**diag**

*Function of creating diagonal matrix.*

**Syntax:**

*M* = **diag**(*X*);

**Arguments:**

*Х* – input array.

The input array *X* can be assigned:

* as variable of array type determined earlier:

*М* = **diag**(*X*);

* as an array consisting of variables determined earlier:

*M* = **diag**([*x1,x2,x3,x4*]);

* as a constant array:

*M* = **diag**([-1.80, -1.60, -1.40, -1.20]);

**Description:**

*diag(X)* – function returns a square matrix, which diagonal elements are equal to vector *X* elements (diagonal matrix)*.* All the other matrix elements staying outside the main diagonal are equal to zero.

**Result:**

*М* – diagonal matrix*.* Matrix *М* – square.

**Example:**

|  |  |
| --- | --- |
|  | **const**X = [2, 2, 1, 3, 4];  M = **diag**(X); |

As a result, variable *M* will be assigned a value of array

[

[2, 0, 0, 0, 0],

[0, 2, 0, 0, 0],

[0, 0, 1, 0, 0],

[0, 0, 0, 3, 0],

[0, 0, 0, 0, 4]

],

determining the diagonal matrix, which diagonal elements are equal to the elements of vector *X*.