

MATLAB - BASIC SYNTAX

http://www.tutorialspoint.com/matlab/matlab_syntax.htm

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MATLAB environment behaves like a super-complex calculator. You can enter commands at the >> command prompt.

MATLAB is an interpreted environment. In other words, you give a command and MATLAB executes it right away.

Hands on Practice

Type a valid expression, for example,

```
5 + 5
```

And press ENTER

When you click the Execute button, or type Ctrl+E, MATLAB executes it immediately and the result returned is –

```
ans = 10
```

Let us take up few more examples –

```
3 ^ 2           % 3 raised to the power of 2
```

When you click the Execute button, or type Ctrl+E, MATLAB executes it immediately and the result returned is –

```
ans = 9
```

Another example,

```
sin(pi /2)     % sine of angle 90°
```

When you click the Execute button, or type Ctrl+E, MATLAB executes it immediately and the result returned is –

```
ans = 1
```

Another example,

```
7/0            % Divide by zero
```

When you click the Execute button, or type Ctrl+E, MATLAB executes it immediately and the result returned is –

```
ans = Inf  
warning: division by zero
```

Another example,

```
732 * 20.3
```

When you click the Execute button, or type Ctrl+E, MATLAB executes it immediately and the result returned is –

```
ans = 1.4860e+04
```

MATLAB provides some special expressions for some mathematical symbols, like pi for π , Inf for ∞ , i and j for $\sqrt{-1}$ etc. **Nan** stands for 'not a number'.

Use of Semicolon ; in MATLAB

Semicolon ; indicates end of statement. However, if you want to suppress and hide the MATLAB output for an expression, add a semicolon after the expression.

For example,

```
x = 3;  
y = x + 5
```

When you click the Execute button, or type Ctrl+E, MATLAB executes it immediately and the result returned is –

```
y = 8
```

Adding Comments

The percent symbol % is used for indicating a comment line. For example,

```
x = 9 % assign the value 9 to x
```

You can also write a block of comments using the block comment operators % { and % }.

The MATLAB editor includes tools and context menu items to help you add, remove, or change the format of comments.

Commonly used Operators and Special Characters

MATLAB supports the following commonly used operators and special characters –

Operator	Purpose
+	Plus; addition operator.
-	Minus; subtraction operator.
*	Scalar and matrix multiplication operator.
.*	Array multiplication operator.
^	Scalar and matrix exponentiation operator.
.^	Array exponentiation operator.
\	Left-division operator.
/	Right-division operator.
.\	Array left-division operator.
./	Array right-division operator.
:	Colon; generates regularly spaced elements and represents an entire row or column.
() [] { } `	Parentheses; encloses function arguments and array indices; overrides

	precedence.
[]	Brackets; enclosures array elements.
.	Decimal point.
...	Ellipsis; line-continuation operator
,	Comma; separates statements and elements in a row
;	Semicolon; separates columns and suppresses display.
%	Percent sign; designates a comment and specifies formatting.
–	Quote sign and transpose operator.
·_	Nonconjugated transpose operator.
=	Assignment operator.

Special Variables and Constants

MATLAB supports the following special variables and constants:

Name	Meaning
ans	Most recent answer.
eps	Accuracy of floating-point precision.
i,j	The imaginary unit $\sqrt{-1}$.
Inf	Infinity.
NaN	Undefined numerical result <i>not a number</i> .
pi	The number π

Naming Variables

Variable names consist of a letter followed by any number of letters, digits or underscore.

MATLAB is **case-sensitive**.

Variable names can be of any length, however, MATLAB uses only first N characters, where N is given by the function **namelengthmax**.

Saving Your Work

The **save** command is used for saving all the variables in the workspace, as a file with .mat extension, in the current directory.

For example,

```
save myfile
```

You can reload the file anytime later using the **load** command.

```
load myfile
Loading [MathJax]/jax/output/HTML-CSS/jax.js
```