	
  (creates a binary text file also)
	4.
	
	Command Window
	B =
	
	  401×4 char array
	
	    '1111'
	    '0000'
	    '1110'
	    '0001'
	    '1101'
	    '0100'
	    '1010'
	    '0110'
	    '0111'
	    '1001'
	    '0100'
	    '1100'
	    '0010'
	    '1110'
	    '0000'
	    '1111'
	    '0000'
	    '1111'
	    '0001'
	    '1101'
	    '0011'
	    '1011'
	    '0110'
	    '1000'
	    '1001'
	    '0101'
	
	lab3.m binary.txt +
	
	379 0110
	380 1011
	381 0011
	382 1101
	383 0001
	384 1111
	385 0000
	386 1111
	387 0000
	388 1110
	389 0010
	390 1100
	391 0100
	392 1001
	393 0111
	394 0110
	395 1010
	396 0100
	397 1101
	398 0001
	399 1110
	400 0000
	401 1111
	402

code of quantization (with graph):

```
%18-37417-1
A1=77;
A2=11;
fs=80000;
t=0:1/fs:0.005;
x1=77*cos(2*pi*(374*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,'b');% 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
```