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Class: B. Tech CsBs	Batch: 1
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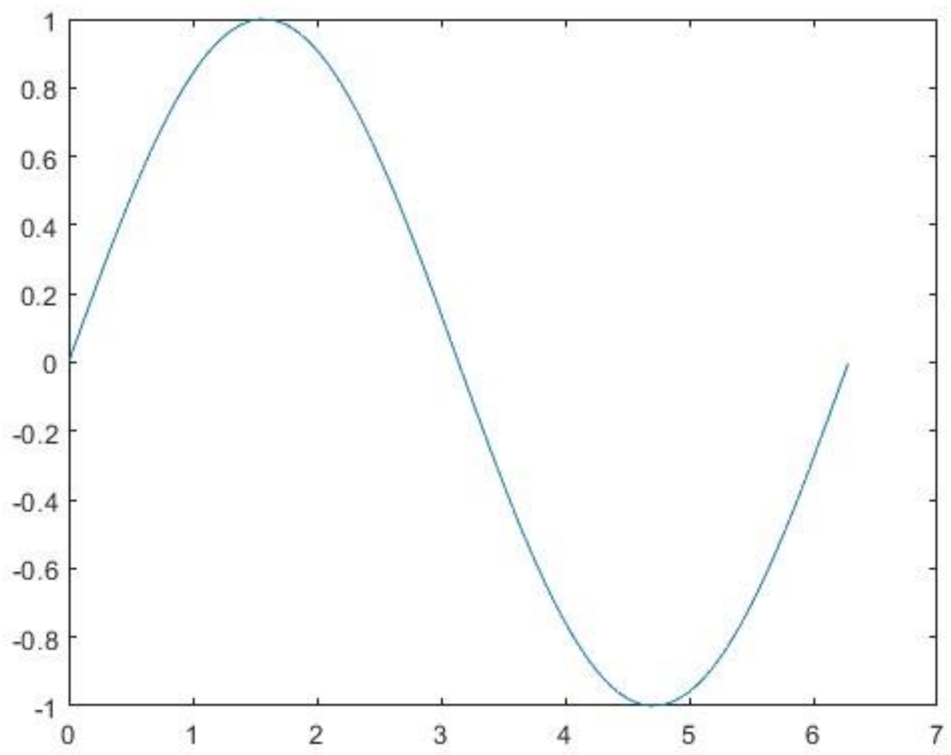
Lab 5: Basic Plotting

1. Creates a 2-D line plot of the data in y versus the corresponding values in x. Create x as a vector of linearly spaced values between 0 and 2π. Use an increment of π/100 between the values. Create y as sine values of x. Calling the plot function will display the x versus y data on a scaled viewing domain and range.

```
x = 0:pi/100:2*pi;

y = sin(x);

plot(x,y)
```



2. Explore various specifications of plot command and put it in a tabular format.

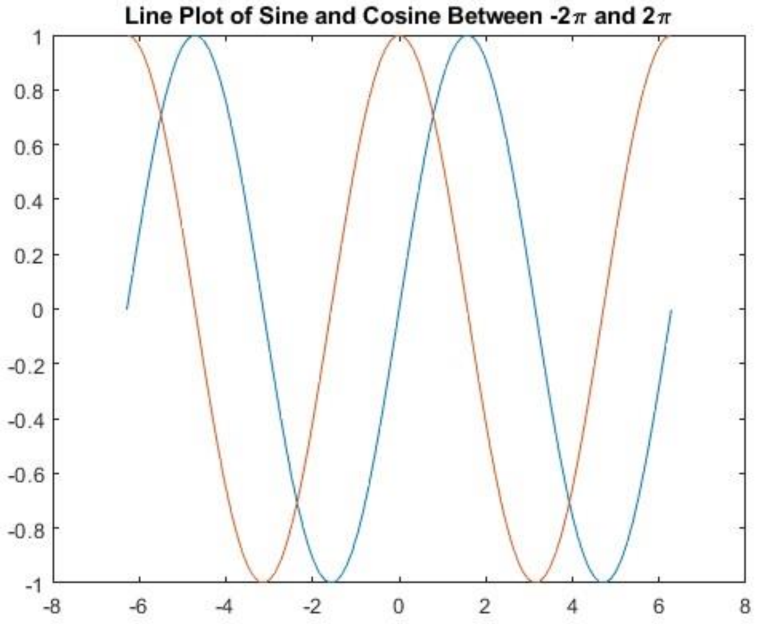
Specification	**Purpose**	**Syntax**	**Example**

