

## Modifying Character Values with Functions

### Selected Character Functions

Function	Purpose
SCAN	returns a specified word from a character value.
SUBSTR	extracts a substring or replaces character values.
TRIM	trims trailing blanks from character values.
CATX	concatenates character strings, removes leading and trailing blanks, and inserts separators.
INDEX	searches a character expression for a string of characters, and returns the position of the string's first character for the first occurrence of the string.
FIND	searches for a specific substring of characters within a character string.
UPCASE	converts all letters in a value to uppercase.
LOWCASE	converts all letters in a value to lowercase.
PROPCASE	converts all letters in a value to proper case.
TRANWRD	replaces or removes all occurrences of a pattern of characters within a character string.



### SCAN Function

The SCAN function uses delimiters to separate a character string into words.

For example:

the comma as a delimiter, the SCAN function separates the string into three words.

LOW,MODERATE,HIGH  
↑    ↑            ↑  
1    2            3

then the function returns whichever word you specify.

If we specify the third word, the SCAN function returns the word HIGH.



### SCAN Function Syntax

General form, SCAN function:

`SCAN(argument, n, 'delimiters')`

Example: variable Name has values like 'Smith, Sara' - 'Last name , First name'

`LastName=scan(name,1,',');`

where

- `argument` specifies the character variable or expression to scan.
- `n` specifies which word to return.
- `delimiters` are special characters that must be enclosed in single quotation marks (' ').
- If you do not specify delimiters, default delimiters (`blank . < ( + | & ! $ * ) ; ^ - / , %`) are used.



### Specifying Multiple Delimiters

- We can specify multiple delimiters when using Scan function.

For example, specify both the slash and the hyphen as delimiters

607/555-1273  
 ↑    ↑    ↑  
 1    2    3

- treats two or more continuous delimiters as one delimiter
- leading delimiters have no effect

SAS code example:

```
last_name = SCAN(full_name,1, ',: '); /*3 delimiters , : and space*/
```



When using the SCAN function, you can specify as many delimiters as needed to correctly separate the character expression.

When you specify multiple delimiters, SAS uses any of the delimiters, singly or in any combination, as word separators.

For example, if you specify both the slash and the hyphen as delimiters, the SCAN function separates the following text string into three words.