

Chapter 3 The Command Window

3.1 Managing The MATLAB Workspace

A list of the current variables residing in the MATLAB Workspace is obtained by typing the command 'who' in the MATLAB Command window. More detailed information about the variables is acquired by typing 'whos' instead.

Example 3.1.1

```
clear
x=5;y=10;
z=x+y*i;
A=pi*x^2;
who
```

Your variables are:

```
A      x      y      z
```

```
whos
```

Name	Size	Bytes	Class
A	1x1	8	double array
x	1x1	8	double array
y	1x1	8	double array
z	1x1	16	double array (complex)

```
Grand total is 4 elements using 40 bytes
```

Note that despite the fact that all four variables are scalars (3 real and 1 complex) their size is listed as 1×1, reflecting the array orientation of MATLAB. Also note that numerical variables are stored in double precision using 8 bytes and belong to a class (data type) referred to as double. Later on other data types will be considered and displayed using the 'whos' command. The Workspace Browser reveals the same information and is accessible from the **File** menu by selecting **Show Workspace** or by selecting the **Workspace Browser** button on the Command window toolbar.

The 'clear' command removes all variables from the MATLAB Workspace. Specific variables, or a set of variables with a common characteristic, can be deleted by appending an argument to the 'clear' command as shown below. It is good practice to clear all variables from the Workspace whenever a new task is initiated.

Example 3.1.2

```
clear % Clear existing variables from Workspace
xA=2;xB=3;xC=5;
y=xA+xB+xC;
z=xA-y;
```

```
who
```

```
Your variables are:
```

```
xA      xB      xC      y      z
```

```
clear xA y % Clears xA and y from MATLAB Workspace
```

```
who
```

```
Your variables are:
```

```
xB      xC      z
```

```
z=exp(-z);
```

```
clear x*
```

```
who
```

```
Your variables are:
```

```
z
```

3.2 Number Display Formats

The display of numerical results can be controlled or left as a default for MATLAB. The default mode displays integers as you would expect in integer form and real numbers are displayed with 4 places after the decimal point. Scientific notation is used if the real number cannot be displayed because of the position of the significant digits. Some of the choices of numerical formats are illustrated below.

Example 3.2.1

```
x=100/1.1;
format short % Scaled fixed point format with 5 digits.
x
x = 90.9091

format long % Scaled fixed point format with 15 digits.
x
x = 90.90909090909091

format short e % Floating point format with 5 digits.
x
x = 9.0909e+001

format long e % Floating point format with 15 digits.
x
x = 9.090909090909091e+001

format bank % Fixed format for dollars and cents.
x
x = 90.91

format rat % Approximation by ratio of small integers.
x
format short % Reset format to default
x = 1000/11
```

A new format can be implemented from the **Preferences** menu item of the **File** menu at the top of the MATLAB Command window. The current format remains in effect until a new one is selected or specified.

3.3 Command Window Control

The Command window can be cleared and the cursor positioned at the upper left corner by issuing the 'clc' command. The MATLAB workspace is unaffected, i.e. all functions and variables are still present. The 'more(n)' command allows output in the Command window to be paged n lines at a time. The description of the 'more' command obtained from a help request is given below.

```
help more
```

```
MORE    Control paged output in command window.  
MORE OFF disables paging of the output in the MATLAB command window.  
MORE ON enables paging of the output in the MATLAB command window.  
MORE(N) specifies the size of the page to be N lines.
```

```
When MORE is enabled and output is being paged, advance to the next  
line of output by hitting the RETURN key; get the next page of  
output by hitting the spacebar. Press the "q" key to exit out  
of displaying the current item.
```

Example 3.3.1 is a portion of code which generates output 20 lines at a time; however it does not execute as such from a MATLAB m-book created with Notebook . The 20 lines of output include blank lines as well.

Example 3.3.1

```
% The following demo must be run directly in the Command window  
more(20) % Page 20 lines of output at a time  
for i=1:50  
x=2*i;  
i,x  
end
```

3.4 System Information

The version of MATLAB and the computer platform its running on are available in the Command window by typing 'computer' and 'version' respectively.

Example 3.4.1

```
computer
```

```
ans = PCWIN
```

```
version
```

```
ans = 5.3.0.10183 (R11)
```

Information about MATLAB toolboxes results from the command 'ver'

Example 3.4.2

```
ver
```

```
-----  
MATLAB Version 5.3.0.10183 (R11) on PCWIN  
MATLAB License Number: 79914  
-----  
MATLAB Toolbox                Version 5.3   (R11)   15-  
Jan-1999  
Power System Blockset         Version 1.1   (R11)   10-  
Aug-1998  
MATLAB Compiler (and Compiler 1.2.1) Version 2.0   (R11)   08-  
Dec-1998  
Symbolic Math Toolbox         Version 2.1   (R11)   11-  
Sep-1998  
Partial Differential Equation Toolbox Version 1.0.3 (R11)   21-  
Nov-1997  
LMI Control Toolbox           Version 1.0.5 (R11)   09-  
Sep-1998  
DSP Blockset                  Version 3.0   (R11)   10-  
Jul-1998  
Model Predictive Control Toolbox Version 1.0.4 (R11)   03-  
Sep-1998  
Frequency Domain Identification Too... Version 2.0.3 (R11)   29-  
Sep-1998  
Statistics Toolbox           Version 2.2   (R11)   24-  
Jul-1998  
Nonlinear Control Design Blockset Version 1.1.3 (R11)   10-  
Aug-1998  
Signal Processing Toolbox     Version 4.2   (R11)   10-  
Jul-1998  
Optimization Toolbox         Version 2.0   (R11)   09-  
Oct-1998  
System Identification Toolbox Version 4.0.5 (R11)   10-  
Apr-1998
```

Control System Toolbox Jul-1998	Version 4.2 (R11)	15-
SystemBuild to Simulink Translator Aug-1998	Version 2.0 (R11)	10-
Stateflow Jan-1999	Version 2.0 (R11)	16-
Simulink Sep-1998	Version 3.0 (R11)	01-
MATLAB Tour Sep-1998	Version 1.2 (R11)	04-