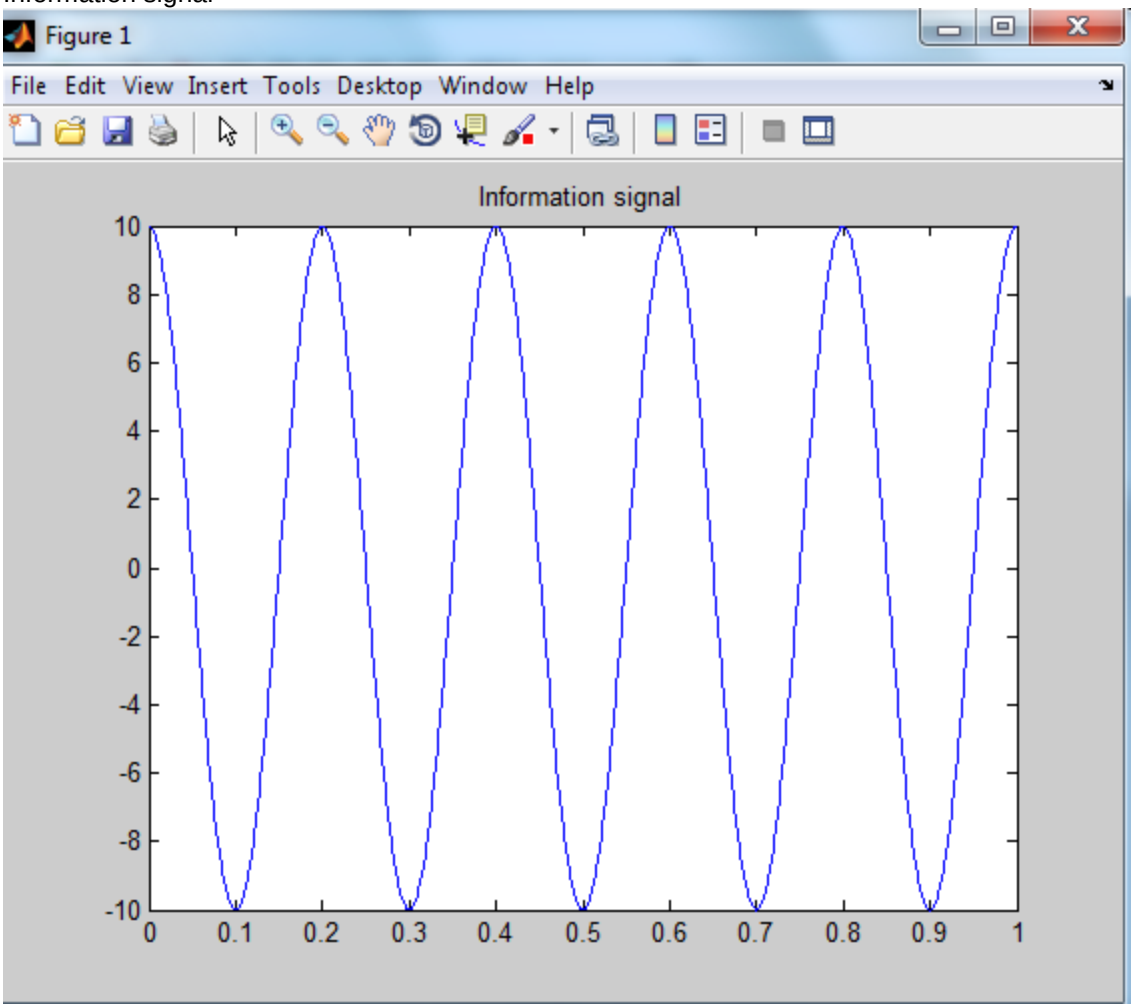
8) CREATE A WAVEFORM GRAPHS WITH TWO SINE WAVE AND ADD IT TO GET MODULATING SIGNAL. ONE SINE WAVE SHOULD BE LOWER FREQUENCY WITH INFORMATION SIGNAL. ANOTHER SINE WAVE SHOULD BE HIGHER FREQUENCY AS CAREER SIGNAL. YOU NEED PUT YOUR OWN VALUE FOR BOTH SINE WAVE. ADD A RANDOM NUMBER TO THE MODULATING SIGNAL TO GETA NOISY SIGNAL AND DISPLAY IT IN GRPAH. ADD A DELAY TO THE RESULTANT SIGNAL. YOU CAN USE WHILE LOOP FOR THIS EXPERIMENT.

