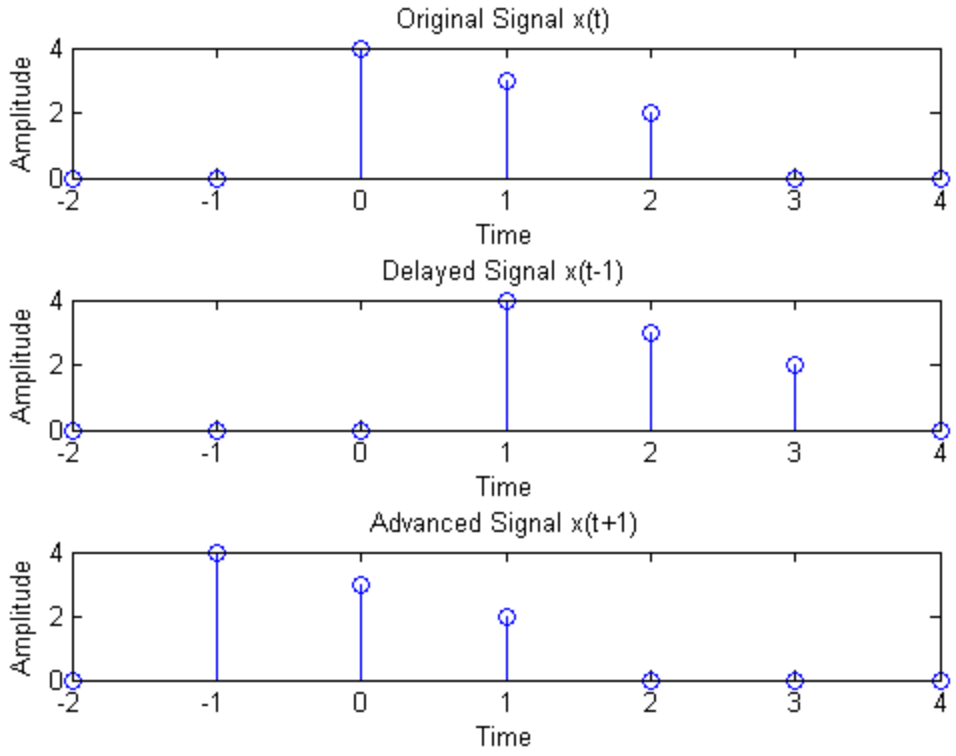
```
clc;
clear;
close all;

%Aditya Engineering College
%Dept of ECE
%Signals and Systems Lab

%Experiment-2-Operations on signals

%1-Time Shifting

t=-2:4;
[m,n] =size(t);
x=[ 0 0 4 3 2 0 0];
y1=zeros(m,n);
y2=zeros(m,n);

%Generating Delayed signal

for i=2:n
    y1(i)=x(i-1);
end

%Generating Advanced Signal

for i=1:n-1
    y2(i)=x(i+1);
end

subplot(3,1,1);
stem(t,x);
xlabel('Time');ylabel('Amplitude');
title('Original Signal x(t)');

subplot(3,1,2);
stem(t,y1);
xlabel('Time');ylabel('Amplitude');
title('Delayed Signal x(t-1)');

subplot(3,1,3);
stem(t,y2);
xlabel('Time');ylabel('Amplitude');
title('Advanced Signal x(t+1)');


%2-Time Reversal

t1=-4:4;
x1=[0 0 0 0 4 3 2 0 0];
[m,n]=size(t1);
y=zeros(m,n);
```

