American International University-Bangladesh (AIUB)

Department of Computer Science

Lab Report-05

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ID : **17-34465-2**

SECTION : **G**

COURSE NAME : DATA COMMUNICATION

SEMESTER : 2020-2021, FALL

Title: Study of Digital to Analog Conversion using MATLAB

Performance Task:

ID = **AB-CDEFG-H**

My ID = **17-34465-2**

Here,

A= 1, B= 7, C= 3, D= 4, E= 4, F= 6, G= 5, H= 2.

(a) Convert DEF into Binary Bits (consider ASCII)

Converting D, E, F into 8-bit ASCII characters,

D = 4 =00110100

E = 4 =00110100

F = 6 = 00110110

So, 24-bit ASCII characters will be,

00110100 00110100 00110110

(b) Show the modulated analog signal considering

- BASK

-BFSK

-BPSK , and

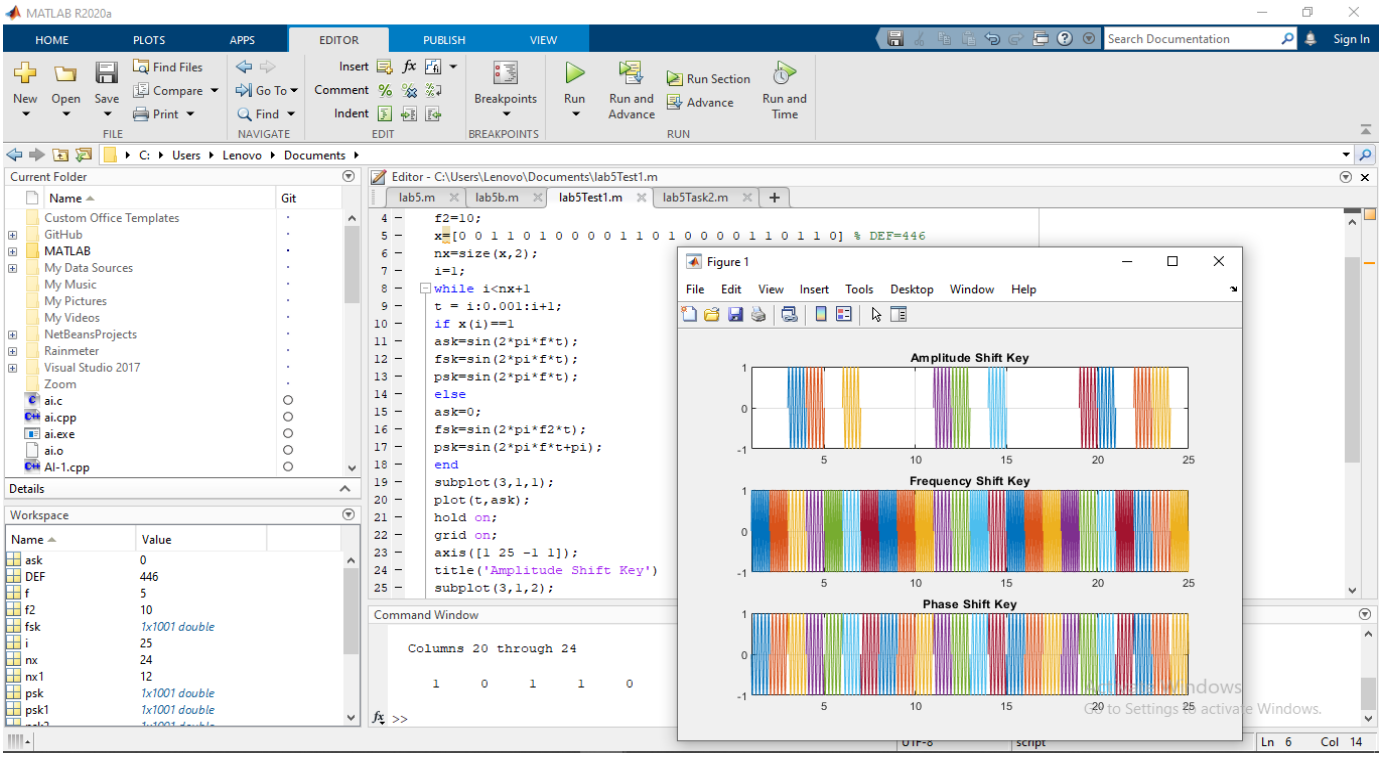
-QPSK

For 8- BASK, 8- BFSK, 8- BPSK :

