LENGTH Statement – letting SAS format the variables as they are input usually works pretty well, as long as you distinguish between character and numeric. However, occasionally things go awry. The length statement is needed to specify character variable with more than 8 characters. With column input this is not needed. It is needed for list input.

The length statement is also useful for reducing the size of large files. By default SAS reads and stores character variables as 8 characters. This is inefficient if fewer characters are needed, so a length statement can reduce the size of a database by specifying fewer characters.

Many integer variables can be stored in less than 8 bytes. For example, station numbers, month, day and year can usually be stored with 3 bytes. The length statement can also be used to reduce the size of stored integer variables, but this is a bit trickier.   The table below specifies the largest integer that can be stored with a given number of characters.

Length in Bytes	Largest Integer Represented Exactly
3	8,192
4	2,097,152
5	536,870,912
6	137,438,953,472
7	35,184,372,088,832
8	9,007,199,254,740,992

Do not use fewer than 8 bytes to store numbers that are not integers or precision will be reduced.

Date informats used to read dates in different forms (example result is the SASdate value "14686" except for MONYYw. which gives 14670 and YYQW. which gives 14610).

List	Input
DATEw.	17MAR2000
DATE9.	17MAR2000
DDMMYYw.	170300
DDMMYY8.	17032000
JULIANw.	0077
JULIAN7.	2000077
MMDDYYw.	031700
MMDDYY10.	03172000
MONYYw.	MAR00
YYMMDDw.	000317
YYMMDD10.	20000317
YYQw.	00Q1

See SAS for time and date time formats and informats.

Date formats used to write dates in different forms (example is the format applied to "14686").

Format	Result
Format	**Result**
DATEw.	17MAR00
DATE9.	17MAR2000a
DAYw.	17
DDMMYYw.	17/03/00
DDMMYY10.	17/03/2000
DDMMYYBw.	17 03 00
DDMMYYB10.	17 03 2000
DDMMYYCw.	17:03:20
DDMMYYC10.	17:03:2000
DDMMYYDw.	17-03-00
DDMMYYD10.	17-03-2000
DDMMYYNw.	17MAR00
DDMMYYN10	17MAR2000
DDMMYYPw.	17.03.00
DDMMYYP10.	17.03.2000
DDMMYYSw.	17/03/00
DDMMYYS10.	17/03/2000
DOWNAME.	Friday
JULDAYw.	77
JULIANw.	00077
MMDDYYw.	03/17/00
MMDDYY10.	03/17/2000
MMDDYYBw.	03 17 00
MMDDYYB10.w.	03 17 2000
MMDDYYCw.	03:17:00
MMDDYYC10	03:17:2000
MMDDYYDw.	03-17-00
MMDDYYD10.	03-17-2000
MMDDYYNw.	031700
MMDDYYN10.	03172000
MMDDYYP	03.17.00
MMDDYYP10.	03.17.2000
MMDDYYS	03/17/00
MMDDYYS10.	03/17/2000
MMYY.xw.	03M2000
MMYYCw.	03:2000
MMYYD.	03-2000
MMYYN.	032000
MMYYP.	03.2000

Format	Result
MMYYS.	03/2000
MONNAME.	March
MONTH.	3
MONYY.	MAR2000
PDJULGw.	2000077F
PDJULIw.	0100077F
QTRw.	1
QTRRw.	I
TIMEw.d	4:04:46
TIMEAMPMw.d	4:04:46 AM
TOD	4:04:46
WEEKDATEw.	Friday, March 17, 2000
WEEKDAYw.	6
WORDDATE.w.	March 17, 2000
WORDDATXw.	17 MARCH 2000
YEARw.	2000
YYMMw.	2000M03
YYMMCw.	2000:03
YYMMDDw.	2000-03
YYMMPw.	2000.03
YYMMS.	2000/03
YYMMN.	200003
YYMMDDw.	00-03-17
YYMON.	2000MAR
YYQxw.	2000Q1
YYQCw.	2000:1
YYQDw.	2000-1
YYQPw.	2000.1
YYQSw.	2000/1
YYQNw.	20001
YYQRw.	2000QI
YYQRCw.	2000:I
YYQRDw.	2000-I
YYQRPw.w.	2000.I
YYQRSw.	2000/I
YYQRNw.	III

Today is Tuesday, June 27, 2006. This is SASdate 16979.

