Common Procedure to all Programs in MATLAB

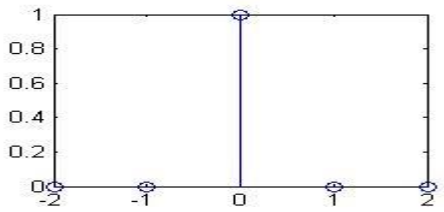
1. use the command /usr/local/MATLAB/R2019a/bin/matlab
2. MATLAB window open.
3. Click on the 'FILE' Menu on menu bar.
4. Click on NEW M-File from the file Menu.
5. An editor window open, start typing commands.
6. Now SAVE the file in directory.
7. Then Click on DEBUG from Menu bar and Click Run.

1. Generation of basic signals using MATLAB

(a) Program for the generation of UNIT impulse signal

```
clc; close all; clear all;
t=-2:1:2;
y=[zeros(1,2),ones(1,1),zeros(1,2)];
figure(1);
stem(t,y);
title('unit impulse');
```

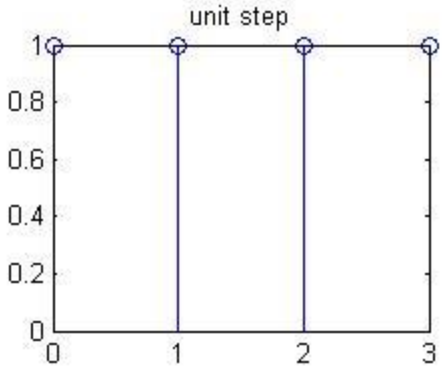
output:



(b) Program for the generation of UNIT step signal

```
clc; close all; clear all;
n=input('enter the n value');
 t=0:1:n-1;
y=ones(1,n); figure(2)
stem(t,y); title('unit step');
```

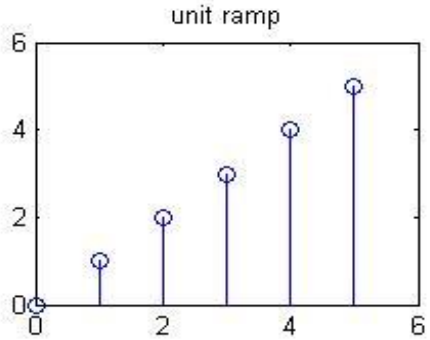
output: n=4



(c) Program for the generation of unit RAMP signal

```
clc; close all; clear all;
n=input('enter the n value');
t=0:n;
y=ones(1,n); figure(3)
stem(t,t);
title('unit ramp');
```

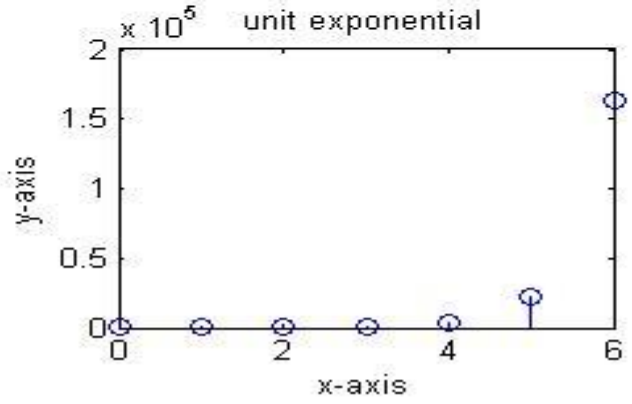
output: n=5



(d) Program for the generation of Exponential signal

```
clc; close all; clear all;
n=input('the length of i/p sequency');
t=0:n
a=input('enter the a value');
y=exp(a*t); figure(4)
stem(t,y);
xlabel('x-axis'); ylabel('y-axis');
title('unit exponential');
```