MATLAB CODE

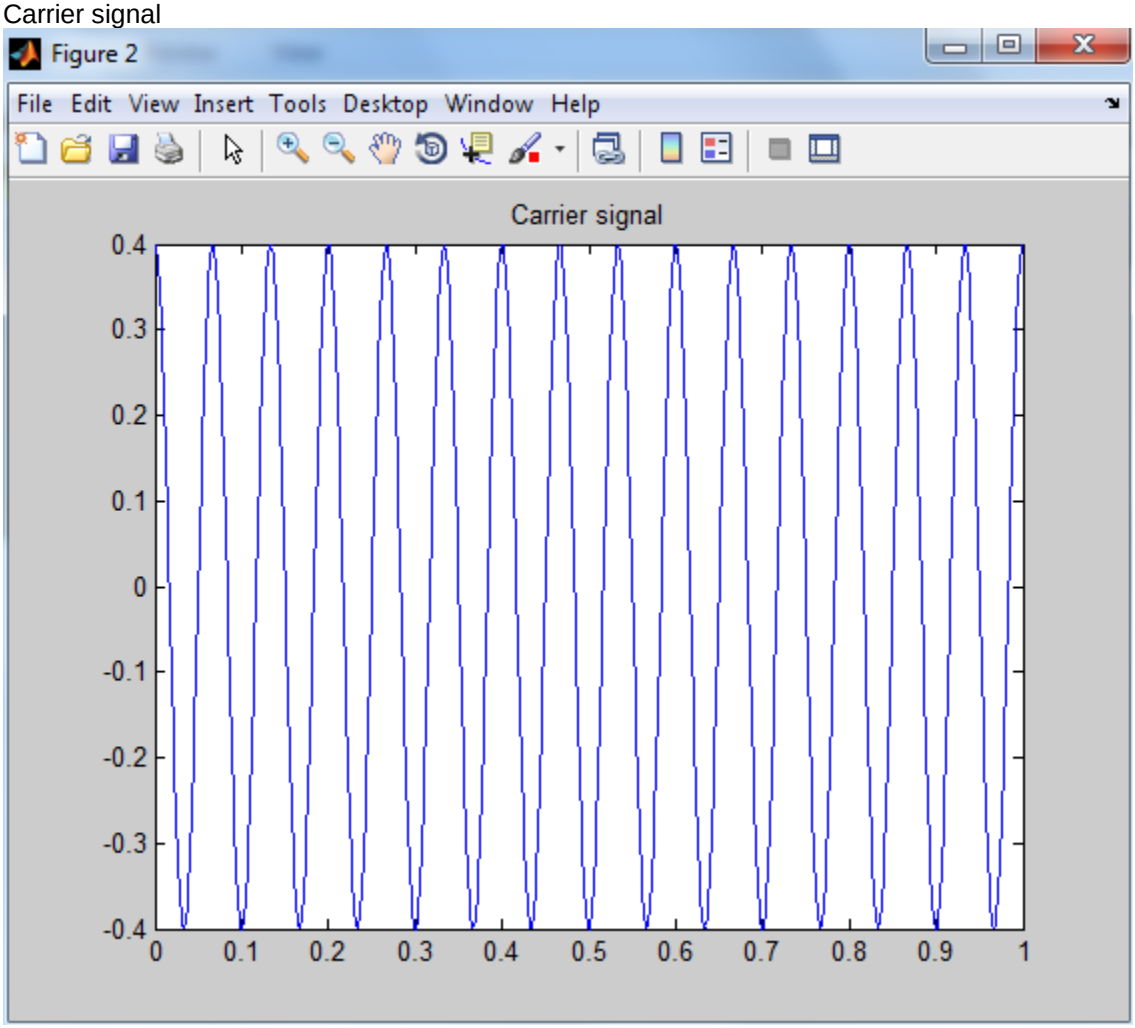
```
%Task 1 creating two sine waves

t=0:0.001:1;
v_signal=10*cos(2*pi*5*t);
v_carrier=0.4 * cos(2*pi*15*t);
figure(1)
plot(t,v_signal);
title('Information signal');

figure(2)
plot(t,v_carrier);
