



# **American International University-Bangladesh (AIUB)**

## **Department of Computer Engineering**

COE 3201: Data Communication Laboratory

### **Lab Report 1**

**Title: Introduction to MATLAB**

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## Ans the questions

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a

```
A1 = 22;  
A2 = 41;  
j1_deg = 74;  
j2_deg = 30;  
CDEF= 4715; % Frequency in Hz
```

```
% Convert degrees to radians
```

```
j1 = deg2rad(j1_deg);
```

```
j2 = deg2rad(j2_deg);
```

```
% Time vector
```

```
T = 1 / f; % Period of the wave
```

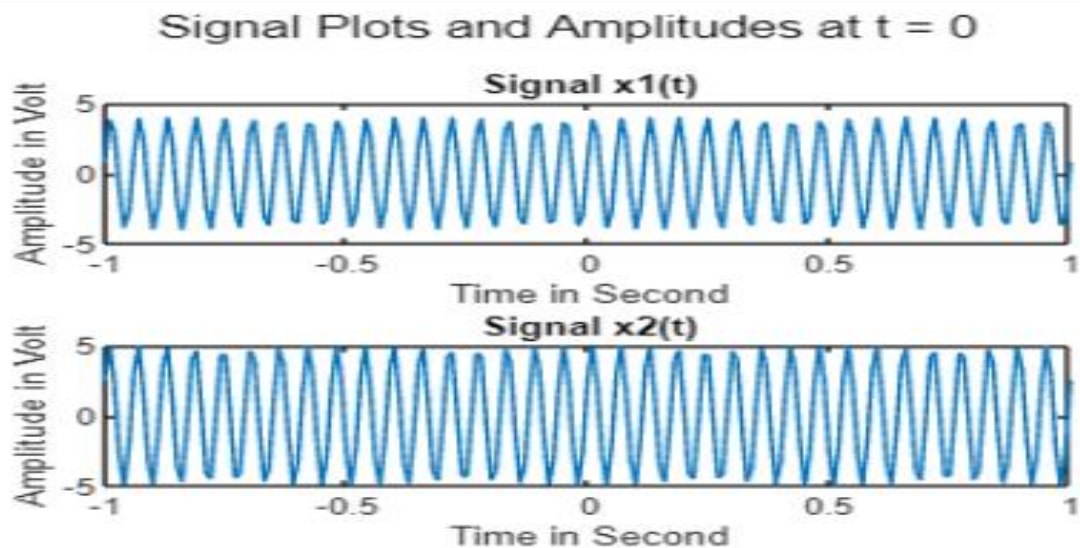
```
t=-1:0.01:+1; % Adjust the time range and number of samples as needed
```

```
% Generate x1(t) and x2(t)
```

```
x1 = A1 * cos(2 * pi * f * t + j1);
```

```
x2 = A2 * cos(2 * pi * f * t + j2);
```

