

Exp .No:01**Date:**

GENERATION OF DISCRETE TIME SIGNALS

AIM: -To write a “MATLAB” Program to generate of discrete time signals like unit impulse, unit step, unit ramp, exponential signal and sawtooth signals.

SOFTWARE REQUIRED :-

- PC and MATLAB Software (2019b 9.7version)

PROCEDURE:-

- Open MATLAB
- Open new M-file
- Type the program
- Save in current directory
- Compile and Run the program
- For the output see command window\ Figure window

PROGRAM:-

```
%unit impulse function%
%Discrete%
n=-10:10;
Xn=(n==0);
subplot(3,2,1);
stem(n,Xn);
axis([-11 11 -0.5 1.5]);
xlabel('Samples');
ylabel('amplitude');
title(' unit impulse function');
%unit step function%
%Discrete%
n=-10:10;
Xn=(n>=0);
subplot(3,2,2);
stem(n,Xn);
axis([-11 11 -0.5 1.5]);
xlabel('Samples');
ylabel('amplitude');
title(' discrete unit step function');

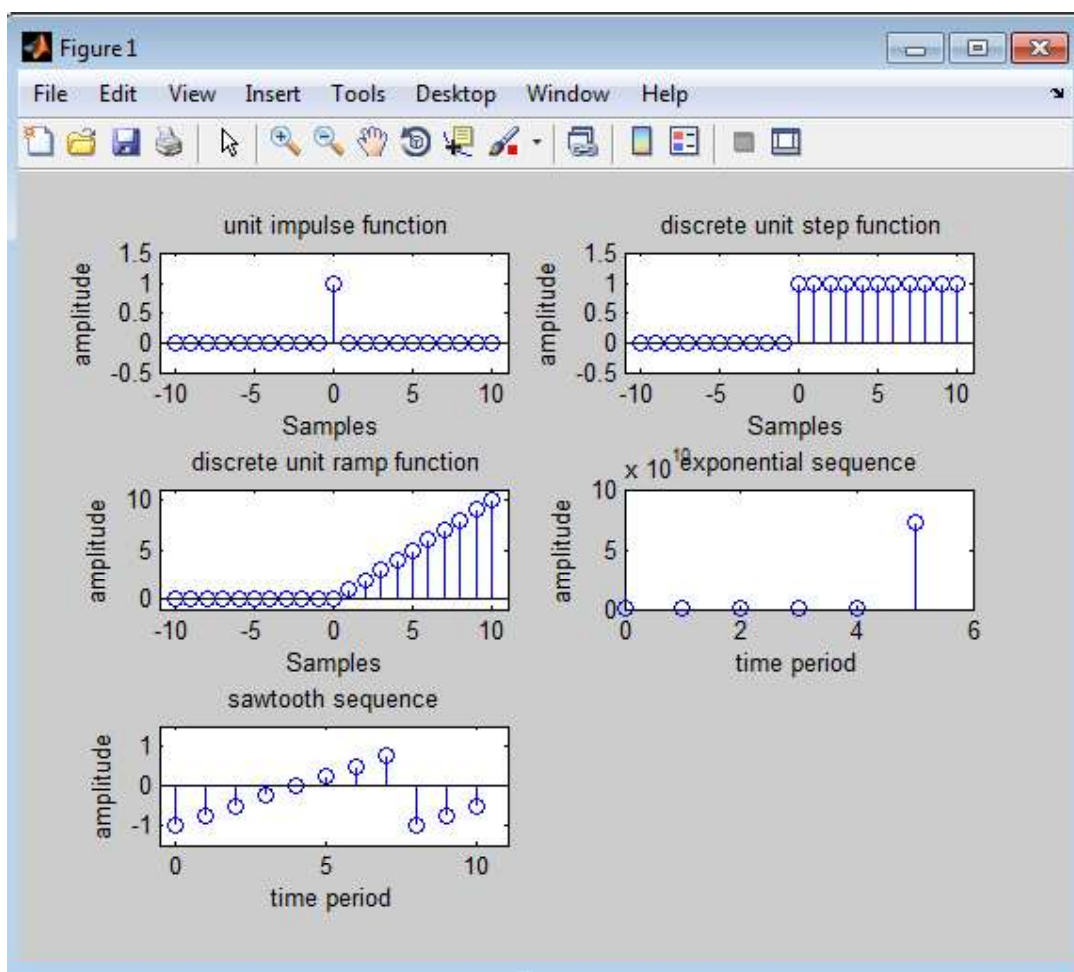
%unit ramp function%
%Discrete%
n=-10:10;
Xn=(n>=0).*n;
subplot(3,2,3);
stem(n,Xn);
axis([-11 11 -1 11]);
xlabel(' Samples');
ylabel('amplitude');
title(' discrete unit ramp function');
```

```

% exponential signal:
%Discrete%
n2=input('enter the length of the exponential sequence');
t=0:n2;
a=input('enter the a value');
y2=exp(a*t);
subplot(3,2,4);
stem(t,y2);
ylabel('amplitude');
xlabel('time period');
title('exponential sequence')

%sawtooth signal
%Discrete%
n=0:10;
Xn=sawtooth(pi*n/4);
subplot(3,2,5);
stem(n,Xn);
axis([-0.5 11 -1.5 1.5])
xlabel('time period');
ylabel('amplitude');
title('sawtooth sequence');

```

OUTPUT:-

RESULT:-

CONCLUSIONS:

VIVA QUESTIONS:

1. Define impulse, unit step, ramp signals and write their expressions?

2. Define exponential and sinusoidal signals and write their expressions?

3. Express unit step signal in terms of unit impulse?

4. Express ramp signal in terms of unit step signal?

5. Represent the signal $x[n]=\{1,2,-1,3,2\}$ using impulse signal?