

Final-term Lab Assessment Task

Submitted By:		
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Parameters:

MY ID = AB-CDEFG-H.

20-44213-3

VAL1 = EFG*100	VAL2 = GH*10
VAL1 = 213 *100	VAL2 = 33 *10

Problem Statement:

Suppose, you want to send a message which contains your **FIRST MEMBER NAME**. Develop a MATLAB code to show the transmission process to send the information from SENDER to RECEIVER. Available frequency ranges for the transmission: 1.8 - 2.5 GHz

Hint:

1. Encode the message.
2. Convert binary bit stream from parallel to serial transmission.
3. Convert data to signal using at least **VAL1** sample data.
4. Now, modulate the digital signal (using any Digital to Analog Conversion except BASK) to send via a transmission channel.
5. The signal to noise ratio of the channel is **VAL2**.
6. Demodulate the received signal.
7. Convert the binary data to retrieve the message.

CODE:

1)

```
function dn= asc2bn(txt)

dec=double(txt);

p2=2.^(0:-1:-7);

B=mod(floor(p2'*dec),2);

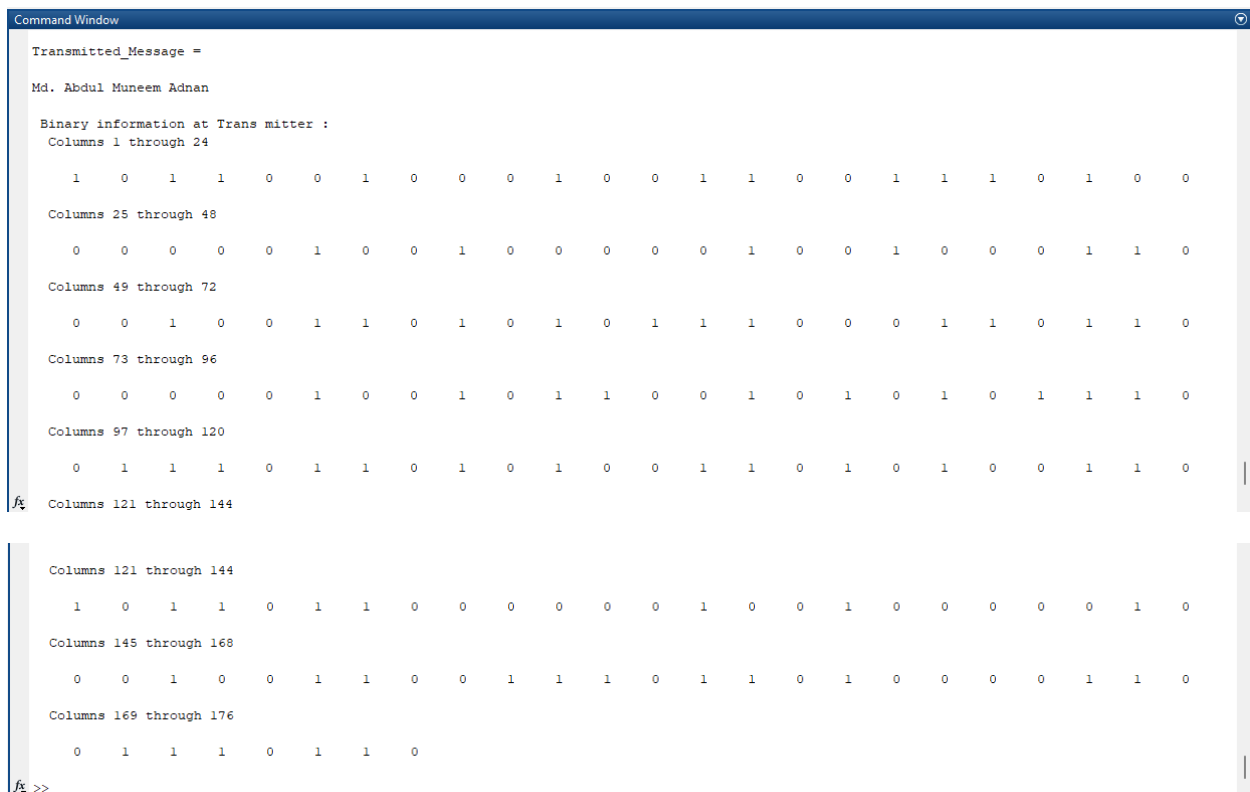
dn=reshape(B,1,numel(B));

end
```