$r = \log_2 L = \log_2 (8) = 3$

So, there will be 3 bits in 1 level.

```
x=[0 0 1 1 0 1 0 0  0 0 1 1 0 1 0 0  0 0 1 1 0 1 1 0];
```


MATLAB R2020a
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Run Section
Advance
Run and Time
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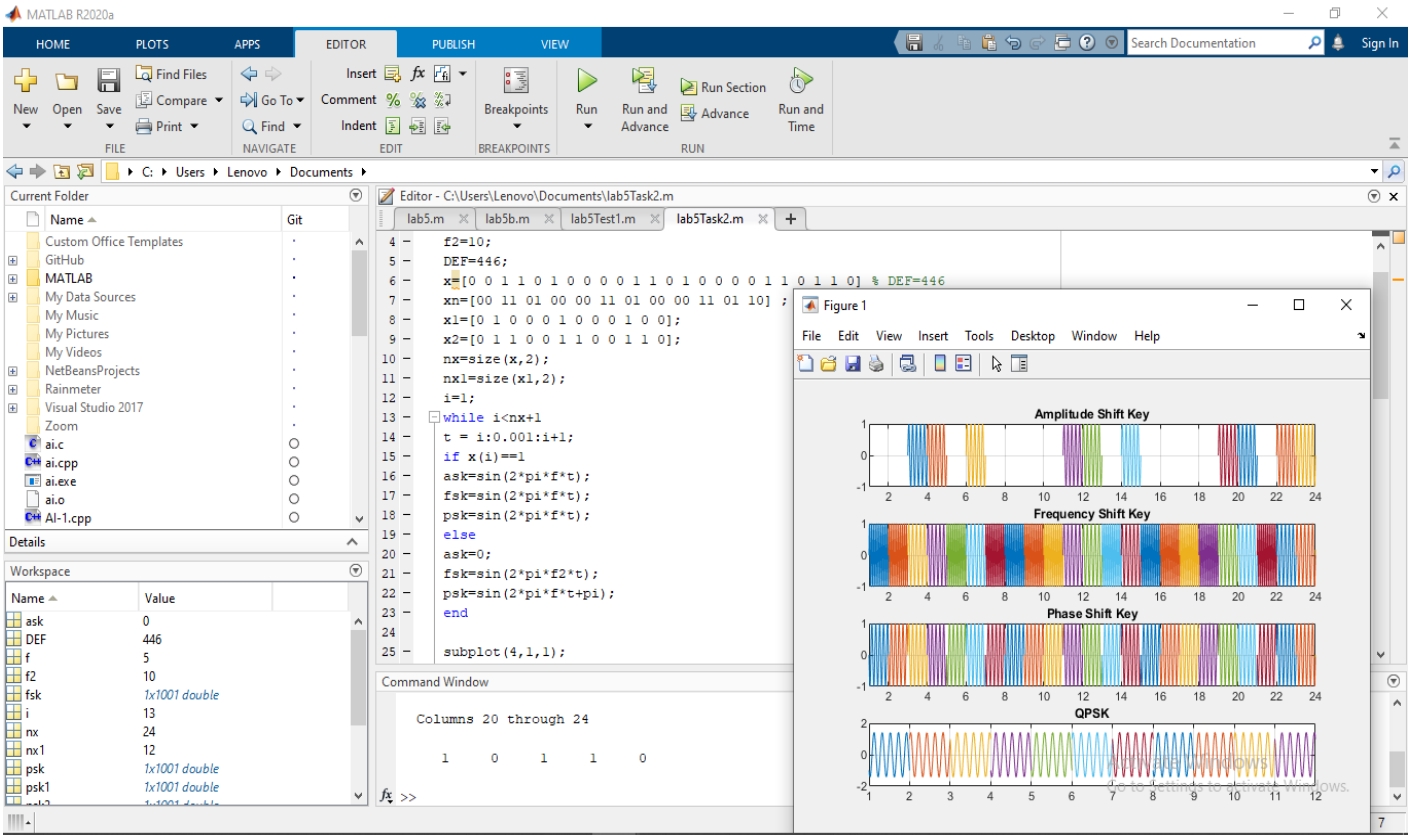
My Music
My Pictures
My Videos
NetBeansProjects
Rainmeter
Visual Studio 2017
Zoom
ai.c
ai.cpp
ai.exe
ai.o
AI-1.cpp
Details
Workspace
Name
Value
ask 0
DEF 446
f 5
f2 10
fsk 1x1001 double
i 25
nx 24
nx1 12
psk 1x1001 double
psk1 1x1001 double
Editor - C:\Users\Lenovo\Documents\lab5Test1.m
lab5.m
lab5b.m
lab5Test1.m
lab5Task2.m
4 f2=10;
5 x=[0 0 1 1 0 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 1 1 0] % DEF=446
6 nx=size(x,2);
7 i=1;
8 while i<nx+1
9 t = i:0.001:i+1;
10 if x(i)==1
11 ask=sin(2*pi*f*t);
12 fsk=sin(2*pi*f*t);
13 psk=sin(2*pi*f*t);
14 else
15 ask=0;
16 fsk=sin(2*pi*f2*t);
17 psk=sin(2*pi*f*t+pi);
18 end
19 subplot(3,1,1);
20 plot(t,ask);
21 hold on;
22 grid on;
23 axis([1 25 -1 1]);
24 title('Amplitude Shift Key')
25 subplot(3,1,2);
Command Window
Columns 20 through 24
1 0 1 1 0
Figure 1
File Edit View Insert Tools Desktop Window Help
Amplitude Shift Key
Frequency Shift Key
Phase Shift Key
Activate Windows
Go to Settings to activate Windows.
Ln 6 Col 14

