| MARKS: |
| --- |
| |

# AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

## Data Communication Laboratory

## LAB REPORT

## ON

## Message Passing and Receiving Using Modulator

## (part 1:Transmitter Side)

**Experiment No: 6**

**Section: [G]**

**Semester: Spring 20-21**

**Course Teacher: MD MEHEDI HASAN**

**Date of Performance: 23-Mar-21**

**Date of Submission: 30-Mar-21**

**Student Name:** DEBORAJ ROY

**Student ID**: 19-40158-1

## Lab task

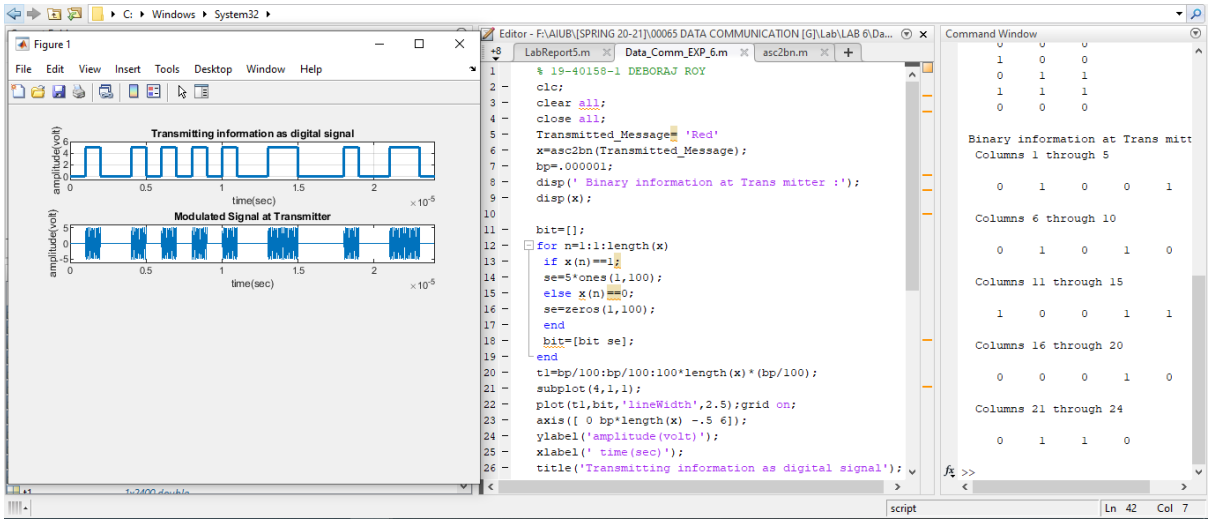
Decimal to Serial Binary Conversion:

```
% 19-40158-1 DEBORAJ ROY
function dn = asc2bn(txt)
dec=double(txt)
p2=2.^(0:-1:-7)
B=mod(floor(p2'*dec),2)
dn=reshape(B,1,numel(B));
end
```

Representation of transmitting binary information as digital signal, Modulation of serial data stream to waveform,

```
% 19-40158-1 DEBORAJ ROY
clc;
clear all;
close all;
Transmitted_Message= 'Red'
x=asc2bn(Transmitted_Message);
bp=.000001;
disp(' Binary information at Trans mitter :');
disp(x);

bit=[];
for n=1:1:length(x)
 if x(n)==1;
 se=5*ones(1,100);
 else x(n)==0;
 se=zeros(1,100);
 end
 bit=[bit se];
end
t1=bp/100:bp/100:100*length(x)*(bp/100);
subplot(4,1,1);
plot(t1,bit,'lineWidth',2.5);grid on;
axis([ 0 bp*length(x) -.5 6]);
ylabel('amplitude(volt)');
xlabel(' time(sec)');
title('Transmitting information as digital signal');
A1=5;
A2=0;
br=1/bp;
f=br*10;
t2=bp/99:bp/99:bp;
ss=length(t2);
m=[];
for (i=1:1:length(x))
 if (x(i)==1)
 y=A1*cos(2*pi*f*t2);
 else
 y=A2*cos(2*pi*f*t2);
 end
 m=[m y];
end
t3=bp/99:bp/99:bp*length(x);
```

```
subplot(4,1,2);
plot(t3,m);
axis([ 0 bp*length(x) -6 6]);
xlabel('time(sec)');
ylabel('amplitude(volt)');
title('Modulated Signal at Transmitter');
```



