Cheat Sheet - Base -

MATLAB

Types

```
>> T=[true,false]
        1×2 logical array
  1   0
```
Boolean values (1 or 0)

```
>> T=[1,2,3]
T=1 2 3
```
Intergers or floating point numbers

```
>> T=[''Bonjour '']
T= ''Bonjour ''
```
Strings character

Vectors

Creating vectors

A=[1 2 3 4] or A=[1,2,3,4]	>> A= 1 2 3 4	Create a row vector
A=[1 2 3 4] or A=[1;2;3;4]	>> A=1 2 3 4	Create a column vector
A=[1:4]	>> A= 1 2 3 4	Create integrer sequence vector
A=[1:0.5:3]	>> A= 1 1.5 2 2.5 3	Create vector with specified increment
A=[1:4] A=A'	>> A= 1 2 3 4 >> A= 1 2 3 4	Use the transpose operator : '

Selecting vectors Elements

By position

A(2)	Return the 2nd element
A(end)	All but the last
A(2:4)	Elements 2 to 4
A(1:end ~= 3)	All elements except the third

By Value

A(A==2)	Elements which are equal to 2
A(A>0)	All elements more than 0
A(A=<2)	All elements less or equal than 2

Matrix

Creating Matrix

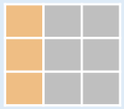
M=zeros (3,5)

Create a zeros matrix with 3 row and 5 column.

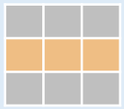
M=[4,5 ; 6,8] Or M=[1 2 3 4]	M= 4 5 6 8	Create a matrix with 2 row and 2 column of specifics numbers
A=[2:5;4:2:10;-4:-1]	M=2 3 4 5 4 6 8 10 -4-3-2-1	Create a matrix with 4 row and 3 column with the use of increment

Selecting Matrix Elements

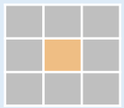
By position



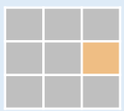
M(:,1) - Select a column



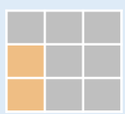
M(2,:) - Select a row



M(2,2) - Select an element

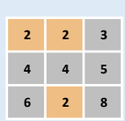


M(2,end) - Select the last element of a row



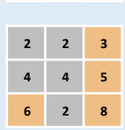
M(2:3,1) - Select successive elements of a column

By value



M(M==2) - Elements which are equal to 2

M(M>4) - All elements more than 0



M(M~=2 & M~=4) - All ements not equal to 2 and 4

Maths

All all calculations must be performed on same size matrices.

Between Matrix

M+N	Addition	**M-N**	Substraction
M.*N	Multiplication	**M./N**	Division
M*N	Matrix Product	**M.^3**	Power

On Matrix

sum(x)	Sum	**sqrt(x)**	square root
max(x)	Largest element	**mean(x)**	mean
min(x)	Smallest element	**std(x)**	Standard deviation

Exemple

```
>> M=[2 2 3 ; 4 1 1 ; 6 2 8]
>> N=[1 3 5 ; 2 8 7 ; 5 5 6]
```

```
>> O=M+N

O=  3  5  8
    6  9  8
   11  7 14
```

M + N = O

M			N			O		
2	2	3	1	3	5	3	5	8
4	1	1	2	8	7	6	9	8
6	2	8	5	5	6	11	7	14

```
>> O=M.*N

O=  2  6  15
    8  8   7
   30 10  64
```

M .* N = O

M			N			O		
2	2	3	1	3	5	2	6	15
4	1	1	2	8	7	8	8	7
6	2	8	5	5	6	30	10	64

```
>> O=M*N

O=  3  5  8
    6  9  8
   11  7 14
```

M * N = O

M			N			O		
2	2	3	1	3	5	21	37	42
4	1	1	2	8	7	11	25	33
6	2	8	5	5	6	50	74	92

Tools Box

Command	Purpose
>>clc	Clear command window.
>>clear	Removes variables from memory.
>>close	Close all objects open (Exemple : Figure)
>>help	Searches for a help topic.
>>lookfor	Searches help entries for a keyword.
>>disp	Displays contents of an array or string.

Keyboard shortcut	Purpose
F5	Run script.
CTRL+C	Interrupt Matlab execution (Debug).

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