Program

% PSK modulation

```
clc;
clear all;
close all;
%GENERATE CARRIER SIGNAL
Tb=1;
t=0:Tb/100:Tb;
fc=2;
c=sqrt(2/Tb)*sin(2*pi*fc*t);
%generate message signal
N=8;
m=rand(1,N);
t1=0;t2=Tb
for i=1:N
   t=[t1:.01:t2]
   if m(i)>0.5
      m(i)=1;
      m_s=ones(1,length(t));
   else
      m(i)=0;
      m_s=-1*ones(1,length(t));
   end
   message(i,:)=m_s;
   %product of carrier and message signal
   bpsk_sig(i,:)=c.*m_s;
   %Plot the message and BPSK modulated signal
   subplot(5,1,2);axis([0 N -2 2]);plot(t,message(i,:),'r');
   title('message signal(POLAR form)');xlabel('t--->');ylabel('m(t)');
   grid on;    hold on;
   subplot(5,1,4);plot(t,bpsk_sig(i,:));
   title('BPSK signal');xlabel('t--->');ylabel('s(t)');
   grid on;    hold on;
   t1=t1+1.01;    t2=t2+1.01;
end
hold off
%plot the input binary data and carrier signal
subplot(5,1,1);stem(m);
title('binary data bits');xlabel('n--->');ylabel('b(n)');
grid on;
subplot(5,1,3);plot(t,c);
title('carrier signal');xlabel('t--->');ylabel('c(t)');
grid on;
```

% PSK Demodulation

```
t1=0;t2=Tb
  for i=1:N
    t=[t1:.01:t2]
    %correlator
    x=sum(c.*bpsk_sig(i,:));
    %decision device
    if x>0
       demod(i)=1;
    else
       demod(i)=0;
    end
     t1=t1+1.01;
    t2=t2+1.01;
  end
  %plot the demodulated data bits
  subplot(5,1,5);stem(demod);
  title('demodulated data');xlabel('n--->');ylabel('b(n)');
  grid on
```