Lengths of variables and names in SAS

Maximum Length of SAS Names	
SAS Application	**Max Length**
Arrays	32
CALL routines	16
Catalog entries	32
DATA step statement labels	32
DATA step variable labels	256
DATA step variables	32
DATA step windows	32
Engines	8
Filerefs	8
Formats, character	31
Formats, numeric	32
Functions	16
Generation data sets	28
Informats, character	30
Informats, numeric	31
Librefs	8
Macro variables	32
Macro windows	32
Macros	32
Members of SAS data libraries (SAS data sets, views, catalogs, indexes) except for generation data sets	32
Passwords	8
Procedure names (first 8 characters must be unique, and may not begin with "SAS")	16
SCL variables	32

SAS Built-in Functions

Type	Functions and CALL Routines	Description
Array	DIM Function	Returns the number of elements in an array
Array	HBOUND Function	Returns the upper bound of an array
Array	LBOUND Function	Returns the lower bound of an array
Bitwise Logical Operations	BAND Function	Returns the bitwise logical AND of two arguments
Bitwise Logical Operations	BLSHIFT Function	Returns the bitwise logical left shift of two arguments
Bitwise Logical Operations	BNOT Function	Returns the bitwise logical NOT of an argument
Bitwise Logical Operations	BOR Function	Returns the bitwise logical OR of two arguments
Bitwise Logical Operations	BRSHIFT Function	Returns the bitwise logical right shift of two arguments
Bitwise Logical Operations	BXOR Function	Returns the bitwise logical EXCLUSIVE OR of two arguments
Character String Matching	CALL PRXCHANGE Routine	Performs a pattern-matching replacement
Character String Matching	CALL PRXDEBUG Routine	Enables Perl regular expressions in a DATA step to send debug output to the SAS log
Character String Matching	CALL PRXFREE Routine	Frees unneeded memory that was allocated for a Perl regular expression
Character String Matching	CALL PRXNEXT Routine	Returns the position and length of a substring that matches a pattern and iterates over multiple matches within one string
Character String Matching	CALL PRXPOSN Routine	Returns the start position and length for a capture buffer
Character String Matching	CALL PRXSUBSTR Routine	Returns the position and length of a substring that matches a pattern
Character String Matching	CALL RXCHANGE Routine	Changes one or more substrings that match a pattern
Character String Matching	CALL RXFREE Routine	Frees memory allocated by other regular expression (RX) functions and CALL routines
Character String Matching	CALL RXSUBSTR Routine	Finds the position, length, and score of a substring that matches a pattern
Character String Matching	PRXCHANGE Function	Performs a pattern-matching replacement
Character String Matching	PRXMATCH Function	Searches for a pattern match and returns the position at which the pattern is found
Character String Matching	PRXPAREN Function	Returns the last bracket match for which there is a match in a pattern
Character String Matching	PRXPARSE Function	Compiles a Perl regular expression (PRX) that can be used for pattern matching of a character value
Character String Matching	PRXPOSN Function	Returns the value for a capture buffer
Character String Matching	RXMATCH Function	Finds the beginning of a substring that matches a pattern
Character String Matching	RXPARSE Function	Parses a pattern
Character	ANYALNUM Function	Searches a character string for an alphanumeric character and returns the first position at which it is found
Character	ANYALPHA Function	Searches a character string for an alphabetic character and returns the first position at which it is found
Character	ANYCNTRL Function	Searches a character string for a control character and returns the first position at which it is found
Character	ANYDIGIT Function	Searches a character string for a digit and returns the first position at which it is found
Character	ANYFIRST Function	Searches a character string for a character that is valid as the first character in a SAS variable name under VALIDVARNAME=V7, and returns the first position at which that character is found
Character	ANYGRAPH Function	Searches a character string for a graphical character and returns the first position at which it is found
Character	ANYLOWER Function	Searches a character string for a lowercase letter and returns the first position at which it is found
Character	ANYNAME Function	Searches a character string for a character that is valid in a SAS variable name under VALIDVARNAME=V7, and returns the first position at which that character is found
Character	ANYPRINT Function	Searches a character string for a printable character and returns the first position at which it is found
Character	ANYPUNCT Function	Searches a character string for a punctuation character and returns the first position at which it is found
Character	ANYSPACE Function	Searches a character string for a white-space character (blank, horizontal and vertical tab, carriage return, line feed, form feed) and returns the first position at which it is found
Character	ANYUPPER Function	Searches a character string for an uppercase letter and returns the first position at which it is found
Character	ANYXDIGIT Function	Searches a character string for a hexadecimal character that represents a digit and returns the first position at which that character is found
Character	BYTE Function	Returns one character in the ASCII or the EBCDIC collating sequence
Character	CALL CATS Routine	Concatenates character strings and removes leading and trailing blanks
Character	CALL CATT Routine	Concatenates character strings and removes trailing blanks
Character	CALL CATX Routine	Concatenates character strings, removes leading and trailing blanks, and inserts separators
Character	CALL COMPCOST Routine	Sets the costs of operations for later use by the COMPGED function
Character	CALL MISSING Routine	Assigns a missing value to the specified character or numeric variables.
Character	CALL SCAN Routine	Returns the position and length of a given word from a character expression