2)

```
Transmitted_Message= 'Md. Abdul Muneem Adnan'
x=asc2bn(Transmitted_Message);
bp=.000001;
disp(' Binary information at Trans mitter :');
disp(x);
```

OUTPUT:



```
Command Window

Transmitted_Message =
Md. Abdul Muneem Adnan

Binary information at Trans mitter :
Columns 1 through 24
    1     0     1     1     0     0     1     0     0     0     1     0     0     1     1     0     0     1     1     1     0     1     0     0

Columns 25 through 48
    0     0     0     0     0     1     0     0     1     0     0     0     0     0     1     0     0     1     0     0     0     1     1     0

Columns 49 through 72
    0     0     1     0     0     1     1     0     1     0     1     0     1     1     1     0     0     0     1     1     0     1     1     0

Columns 73 through 96
    0     0     0     0     0     1     0     0     1     0     1     1     0     0     1     0     1     0     1     0     1     1     1     0

Columns 97 through 120
    0     1     1     1     0     1     1     0     1     0     1     0     0     1     1     0     1     0     1     0     0     1     1     0

Columns 121 through 144
    1     0     1     1     0     1     1     0     0     0     0     0     0     1     0     0     1     0     0     0     0     0     1     0

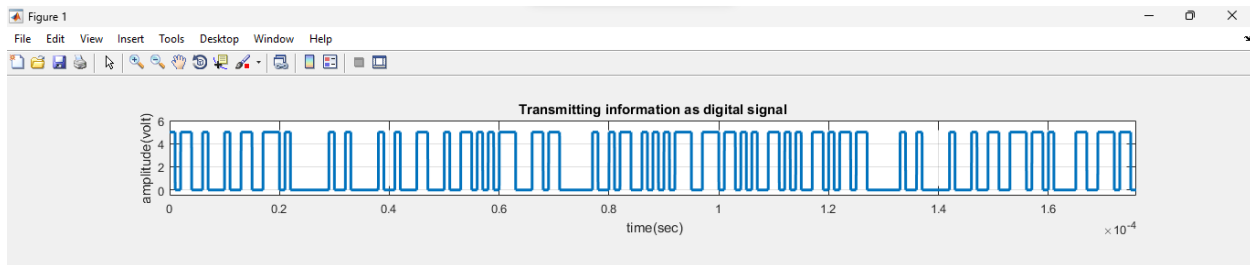
Columns 145 through 168
    0     0     1     0     0     1     1     0     0     1     1     1     0     1     1     0     1     0     0     0     0     1     1     0

Columns 169 through 176
    0     1     1     1     0     1     1     0
```

3)

```
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');
```

OUTPUT:



4)

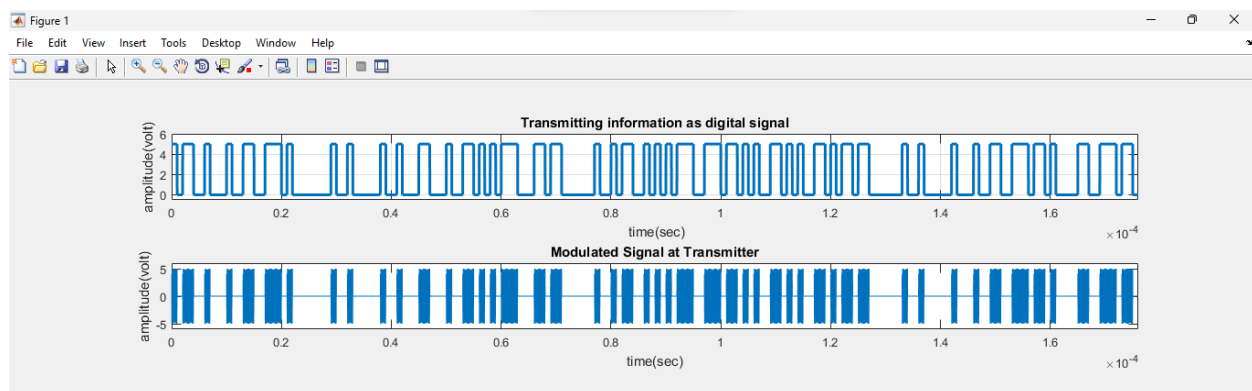
```
A1=5;  
A2=0;  
br=1/bp;
```

```

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');

```

OUTPUT:



5)

```
%Channel Noise%
```

```
t4=bp/99:bp/99:bp*length(x);
```

```
Rec=awgn(m,10);
```

```
subplot(4,1,3);
```

```
plot(t4,Rec);
```

