

## LESSON: Getting Started with MATLAB

### FOCUS QUESTION: How do I start using MATLAB?

This lesson takes you through the basic process of performing data analysis in MATLAB.

#### In this lesson you will:

- Create a new lesson project.
- Create a new script to hold your analysis.
- Enter commands to do the data analysis.
- Save the script and run it.
- Publish the analysis.

Along the way you will also learn about cell mode and some simple debugging.



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### DATA FOR THIS LESSON

File	Description
count.dat	<p>This data file contains traffic measurements from three intersections over a 24-hour period. We assume that these correspond to the following San Antonio intersections:</p> <ul style="list-style-type: none"><li>▪ Durango at N. St. Mary's</li><li>▪ IH10 at De Zavala</li><li>▪ LP410 at Military</li></ul>

File	Description
	The data is in text format.

## SETUP FOR THE GETTING STARTED LESSON

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1. Create a `GettingStarted` directory under your `V:` drive.
2. Create a `GettingStartedLesson.m` in the `GettingStarted` subdirectory.
3. Enter the commands as described below into the `GettingStartedLesson` script file.

### EXAMPLE 1: Read data from a file into MATLAB (load a text file)

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Type the following in the lesson 1 script, save, and run:

```
load count.dat;
```

You should see a `count` variable in your workspace:

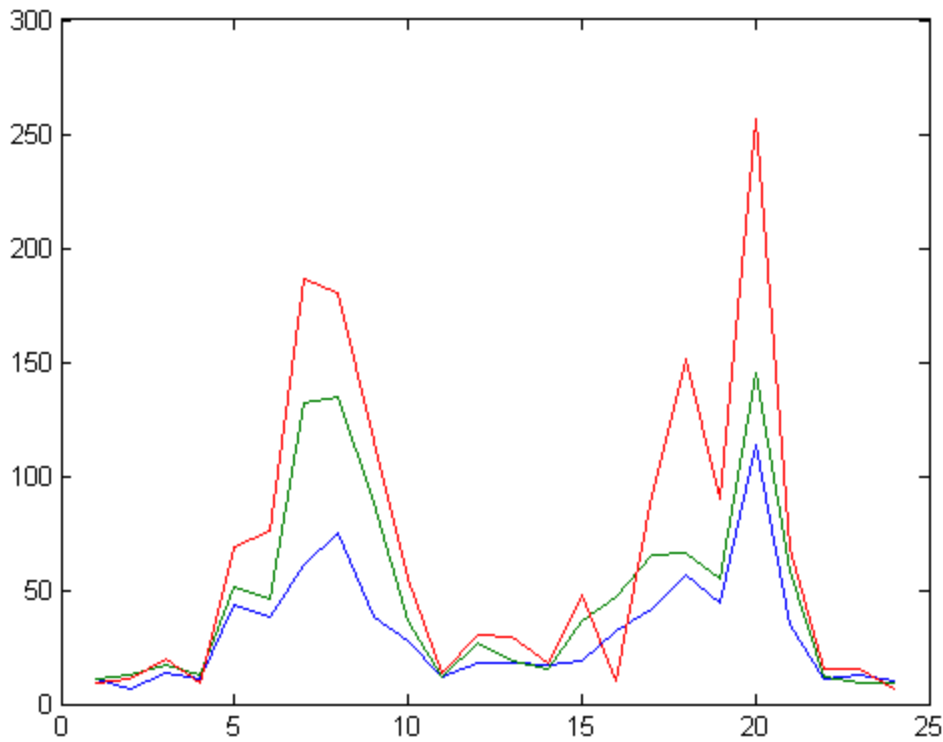
### EXAMPLE 2: Plot the data just read (simple plot in a new figure)

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Type the following in the lesson 1 script, save, and run:

```
figure  
  
plot(count)
```

You should see a **Figure Window** with an unlabeled plot of the traffic:

