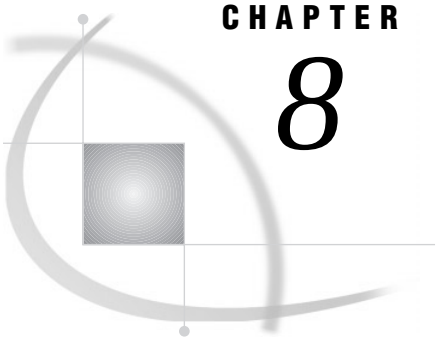

CHAPTER

8

Statements

Definition

A *SAS statement* is a series of items that may include keywords, SAS names, special characters, and operators. All SAS statements end with a semicolon. A SAS statement either requests SAS to perform an operation or gives information to the system.

This book covers two kinds of SAS statements:

- those used in DATA step programming
- those that are global in scope and can be used anywhere in a SAS program.

The *SAS Procedures Guide* gives detailed descriptions of the SAS statements that are specific to each SAS procedure. *The Complete Guide to the SAS Output Delivery System* gives detailed descriptions of the Output Delivery System (ODS) statements.

DATA Step Statements

Executable and Declarative Statements

DATA step statements are those that can appear in the DATA step. They can be either executable or declarative. *Executable statements* result in some action during individual iterations of the DATA step; *declarative statements* supply information to SAS and take effect when the system compiles program statements.

The following tables show the SAS executable and declarative statements that you can use in the DATA step.

Table 8.1 Executable Statements in the DATA Step

Executable Statements		
ABORT	IF, Subsetting	PUT
Assignment	IF-THEN/ELSE	PUT, Column
CALL	INFILE	PUT, Formatted
CONTINUE	INPUT	PUT, List
DELETE	INPUT, Column	PUT, Named
DESCRIBE	INPUT, Formatted	PUT, _ODS_
DISPLAY	INPUT, List	REDIRECT
DO	INPUT, Named	REMOVE
DO, Iterative	LEAVE	REPLACE
DO Until	LINK	RETURN
DO While	LIST	SELECT
ERROR	LOSTCARD	SET
EXECUTE	MERGE	STOP
FILE	MODIFY	Sum
FILE, ODS	Null	UPDATE
GO TO	OUTPUT	

Table 8.2 Declarative Statements in the DATA Step

Declarative Statements		
ARRAY	DATALINES	LABEL
Array Reference	DATALINES4	Labels, Statement
ATTRIB	DROP	LENGTH
BY	END	RENAME
CARDS	FORMAT	RETAIN
CARDS4	INFORMAT	WHERE
DATA	KEEP	WINDOW

DATA Step Statements by Category

In addition to being either executable or declarative, SAS DATA step statements can be grouped into four functional categories:

Table 8.3 Categories of DATA Step Statements

Statements in this category …	let you …
ACTION	□ create and modify variables □ select only certain observations to process in the DATA step □ look for errors in the input data □ work with observations as they are being created
CONTROL	□ skip statements for certain observations □ change the order that statements are executed □ transfer control from one part of a program to another
FILE-HANDLING	□ work with files used as input to the data set □ work with files to be written by the DATA step
INFORMATION	□ give SAS additional information about the program data vector □ give SAS additional information about the data set or data sets that are being created.

The following table lists and briefly describes the DATA step statements by category.

Table 8.4 Categories and Descriptions of DATA Step Statements

Category	Statement	Description
Action	ABORT	Stops executing the current DATA step, SAS job, or SAS session
	Assignment	Evaluates an expression and stores the result in a variable
	CALL	Invokes or calls a SAS CALL routine
	DELETE	Stops processing the current observation
	DESCRIBE	Retrieves source code from a stored compiled DATA step program or a DATA step view
	ERROR	Sets _ERROR_ to 1 and, optionally, writes a message to the SAS log
	EXECUTE	Executes a stored compiled DATA step program
	IF, Subsetting	Continues processing only those observations that meet the condition
	LIST	Writes to the SAS log the input data records for the observation that is being processed
	LOSTCARD	Resynchronizes the input data when SAS encounters a missing or invalid record in data that have multiple records per observation