title('Carrier signal');

ft=v_carrier.*v_signal;
m_signal=ft+v_carrier;

figure(3)
plot(t,m_signal);
title('Amplitude modulated signal');

noise=normrnd(1,0.4,[1 1001]);
figure(4)
plot(t,noise);
title('Noise Signal');

md_with_noise=m_signal+noise;
figure(5)
plot(t,md_with_noise);
title('Modulated Signal with noise');

%delayed by 0.05 units
delayed_output = zeros(1,1001);
delayed_output(51:1001)=md_with_noise(1:951);
delayed_output(1:50)=md_with_noise(952:1001);
figure(6)
plot(t,delayed_output);
title('Modulated Signal with noise and delayed');
```

```
% both the output on same plot
figure(7)
plot(t,md_with_noise,'r');
hold on;
plot(t,delayed_output,'g');
hold on;
plot(t,m_signal,'b');
title('all output on same plot');
% red for with noise
% green for delayed
% blue for without noise and without delay
```

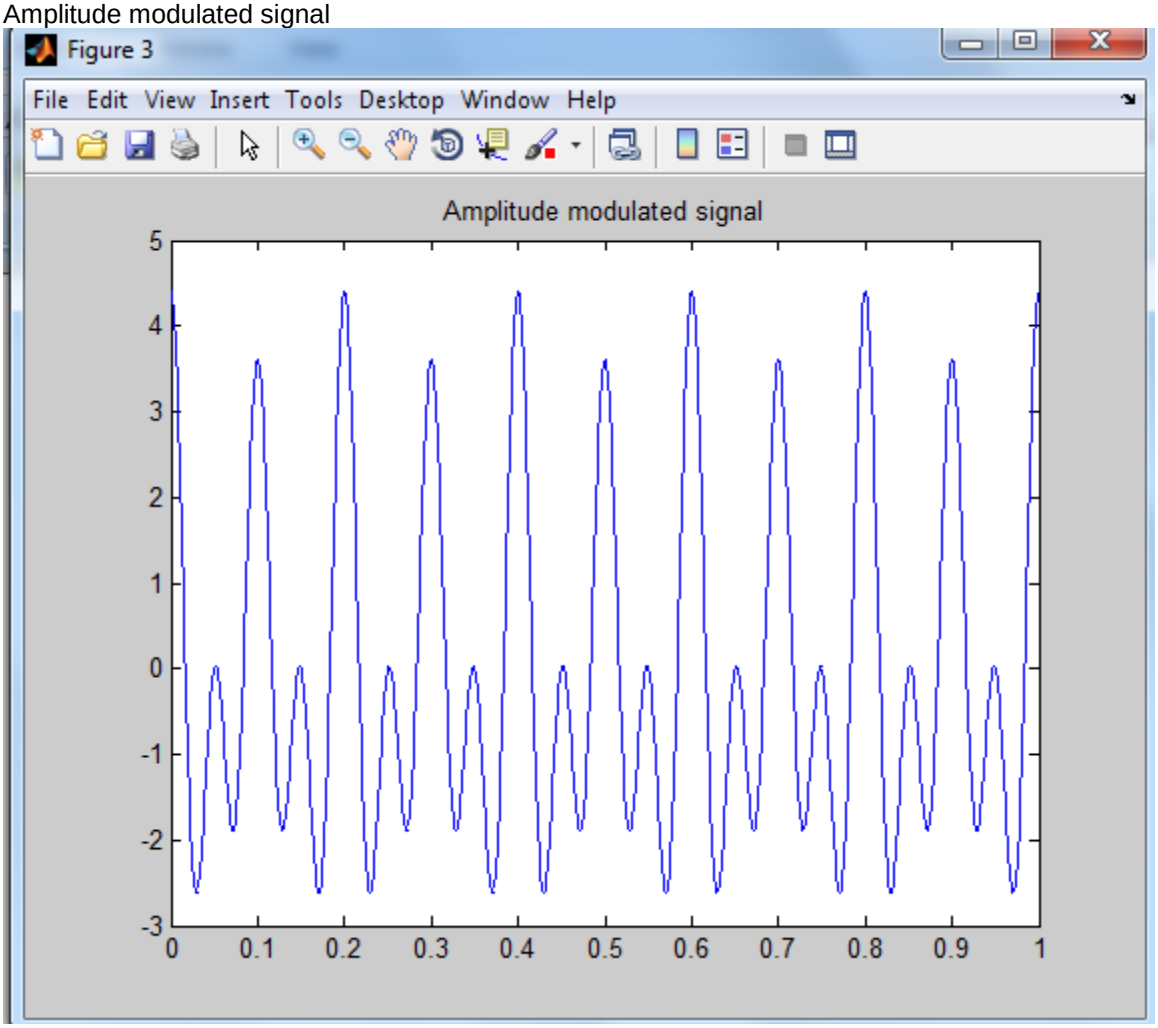
Information signal



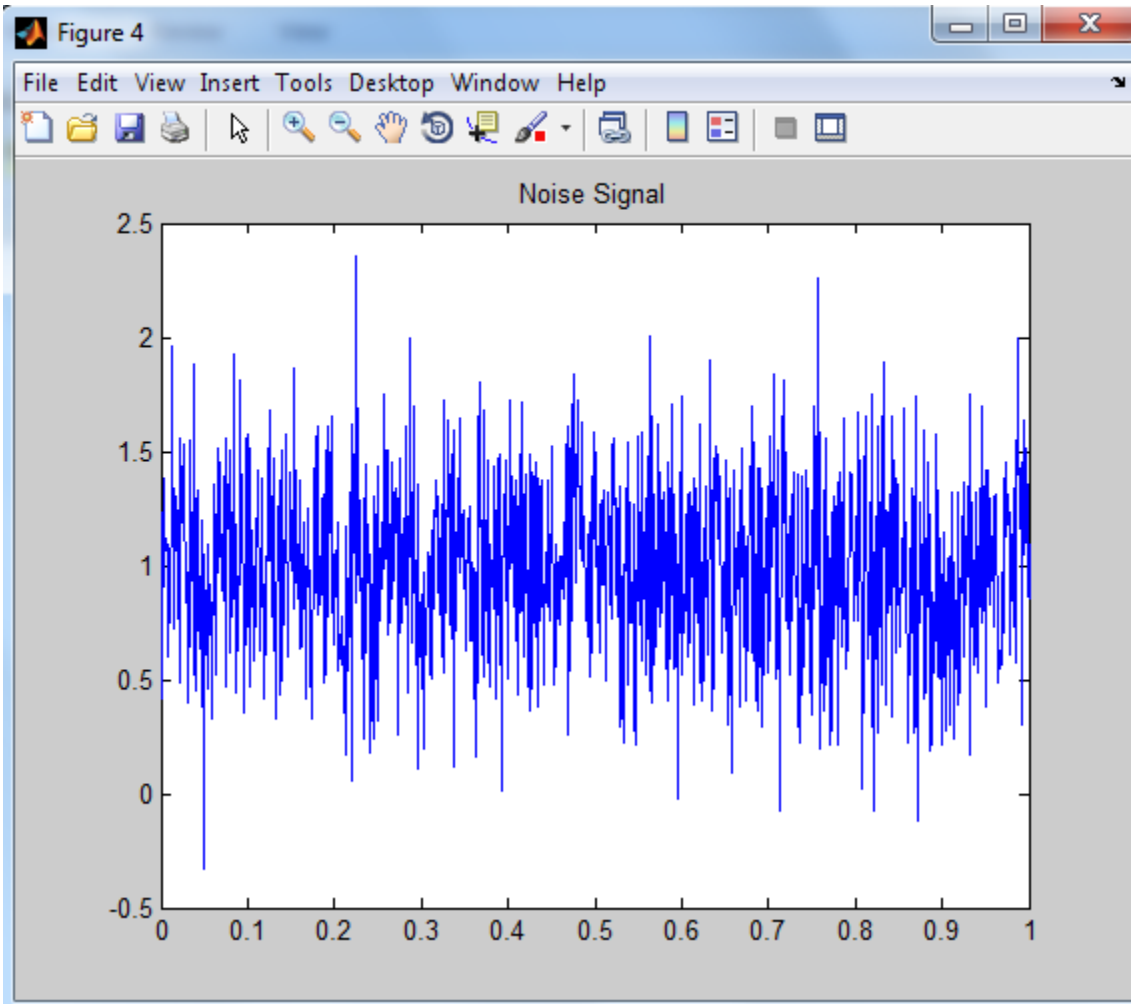
Carrier signal



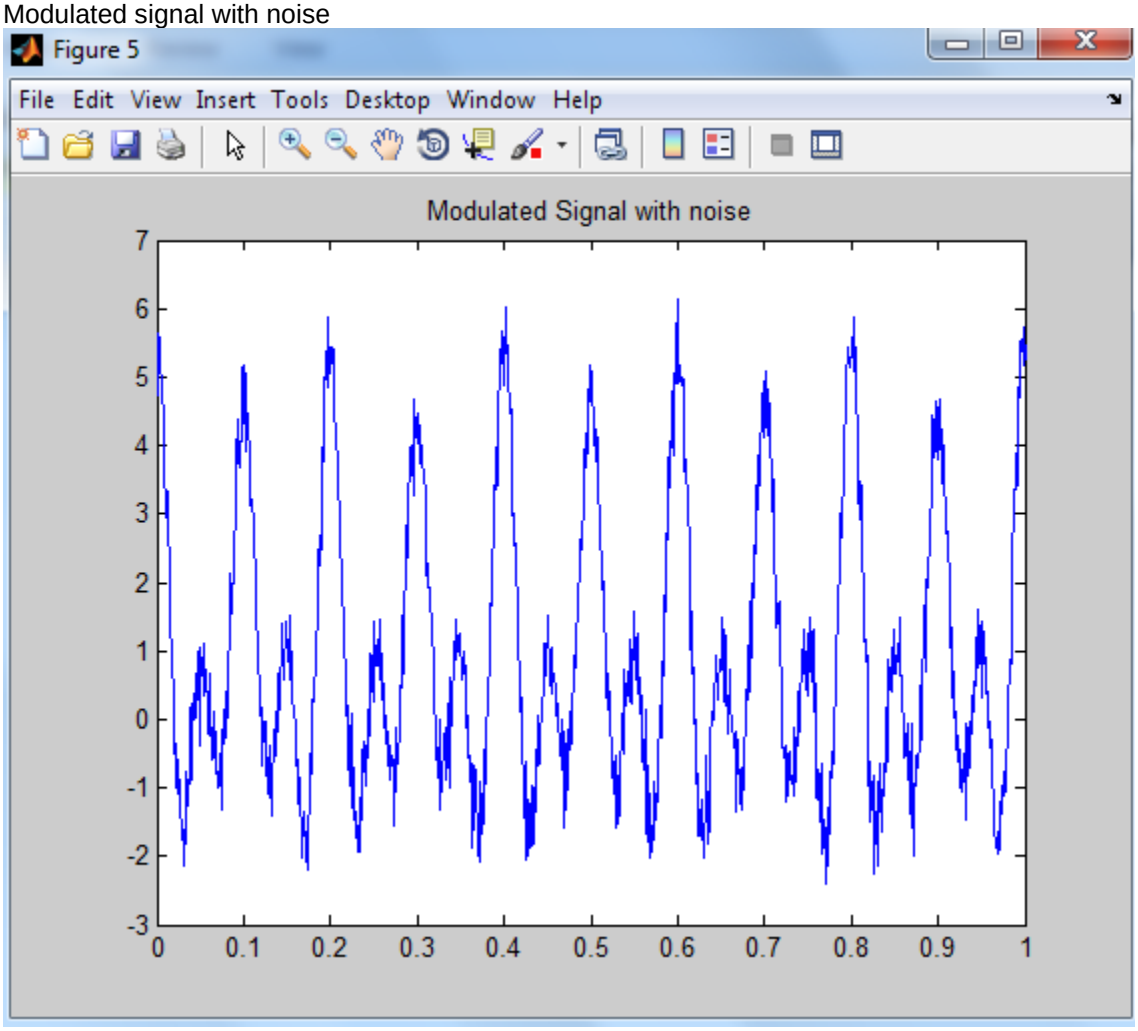
Amplitude modulated signal



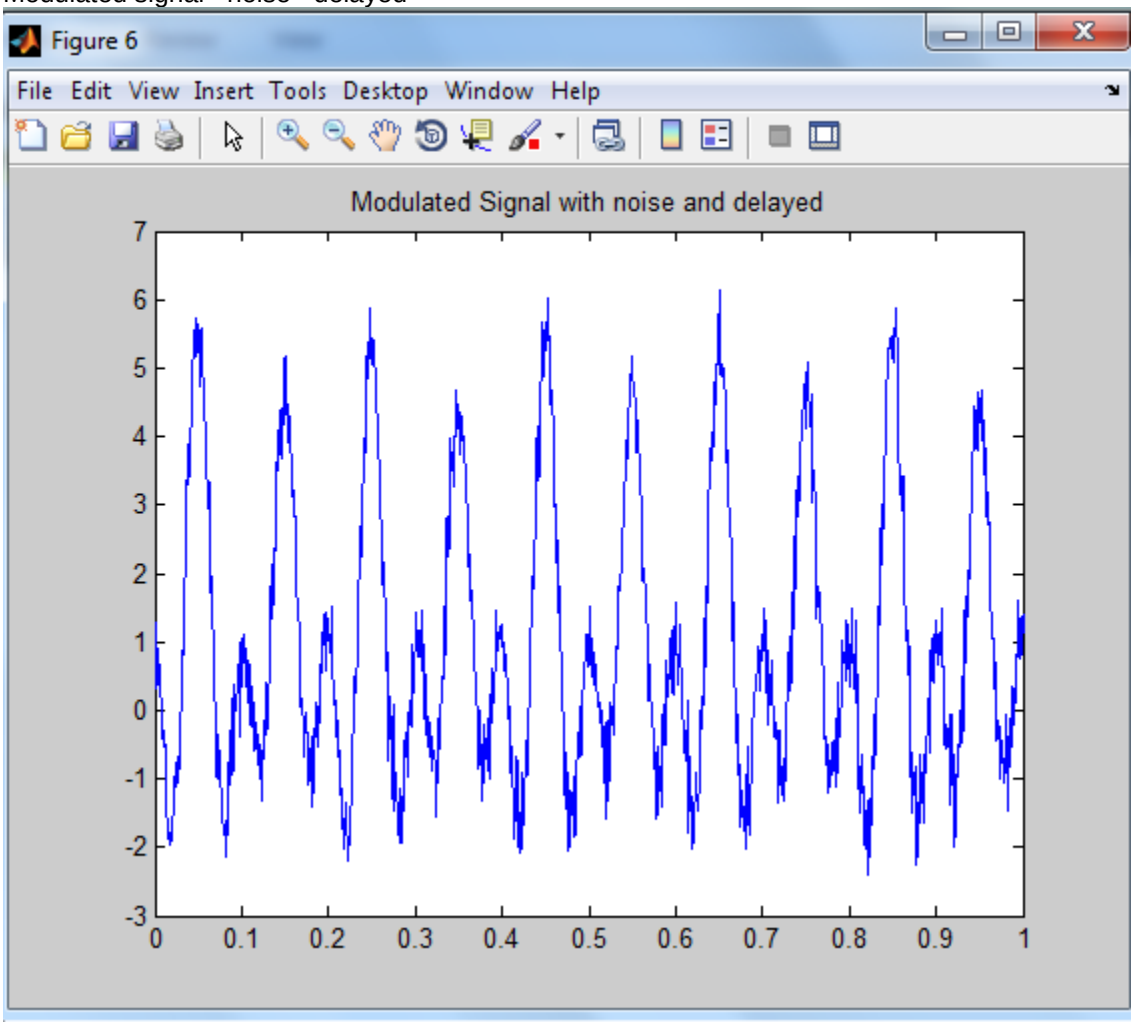