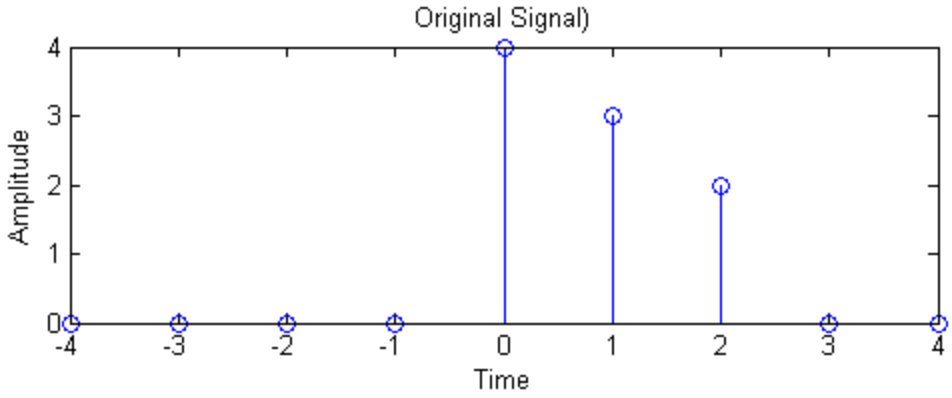
```
for i=1:n
    y(i)=x1(n);
    n=n-1;
end
figure;

subplot(211);
stem(t1,x1);
xlabel('Time');ylabel('Amplitude');
title('Original Signal)');

subplot(212);
stem(t1,y);
xlabel('Time');ylabel('Amplitude');
title('Signal with time Reversal');

%3-Time Scaling

t2=-5:0.0001:5;
x2=tripuls(t2,2);
figure;
subplot(311);
plot(t2,x2);grid
title('Triangular pulse with width 2');
t3=2*t2;
x3=tripuls(t3,2);
subplot(312);
plot(t2,x3);grid
title('Triangular pulse with width 1');
t4=1/2*t2;
x4=tripuls(t4,2);
subplot(313);
plot(t2,x4);grid
title('Triangular pulse with width 4');

%4-Amplitude Scaling

t5=0:0.01:1;
f=4;
x5=sin(2*pi*f*t5);
y3=2*x5;
y4=1/2*x5;
figure;

subplot(311);plot(t5,x5);
title('Original Signal');
subplot(312);plot(t5,y3);
title('Amplitude Scaled by 2 units');
subplot(313);plot(t5,y4);
title('Amplitude Scaled by 1/2 units');

%5-Signal Addition

%Case-1-Consider two sinusoidal signals with different frequencies
```

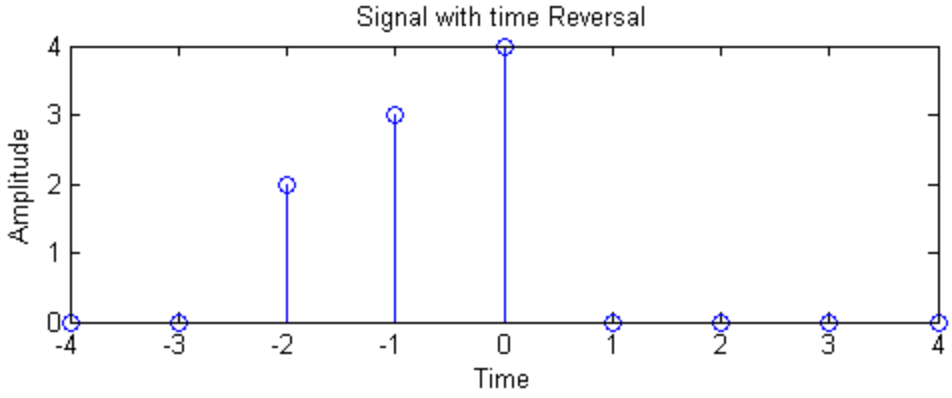
```
t6=0:0.01:1;
f1=6;
f2=3;
x6=sin(2*pi*f1*t6);
x7=sin(2*pi*f2*t6);

y5=x6+x7;
figure;

subplot(311);plot(t6,x6);grid
title('sine Signal with 6Hz');
subplot(312);plot(t6,x7);
title('Sine Signal with 3Hz');
subplot(313);plot(t6,y5);
title('Addtion of two Signals');

%Case-2-Consider a sine signal and noise signal

t5=0:0.01:1;
[m,n]=size(t6);
f=4;

x5=sin(2*pi*f*t5);

%genertaing random noise with signal size of time t

r=0.5*rand(m,n);

y6=x5+r;
figure;

subplot(311);plot(t5,x5);
title('Original Signal');

subplot(312);plot(t5,r);
title('Random signal');

subplot(313);plot(t5,y6);
title('Noisy Signal');

%6-Signal Multiplication

t7=0:0.001:1;
f3=20;
f4=2;

%Generate square wave

x8=square(2*pi*f3*t7);
x9=sin(2*pi*f4*t7);

y7=x8.*x9;
figure;
```

