Experiment No.:1

AIM: Write a MATLAB code to plot basic in both continuous and discrete time domains.

(i) Sinusoidal (ii) Cosine wave (iii) Exponential signal (iv) Unit step (v) Unit Ramp (vi) unit impulse

MATLAB CODE:

In Continous time domains

```
clc;
clear all;
close all;

a=5
f1=5
t=[0:0.001:2];
z=a*sin(2*pi*f1*t)
subplot(3,3,1)
plot(t,z)
xlabel('Time')
ylabel('Amplitude')

a=5
f2=5
t=[0:0.001:2];
z=a*cos(2*pi*f1*t)
subplot(3,3,2)
plot(t,z)
xlabel('Time')
ylabel('Amplitude')

a=5
t=[0:0.001:2];
z=exp(a*t);
subplot(3,3,3)
plot(t,z)
xlabel('Time')
ylabel('Amplitude')

a=5
t=[0:0.001:2];
z=exp(-a*t);
subplot(3,3,4)
plot(t,z)
xlabel('Time')
ylabel('Amplitude')

t=[-1:0,001:10]
n=length(t);
u=[]
for i=1:n
    if(t(i)<0)
        u(i)=0;
    else
```

```
        u(i)=1;
    end
end
subplot(3,3,5)
plot(t,u)
xlabel('Time')
ylabel('Amplitude')

t=[-1:0,001:10]
n=length(t);
u=[]
for i=1:n
    if(t(i)<0)
        u(i)=0;
    else
        u(i)=t(i);
    end
end
subplot(3,3,6)
plot(t,u)
xlabel('Time')
ylabel('Amplitude')

t=[-1:0.01:10]
n=length(t);
u=[]
for i=1:n
    if(t(i)==0)
        u(i)=1;
    else
        u(i)=0;
    end
end
subplot(3,3,7)
plot(t,u)
xlabel('Time')
ylabel('Amplitude')
```

In Discrete time domains

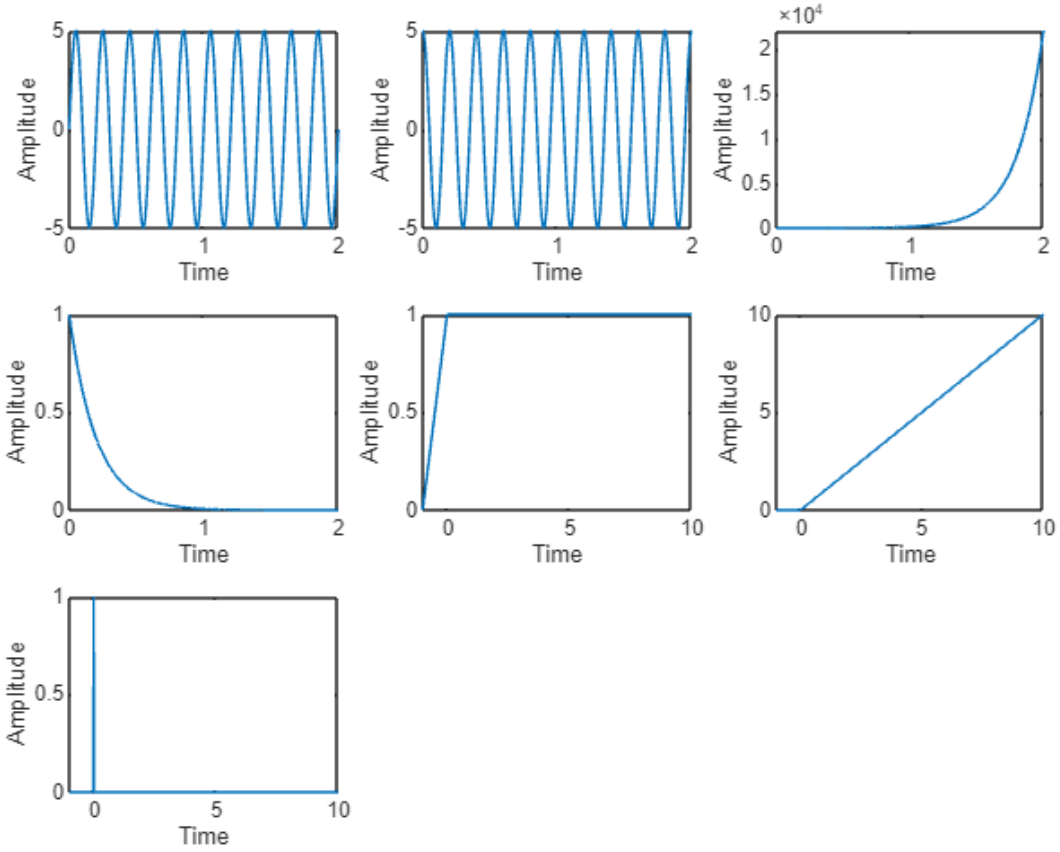
```
clc;
clear all;
close all;

a=5
f1=5
t=[0:0.01:2];
z=a*sin(2*pi*f1*t)
subplot(3,3,1)
stem(t,z)
xlabel('Time')
ylabel('Amplitude')

a=5
f2=5
t=[0:0.01:2];
z=a*cos(2*pi*f1*t)
subplot(3,3,2)
stem(t,z)
```

```
xlabel('Time')
ylabel('Amplitude')

a=5
t=[0:0.01:2];
z=exp(a*t);
subplot(3,3,3)
stem(t,z)
xlabel('Time')
ylabel('Amplitude')

a=5
t=[0:0.01:2];
z=exp(-a*t);
subplot(3,3,4)
stem(t,z)
xlabel('Time')
ylabel('Amplitude')

t1=[-1:0.1:5]
n=length(t1);
u=[]
for i=1:n
    if(t1(i)<0)
        u(i)=0;
    else
        u(i)=1;
    end
end
subplot(3,3,5)
stem(t1,u)
xlabel('Time')
ylabel('Amplitude')

t=[-1:0.1:5]
n=length(t);
u=[]
for i=1:n
    if(t(i)<0)
        u(i)=0;
    else
        u(i)=t(i);
    end
end
subplot(3,3,6)
stem(t,u)
xlabel('Time')
ylabel('Amplitude')

t=[-1:0.1:1]
n=length(t);
u=[]
for i=1:n
    if(t(i)==0)
        u(i)=1;
    else
        u(i)=0;
    end
end
```