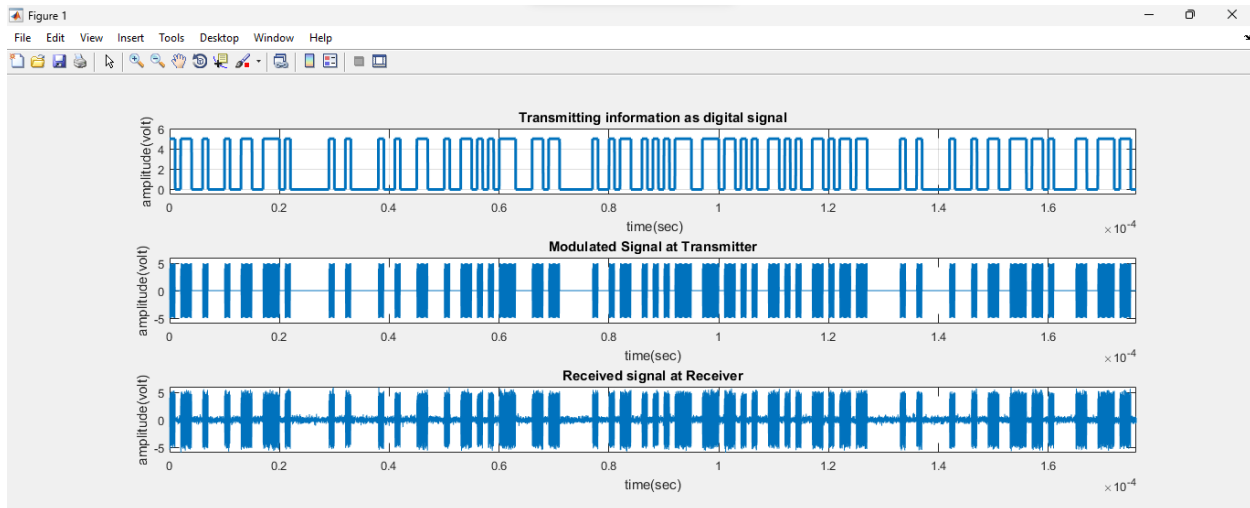
```
axis([ 0 bp*length(x) -6 6]);
```

```
xlabel('time(sec)');
```

```
ylabel('amplitude(volt)');
```

```
title('Received signal at Receiver');
```

OUTPUT:



6)

```
mn=[];
```

```
for n=ss:ss:length(Rec)
```

```
    t=bp/99:bp/99:bp;
```

```
    y=cos(2*pi*f*t);
```

```
    mm=y.*Rec((n-(ss-1)):n);
```

