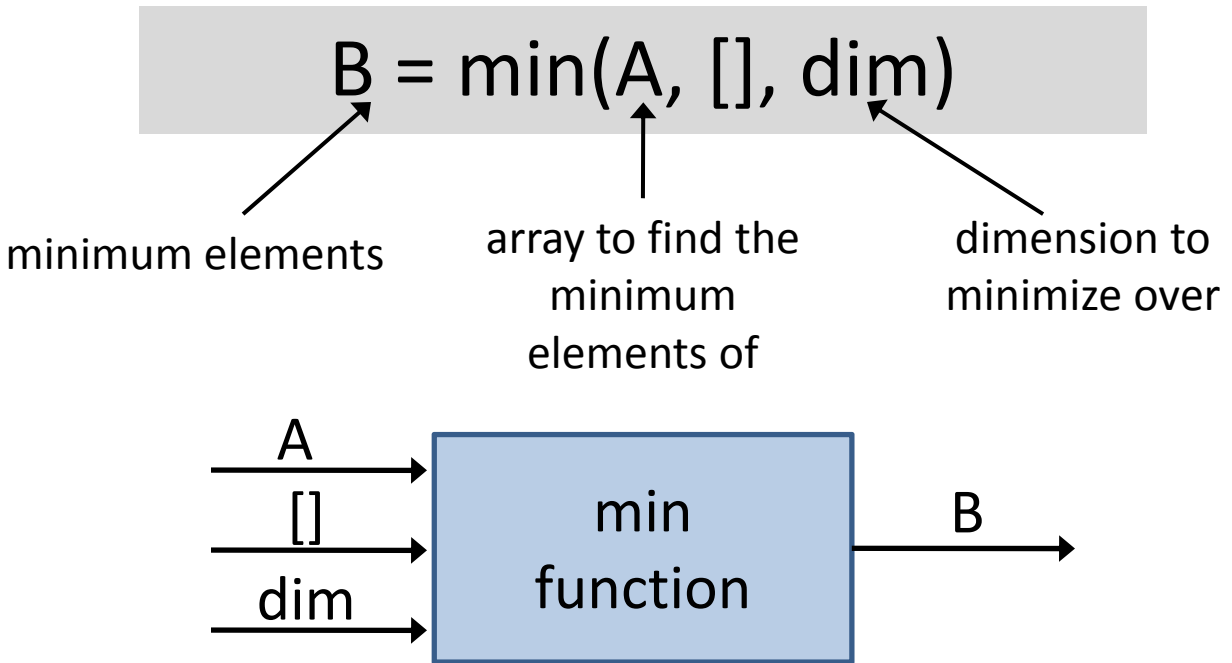


# CS 1173: MATLAB min function

The min function returns the minimum value of the elements along an array dimension.



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

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

dim 1      dim 2

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

(A vertical blue arrow points down from the first column, and a horizontal blue arrow points right from the second row.)

```
B = min(A, [], 1) =  
[ 1  -7  0]
```

```
C = min(A, [], 2)  
[ 1  
 -7]
```

# CS 1173: MATLAB min function (1 argument)

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

$$B = \min(A)$$

minimum elements

array to find the minimum elements of

## Example 1: A has both rows and columns

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

The first non-singleton dimension is 1

$$B = \minx(A) =$$
$$[1 \quad -7 \quad 0]$$

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

$$C = \min(A(:)) = -7$$

## Example 2: A has just one row

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

The first non-singleton dimension is 2

$$B = \minx(A) = 1$$

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

## Example 3: A has just one column

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

The first non-singleton dimension is 1

$$B = \min(A) = 1$$

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