

Functions_in_MATLAB_I

December 19, 2018

1 Teoría de elementos finitos y su implementación (11/12/2018)

1.1 La función help

```
In [1]: set = ["min" "max" "mean"];  
        for i = 1:3  
            help( set(i) )  
        end
```

MIN Smallest component.

For vectors, MIN(X) is the smallest element in X. For matrices, MIN(X) is a row vector containing the minimum element from each column. For N-D arrays, MIN(X) operates along the first non-singleton dimension.

[Y,I] = MIN(X) returns the indices of the minimum values in vector I. If the values along the first non-singleton dimension contain more than one minimal element, the index of the first one is returned.

MIN(X,Y) returns an array with the smallest elements taken from X or Y. X and Y must have compatible sizes. In the simplest cases, they can be the same size or one can be a scalar. Two inputs have compatible sizes if, for every dimension, the dimension sizes of the inputs are either the same or one of them is 1.

MIN(X,[],'all') returns the smallest element of X.

[Y,I] = MIN(X,[],DIM) operates along the dimension DIM.

MIN(X,[],VECDIM) operates on the dimensions specified in the vector VECDIM. For example, MIN(X,[],[1 2]) operates on the elements contained in the first and second dimensions of X.

When X is complex, the minimum is computed using the magnitude MIN(ABS(X)). In the case of equal magnitude elements, then the phase angle MIN(ANGLE(X)) is used.

MIN(...,NANFLAG) specifies how NaN (Not-A-Number) values are treated.

NANFLAG can be:

'omitnan' - Ignores all NaN values and returns the minimum of the non-NaN elements. If all elements are NaN, then the first one is returned.
'includenan' - Returns NaN if there is any NaN value. The index points to the first NaN element.

Default is 'omitnan'.

Example:

```
X = [2 8 4; 7 3 9]
min(X,[],1)
min(X,[],2)
min(X,5)
```

See also MAX, BOUNDS, CUMMIN, MEDIAN, MEAN, SORT, MINK.

Reference page in Doc Center
doc min

Other functions named min

| | | | |
|-------------------|--------------|--------------|----------------|
| categorical/min | duration/min | gpuArray/min | tall/min |
| codistributed/min | fints/min | sym/min | timeseries/min |
| datetime/min | | | |

MAX Largest component.

For vectors, MAX(X) is the largest element in X. For matrices, MAX(X) is a row vector containing the maximum element from each column. For N-D arrays, MAX(X) operates along the first non-singleton dimension.

[Y,I] = MAX(X) returns the indices of the maximum values in vector I. If the values along the first non-singleton dimension contain more than one maximal element, the index of the first one is returned.

MAX(X,Y) returns an array with the largest elements taken from X or Y. X and Y must have compatible sizes. In the simplest cases, they can be the same size or one can be a scalar. Two inputs have compatible sizes if, for every dimension, the dimension sizes of the inputs are either the same or one of them is 1.

MAX(X,[],'all') returns the largest element of X.

[Y,I] = MAX(X,[],DIM) operates along the dimension DIM.

MAX(X,[],VECDIM) operates on the dimensions specified in the vector VECDIM. For example, MAX(X,[],[1 2]) operates on the elements contained in the first and second dimensions of X.

When X is complex, the maximum is computed using the magnitude MAX(ABS(X)). In the case of equal magnitude elements, then the phase angle MAX(ANGLE(X)) is used.

MAX(...,NANFLAG) specifies how NaN (Not-A-Number) values are treated. NANFLAG can be:

'omitnan' - Ignores all NaN values and returns the maximum of the non-NaN elements. If all elements are NaN, then the first one is returned.
'includenan' - Returns NaN if there is any NaN value. The index points to the first NaN element.

Default is 'omitnan'.

Example:

```
X = [2 8 4; 7 3 9]
max(X,[],1)
max(X,[],2)
max(X,5)
```

See also MIN, BOUNDS, CUMMAX, MEDIAN, MEAN, SORT, MAXK.

Reference page in Doc Center

doc max

Other functions named max

| | | | |
|-------------------|--------------|--------------|----------------|
| categorical/max | duration/max | gpuArray/max | tall/max |
| codistributed/max | fints/max | sym/max | timeseries/max |
| datetime/max | | | |

MEAN Average or mean value.

S = MEAN(X) is the mean value of the elements in X if X is a vector.

For matrices, S is a row vector containing the mean value of each column.

For N-D arrays, S is the mean value of the elements along the first array dimension whose size does not equal 1.

MEAN(X,'all') is the mean of all elements in X.

MEAN(X,DIM) takes the mean along the dimension DIM of X.

MEAN(X,VECDIM) operates on the dimensions specified in the vector VECDIM. For example, MEAN(X,[1 2]) operates on the elements contained in the first and second dimensions of X.

S = MEAN(...,TYPE) specifies the type in which the mean is performed, and the type of S. Available options are:

'double' - S has class double for any input X
 'native' - S has the same class as X
 'default' - If X is floating point, that is double or single,
 S has the same class as X. If X is not floating point,
 S has class double.

S = MEAN(...,NANFLAG) specifies how NaN (Not-A-Number) values are treated. The default is 'includenan':

'includenan' - the mean of a vector containing NaN values is also NaN.
 'omitnan' - the mean of a vector containing NaN values is the mean of all its non-NaN elements. If all elements are NaN, the result is NaN.

Example:

```
X = [1 2 3; 3 3 6; 4 6 8; 4 7 7]
mean(X,1)
mean(X,2)
```

Class support for input X:

```
float: double, single
integer: uint8, int8, uint16, int16, uint32,
        int32, uint64, int64
```

See also MEDIAN, STD, MIN, MAX, VAR, COV, MODE.

Reference page in Doc Center
 doc mean

Other functions named mean

```
codistributed/mean    fints/mean          tall/mean
datetime/mean        gpuArray/mean       timeseries/mean
duration/mean
```

```
In [2]: a = [2, 3, 4, 7, -4, 3];
        fprintf('El valor mínimo y máximo de a es: %i.\n', min(a) );
        fprintf('El valor mínimo de a es %i.\n', max(a) );
        fprintf('El valor promedio de a es %1.0f.\n', mean(a) );
        fprintf('La longitud de a es %i.', length(a) );
```

El valor mínimo y máximo de a es: -4.

El valor mínimo de a es 7.

El valor promedio de a es 2.

La longitud de a es 6.