

%Exp No. 2

```
% Generation of various signals and  
Sequences  
% (Periodic and Aperiodic),  
% such as Unit Impulse,  
% Unit Step, Square, Saw tooth,  
% Triangular, Sinusoidal, Ramp, Sinc.
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clc;  
clear all;  
close all;  
fs=500;  
t=-10:1/fs:10;  
n=-10:1:10;  
%generation of impulse signal  
y1=(t==0);  
subplot(2,2,1);  
plot(t,y1);  
axis([-10 10 -2 2])  
grid;  
xlabel('time');  
ylabel('amplitude');  
title('impulse signal');  
%generation of impulse sequence  
y2=(n==0);  
subplot(2,2,2);  
stem(n,y2);  
axis([-10 10 -2 2])  
xlabel('n');  
ylabel('amplitude');  
title('impulse sequence');
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%generation of unit step signal
y3=(t>=0);
subplot(2,2,3);
plot(t,y3);
axis([-10 10 -2 2])
xlabel('time');
ylabel('amplitude');
title('unit step signal');
%generation of unit step sequence
y4=(n>=0);
subplot(2,2,4);
stem(n,y4);
axis([-10 10 -2 2])
xlabel('n');
ylabel('amplitude');
title('unit step sequence');
figure;
%generation of ramp signal
y1=t.*(t>=0);
subplot(2,2,1);
plot(t,y1);
xlabel('time');
ylabel('amplitude');
title('ramp signal');
%generation of ramp sequence
y2=n.*(n>=0);
subplot(2,2,2);
stem(n,y2);
xlabel('n');
ylabel('amplitude');
title('ramp sequence');

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%generation of parabolic signal
y3=(t.^2/2).* (t>=0);
subplot(2,2,3);
plot(t,y3);
xlabel('time');
ylabel('amplitude');
title('parabolic signal');
%generation of parabolic sequence
y4=(n.^2/2).* (n>=0);
subplot(2,2,4);
stem(n,y4);
xlabel('n');
ylabel('amplitude');
title('parabolic sequence');
figure;
%generation of square wave signal
y1=square(2*pi*0.2*t);
subplot(2,2,1);
plot(t,y1);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title('square wave signal');
%generation of square wave sequence
y2=square(2*pi*0.2*n);
subplot(2,2,2);
stem(n,y2);
axis([-10 10 -2 2]);
xlabel('n');
ylabel('amplitude');
title('square wave sequence');

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%generation of sin wave signal
y3=sin(2*pi*0.1*t);
subplot(2,2,3);
plot(t,y3);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title(' sinusoidal wave signal');
%generation of sin wave sequence
y4=sin(2*pi*0.1*n);
subplot(2,2,4);
stem(n,y4);
axis([-10 10 -2 2]);
xlabel('n');
ylabel('amplitude');
title('sin wave sequence');
figure;
%generation of sawtooth signal
y1=sawtooth(2*pi*0.1*t);
subplot(2,2,1);
plot(t,y1);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title('sawtooth wave signal');
%generation of sawtooth sequence
y2=sawtooth(2*pi*0.1*n);
subplot(2,2,2);
stem(n,y2);
axis([-10 10 -2 2]);
xlabel('n');

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ylabel('amplitude');
title('sawtooth wave sequence');
%generation of triangular wave signal
y3=sawtooth(2*pi*0.1*t,0.5);
subplot(2,2,3);
plot(t,y3);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title(' triangular wave signal');
%generation of triangular wave sequence
y4=sawtooth(2*pi*0.1*n,0.5);
subplot(2,2,4);
stem(n,y4);
axis([-10 10 -2 2]);
xlabel('n');
ylabel('amplitude');
title('triangular wave sequence');
figure;
%generation of exponential signal
a=0.5;
%Exponentially increasing signal
y1=exp(a*t);
subplot(2,2,1);
plot(t,y1);
xlabel('time');
ylabel('amplitude');
title('Exponentially increasing signal');
%Exponentially increasing sequence
a=2;
y2=a.^n;

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subplot(2,2,2);
stem(n,y2);
xlabel('time');
ylabel('amplitude');
title('Exponentially increasing sequence');
%Exponentially decreasing signal
a=0.5;
y3=exp(-a*t);
subplot(2,2,3);
plot(t,y3);
xlabel('time');
ylabel('amplitude');
title('Exponentially decreasing signal');
%Exponentially decreasing sequence
y4=(a).^n;
subplot(2,2,4);
stem(n,y4);
xlabel('n');
ylabel('amplitude');
title('Exponentially decreasing sequence');
figure;
%generation of Rectangular Pulse Signal
y1=rectpuls(t,4);
subplot(2,2,1);
plot(t,y1);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title('Rectangular Pulse Signal');
%generation of Rectangular Pulse sequence
y2=rectpuls(n,4);

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subplot(2,2,2);
stem(n,y2);
axis([-10 10 -2 2]);
xlabel('n');
ylabel('amplitude');
title('Rectangular Pulse sequence');
%generation of triangular pulse signal
y3=tripuls(t,4);
subplot(2,2,3);
plot(t,y3);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title(' triangular wave signal');
%generation of triangular pulse sequence
y4=tripuls(n,4);
subplot(2,2,4);
stem(n,y4);
axis([-10 10 -2 2]);
xlabel('n');
ylabel('amplitude');
title('triangular pulse sequence');
figure;
%generation of signum signal
y1=1*(t>0)-1*(t<0);
subplot(3,2,1);
plot(t,y1);
axis([-10 10 -2 2]);
xlabel('time');
ylabel('amplitude');
title('signum signal');

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```

%generation of signum sequence
y2=1*(n>0)-1*(n<0);
subplot(3,2,2);
stem(n,y2);
axis([-10 10 -2 2]);
xlabel('n');
ylabel('amplitude');
title('signum sequence');
%generation of sinc signal
y3=sinc(2*pi*0.1*t);
subplot(3,2,3);
plot(t,y3);
xlabel('time');
ylabel('amplitude');
title(' sinc signal');
%generation of sinc sequence
y4=sinc(2*pi*0.1*n);
subplot(3,2,4);
stem(n,y4);
xlabel('n');
ylabel('amplitude');
title('sinc sequence');
%generation of Gaussian signal
a=0.2;
y5=exp((-a*t.^2)/2);
subplot(3,2,5);
plot(t,y5);
xlabel('time');
ylabel('amplitude');
title(' Gaussian signal');
%generation of Gaussian sequence

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y6=exp((-a*n.^2)/2);
subplot(3,2,6);
stem(n,y6);
xlabel('n');
ylabel('amplitude');
title(' Gaussian sequence');
%generation of complex exponential signal
a=-0.1;
s=a+j*2*pi*0.1;
y7=exp(s*t);
figure;
subplot(2,2,1);
plot(t,y7);
xlabel('time');
ylabel('amplitude');
title(' complex exponential decreasing
signal');
a=0.1;
s=a+j*2*pi*0.1;
y8=exp(s*t);
subplot(2,2,2);
plot(t,y8);
xlabel('time');
ylabel('amplitude');
title(' complex exponential increasing
signal');
%generation of complex exponential sequence
a=-0.1;
s=a+j*2*pi*0.1;
y7=exp(s*n);
subplot(2,2,3);

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stem(n, y7);  
xlabel('time');  
ylabel('amplitude');  
title('complex exponential decreasing  
sequence');  
a=0.1;  
s=a+j*2*pi*0.1;  
y8=exp(s*n);  
subplot(2,2,4);  
stem(n, y8);  
xlabel('n');  
ylabel('amplitude');  
title('complex exponential increasing  
sequence');
```