

GETTING HELP	
help	open online Scilab help (F1)
SCILAB FILE EXTENSIONS	
.sce	Scilab script
.sci	Scilab macro (function)
.sod	binary files for data (Scilab Open Data)
.scg	saved file for figures ( <i>load to load</i> )
EDITOR KEYBOARD SHORTCUTS	
Ctrl + D	comment
Ctrl + Maj + D	uncomment
Ctrl + I	properly indent
F5	save and run a script
Ctrl + E	run selection
Ctrl + Maj + O	open selection with editors
Ctrl + S	save
Ctrl + G	move down a line
Ctrl + F	find in a file
F1	open help/help on selection
INITIALIZATION	
.scilab	init script of the environment (defined by the programmer) which automatically runs when opening Scilab in the according directory
or	
scilab.ini	(containing scilab.ini) or when a given user is in SCIHOME.
clc	clear the command window
xdel(winsid())	close all figures
BROWSING	
cd	display or change current directory
dir/ls	list the current directory contents
pwd	display current directory
get_absolute_file_path	get absolute path of opened file
getlongpathname	get long path name
getshortpathname	get short path name
SPECIAL CONSTANTS	
ans	give last result
%pi, %e, %i	constants $\pi$ , e, $i = \sqrt{-1}$
%nan	Not a Number
%inf	infinite
%eps	machine accuracy
%t, %f	true, false
TMPDIR	temporary directory path
SCI	variable containing the value of the root path of Scilab
SCIHOME	contains the path to preferences, history files of your Scilab session
MATRIX	
ones	create matrix of 1
zeros	create matrix of 0
eye	create identity matrix
linspace	generate linearly spaced vector
logspace	generate logarithmically spaced vectors
rand	generate random numbers matrix
DIMENSIONS	
size	size of matrix
ndims	number of dimension in a table

length	length of matrix number of characters in a string number of characters in each string of a string matrix	geomean	geometric mean
<b>SPECIAL CHARACTERS</b>			
//	comments	harmean	harmonic mean
"	surround strings	<b>RELATIONAL OPERATORS</b>	
'	transpose of a matrix	=, <>, <, >, <=, >=	
,	separate éléments on the same lines (matrix and command)	&   ~	LOGICAL OPERATORS
;	separate arguments of a function	and	element wise AND, OR and NOT
( )	end a command and disable display	or	determine if all array element are nonzero
[ ]	end a line when assigning a matrix		determine if any array element is nonzero
:	matrix indexation operator (line, column)		
:	matrix definition and concatenation operator		
>> a = 1 : 2 : 10	operator to create vector		
..	continue statement on the next line		
.	decimal marker		
=	assignment operator		
\$	select last element (line, column...) within indexation		
<b>CALCULATIONS</b>			
+ - * /	addition, subtraction, multiplication, division	real	real part
\	left array divide (system of equations solving with least squares)	imag	imaginary part
^	power	abs	complex magnitude
.	combined with arithmetic operator to calculate element by element.	conj	complex conjugate
		complex	create a complex number
<b>MATHEMATICAL FUNCTIONS</b>			
sqrt	root square	<b>STRINGS</b>	
abs	absolute value	handling	
log	natural logarithms	str1 = "one" ; str2 = "string" ;	
exp	exponential	str = str1 + " " + str2	concatenate
log10	common logarithm (base 10)	strcat	concatenate strings
10^	10 power	strsplit	split string
modulo	reminder after division	convstr	convert string to lower/upper case
		strsubst	replace substring
		stripblanks	remove leading and trailing white space from strings
		strcmp, strcmpi	compare strings
		strtok	split string into tokens
<b>STRING/NUMBER CONVERSION</b>			
eval, evstr	execute a string containing an instruction/expression		
strtod	convert string to double		
string	convert to string		
msprintf, mprintf	convert, format, and write data in a string		
<b>FIGURES AND PLOT</b>			
<b>FIGURE COMPUTATION</b>			
scf	create or select a figure		
xdel	close one or all figure(s)		
clf	clear figure		
winsid	list existing figures		
subplot	create axis in tiled positions		
drawlater	make figure invisible while creating		
drawnow	show invisible graphical items		
xsave	save figure in .scg file		
xload	load figure in .scg file		
<b>2D PLOT</b>			
plot, plot2d	linear or logarithmic plot		
plot2d2	plot with step		
plot2d3	plot with vertical bars		
plot2d4	plot with arrows style		
<b>3D PLOT</b>			
surf	3D shaded surface plot		
mesh	mesh plot		
plot3d, plot3d1	3D line plot		
<b>COLORS</b>		<b>MARKERS</b>	
.75	0	'y'	'yellow'
		.'	'.'
		+	'v'
			▽

.75	0	.75	'm'	'magenta'
0	.75	.75	'c'	'cyan'
1	0	0	'r'	'red'
0	0.5	0	'g'	'green'
0	0	1	'b'	'blue'
1	1	1	'w'	'white'
.25	.25	.25	'k'	'black'