	Null	Signals the end of data lines; acts as a placeholder
	OUTPUT	Writes the current observation to a SAS data set
	REDIRECT	Points to different input or output SAS data sets when you execute a stored program
	REMOVE	Deletes an observation from a SAS data set
	REPLACE	Replaces an observation in the same location
	STOP	Stops execution of the current DATA step
	Sum	Adds the result of an expression to an accumulator variable
	WHERE	Selects observations from SAS data sets that meet a particular condition
Control	CONTINUE	Stops processing the current DO-loop iteration and resumes with the next iteration
	DO	Designates a group of statements to be executed as a unit
	DO, Iterative	Executes statements between DO and END repetitively based on the value of an index variable
	DO UNTIL	Executes statements in a DO loop repetitively until a condition is true
	DO WHILE	Executes statements repetitively while a condition is true
	END	Ends a DO group or a SELECT group
	GO TO	Moves execution immediately to the statement label that is specified
	IF-THEN/ELSE	Executes a SAS statement for observations that meet specific conditions
	Labels, Statement	Identifies a statement that is referred to by another statement
	LEAVE	Stops processing the current loop and resumes with the next statement in sequence
	LINK	Jumps to a statement label
	RETURN	Stops executing statements at the current point in the DATA step and returns to a predetermined point in the step
	SELECT	Executes one of several statements or groups of statements
File-handling	BY	Controls the operation of a SET, MERGE, MODIFY, or UPDATE statement in the DATA step and sets up special grouping variables
	CARDS	Indicates that data lines follow
	CARDS4	Indicates that data lines that contain semicolons follow

DATA	Begins a DATA step and provides names for any output SAS data sets
DATALINES	Indicates that data lines follow
DATALINES4	Indicates that data lines that contain semicolons follow
FILE	Specifies the current output file for PUT statements
FILE, ODS	Defines the structure of the data component that holds the results of the DATA step and binds that component to a template to produce an output object. ODS sends this object to all open ODS destinations, each of which formats the object appropriately. Also controls what happens when the PUT statement tries to write past the end of a line.
INFILE	Identifies an external file to read with an INPUT statement
INPUT	Describes the arrangement of values in the input data record and assigns input values to the corresponding SAS variables
INPUT, Formatted	Reads input values from specified columns and assigns them to the corresponding SAS variables
INPUT, Column	Reads input values with specified informats and assigns them to the corresponding SAS variables
INPUT, List	Scans the input data record for input values and assigns them to the corresponding SAS variables
INPUT, Named	Reads data values that appear after a variable name that is followed by an equal sign and assigns them to corresponding SAS variables
MERGE	Joins observations from two or more SAS data sets into single observations
MODIFY	Replaces, deletes, and appends observations in an existing SAS data set in place; does not create an additional copy
PUT	Writes lines to the SAS log, to the SAS procedure output file, or to an external file that is specified in the most recent FILE statement
PUT, Column	Writes variable values in the specified columns in the output line
PUT, Formatted	Writes variable values with the specified format in the output line
PUT, List	Writes variable values and the specified character strings in the output line
PUT, Named	Writes variable values after the variable name and an equal sign

	PUT, _ODS_	Writes data values to a special buffer from which they can be written to the data component, and formatted by ODS destinations
	SET	Reads an observation from one or more SAS data sets
	UPDATE	Updates a master file by applying transactions
Information	ARRAY	Defines elements of an array
	Array Reference	Describes the elements in an array to be processed
	ATTRIB	Associates a format, informat, label, and/or length with one or more variables
	DROP	Excludes variables from output SAS data sets
	FORMAT	Associates formats with variables
	INFORMAT	Associates informats with variables
	KEEP	Includes variables in output SAS data sets
	LABEL	Assigns descriptive labels to variables
	LENGTH	Specifies the number of bytes for storing variables
	MISSING	Assigns characters in your input data to represent special missing values for numeric data
	RENAME	Specifies new names for variables in output SAS data sets
	RETAIN	Causes a variable that is created by an INPUT or assignment statement to retain its value from one iteration of the DATA step to the next

Global Statements

Definition

Global statements generally provide information to SAS, request information or data, move between different modes of execution, or set values for system options. Other global statements (ODS statements) deliver output in a variety of formats, such as in Hypertext Markup Language (HTML). You can use global statements anywhere in a SAS program. Global statements are not executable; they take effect as soon as SAS compiles program statements.