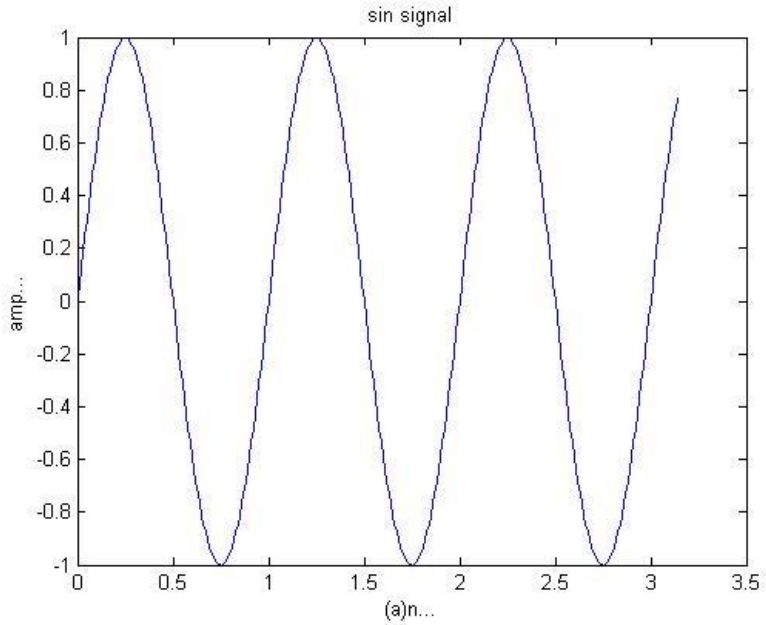
output: n=6 a=2



2. To Generate continuous time sinusoidal signal, Discrete time cosine signal.

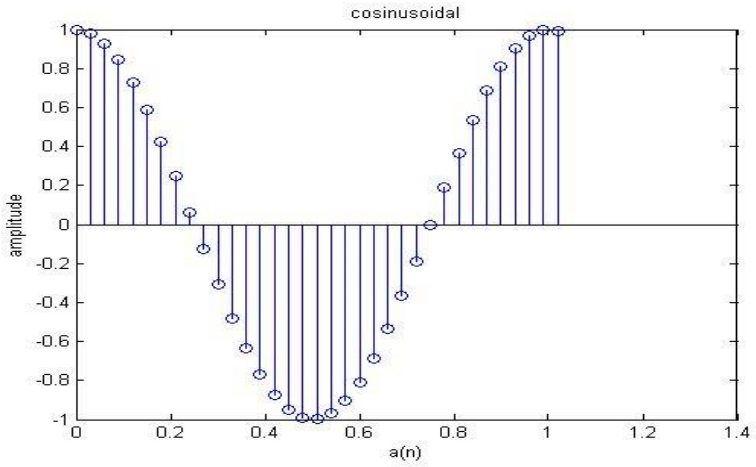
```
% Program for Continuous time signal
clc; close all; clear all;
t=0:.01:pi;
y= sin(2*pi*t);
plot(t,y);                          % plotting continuous signal
ylabel('amp...'); xlabel('(a)n...');
title('sin signal')
```

output:



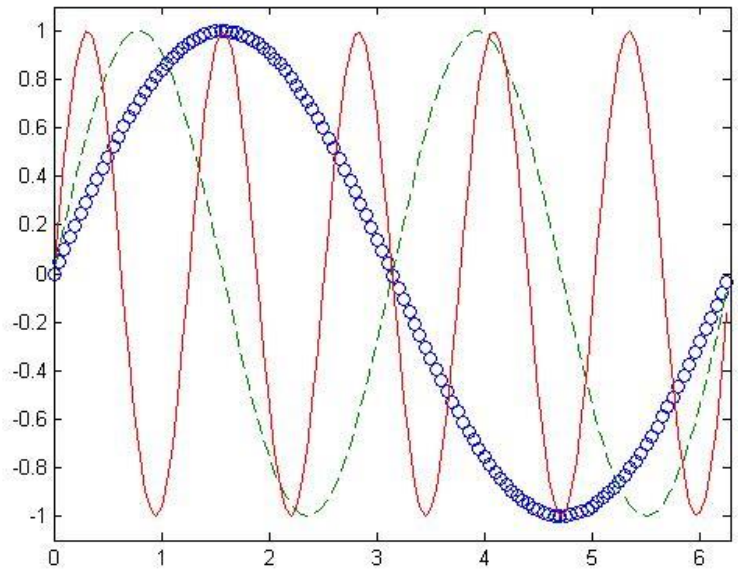

```
%Program for Discrete time cosine signal :
t=0:.03:pi/3;
y= cos(2*pi*t);
stem(t,y);                          % for plotting discrete signal
xlabel('a(n)');ylabel('amplitude');
title('cosinusoidal');
```

output:



Exercise:

1. Generate continuous time and discrete time signal for the following
   (a) y = sin(t)
   (b) y= cos(2πt)
   (c) y=cos(5t + sin (2t))
2. plot the signals. Take t=0:0.1:6.28. y1(t) = sin(t), y2(t) = sin(2t), y3(t) = sin(5t). Plot all the three signals in the same figure. Use plot(t,y1,'o',t,y2,'--',t,y3);
   output:



3. Consider the following length 7 sequences defined for -3≤ n ≤3 x[n] = [3 -2 0 1 4 5 2], y[n] = [0 7 1 -3 4 9 -2], w[n] = [-5 4 3 6 -5 0 1]. Generate the following sequences
   (a) u[n] = x[n] + y[n], (b) v[n] = x[n].w[n], (c) s[n] = y[n] – w[n], and (d) r[n] = 4.5y[n]
4. Generate the sequences
   (a) x[n] = sin(0.6πn+0.6π)
   (b) x[n] = 2cos(1.1πn -0.5π)
   (c) x[n] = n modulo 6