

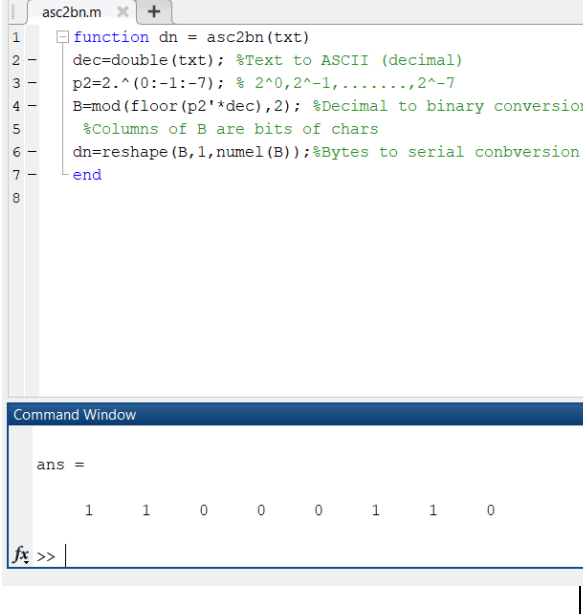
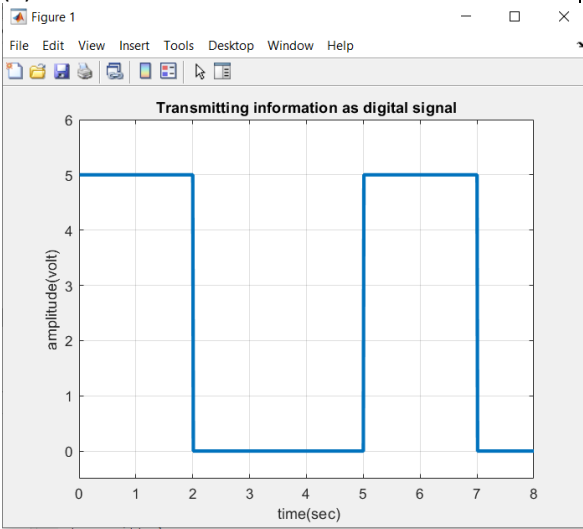


American International University- Bangladesh
Department of Computer Science

Lab Report Cover Sheet

Course Name	Data Communication
Lab Report No.	08
Lecturer Name	Md. Navid Bin Anwar
Semester	Fall 2020-21
Submission Date	12/12/2020
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%
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Lecturer Remarks (Only for teacher)		