Other SAS software products have additional global statements that are used with those products. For information, see the SAS documentation for those products.

Global Statements by Category

The following table lists and describes SAS global statements, organized by function into five categories:

Table 8.5 Global Statements by Category

Statements in this category ...	let you ...
DATA ACCESS	associate reference names with SAS data libraries, SAS catalogs, external files and output devices, and access remote files.
OPERATING ENVIRONMENT	access the operating environment directly.
LOG CONTROL	alter the appearance of the SAS log.
OUTPUT CONTROL	add titles and footnotes to your SAS output; deliver output in a variety of formats.
PROGRAM CONTROL	govern the way SAS processes your SAS program.
WINDOW DISPLAY	display and customize windows.

The following table provides brief descriptions of SAS global statements. For more detailed information, see the individual statements in *SAS Language Reference: Dictionary*.

Table 8.6 Categories and Descriptions of Global Statements

Category	Statement	Description
Data Access	CATNAME	Logically combines two or more catalogs into one by associating them with a catref (a shortcut name); clears one or all catrefs; lists the concatenated catalogs in one concatenation or in all concatenations
	FILENAME	Associates a SAS fileref with an external file or an output device; disassociates a fileref and external file; lists attributes of external files
	FILENAME, CATALOG Access Method	References a SAS catalog as an external file
	FILENAME, FTP Access Method	Allows you to access remote files using the FTP protocol
	FILENAME, SOCKET Access Method	Allows you to read from or write to a TCP/IP socket
	FILENAME, URL Access Method	Allows you to access remote files using the URL access method
	LIBNAME	Associates or disassociates a SAS data library with a libref (a shortcut name); clears one or all librefs; lists the characteristics of a SAS data library; concatenates SAS data libraries; implicitly concatenates SAS catalogs.
	LIBNAME, SAS/ACCESS	Associates a SAS libref with a database management system (DBMS) database, schema, server, or group of tables or views
Log Control	Comment	Documents the purpose of the statement or program
	PAGE	Skips to a new page in the SAS log
	SKIP	Creates a blank line in the SAS log

Operating Environment	X	Issues an operating-environment command from within a SAS session
Output Control	FOOTNOTE	Prints up to ten lines of text at the bottom of the procedure or DATA step output
	ODS EXCLUDE	Specifies output objects to exclude from ODS destinations
	ODS HTML	Opens, manages, or closes the HTML destination. If the destination is open, you can create HTML output (output that is written in Hypertext Markup Language).
	ODS LISTING	Opens, manages, or closes the Listing destination
	ODS OUTPUT	Creates a SAS data set from an output object and manages the selection and exclusion lists for the Output destination
	ODS PATH	Specifies which locations to search for definitions that were created by PROC EMPLATE, as well as the order in which to search for them
	ODS PRINTER	Opens, manages, or closes the Printer destination. If the destination is open, you can create Printer output (output that is formatted for a high-resolution printer)
	ODS SELECT	Specifies output objects for ODS destinations
	ODS SHOW	Writes to the SAS log the specified selection or exclusion list
	ODS TRACE	Writes to the SAS log a record of each output object that is created, or suppresses the writing of this record
	ODS VERIFY	Prints or suppresses a warning that a style definition or a table definition that is used is not supplied by SAS Institute
	TITLE	Specifies title lines for SAS output
Program Control	DM	Submits SAS Program Editor, Log, Procedure Output or text editor commands as SAS statements
	ENDSAS	Terminates a SAS job or session after the current DATA or PROC step executes
	%INCLUDE	Brings a SAS programming statement, data lines, or both, into a current SAS program
	%LIST	Displays lines that are entered in the current session
	OPTIONS	Changes the value of one or more SAS system options
	RUN	Executes the previously entered SAS statements
	%RUN	Ends source statements following a %INCLUDE * statement
Window Display	DISPLAY	Displays a window that is created with the WINDOW statement
	WINDOW	Creates customized windows for your applications

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