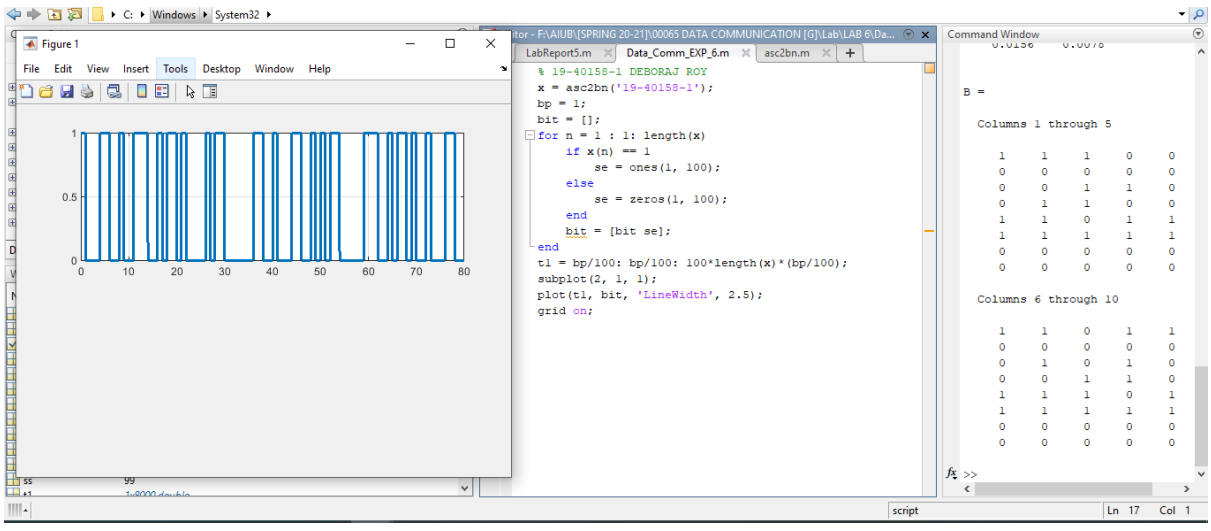
# Performance Task for Lab Report: (My ID = 19-40158-1)

(a) Generate a function which will convert a text message into binary bit sequence.

```
% 19-40158-1 DEBORAJ ROY
function dn = asc2bn(txt)
dec=double(txt)
p2=2.^(0:-1:-7)
B=mod(floor(p2'*dec),2)
dn=reshape(B,1,numel(B));
end
```