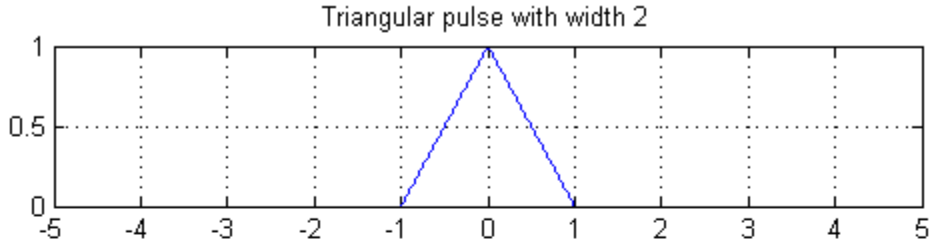
```
subplot(311);plot(t7,x8);
title('Square Signal');
subplot(312);plot(t7,x9);
title('sine Signal');
subplot(313);plot(t7,y7);
title('Multiplied Signal');
```

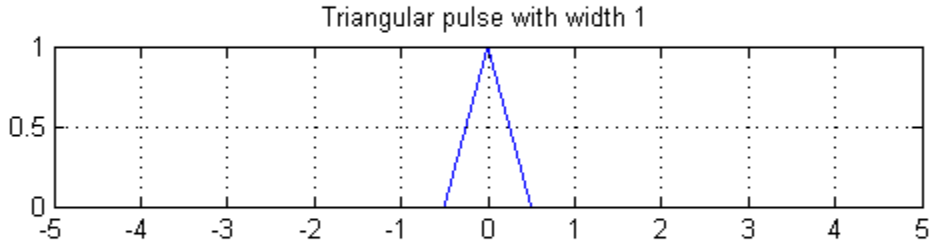
```
%NAME:K.VIVEK
%ROLL.NO:20A91A04L8
%DATE:08/11/2021
```

