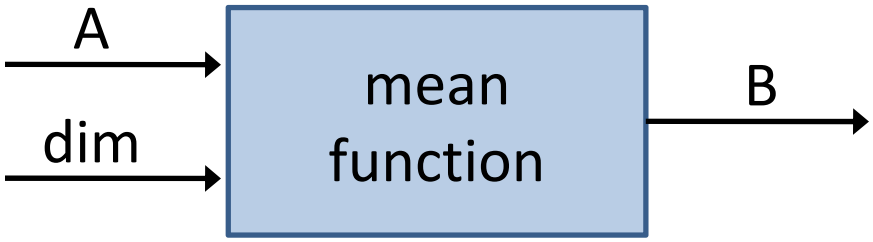
CS 1173: MATLAB mean function

The mean function returns the mean or average along an array dimension.

```
B = mean(A, dim)
```

resulting average — array to average — dimension to average over



Example 1: Different ways to average array A

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

dim 1 ↓ dim 2 →

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

B = mean(A, 1) =

$$\begin{bmatrix} 2.5 & -2.5 & 3 \end{bmatrix}$$

C = mean(A, 2) =

$$\begin{bmatrix} 3 \\ -1 \end{bmatrix}$$

CS 1173: MATLAB mean function (1 argument)

When you don't include the dimension argument, mean adds along the first non-singleton dimension. For a single row or column, the result is just one number.

```
B = mean(A)
```

resulting average — array to average

Example 1: A has both rows and columns

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

The first non-singleton dimension is 1

dim 1 ↓ dim 2 →

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

B = mean(A) =

$$\begin{bmatrix} 2.5 & -2.5 & 3 \end{bmatrix}$$

C = mean(A(:)) = 1

Example 2: A has just one row

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

The first non-singleton dimension is 2

$$A = \begin{bmatrix} 1 & 2 & 6 \end{bmatrix}$$

B = mean(A) = 3

Example 3: A has just one column

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

The first non-singleton dimension is 1

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

B = mean(A) = 2.5