clc;

clear all;

close all;

n=100;

x=[ones(1,20) zeros(1,20) ones(1,20) zeros(1,20) ones(1,20)];

subplot(4,1,1);

plot(x);

title('input signal');

xlabel('number of samples');

ylabel('amplitude');

f=1\*10^6;

fs=10\*10^6;

for i=0:n-1

d(i+1)=sin(2\*pi\*(f/fs)\*i);

end

subplot(4,1,2);

plot(d);

title('carrier signal');

xlabel('number of samples');

ylabel('amplitude');

for i=0:n-1

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

x(i+1)=sin(2\*pi\*(f/fs)\*i);

else

x(i+1)=sin(2\*pi\*(f/fs)\*i+pi);

end

end

subplot(4,1,3);

plot(x);

title('DPSK Signal');

xlabel('number of samples');

ylabel('amplitude');

for i=0:n-1

if(x(i+1)==sin(2\*pi\*(f/fs)\*i))

x(i+1)=0;

else

x(i+1)=1;

end

end

subplot(4,1,4);

plot(x);

title('demodulated Signal');

xlabel('number of samples');

ylabel('amplitude');