Name: Nafinur Leo

Id: 20-42195-1

Course Name: Data Communication

Section: D

Lab Report Number: 05

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Submission Date: 08-11-2021

Lab Performance Task

ID = AB-CDEFG-H

Here, my id is: 20-42195-1

A = 2, B = 0, C = 4, D = 2, E = 1, F = 9, G = 5, H = 1

8 Bit ASCII characters:

E = 1 = 00110001

F = 9 = 00111001

G = 5 = 00110101

Bit stream (24 Bits):

001100010011100100110101

r = 3

L = 8

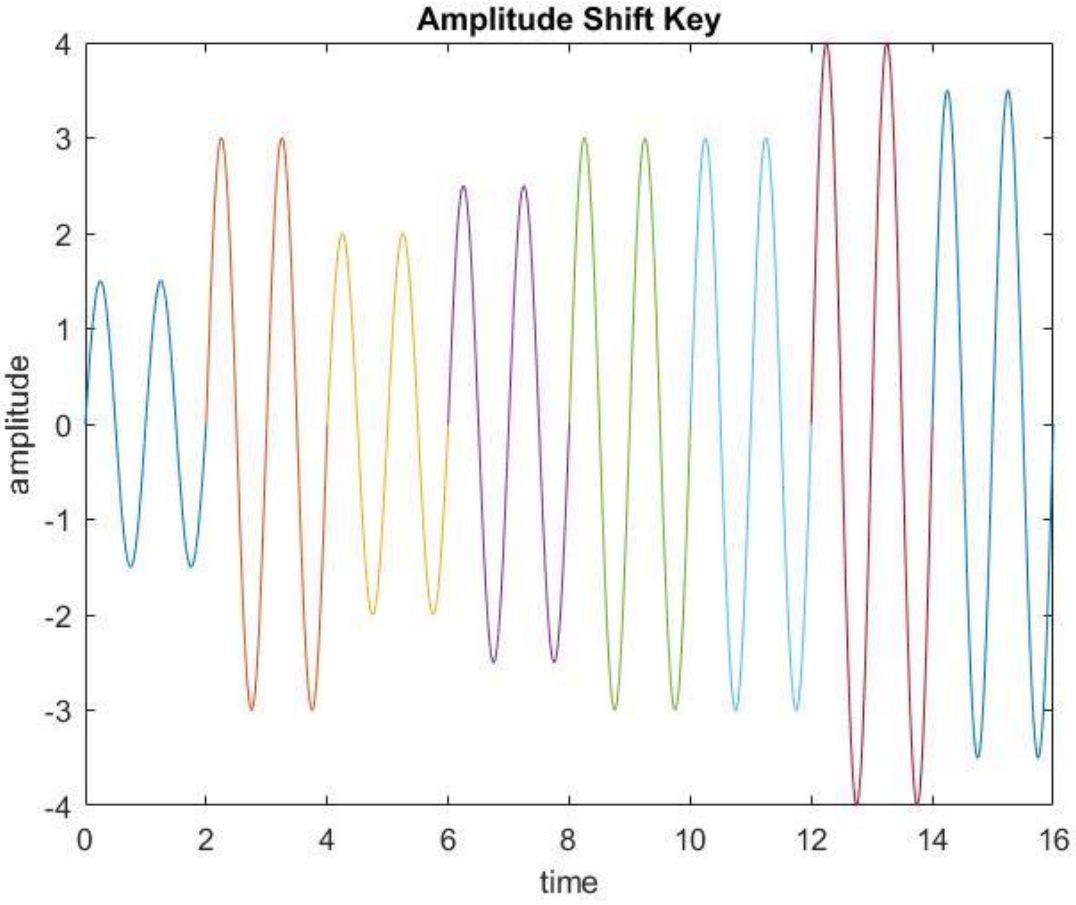
1. 8-ASK (Amplitude Shift Key):