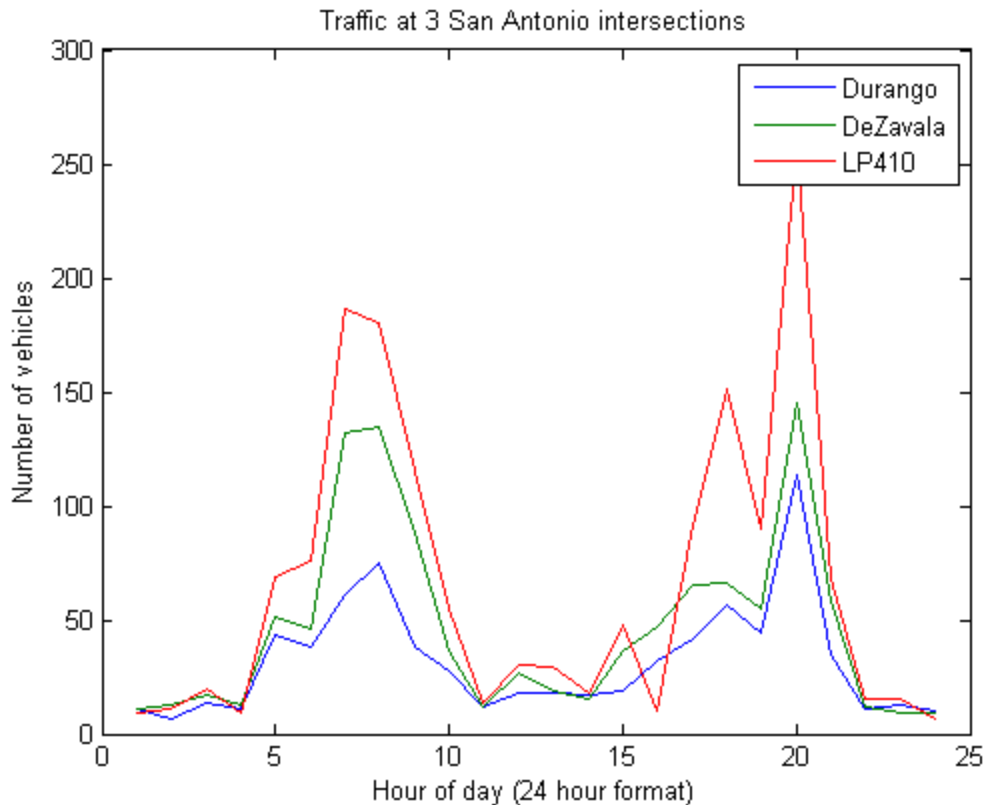


**EXAMPLE 3: Plot the data in an informative way (labeled plot in new figure)**

Type the following in the lesson 1 script, save, and run:


```
figure  
  
plot(count)  
  
title('Traffic at 3 San Antonio intersections')  
  
xlabel('Hour of day (24 hour format)')  
  
ylabel('Number of vehicles')  
  
legend('Durango', 'DeZavala', 'LP410')
```

You should see a Figure Window with a labeled plot of the traffic:



#### EXAMPLE 4: Reorganize your script into cells (cell mode)

When you organize your script into cells, you can execute the cells individually. Published scripts with cells are organized into subsections for better readability.






Start a new cell before each of the three examples. Use the new cell icon  or start a new line in your script with two percent signs (%%) followed by a space.

#### EXAMPLE 5: Publish your final script

Press the publish icon  to save and publish your script

#### SUMMARY OF SYNTAX

MATLAB syntax	Description
<code>load myfile</code>	Read previously saved variables from the <code>myfile</code> file into MATLAB. The <code>myfile</code> file must be a text file or have a special format called the MAT-file format.
<code>figure</code>	Create a new Figure Window, which then becomes the current figure.
<code>plot(Y)</code>	Draw a separate x-y plot for each column of the array <code>Y</code> in the current Figure Window. If <code>Y</code> is a

MATLAB syntax	Description
	vector, <code>plot</code> draws a single line representing the vector. If <code>Y</code> has multiple columns, <code>plot</code> displays each column as a separate line. These values are plotted against the values 1, 2, 3, 4, ...
<code>title('string')</code>	Insert <code>string</code> as a title above the plot of the current axis.
<code>xlabel('string')</code>	Insert <code>string</code> as the label for the x-axis of the current axis.
<code>ylabel('string')</code>	Insert <code>string</code> as the label for the y-axis of the current axis.
<code>legend</code>	Add an identifying annotation to the current figure.
	Run the script currently selected in the Editor Window by pressing this icon.
	Insert a section (cell) at the cursor position. Alternatively, type two percent signs ( <code>%%</code> ) followed by a space at the beginning of a line.
	Execute a section (cell), keeping the cursor in the section after execution.
	Execute a section (cell) and advance the cursor to the next section (for stepping through section).
	Advance the cursor to the next section (for stepping through sections).

*This lesson was written by Kay A. Robbins of the University of Texas at San Antonio and last modified by Dawn Roberson on 3-Jan-2014. Please contact [Kay.Robbins@utsa.edu](mailto:Kay.Robbins@utsa.edu) with comments or suggestions.*