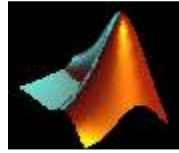


Introduction to MATLAB¹

General Information

Once you initiate the MATLAB software, you will see the MATLAB logo appear and then the MATLAB prompt `>>`. The prompt `>>` indicates that MATLAB is awaiting a command.



MATLAB is **case sensitive**; all built-in MATLAB commands are LOWER CASE.

There are certain MATLAB features you should be aware of before you begin working with MATLAB.

- *Variables, Expressions and Statements.*

MATLAB statements typically take one of two forms:

variable = expression or an **expression**

Examples `val = cos(pi/7)` `exp(2.13)`

All variable (and function) names consist of a letter followed by any number of numbers, letters and underscores. MATLAB is case sensitive and only the first 19 characters of any name are significant.

The equal sign `=` is called the **assignment operator**.

Expressions are composed from operators, function calls and variable names. Pressing ENTER normally signifies the end of a statement, causing MATLAB to interpret the command and print its result. **If the last character of a statement is a ; (semicolon), however, display of the result is suppressed.** This feature may be especially useful when the result of a computation is a large matrix. Finally, several statements separated by commas may be placed on a single line.

When an expression is not explicitly assigned to a variable with the **assignment operator (=)**, MATLAB automatically stores the result in the special variable **ans**.

During a MATLAB session you may forget the names of variables stored in your *workspace*. The command **who** lists the names of all your variables. If you want to know their size as well, use the command **whos**. By default MATLAB stores all variables until the session is terminated. To remove a variable from the workspace use the command **clear var_name**. **WARNING: clear** with no arguments removes all variables from the workspace.

¹ Introduction to MATLAB.doc \Lab1Fall2010

- *Numbers.*

MATLAB uses conventional decimal notation with an optional decimal point and minus sign for negative values. Scientific notation uses the letter e to specify a power of ten scale factor. Some valid numbers are: 34, -7, 0.0017, 6.3457, 2.718281828459046, 3.060196847852814e+002.

All numbers are stored internally using the “long” format specified by the IEEE floating point standard. Floating point numbers have about 16 significant decimal digits and a finite range of about 10^{-308} to 10^{308} .

- *Starting execution of a command.*

After you have typed a command name and any arguments or data required, you must press **ENTER** before it will begin to execute.

- *Search Path.*

To determine how to execute commands MATLAB uses a search path to find m-files and other data sets. Any file you want to execute must reside in the current directory or in a folder that is on the search path. By default, the files supplied with MATLAB and MathWorks toolboxes are included in the search path.

To see which directories/folders are on the search path type the command **path**. To change the search path select Set Path from the File menu in the desktop, and use the Set Path dialog box. The command **addpath** can be used to add directories to the path, and command **rmpath** can be used to remove directories from the path,

- *Getting help.*

If you know the name of command typing **help** followed by the name displays information about the command.

```
>> help sin
SIN   Sine of argument in radians.
      SIN(X) is the sine of the elements of X.
```

```
>> help sqrt
SQRT  Square root.
      SQRT(X) is the square root of the elements of X. Complex
      results are produced if X is not positive.
```

- *The command stack.*

As you enter commands, MATLAB saves a number of the most recent commands in a stack. Previous commands saved on the stack can be recalled using the **up arrow** key. The number of commands saved on the stack varies depending on the length of the commands and other factors.

- *Editing commands.*

If you make an error or mistype something in a command, you can use the **left arrow** and **right arrow** keys to position the cursor for corrections. The **home** key moves the cursor to the beginning of a command, and the **end** key moves the cursor to the end. The **backspace** and **delete** keys can be used to remove characters from

a command line. The **insert** key is used to initiate the insertion of characters. Pressing the insert key a second time exits the insert mode. If MATLAB recognizes an **error** after you have pressed ENTER, then MATLAB responds with a beep and a message that helps define the error. You can **recall the command line** using the up arrow key in order to edit the line. To **delete an entire command line** press ESC, escape.