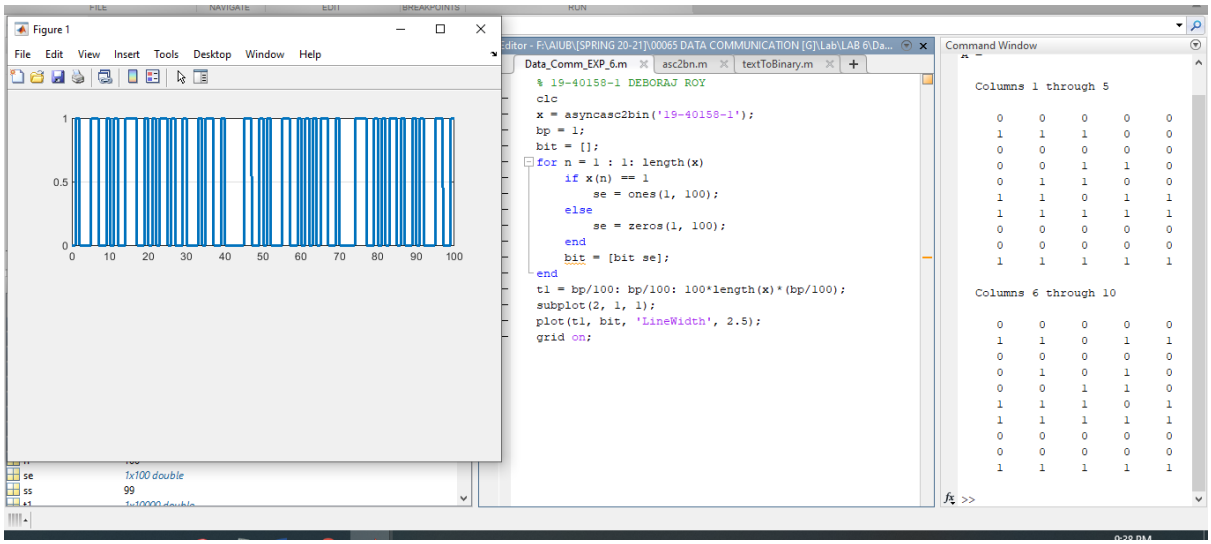
(b) Generate the digital signal where the bit duration is 1 sec.

```
% 19-40158-1 DEBORAJ ROY
x = asc2bn('19-40158-1');
bp = 1;
bit = [];
for n = 1 : 1: length(x)
    if x(n) == 1
        se = ones(1, 100);
    else
        se = zeros(1, 100);
    end
    bit = [bit se];
end
t1 = bp/100: bp/100: 100*length(x)*(bp/100);
subplot(2, 1, 1);
plot(t1, bit, 'LineWidth', 2.5);
grid on;
```



(c) Formulate the code in (a), so that it can perform asynchronous transmission (10 bits).

```
function dn = asyncasc2bin(txt)
dec=double(txt);
p2=2.^(0:-1:-7);
B=mod(floor(p2'*dec),2);
X=size(B,2);
Y=ones(1,X);
Z=zeros(1,X);
A=[Z;B;Y]
dn=reshape(A,1,numel(A));
end
```