CODE	PLOTTING
<p>(a)</p> <pre> function dn = asc2bn(txt) dec=double(txt); %Text to ASCII (decimal) p2=2.^(0:-1:-7); % 2^0,2^- 1,.....,2^-7 B=mod(floor(p2'*dec),2); %Decimal to binary conversion %Columns of B are bits of chars dn=reshape(B,1,numel(B));%Byte s to serial conbversion end </pre>	<p>(a)</p>  <p>The screenshot shows the MATLAB editor with a file named 'asc2bn.m'. The function code is as follows:</p> <pre> function dn = asc2bn(txt) dec=double(txt); %Text to ASCII (decimal) p2=2.^(0:-1:-7); % 2^0,2^-1,.....,2^-7 B=mod(floor(p2'*dec),2); %Decimal to binary conversion %Columns of B are bits of chars dn=reshape(B,1,numel(B));%Bytes to serial conbversion end </pre> <p>The Command Window shows the output of the function:</p> <pre> ans = 1 1 0 0 0 1 1 0 </pre>
<p>(b)</p> <pre> disp('transmitted message c:'); x=asc2bn('c'); nx=size(x,2); bp=1; 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)'); </pre>	<p>(b)</p>  <p>The screenshot shows a MATLAB plot titled 'Transmitting information as digital signal'. The x-axis is labeled 'time(sec)' and ranges from 0 to 8. The y-axis is labeled 'amplitude(volt)' and ranges from 0 to 6. The plot shows a digital signal that is 5 volts high for the first 2 seconds, 0 volts for the next 3 seconds, 5 volts for the next 2 seconds, and 0 volts for the last 1 second.</p>

```
title('Transmitting
information as digital
signal');
```

```
(c)
x=asc2bn('c');
bp=1;
y=[]; %New array to store bits
with start and stop bit for
asynchronous transmission
y(1)=1;
leny=length (x)+((length
(x)/8)*2); %Length of New
array y
c=1; %counter to count every 8
bit
j=1; % index number of array x

for i=2:1:leny
    if c==9
        y(i)=0;
        c=c+1;

    elseif c==10;
        y(i)=1;
        c=1;

    else
        y(i)=x(j);
        j=j+1;
        c=c+1;

    end
end
%This for loop to add start
and stop bit with every 8 bit
bit=[];
for n=1:1:length (y)

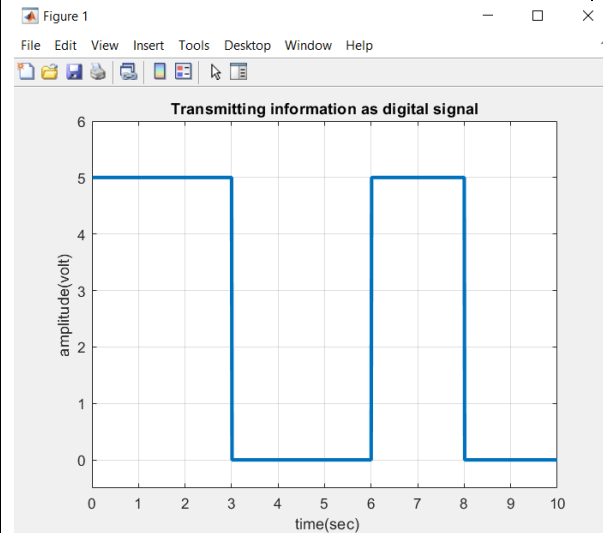
    if y(n)==1;

        se=5*ones (1, 100);

    else y(n)==0;

        se =zeros (1,100);
```

(c)



```

end

bit=[bit se];

end

tl=bp/100:bp/100:100*length(y)
*(bp/100);

plot (tl,bit,'lineWidth',2.5);
grid on;
axis([ 0 bp*length(y) -.5 6]);
ylabel('amplitude(volt)');
xlabel(' time(sec)');
title('Transmitting
information as digital
signal');

```

(d)

```

x=asc2bn('c');
bp=1;
y=[]; %New array to store bits
with start and stop bit for
asynchronous transmission
y(1)=1;
leny=length (x)+((length
(x)/8)*2); %Length of New
array y

c=1; %counter to count every 8
bit
j=1; % index no for array x

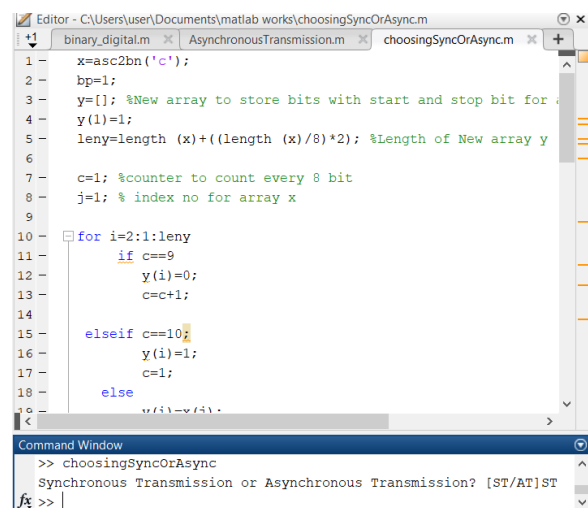
for i=2:1:leny
    if c==9
        y(i)=0;
        c=c+1;

    elseif c==10;
        y(i)=1;
        c=1;

    else
        y(i)=x(j);
        j=j+1;
        c=c+1;

