



Array Processing

Array Processing



You can use arrays to simplify programs that

- Perform repetitive calculations
- Create many variables with the same attributes
- Read data
- Rotate SAS data sets by making variables into observations or observations into variables
- Compare variables
- Perform a table lookup.



What Is a SAS Array?

A SAS array

- Is a temporary grouping of SAS variables that are arranged in a particular order
- Is identified by an array name
- Exists only for the duration of the current DATA step
- Is not a variable

Each value in an array is

- Called an element
- Identified by a subscript that represents the position of the element in the array.

When you use an array reference, the corresponding value is substituted for the reference.



The ARRAY Statement

The ARRAY statement

- Defines the elements in an array.
- These elements will be processed as a group.
- You refer to elements of the array by the array name and subscript.

```
ARRAY array-name {subscript} <$> <length>  
  <array-elements> < (initial-value-list) .;
```

- Must contain all numeric or all character elements
- Must be used to define an array before the array name can be referenced
- Creates variables if they do not already exist in the PDV
- Is a compile-time statement.



Creating One-Dimensional Arrays

- **Specifying the Array Name**

To group the variables in the array, first give the array a name.

```
array sales{4} qtr1 qtr2 qtr3 qtr4;
```

- **Specifying the Dimension**

- You must specify the dimension of the array.
- The dimension describes the **number and arrangement of elements** in the array

```
array sales{4} qtr1 qtr2 qtr3 qtr4;
```

- The dimension of an array **doesn't** have to be the number of array elements

```
array sales{96:99} totals96 totals97 totals98 totals99;
```

- **Specifying Array Elements**

When specifying the elements of an array, you can list each **variable name** that you want to include in the array



Variable Lists as Array Elements

- Specifying a Numbered Range of Variables

```
array sales{4} qtr1-qtr4;
```

When specifying a numbered range of variables,

- the variables must have the same name except for the last character or characters
- the last character of each variable must be numeric
- the variables must be numbered consecutively.

- Specifying All Numeric Variables

```
array sales{*} _numeric_;
```

- Specifying All Character Variables

```
array sales{*} _character_;
```



Referencing Elements of an Array

General form, ARRAY reference:

array-name{index value}

where *index value*

- is enclosed in parentheses, braces, or brackets
- specifies an integer, a numeric variable, or a SAS numeric expression
- is within the lower and upper bounds of the dimension of the array.

Using the DIM Function in an Iterative DO Statement

- You can also use the **DIM** function to return the number of elements in the array.

DIM(*array-name*)

Creating Variables in an ARRAY Statement



General form, ARRAY statement to create new variables:

ARRAY *array-name*{*dimension*};

- Creating Default Variable Names

- SAS creates default variable names by concatenating the array name and the numbers 1, 2, 3, and so on, up to the array dimension.

```
array WgtDiff{5};
```

- If you prefer, you can specify individual variable names.

```
array WgtDiff{5} Oct12 Oct19 Oct26 Nov02 Nov09;
```

- Creating Temporary Array Elements

- To create temporary array elements for DATA step processing without creating new variables, specify **_TEMPORARY_** after the array name and dimension.

```
array goal{4} _temporary_ (9000 9300 9600 9900);
```

- Temporary array elements do not appear in the resulting data set.