

Basic Matlab Commands

Derrick Hasterok

January 27, 2005

1 Introduction

Matlab has a multitude of syntax and basic commands. Beginning to program in a new language can be a daunting task. This document is meant as a help to make getting started with Matlab a bit easier. Listed below is a few of the basic commands and a few of their properties. This list is not exhaustive, nor is it meant to be. The Matlab command **'help'** is your friend!

2 System Commands

<code>cd</code>	- Change directory.
<code>clc</code>	- Clears command window.
<code>clear</code>	- Clears variables from workspace.
<code>close</code>	- Closes figures.
<code>delete</code>	- Deletes file.
<code>ls</code>	- Lists directry.
<code>help</code>	- Tells you how to use a command.
<code>mkdir</code>	- Makes directory.
<code>pwd</code>	- Prints working directory.
<code>who</code>	- Lists current variables on workspace.
<code>whos</code>	- Lists current variables and size.
<code>why</code>	- Just try it if you get annoyed.

3 Operators

3.1 Arithmetic operators

<code>+</code>	- Plus
<code>-</code>	- Minus
<code>*</code>	- Matrix multiply
<code>.*</code>	- Array multiply
<code>^</code>	- Matrix power
<code>.^</code>	- Array power
<code>/</code>	- Right matrix divide

`./` - Right array divide

3.2 Boolean operators

`==` - Equal
`~=` - Not equal
`<` - Less than
`>` - Greater than
`<=` - Less than or equal
`>=` - Greater than or equal

3.3 Logical operators

`&` - Logical AND
`|` - Logical OR
`~` - Logical NOT

3.4 Special commands

`:` - Span operator `[1:5] = [1 2 3 4 5]`
`()` - Operation grouping
`[]` - Vector and matrix delimiter
`.` - Decimal point
`..` - Parent directory
`...` - Continuation of command to next line
`,` - Separator
`;` - End line or row
`%` - Comment
`=` - Assignment operator
`'` - String delimiter
`.'` - Transpose
`'` - Complex conjugate transpose

4 Basic Syntax

`if` - Conditionally execute statements.
`else` - IF statement condition.
`elseif` - IF statement condition.
`end` - Terminate scope of FOR, WHILE, SWITCH, TRY and IF statements.
`for` - Repeat statements a specific number of times.
`while` - Repeat statements an indefinite number of times.
`break` - Terminate execution of WHILE or FOR loop.
`continue` - Pass control to the next iteration of FOR or WHILE loop.
`function` - Add new function.
`return` - Return to invoking function.

error - Display error message and abort function.
disp - Display an array.
feval - Execute function specified by string.

5 Elementary Math Functions

5.1 Trigonometric

sin - Sine.
asin - Inverse sine.
cos - Cosine.
acos - Inverse cosine.
tan - Tangent.
atan - Inverse tangent.
atan2 - Four quadrant inverse tangent.

5.2 Basic

sqrt - Square root.
exp - Exponential.
log - Natural logarithm.
log10 - Common (base 10) logarithm.
factorial - Factorial function.

5.3 Complex

abs - Absolute value.
conj - Complex conjugate.
real - Complex real part.
imag - Complex imaginary part.
isreal - True for real array.

5.4 Rounding

floor - Round towards minus infinity.
ceil - Round towards plus infinity.
round - Round towards nearest integer.
mod - Modulus.

5.5 Matrix and Other

norm - Matrix or vector norm.
det - Determinant.
inv - Matrix inverse.
eig - Eigenvalues and eigenvectors.
cross - Vector cross product.

dot - Vector dot product.

6 File input/output

input - Prompt for user input.
load - Load workspace from MATLAB (MAT) file.
save - Save data to MATLAB (MAT) file.

7 Plot commands

7.1 2D Graphs

plot - Linear plot.
loglog - Log-log scale plot.
semilogx - Semi-log scale plot.
semilogy - Semi-log scale plot.
axis - Control axis scaling and appearance.
hold - Hold current graph.
title - Graph title.
xlabel - X-axis label.
ylabel - Y-axis label.
get - Gets plot properties.
set - Sets plot properties.

7.2 Matlab PLOT styles

Color	Line Type	Marker Type
y - yellow	- - solid	. - point
m - magenta	: - dotted	o - circle
c - cyan	-. - dashdot	x - x-mark
r - red	-- - dashed	+ - plus
g - green		* - star
b - blue		s - square
w - white		d - diamond
k - black		v - triangle (down)
		^ - triangle (up)
		< - triangle (left)
		> - triangle (right)
		p - pentagram
		h - hexagram