

2.017 Matlab Guide 1

Matlab commands are lowercase; variables can be either upper or lower; case sensitive.

help command	gives a short description of <i>command</i>
a=[1 2]	creates the vector <i>a</i> with one row and two columns, prints to screen
a=[1 2];	same, but does not print
a=[1;2];	creates the vector <i>a</i> with two rows, one column
global a;	This will overwrite any previous definition of <i>a</i>
clear a;	makes <i>a</i> visible to all programs that contain this line
clear a;	deletes variable <i>a</i> from the workspace
a=[1 2 ; 3 4];	creates a 2x2 matrix, first row is [1 2], second row is [3,4]
size(a);	prints the size of <i>a</i>
b = a + 1;	adds one to all elements of <i>a</i>
b = a + [1 2];	illegal: <i>a</i> is a 2x2 and you can't add a 1x2 to it
b = a + [2 3 ; 4 5];	OK
t = 0:.1:10;	creates the row vector [0 0.1 0.2 0.3 9.9 10.0]
x = sqrt(t);	creates <i>x</i> with the same size as <i>t</i> ; point-wise square roots of <i>t</i>
x = input('What is your input: ');	asks the question and loads your response into <i>x</i>
disp(sprintf('The answer is %g,' x(1))) ;	prints text to screen with the first element of <i>x</i> shown.
plot(x);	plots <i>x</i> on the vert. axis, [1 2 3 4 ... length(x)] on the horiz. axis
plot(t,x);	plots <i>x</i> on the vert. axis, <i>t</i> on the horiz. axis
plot(t,x,t,x+1);	plots two lines
plot(t,x,'o');	plots points with circles – no line
plot(t,x,'o-');	plots points with circles and a line connecting them
subplot(114);	will make the next plot in the 1,1 slot of a 2x2 “plot matrix”
subplot('Position',[llx lly width height]);	will make the next plot in a screen position (0 to 1) defined by lower left coordinates (<i>llx,lly</i>) and dimensions (<i>width,height</i>)
xlabel('text');	puts a label on the horizontal axis
text(x,y,'text');	puts the text at the location (<i>x,y</i>), measured on the axes as labeled
for i = 1:10; stuff ; end ; or i = 1 ; while i < 10; stuff ; i = i + 1 ; end ;	executes <i>stuff</i> ten times, with <i>i</i> taking a different value each time
[t,y] = ode45('function',[t0 t1],y0);	uses 4 th -order Runge-Kutta integration to propagate the system defined by ' <i>function</i> ' over the time window <i>t0</i> to <i>t1</i> , and from initial condition <i>y0</i>
save filename x t;	saves the variables <i>x</i> and <i>t</i> (both names and data) to <i>filename.mat</i>
load filename;	loads the file <i>filename.mat</i> , creating named variables in workspace
save filename.dat x –ascii	saves the data of <i>x</i> in text format in <i>filename.dat</i>
y = [x;y] ; save filename.dat y –ascii	saves data of <i>y</i> in text format in <i>filename.dat</i> – ARRAY only
load filename.dat	loads data array from <i>filename.dat</i> ; it appears as a variable called <i>filename</i> in the workspace