xlabel, ylabel	`xlabel(txt)` labels the *x*-axis of the current	`xlabel('string')`
		`ylabel('string')`
			xlabel('X-Axis')
			ylabel('Y-Axis')

	axes or standalone visualization. ylabel(txt) labels the y-axis of the current axes or standalone visualization.		
title	title(titletext) adds the specified title to the current axes or standalone visualization.	title(‘string’)	title(‘Plot between X-axis and Y-axis’)
legend	The legend automatically updates when you add or delete data series from the axes. This command creates a legend in the current axes, which is returned by the gca command.	legend	legend(‘x’,’y’)

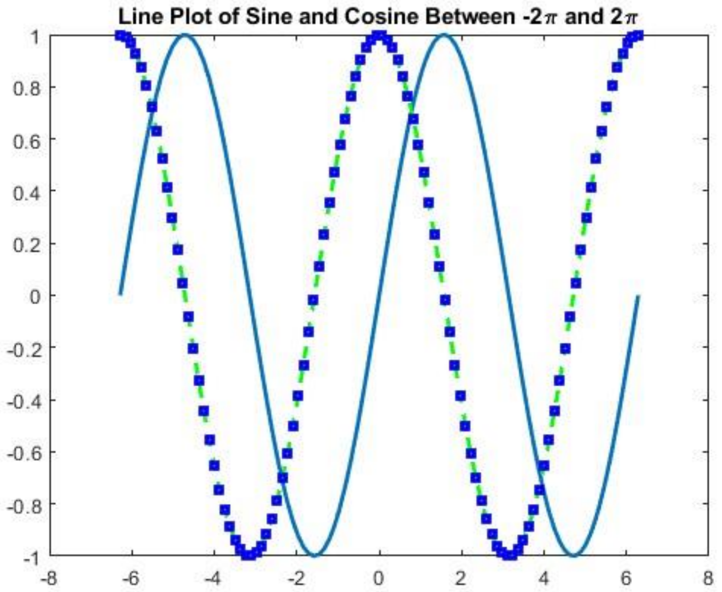
3. Create x as 100 linearly spaced values between −2π and 2π. Create y1 and y2 as sine and cosec values of x. Plot both sets of data. Add a title to the chart by using the title function. To display the Greek symbol π, use pi.

```
x = linspace(-2*pi,2*pi,100);
y1 = sin(x);
y2 = cos(x);
figure
plot(x,y1,x,y2)
title('Line Plot of Sine and Cosine Between -2\pi and 2\pi')
```



4. In the above plot, use the LineSpec option to specify a dashed green line with square markers. Use Name,Value pairs to specify the line width, point marker size, and point marker colors. Set the marker edge color to blue and set the marker face color using an RGB color value.

```
x = linspace(-2*pi,2*pi,100);

y1 = sin(x);

y2 = cos(x);

figure

plot(x,y1,x,y2,'--gs',...

    'LineWidth',2,...

    'MarkerSize',5,...

    'MarkerEdgeColor','b',...

    'MarkerFaceColor',[0.5,0.5,0.5])

title('Line Plot of Sine and Cosine Between -2\pi and 2\pi')
```