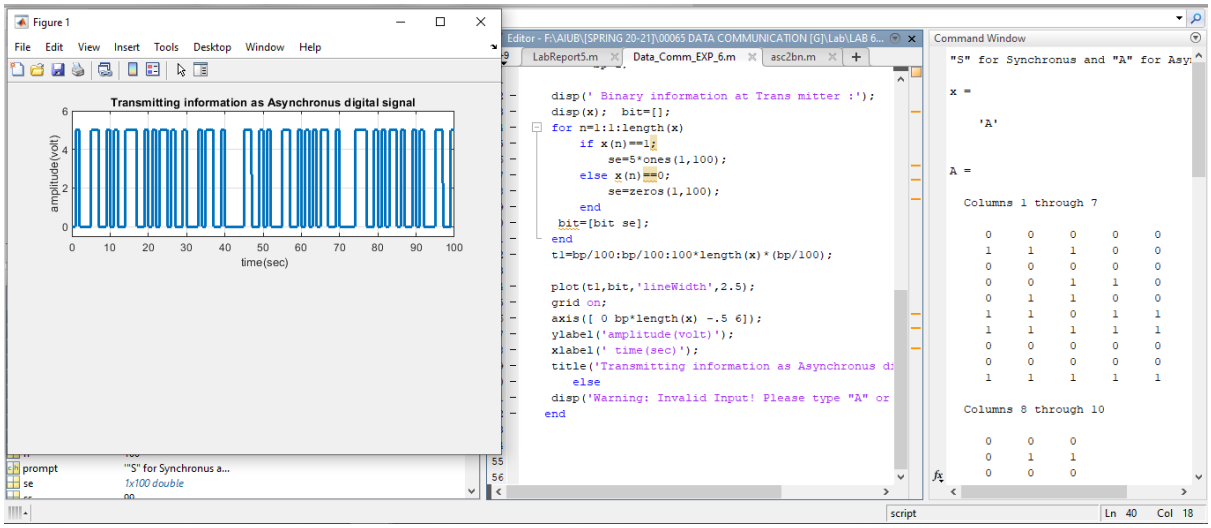


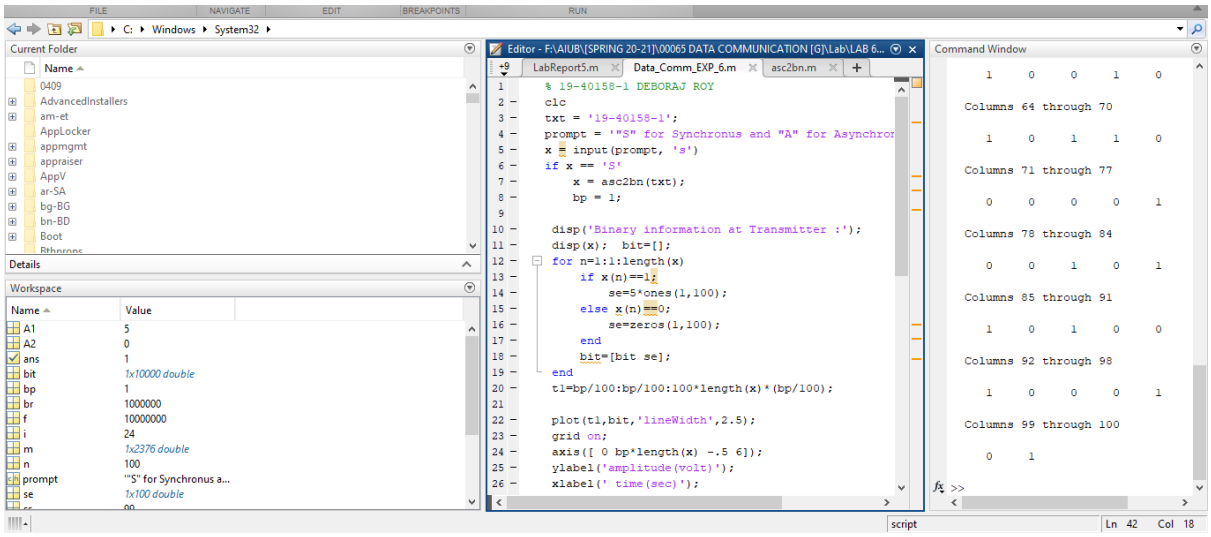

(d) Write necessary code so that it will ask the users whether to perform synchronous/asynchronous transmission and then perform accordingly (a, b).

```
% 19-40158-1 DEBORAJ ROY
clc
txt = '19-40158-1';
prompt = '"S" for Synchronus and "A" for Asynchronus!';
x = input(prompt, 's')
if x == 'S'
    x = asc2bn(txt);
    bp = 1;

 disp('Binary information at Transmitter :');
 disp(x);  bit=[];
 for n=1:1:length(x)
     if x(n)==1;
         se=5*ones(1,100);
```

```
    else x(n)==0;
        se=zeros(1,100);
    end
    bit=[bit se];
end
t1=bp/100:bp/100:100*length(x)*(bp/100);

plot(t1,bit,'lineWidth',2.5);
grid on;
axis([ 0 bp*length(x) -.5 6]);
ylabel('amplitude(volt)');
xlabel(' time(sec)');
title('Transmitting information as Synchronus digital signal');
   elseif x=='A'
      x=asyncasc2bin(txt);
      bp=1;

disp(' Binary information at Trans mitter :');
disp(x);  bit=[];
for n=1:1:length(x)
    if x(n)==1;
        se=5*ones(1,100);
    else x(n)==0;
        se=zeros(1,100);
    end
 bit=[bit se];
end
t1=bp/100:bp/100:100*length(x)*(bp/100);

plot(t1,bit,'lineWidth',2.5);
grid on;
axis([ 0 bp*length(x) -.5 6]);
ylabel('amplitude(volt)');
xlabel(' time(sec)');
title('Transmitting information as Asynchronus digital signal');
   else
disp('Warning: Invalid Input! Please type "A" or "S"!!');
end
```

# Asynchronous transmission



# Synchronous transmission