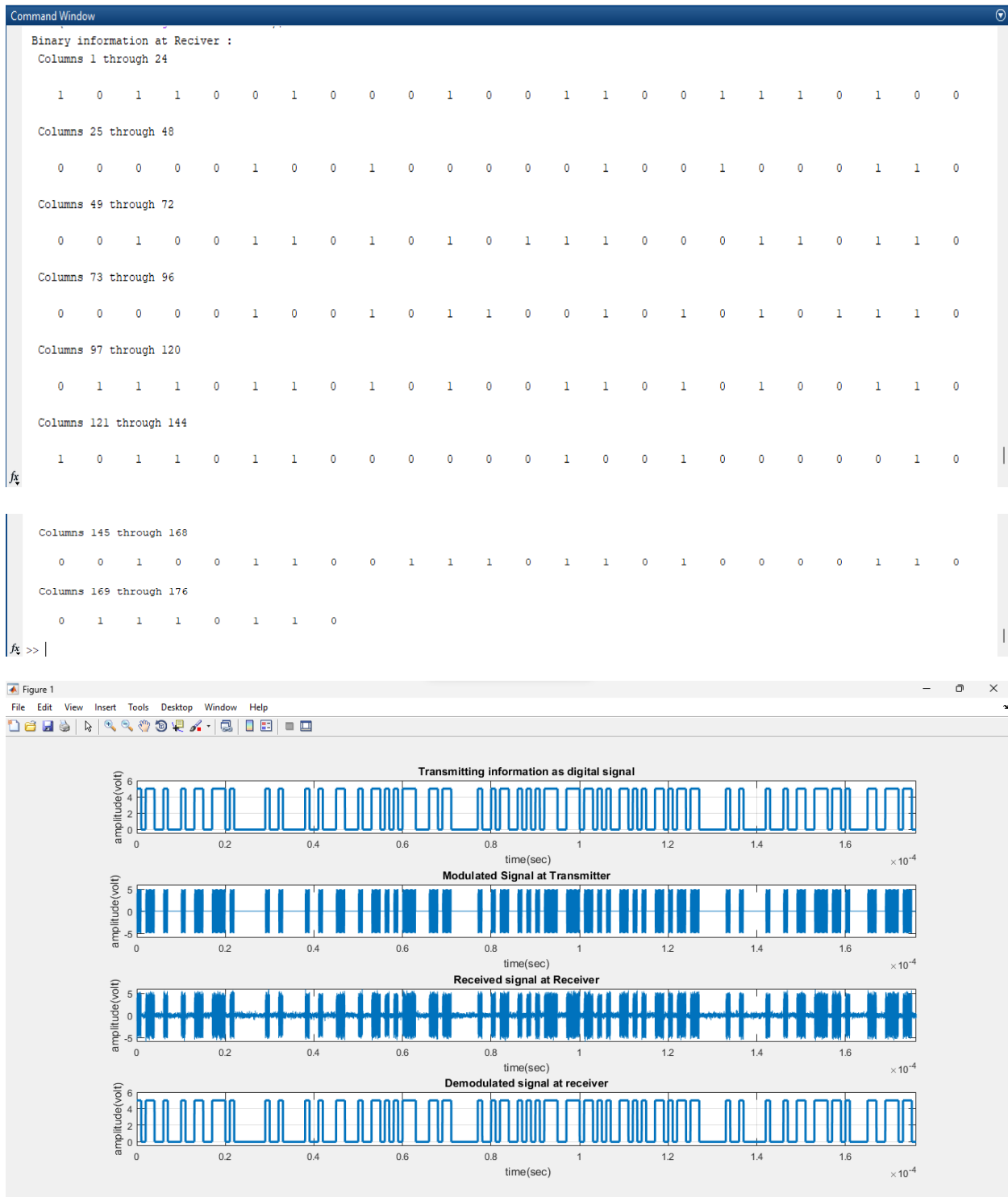
```

t5=bp/99:bp/99:bp;
z=trapz(t5,mm) ;
zz=round((2*z/bp));
if(zz>2.5)
a=1;
else
a=0;
end
mn=[mn a];
end
disp(' Binary information at Reciver :');
disp(mn);
bit=[];
for n=1:length(mn);
    if mn(n)==1;
        se=5*ones(1,100);
    else mn(n)==0;
        se=zeros(1,100);
    end
    bit=[bit se];
end
t5=bp/100:bp/100:100*length(mn)*(bp/100);
subplot(4,1,4)
plot(t5,bit,'LineWidth',2.5);grid on;
axis([ 0 bp*length(mn) -.5 6]);
ylabel('amplitude(volt)');
xlabel(' time(sec)');

```

title('Demodulated signal at receiver');

OUTPUT:



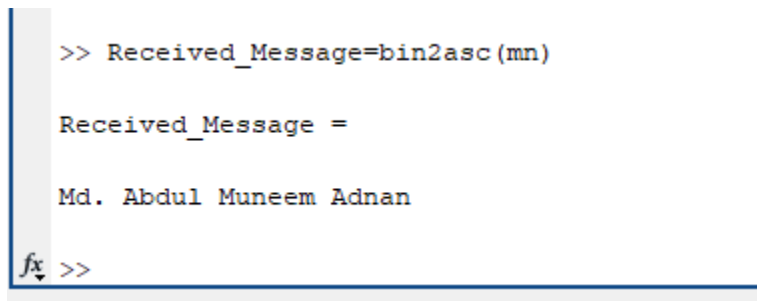
7)

```
function txt = bin2asc(dn)
L=length(dn);
L8=8*floor(L/8);
B=reshape(dn(1:L8),8,L8/8);
p2=2.^(0:7);
dec=p2*B;
txt=char(dec);
end
```

COMMAND WINDOW:

```
Received_Message=bin2asc(mn)
```

OUTPUT:

A screenshot of the MATLAB Command Window. The window has a light gray background with a dark blue border. The text is displayed in a monospaced font. The first line shows the command '>> Received_Message=bin2asc(mn)'. The second line shows the output 'Received_Message ='. The third line shows the result 'Md. Abdul Muneem Adnan'. At the bottom left, there is a small icon of a document with a checkmark and the text '>>'.

```
>> Received_Message=bin2asc(mn)

Received_Message =

Md. Abdul Muneem Adnan

fx >>
```