

## Two-dimensional arrays

So far, you have learned use one-dimensional arrays. In this video let's look at how to define and use two-dimensional arrays, which are a common type of multidimensional array.



## Defining a Multidimensional Array

To define a multidimensional array, you specify the number of elements in each dimension, separated by a comma. This ARRAY statement defines a two-dimensional array:

```
array new{3,4} x1-x12;
```

In a two-dimensional array, the two dimensions can be thought of as a table of rows and columns.

	columns			
	x1	x2	x3	x4
rows	x5	x6	x7	x8
	x9	x10	x11	x12

The first dimension in the ARRAY statement specifies the number of rows.

The second dimension specifies the number of columns.



You can reference any element of the array by specifying the two dimensions. In the example below, you can perform an action on the variable x7 by specifying the array reference new(2,3). You can easily locate the array element in the table by finding the row (2), then the column (3).

```
array new{3,4} x1-x12;
```

```
new(2,3)=0;
```

x1	x2	x3	x4
x5	x6	x7	x8
x9	x10	x11	x12



When you define a two-dimensional array, the array elements are grouped in the order in which they are listed in the ARRAY statement. For example, the array elements x1 through x4 can be thought of as the first row of the table.

↓ ↓ ↓ ↓  
array new{3,4} x1 x2 x3 x4 x5 x6 x7 x8 x9 x10 x11 x12;

x1	x2	x3	x4
x5	x6	x7	x8
x9	x10	x11	x12

The elements x5 through x8 become the second row of the table, and so on.

↓ ↓ ↓ ↓  
array new{3,4} x1 x2 x3 x4 x5 x6 x7 x8 x9 x10 x11 x12;

x1	x2	x3	x4
x5	x6	x7	x8
x9	x10	x11	x12