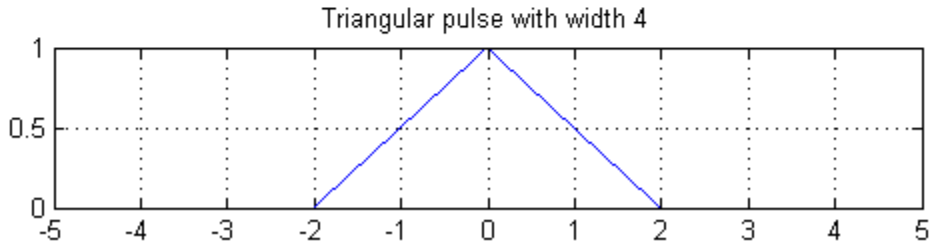


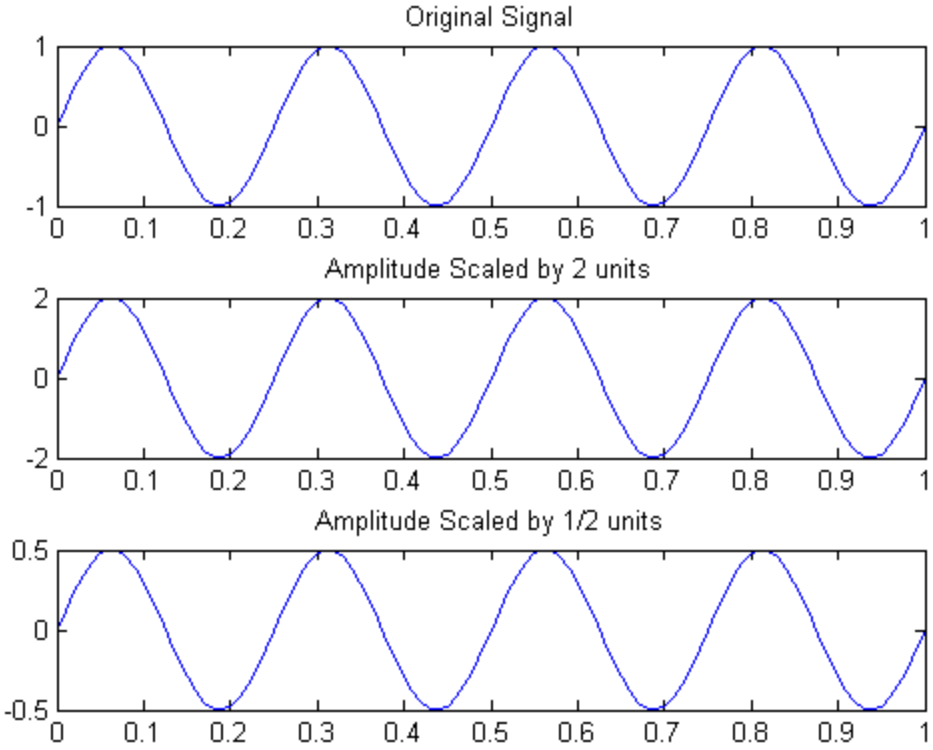

Original Signal)
Amplitude
Time

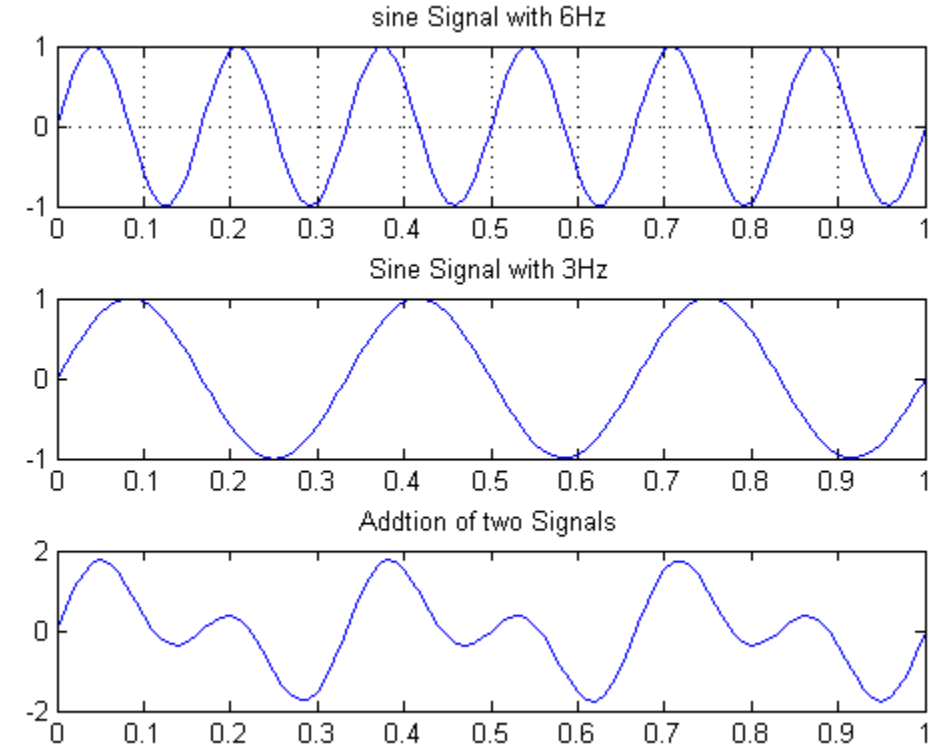

Signal with time Reversal
Amplitude
Time

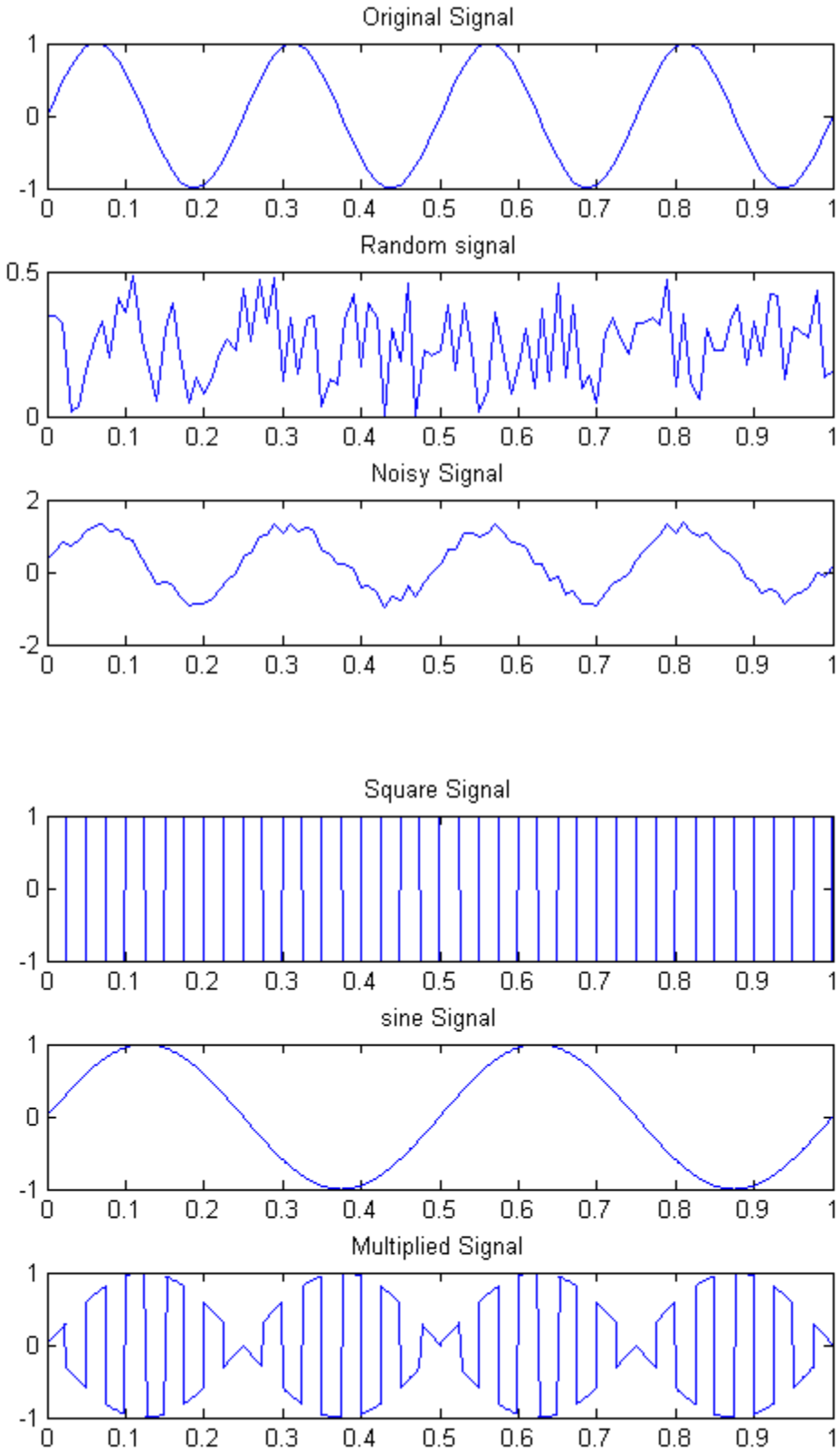

Triangular pulse with width 2


Triangular pulse with width 1


Triangular pulse with width 4


Original Signal
Amplitude Scaled by 2 units
Amplitude Scaled by 1/2 units


sine Signal with 6Hz
Sine Signal with 3Hz
Addtion of two Signals


Original Signal
Random signal
Noisy Signal
Square Signal
sine Signal
Multiplied Signal

Published with MATLAB® R2014a