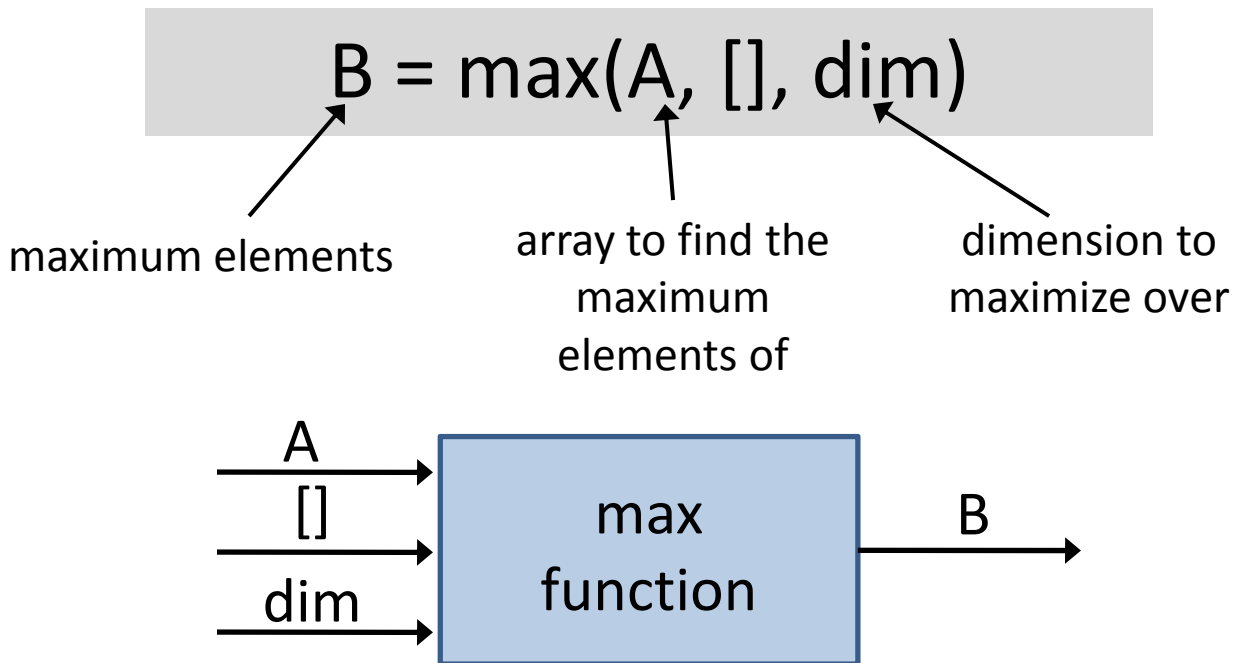


# CS 1173: MATLAB max function

The max function returns the maximum value of the elements along an array dimension.



## Example 1: Different ways to apply max to array A

```
A = [1, 2, 6; 4, -7, 0];
```

```
B = max(A, [], 1);
```

```
C = max(A, [], 2);
```

dim 1      dim 2

↓      →

$$A = \begin{bmatrix} 1 & 2 & 6 \\ 4 & -7 & 0 \end{bmatrix}$$

$B = \max(A, [], 1) =$

$[4 \quad 2 \quad 6]$

$C = \max(A, [], 2) =$

$\begin{bmatrix} 6 \\ 4 \end{bmatrix}$

# CS 1173: MATLAB max function (1 argument)

When you call `max` with only one argument, `max` finds the maximum element(s) along the first non-singleton dimension. For a single row or column, the result is just one number.

$$B = \max(A)$$

maximum elements

array to find the maximum elements of

## Example 1: A has both rows and columns

```
A = [1, 2, 6; 4, -7, 0];  
B = max(A);  
C = max(A(:));
```

The first non-singleton dimension is 1

$$B = \max(A) = [4 \quad 2 \quad 6]$$

$$A = \begin{matrix} & \xrightarrow{\text{dim 2}} \\ \text{dim 1} \downarrow & \begin{bmatrix} 1 & 2 & 6 \\ 4 & -7 & 0 \end{bmatrix} \end{matrix}$$

$$C = \max(A(:)) = 6$$

## Example 2: A has just one row

```
A = [1, 2, 6];  
B = max(A);
```

The first non-singleton dimension is 2

$$B = \max(A) = 6$$

$$A = [1 \quad 2 \quad 6]$$

## Example 3: A has just one column

```
A = [1; 4];  
B = max(A);
```

The first non-singleton dimension is 1

$$B = \max(A) = 4$$

$$A = \begin{bmatrix} 1 \\ 4 \end{bmatrix}$$