For 8- QPSK:


MATLAB R2020a
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Advance
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ai.cpp
ai.exe
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AI-1.cpp
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ask 0
DEF 446
f 5
f2 10
fsk 1x1001 double
i 13
nx 24
nx1 12
psk 1x1001 double
psk1 1x1001 double
Editor - C:\Users\Lenovo\Documents\lab5Task2.m
lab5.m
lab5b.m
lab5Test1.m
lab5Task2.m
4 f2=10;
5 DEF=446;
6 x=[0 0 1 1 0 1 0 0 0 0 1 1 0 1 0 0 0 0 1 1 0 1 1 0] % DEF=446
7 xn=[00 11 01 00 00 11 01 00 00 11 01 10] ;
8 x1=[0 1 0 0 0 1 0 0 0 1 0 0];
9 x2=[0 1 1 0 0 1 1 0 0 1 1 0];
10 nx=size(x,2);
11 nx1=size(x1,2);
12 i=1;
13 while i<nx+1
14 t = i:0.001:i+1;
15 if x(i)==1
16 ask=sin(2*pi*f*t);
17 fsk=sin(2*pi*f*t);
18 psk=sin(2*pi*f*t);
19 else
20 ask=0;
21 fsk=sin(2*pi*f2*t);
22 psk=sin(2*pi*f*t+pi);
23 end
24
25 subplot(4,1,1);
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1 0 1 1 0
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Frequency Shift Key
Phase Shift Key
QPSK
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