

Cheat Sheets

MATLAB for Python Users

The MATLAB language is designed primarily for math-intensive scientific computing. MATLAB combines a desktop environment tuned for iterative analysis with a programming language that expresses matrix and array mathematics directly. Understanding the philosophy and API design can help while learning MATLAB.

Enhance Python with MATLAB

Integrate MATLAB's advanced tools directly into your Python workflows.

[» Learn more](#)

Table of Contents	
General Behavior	Data Types
Referencing	Control Flow
Functions	Objects

» General Behavior			
Python Syntax	MATLAB Syntax	Purpose	MATLAB Examples
#	%	Comment	% hello
print	Do not terminate with ;	Print output	x
/	...	Continue to next line	x = 1+...2;
os	!	Operating system command	! echo hi
+ - * /	+ - * /	Mathematical operators	x = 1+2
**	^	Exponent	x = y^2
* / **	.* ./ .^	Element-wise operators	x = [1 2].* [3 4]
not, and, or	~ &	NOT, AND, OR logical operators	if x<2 & x>2
del	clear	Clear variable from memory	clear x y
clear	clc	Clear command window	clc

» Referencing		
MATLAB Syntax	Purpose	Example
()	Index (copy-on-write)	x(1,1)
[]	Create array	x = [1 2 3]
	Join arrays	z = [x ; y]
{ }	Create cell arrays	x = {42; "hello world"}
	Extract contents from a container	x{1,1}
.	Access class property or method	obj.Data
	Reference table or struct field	t.FieldName

• Beginning element has an index of 1.
 • Indexing is left and right inclusive.
 • Indexing options include N-D indexing (row,col), linear indexing (element number), and logical indexing (conditional statement).

» Functions		
Creating functions	You can declare functions within a function file. Input arguments are captured in parentheses.	function z = foo(x,y) ... end
	Multiple outputs are captured with square brackets.	function [a,b] = foo(x,y) ... end
Calling functions with input arguments and name-value pairs		y = foo(x,y, "Name", Value)

» Data Types		
Similar data types:		
Python	MATLAB	
float	double, single	
complex	complex single, complex double	
int	(u)int8, (u)int16, (u)int32, (u)int64	
float(nan)	NaN	
float(inf)	inf	
str	str, char	
bool	logical	
dict	struct	
list, tuple	cell	
pandas.DataFrame	table	
MATLAB defaults to store all numeric values as double-precision floating-point numbers. Python stores some numbers as integers and others as floating-point numbers. In MATLAB, for x=4 and y=4.0, x is always equal to y.		

» Control Flow		
Statement	Example	
for	for i = 1:10 ... end	
if	if x< ... elseif x == 2 else ... end	
while	while x<3 ... end	
switch-case	switch switch_arg ... case case_arg ... end	
try-catch	try ... catch ... end	

» Objects	
Define a class	Use a class
<pre>classdef MyClass properties MyProp end methods function obj = MyClass(val) end function y = MyMethod(obj,x) end end end</pre>	<ul style="list-style-type: none"> Save the class definition with the same name as the class <code>MyClass.m</code> Create an object of the class <code>a = MyClass</code> Access the properties <code>a.MyProp</code> Call methods to perform operations <code>b = MyMethod(a,val)</code> To pass-by-reference, create a "handle" class <code>classdef myclass < handle</code> ... end

MathWorks	Explore Products	Try or Buy	Learn to Use	Get Support	About MathWorks
Accelerating the pace of engineering and science	MATLAB	Downloads	Documentation	Installation Help	Careers
MathWorks is the leading developer of mathematical computing software for engineers and scientists.	Simulink	Trial Software	Tutorials	MATLAB Answers	Newsroom
Discover...	Student Software	Contact Sales	Examples	Consulting	Social Mission
	Hardware Support	Pricing and Licensing	Videos and Webinars	License Center	Customer Stories
	File Exchange	Store Terms and Conditions	Training	Contact Support	About MathWorks