```

(e) if synchronous transmission is chosen:



The screenshot shows the MATLAB Editor with three open files: binary_digital.m, AsynchronousTransmission.m, and choosingSyncOrAsync.m. The code in choosingSyncOrAsync.m is as follows:

```

1 x=asc2bn('c');
2 bp=1;
3 y=[]; %New array to store bits with start and stop bit for
4 y(1)=1;
5 leny=length (x)+((length (x)/8)*2); %Length of New array y
6
7 c=1; %counter to count every 8 bit
8 j=1; % index no for array x
9
10 for i=2:1:leny
11     if c==9
12         y(i)=0;
13         c=c+1;
14
15     elseif c==10;
16         y(i)=1;
17         c=1;
18     else
19         y(i)=x(j);
20         j=j+1;
21         c=c+1;

```

The Command Window shows the following output:

```

>> choosingSyncOrAsync
Synchronous Transmission or Asynchronous Transmission? [ST/AT]ST
fx >>

```

```

        end
    end
    %This for loop to add start
    and stop bit with every 8 bit

    bit=[];

    prompt='Synchronous
    Transmission or Asynchronous
    Transmission? [ST/AT]'; %Take
    input
    str=input(prompt,'s');

    if (str=='ST')
        z=x; % x has synchronous bits
    else
        z=y; % y has asynchronous bits
    end

    for n=1:1:length (z)

        if z(n)==1;

            se=5*ones (1, 100);

        else z(n)==0;

            se=zeros (1,100);
        end

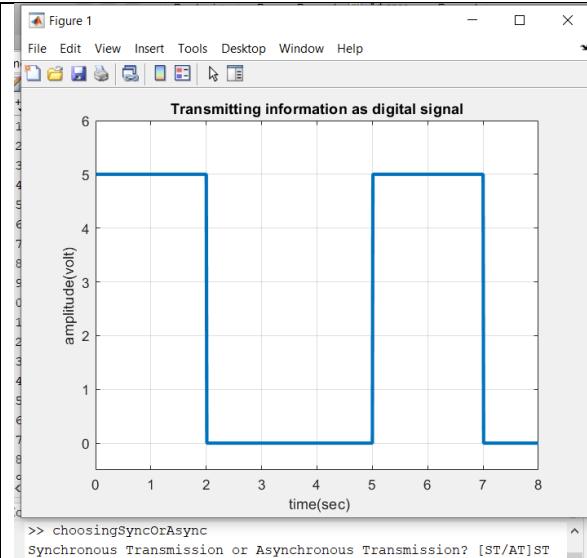
        bit=[bit se];

    end

    tl=bp/100:bp/100:100*length(z)
    *(bp/100);

    plot (tl,bit,'lineWidth',2.5);
    grid on;
    axis([ 0 bp*length(z) -.5 6]);
    ylabel('amplitude(volt)');

```



If asynchronous transmission is chosen:

```

1- x=asc2bn('c');
2- bp=1;
3- y=[]; %New array to store bits with start and stop bit for
4- y(1)=1;
5- leny=length (x)+((length (x)/8)*2); %Length of New array y
6-
7- c=1; %counter to count every 8 bit
8- j=1; % index no for array x
9-
10- for i=2:1:leny
11-     if c==9
12-         y(i)=0;
13-         c=c+1;
14-
15-     elseif c==10
16-         y(i)=1;
17-         c=1;
18-     else
19-         y(i)=y(i-1);
20-     end
21- end

```

Command Window

```

>> choosingSyncOrAsync
Synchronous Transmission or Asynchronous Transmission? [ST/AT]AT
fx >>

```

```
xlabel(' time(sec)');  
title('Transmitting  
information as digital  
signal');
```