b



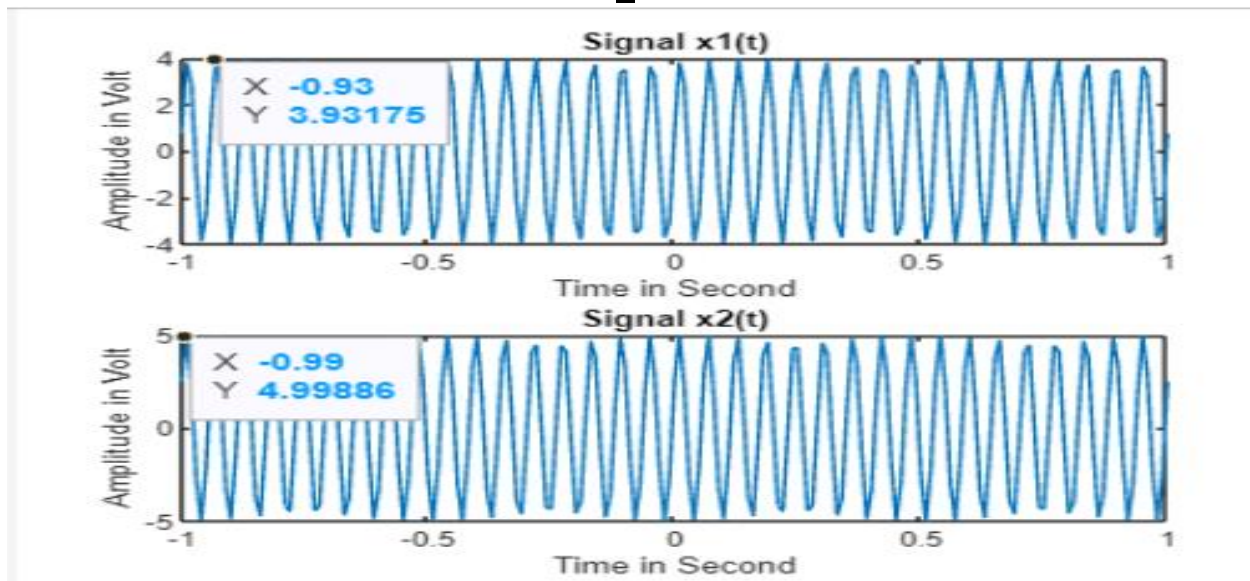
```

A1=4;
A2=5;
f=17;
j1=0.192;
j2=0.524;
t=-1:0.01:+1;
x1=A1*sin(2*pi*f*t+j1);
subplot(2,1,1)
plot(t,x1)
xlabel('Time in Second');
ylabel('Amplitude in Volt');
title('Signal x1(t)');

x2=A2*sin(2*pi*f*t+j2);
subplot(2,1,2)
plot(t,x2)
xlabel('Time in Second');
ylabel('Amplitude in Volt');
title('Signal x2(t)');