- *Continuing commands.*

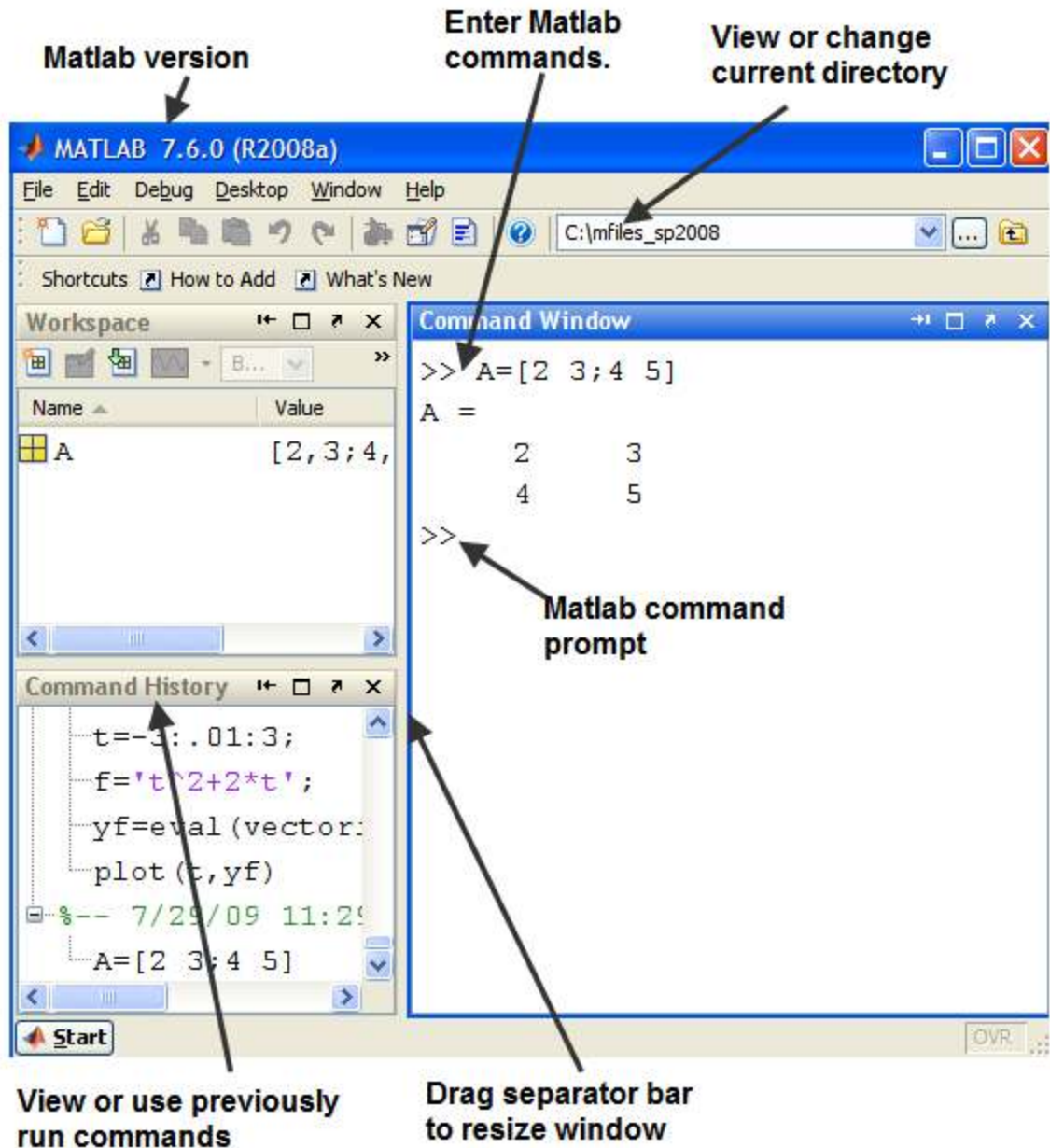
MATLAB commands that do not fit on a single line can be continued to the next line using an ellipsis, which is three consecutive periods, followed by ENTER.

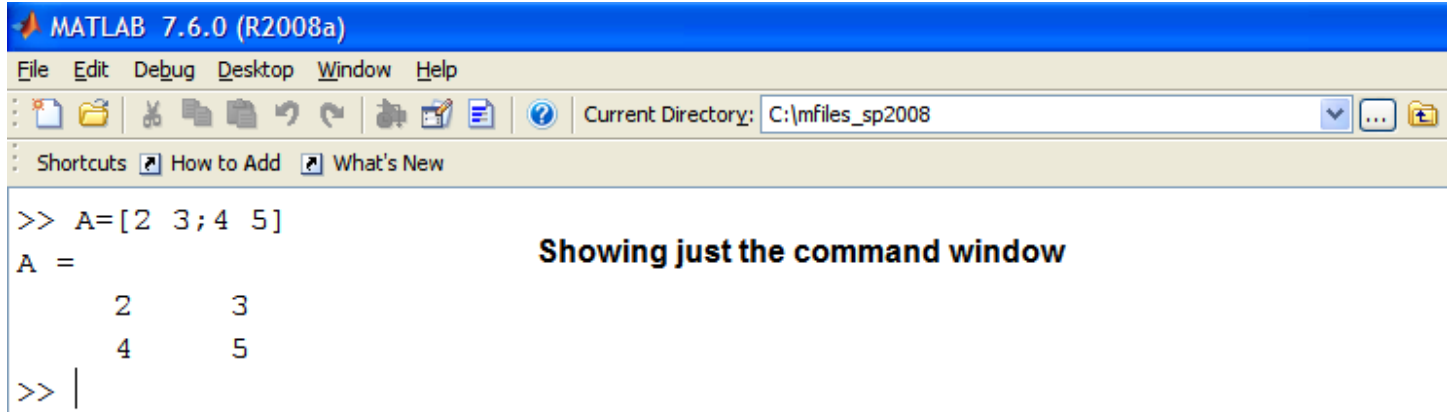
- *Stopping a command.*

To stop execution of a MATLAB command, press **Ctrl** and **C** simultaneously, then press ENTER. Sometimes this sequence must be repeated.

- *Quitting.*

To quit MATLAB, type **exit** or **quit** followed by pressing ENTER.





You can change the way the desktop looks. Click on the Desktop drop down menu.