Code:

```
clear all

close all

clc

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

nx = length(x);

m1 = 1;

m2 = 1.5;

m3 = 2;
```

```
m4 = 2.5;

m5 = 3;

m6 = 3.5;

m7 = 4;

m8 = 4.5;

f1 = 1;

p1 = 0;

pd = 2;

i = 1;

fs = 50000;

while i<nx+1

 t = (i-1)/3*pd:1/fs:(i+2)/3*pd;

 if x(i)==0 && x(i+1)==0 && x(i+2)==0

 ask = m1*sin(2*pi*f1*t);

 elseif x(i)==0 && x(i+1)==0 && x(i+2)==1

 ask = m2*sin(2*pi*f1*t);

 elseif x(i)==0 && x(i+1)==1 && x(i+2)==0

 ask = m3*sin(2*pi*f1*t);

 elseif x(i)==0 && x(i+1)==1 && x(i+2)==1

 ask = m4*sin(2*pi*f1*t);

 elseif x(i)==1 && x(i+1)==0 && x(i+2)==0

 ask = m5*sin(2*pi*f1*t);

 elseif x(i)==1 && x(i+1)==0 && x(i+2)==1

 ask = m6*sin(2*pi*f1*t);

 elseif x(i)==1 && x(i+1)==1 && x(i+2)==0
```

```
 ask = m7*sin(2*pi*f1*t);
 else
 ask = m8*sin(2*pi*f1*t);
 end
 i = i+3;
 plot(t,ask)
 hold on
 xlabel('time');
 ylabel('amplitude');
 title('Amplitude Shift Key');
end
hold off
```



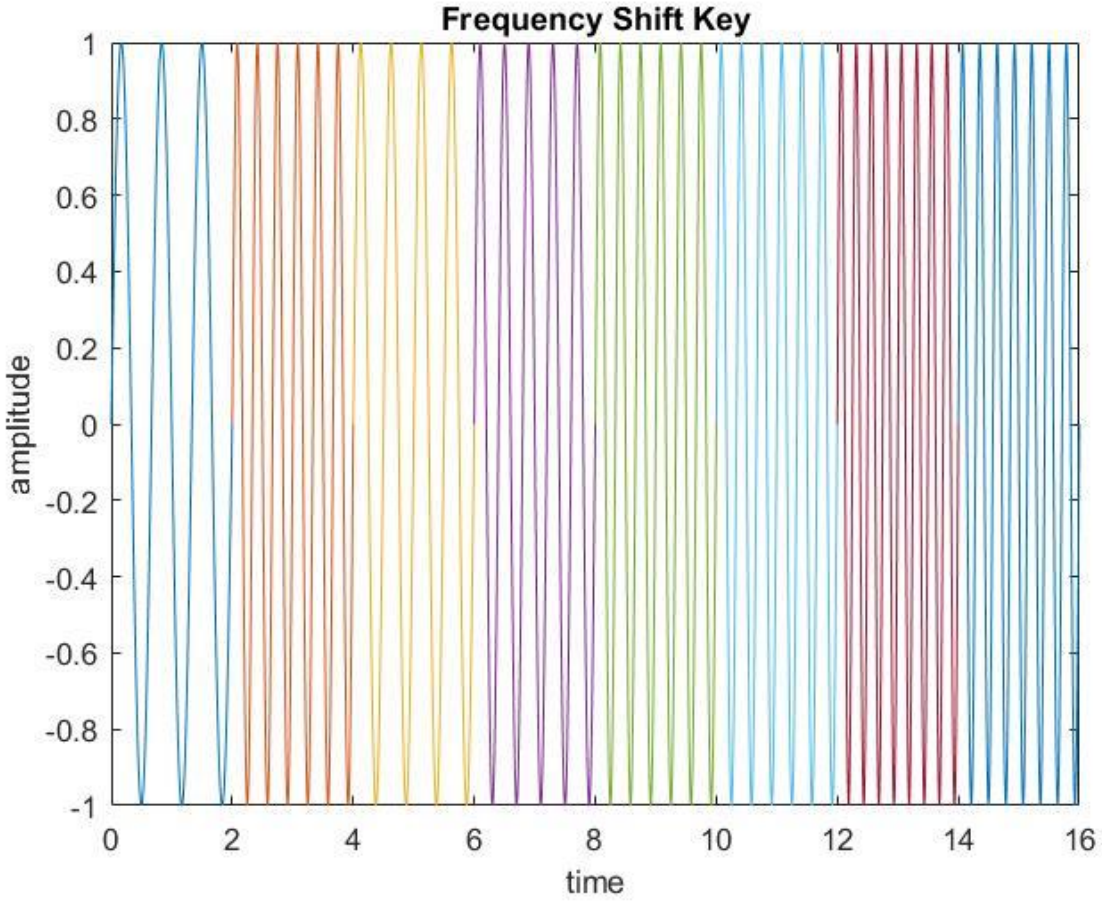
2. 8-FSK (Frequency Shift Key):