```

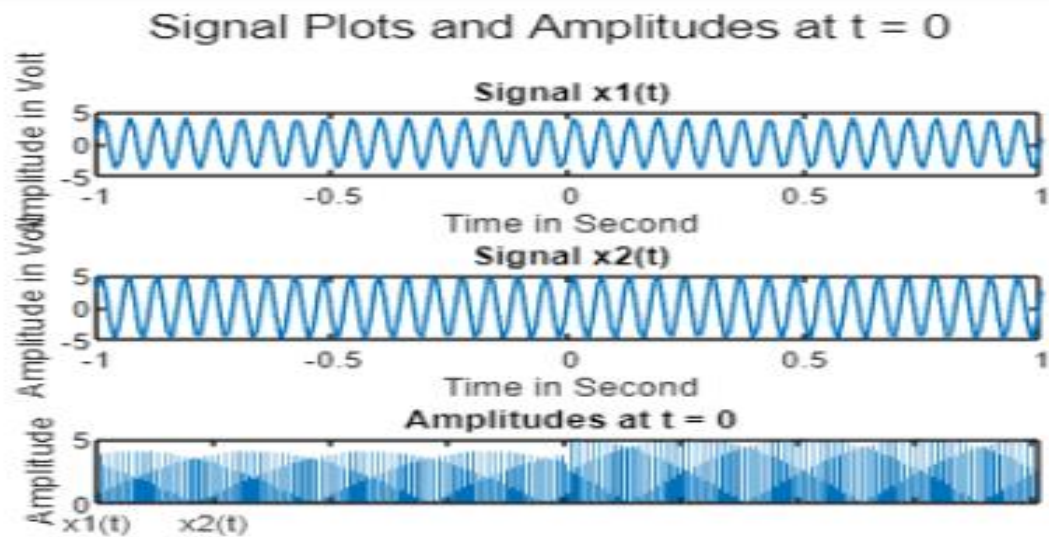
c



$x_1(t)$  at  $t = 0$ : 3.926  
 Amplitude: 4  
 Phase (radians): 0.192

$x_2(t)$  at  $t = 0$ : 4.329  
 Amplitude: 5  
 Phase (radians): 0.524

d

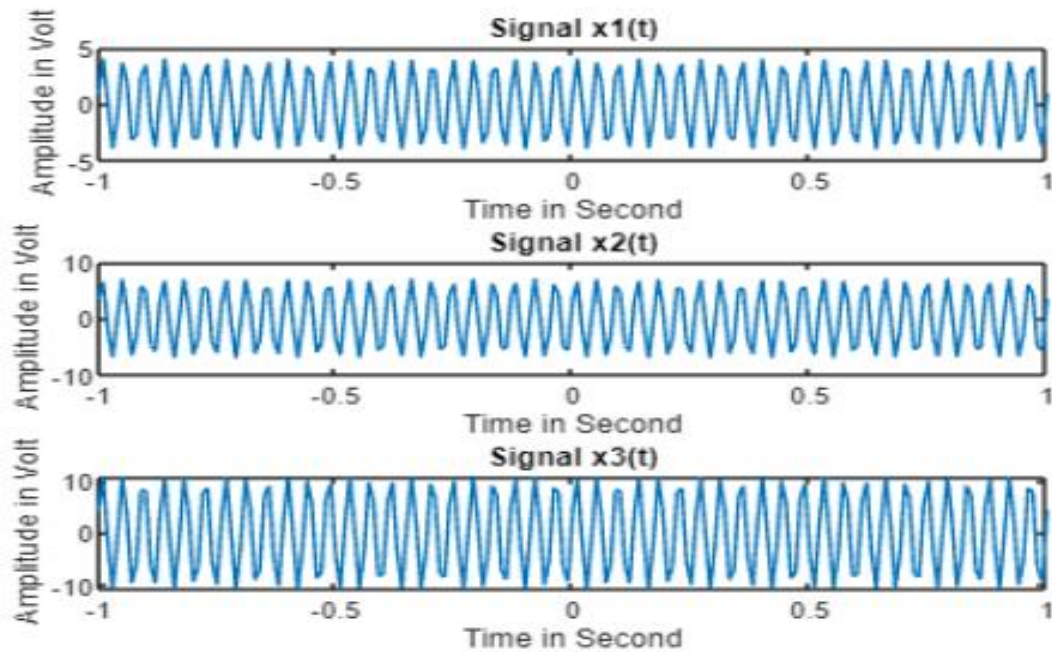


```
A1=4;
A2=5;
f=17;
j1=0.192;
j2=0.524;
t=-1:0.01:+1;
x1=A1*sin(2*pi*f*t+j1);
subplot(3,1,1)
plot(t,x1)
xlabel('Time in Second');
ylabel('Amplitude in Volt');
title('Signal x1(t)');

x2=A2*sin(2*pi*f*t+j2);
subplot(3,1,2)
plot(t,x2)
xlabel('Time in Second');
ylabel('Amplitude in Volt');
title('Signal x2(t)');

subplot(3, 1, 3);
bar([abs(x1), abs(x2)]);
title('Amplitudes at t = 0');
ylabel('Amplitude');
xticklabels({'x1(t)', 'x2(t)'});
sgtitle('Signal Plots and Amplitudes at t = 0');
```

e



```
A1=4;  
A2=5;  
f=17;  
j1=0.192;  
j2=0.524;  
t=-1:0.01:+1;  
x1=A1*sin(2*pi*f*t+j1);  
subplot(3,1,1)  
plot(t,x1)  
xlabel('Time in Second');  
ylabel('Amplitude in Volt');  
title('Signal x1(t)');  
  
x2=A2*sin(2*pi*f*t+j2);  
subplot(3,1,2)  
plot(t,x2)  
xlabel('Time in Second');  
ylabel('Amplitude in Volt');  
title('Signal x2(t)');  
  
x3=x1+x2;  
subplot(3,1,3)
```

```
plot(t,x3)
xlabel('Time in Second');
ylabel('Amplitude in Volt');
title('Signal x3(t)');
```

**f**