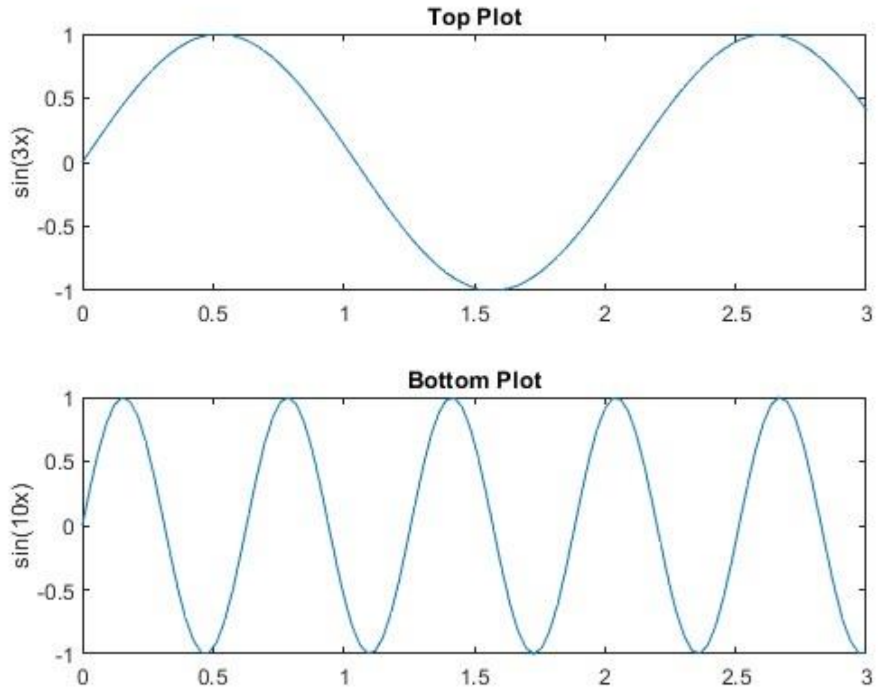


5. Display Multiple Plots in a Figure Window : Call the tiledlayout function to create a 2-by-1 tiled chart layout. Call the nexttile function to create an axes object and return the object as ax1. Create the top plot by passing ax1 to the plot function. Add a title and y-axis label to the plot by passing the axes to the title and ylabel functions. Repeat the process to create the bottom plot.

   (y = sin(3x) %for 1st plot)

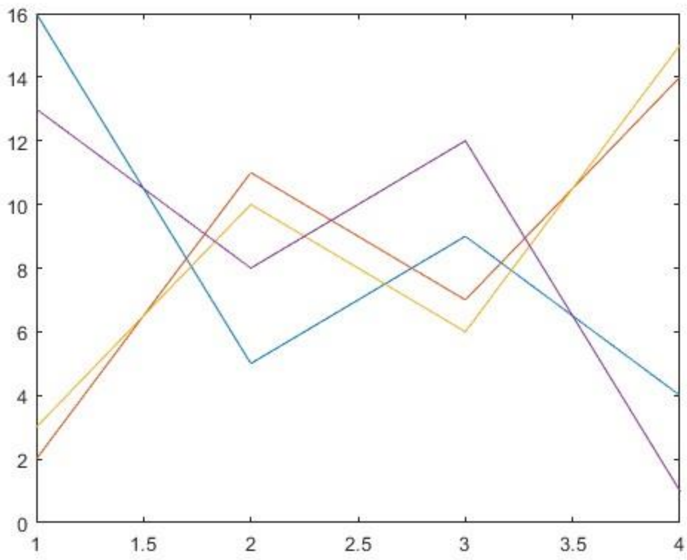
   (y = sin(10x) %for 2nd plot)

```
x = linspace(0,3);
y1 = sin(3*x);
y2 = sin(10*x);
tiledlayout(2,1)


% Top plot
ax1 = nexttile;
plot(ax1,x,y1)
title(ax1,'Top Plot')
ylabel(ax1,'sin(3x)')


% Bottom plot
ax2 = nexttile;
plot(ax2,x,y2)
title(ax2,'Bottom Plot')
ylabel(ax2,'sin(10x)')
```



6. Define Y as the 4-by-4 matrix returned by the magic function. Create a 2-D line plot of Y. MATLAB® plots each matrix column as a separate line.

```
Y = magic(4);
figure
plot(Y)
```


16
14
12
10
8
6
4
2
0
1
1.5
2
2.5
3
3.5
4