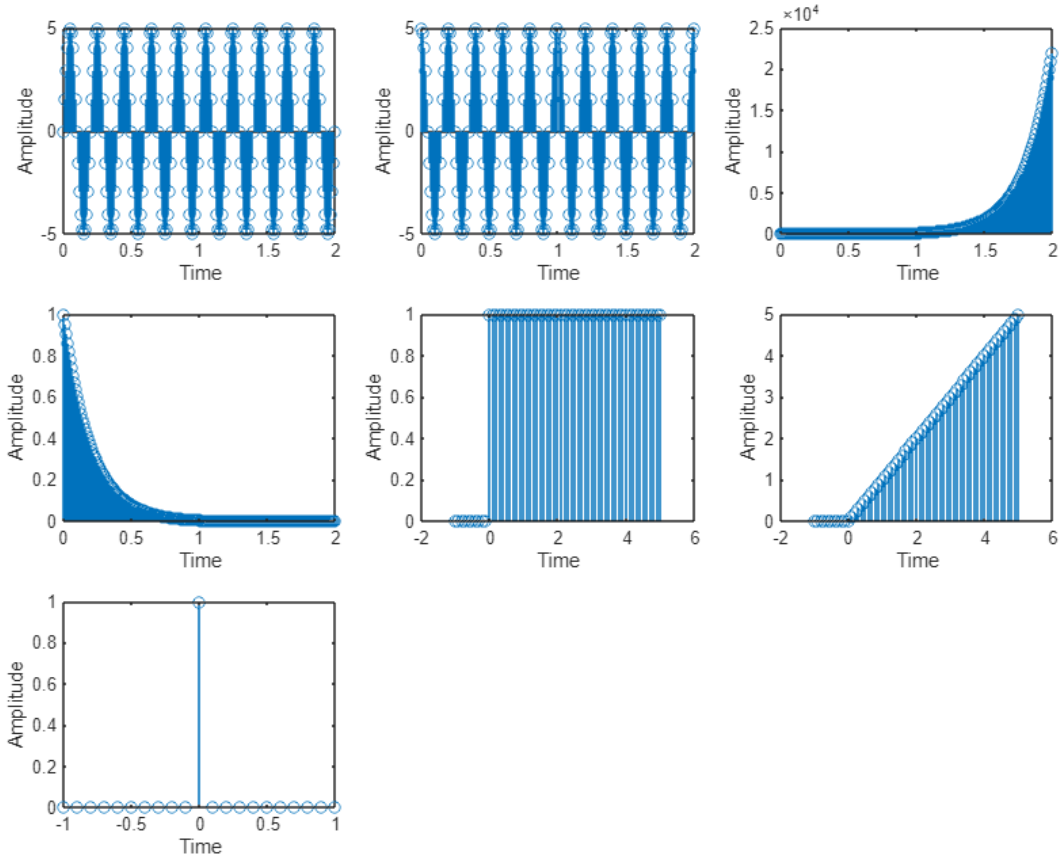
```
subplot(3,3,7)
stem(t,u)
xlabel('Time')
ylabel('Amplitude')
```

Output:

In Continous time domains



In Discrete time domains



CONCLUSION:

This MATLAB exercise successfully plotted six fundamental signals in continuous and discrete domains. It highlighted differences between representations, emphasizing sampling effects. The code provides a versatile template for signal exploration, enhancing understanding of basic waveforms. This foundation is crucial for signal processing applications, bridging theory with practical implementation.