Noise signal



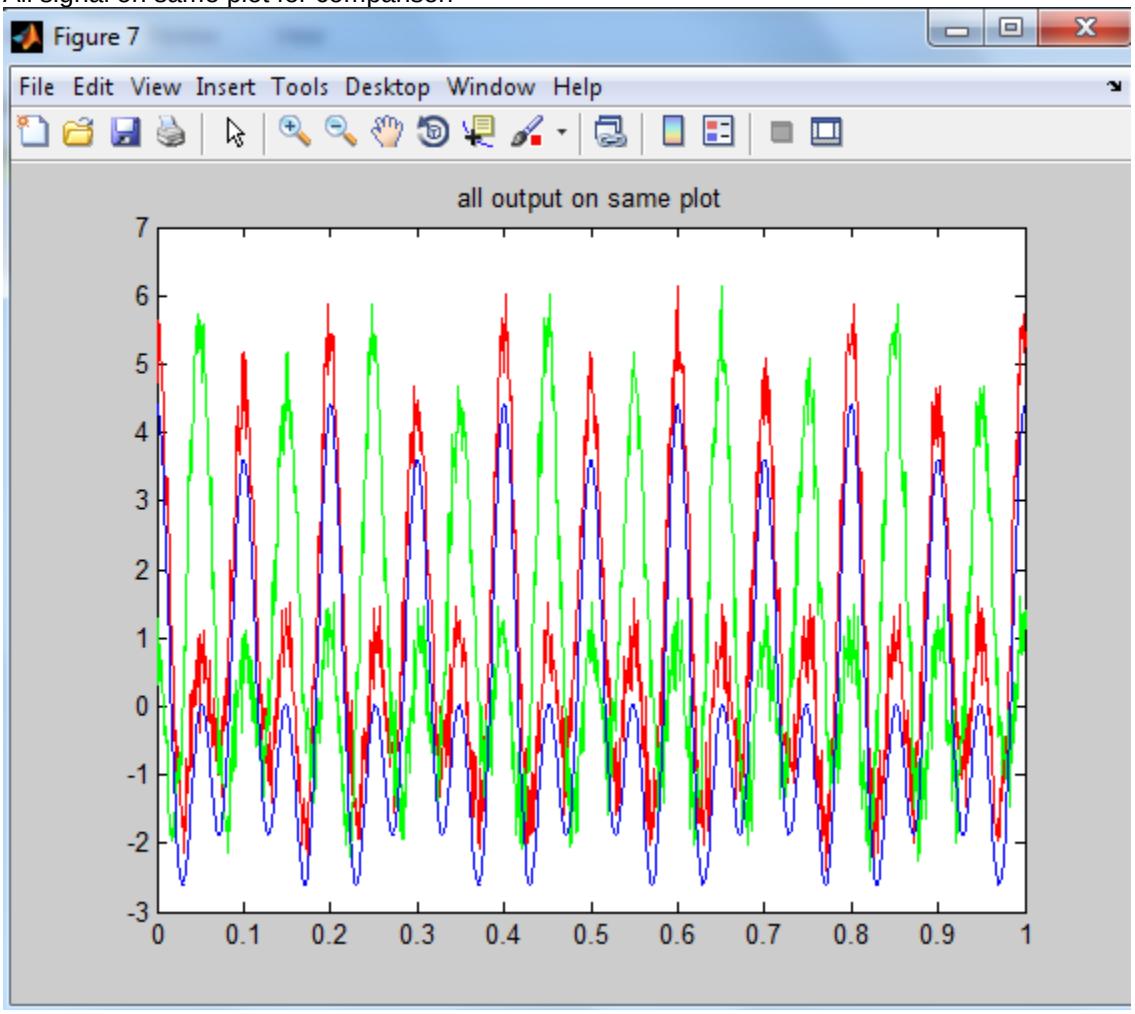
Modulated signal with noise



Modulated signal+ noise+ delayed



All signal on same plot for comparison




```
% red for with noise
% green for delayed
% blue for without noise and without delay
```