Code:

```
clear all

close all

clc

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

nx = length(x);

m1 = 1;

f1 = 1;

f2 = 1.5;
```

```
f3 = 2;

f4 = 2.5;

f5 = 3;

f6 = 3.5;

f7 = 4;

f8 = 4.5;

p1 = 0;

pd = 2;

i = 1;

fs = 50000;

while i<nx+1

 t = (i-1)/3*pd:1/fs:(i+2)/3*pd;

 if x(i)==0 && x(i+1)==0 && x(i+2)==0

 fsk = m1*sin(2*pi*f1*t);

 elseif x(i)==0 && x(i+1)==0 && x(i+2)==1

 fsk = m1*sin(2*pi*f2*t);

 elseif x(i)==0 && x(i+1)==1 && x(i+2)==0

 fsk = m1*sin(2*pi*f3*t);

 elseif x(i)==0 && x(i+1)==1 && x(i+2)==1

 fsk = m1*sin(2*pi*f4*t);

 elseif x(i)==1 && x(i+1)==0 && x(i+2)==0

 fsk = m1*sin(2*pi*f5*t);

 elseif x(i)==1 && x(i+1)==0 && x(i+2)==1

 fsk = m1*sin(2*pi*f6*t);

 elseif x(i)==1 && x(i+1)==1 && x(i+2)==0
```

```
 fsk = m1*sin(2*pi*f7*t);
 else
 fsk = m1*sin(2*pi*f8*t);


 end
 i = i+3;
 plot(t,fsk)
 hold on
 xlabel('time')
 ylabel('amplitude')
 title('Frequency Shift Key')
end
hold off
```