## other plots

pie	pie chart
histplot	histogram plot
bar	bar graph
champ	3D vector field plot
contour	contour plot of matrix

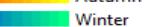
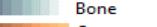
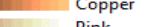
## annotations

legend	legend
xlabel, ylabel, zlabel	axis labels
title	add title to current figure

## various operation

colorbar	display colorbar showing color scale
zoom_rect	zoom a selection of the current graphic figure
un_zoom	restore default zoom
xstring	create text object in current axis
xinfo	display string in status bar

## color scale

colormap	color map
	Jet
	HSV
	Hot
	Cool
	Spring
	Summer
	Autumn
	Winter
	Gray
	Bone
	Copper
	Pink

## FILE MANAGEMENT

edit	open a file with Scilab editor
copyfile	copy files
deletefile	delete files
fileinfo	display information about a file
mkdir	make a new folder
rmdir	remove new folder

## path management

fullfile	build full file name from parts
fileparts	parts of file (name, path and extension)
basename	extract file name from path
dirname	extract directory name from path
fileext	extract file extension type from path
filesep	returns directory separator for current platform
fullpath	creates a full path name for the specified relative path name

## PERFORMANCE ANALYSIS

tic, toc	start/stop stopwatch timer (measure time)
timer	measure consumed CPU time
profile	profile execution time for function
getmemory	display memory information

## READ/WRITE FILES

### high level

csvRead, csvWrite	read/write comma separated value (CSV) file
xls_open, mclose	open/close Microsoft Excel spreadsheet file
xls_read	read opened Microsoft Excel spreadsheet file
load, save	read/write binary Scilab file (.sod)
imread, imwrite	read/write image file (toolbox SIP)

### low level

1 – open the file	2 – position, read, write...	3 – close the file
mopen, mcclose	open/close a file	
mscanf, mprintf,	read/write data file	
mgetl, mputl	read/write a line from a data file	
meof	test for end of file	
mseek	set the selector position in a file	
mtell	return the selector position in a file	

## CONTROL STRUCTURES

### iterative loop

```
for var = vector
    // Scilab code
end
while
    // Scilab instructions
end
```

### conditional structures

```
if logical expression 1 then // Mandatory
    // Scilab instruction
elseif logical expression 2 then // Optional
    // Scilab instruction
else // Optional
    // Scilab instruction
end // Mandatory
select expression // String, double, boolean
case value 1 // Mandatory
    // Scilab instruction
case {value 2, value 3} // Optional
    // Scilab instruction
else // Optional but recommended
    // Scilab instruction
end
```

### control commands

```
break terminate execution of 'for' and 'while' loop
continue pass control to next iteration of 'for' or 'while' loop
return return control to invoking function
pause halt execution temporarily
```

## TESTING

isempty	is empty?
isnan	is NaN?
isinf	is infinite?
isequal	is equal?
isdef	is variable defined?
isfile	is file?
isdir	is directory?
isnum	is string a number?
isfield	is a field that belongs to a structure?

## ERROR MANAGEMENT

### try

```
// Scilab instruction
catch
    // Scilab instruction
end
error
warning
lasterror
errcatch
errclear
```

throw error and display message  
display warning message  
send last error (and erase it!)  
catch a type of error  
clear an error

## FUNCTION MANAGEMENT

Create a file myFunction.sci :

```
function [S1, S2, ...] = myFunction (E1, E2, ...)
    // Header comment
    // Scilab instruction
endfunction
```

Load myFunction.sci for use

```
exec ("myFunction.sci", -1)
argn
varargin, varargin
exec
getd
genlib
lib
```

number of function input/output arguments  
input/output variables of function arguments as a list  
load a memorized function  
load every function (.sci) in a directory  
build every function (.sci) in a directory  
define/load a functions library

## COMMUNICATION WITH USER

```
disp
input
pause
waitbar
x_dialog, x_mdialog
messagebox
uiputdir
uigetfile, uiputfile
uigetcolor
```

display value of variable in command window  
display a message and request user input  
halt execution temporarily  
open wait bar dialog box  
create dialog box that gathers user input  
create warning/error/help dialog box  
selection box for directory  
selection box for file  
selection box for color

## POLYNOMIALS

```
poly
coeff
roots
detr
determ
rational
```

define a polynomial  
get polynomial coefficients  
get polynomial roots  
get polynomial determinant  
get determinant from a polynomial matrix  
define a rational fraction

## DATES

```
date
now, clock
```

current date with strings  
current date with numbers or array

```
format
chaine
nombre
vecteur
```

dd-mmm-yyyy  
elapsed days since January 0, 0000  
[year, month, day, hour, minutes, seconds]

## conversion

```
datenum convert array date to number
datevec convert a date number to array date
DateScilab = DateExcel + datenum(1899, 12, 30);
```

## others

```
calendar
weekday
```

calendarr  
day of the week