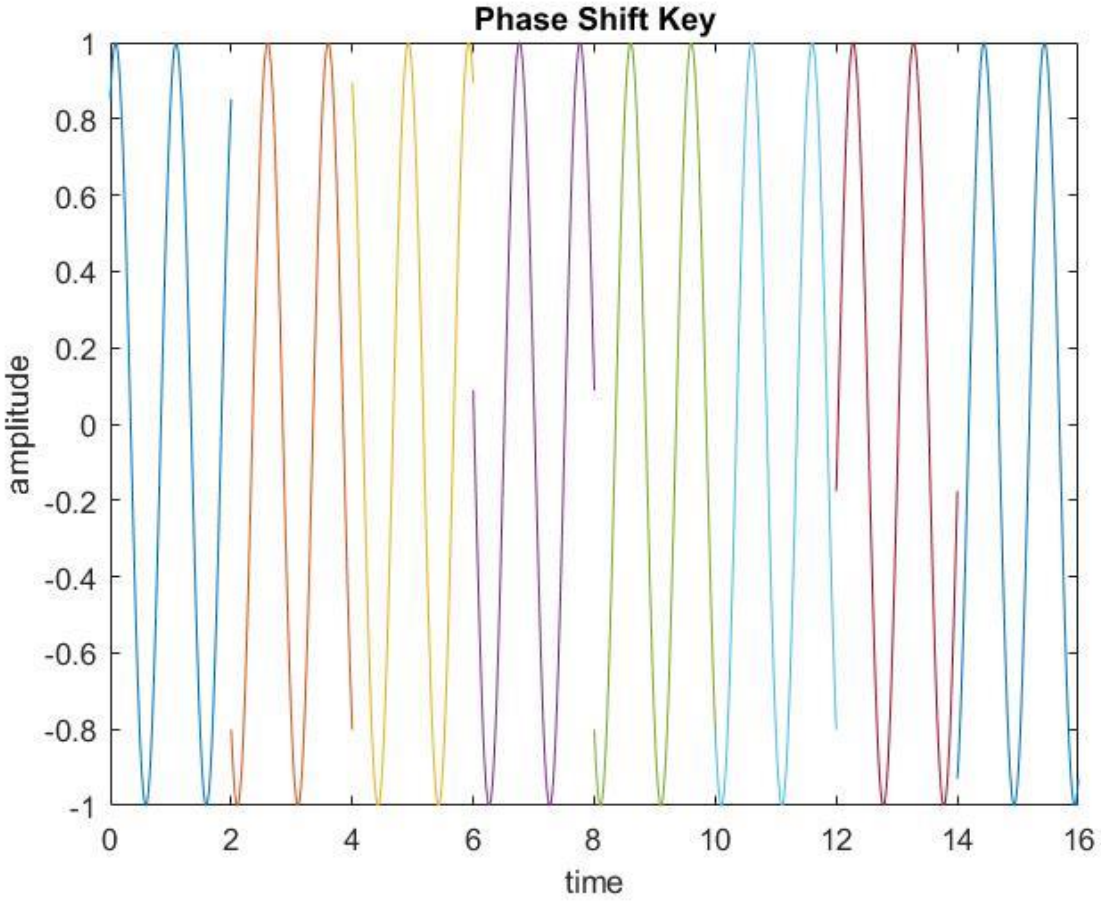
3. 8-PSK (Phase Shift Key):

Code:

```
clear all

close all

clc

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

nx = length(x);

m1 = 1;

f1 = 1;
```

```
p1 = 0;
p2 = 45;
p3 = 90;
p4 = 135;
p5 = 180;
p6 = 225;
p7 = 270;
p8 = 315;
pd = 2;
i = 1;
fs = 50000;
while i<nx+1
 t = (i-1)/3*pd:1/fs:(i+2)/3*pd;
 if x(i)==0 && x(i+1)==0 && x(i+2)==0
 psk = m1*sin(2*pi*f1*t + p1);
 elseif x(i)==0 && x(i+1)==0 && x(i+2)==1
 psk = m1*sin(2*pi*f1*t + p2);
 elseif x(i)==0 && x(i+1)==1 && x(i+2)==0
 psk = m1*sin(2*pi*f1*t + p3);
 elseif x(i)==0 && x(i+1)==1 && x(i+2)==1
 psk = m1*sin(2*pi*f1*t + p4);
 elseif x(i)==1 && x(i+1)==0 && x(i+2)==0
 psk = m1*sin(2*pi*f1*t + p5);
 elseif x(i)==1 && x(i+1)==0 && x(i+2)==1
 psk = m1*sin(2*pi*f1*t + p6);
```

```
elseif x(i)==1 && x(i+1)==1 && x(i+2)==0
psk = m1*sin(2*pi*f1*t + p7);
else
psk = m1*sin(2*pi*f1*t + p8);

end
i = i+3;
plot(t,psk)
hold on
xlabel('time')
ylabel('amplitude')
title('Phase Shift Key')
end
hold off
```



Discussion:

There is some of the bugs concluded with the definite organizational complementation with the functions of the MATLAB. The regression of the functions originated from the libraries inclines the comprehensive objective of this complementation. I face some problems while creating the plot and also face problems while calculation using my student id number. MATLAB takes some time while I try to run because my laptop configuration is low.