Character	CALL SCANQ Routine	Returns the position and length of a given word from a character expression, and ignores delimiters that are enclosed in quotation marks
Character	CAT Function	Concatenates character strings without removing leading or trailing blanks
Character	CATS Function	Concatenates character strings and removes leading and trailing blanks
Character	CATT Function	Concatenates character strings and removes trailing blanks
Character	CATX Function	Concatenates character strings, removes leading and trailing blanks, and inserts separators
Character	CHOOSEC Function	Returns a character value that represents the results of choosing from a list of arguments
Character	CHOOSEN Function	Returns a numeric value that represents the results of choosing from a list of arguments
Character	COALESCEC Function	Returns the first non-missing value from a list of character arguments.
Character	COLLATE Function	Returns an ASCII or EBCDIC collating sequence character string
Character	COMPARE Function	Returns the position of the leftmost character by which two strings differ, or returns 0 if there is no difference
Character	COMPBL Function	Removes multiple blanks from a character string
Character	COMPGED Function	Compares two strings by computing the generalized edit distance
Character	COMPLEV Function	Compares two strings by computing the Levenshtein edit distance
Character	COMPRESS Function	Removes specific characters from a character string
Character	COUNT Function	Counts the number of times that a specific substring of characters appears within a character string that you specify
Character	COUNTC Function	Counts the number of specific characters that either appear or do not appear within a character string that you specify
Character	DEQUOTE Function	Removes matching quotation marks from a character string that begins with an individual quotation mark and deletes everything that is to the right of the closing quotation mark
Character	FIND Function	Searches for a specific substring of characters within a character string that you specify
Character	FINDC Function	Searches for specific characters that either appear or do not appear within a character string that you specify
Character	IFC Function	Returns a character value of an expression based on whether the expression is true, false, or missing
Character	IFN Function	Returns a numeric value of an expression based on whether the expression is true, false, or missing
Character	INDEX Function	Searches a character expression for a string of characters
Character	INDEXC Function	Searches a character expression for specific characters
Character	INDEXW Function	Searches a character expression for a specified string as a word
Character	LEFT Function	Left aligns a SAS character expression
Character	LENGTH Function	Returns the length of a non-blank character string, excluding trailing blanks, and returns 1 for a blank character string
Character	LENGTHC Function	Returns the length of a character string, including trailing blanks
Character	LENGTHM Function	Returns the amount of memory (in bytes) that is allocated for a character string
Character	LENGTHN Function	Returns the length of a non-blank character string, excluding trailing blanks, and returns 0 for a blank character string
Character	LOWCASE Function	Converts all letters in an argument to lowercase
Character	MISSING Function	Returns a numeric result that indicates whether the argument contains a missing value
Character	NLITERAL Function	Converts a character string that you specify to a SAS name literal (n-literal)
Character	NOTALNUM Function	Searches a character string for a non-alphanumeric character and returns the first position at which it is found
Character	NOTALPHA Function	Searches a character string for a non-alphabetic character and returns the first position at which it is found
Character	NOTCNTRL Function	Searches a character string for a character that is not a control character and returns the first position at which it is found
Character	NOTDIGIT Function	Searches a character string for any character that is not a digit and returns the first position at which that character is found
Character	NOTFIRST Function	Searches a character string for an invalid first character in a SAS variable name under VALIDVARNAME=V7, and returns the first position at which that character is found
Character	NOTGRAPH Function	Searches a character string for a non-graphical character and returns the first position at which it is found
Character	NOTLOWER Function	Searches a character string for a character that is not a lowercase letter and returns the first position at which that character is found
Character	NOTNAME Function	Searches a character string for an invalid character in a SAS variable name under VALIDVARNAME=V7, and returns the first position at which that character is found
Character	NOTPRINT Function	Searches a character string for a non-printable character and returns the first position at which it is found
Character	NOTPUNCT Function	Searches a character string for a character that is not a punctuation character and returns the first position at which it is found
Character	NOTSPACE Function	Searches a character string for a character that is not a white-space character (blank, horizontal and vertical tab, carriage return, line feed, form feed) and

		returns the first position at which it is found
Character	NOTUPPER Function	Searches a character string for a character that is not an uppercase letter and returns the first position at which that character is found
Character	NOTXDIGIT Function	Searches a character string for a character that is not a hexadecimal digit and returns the first position at which that character is found
Character	NVALID Function	Checks a character string for validity for use as a SAS variable name in a SAS statement
Character	PROPCASE Function	Converts all words in an argument to proper case
Character	QUOTE Function	Adds double quotation marks to a character value
Character	RANK Function	Returns the position of a character in the ASCII or EBCDIC collating sequence
Character	REPEAT Function	Repeats a character expression
Character	REVERSE Function	Reverses a character expression
Character	RIGHT Function	Right aligns a character expression
Character	SCAN Function	Selects a given word from a character expression
Character	SCANQ Function	Returns the nth word from a character expression, ignoring delimiters that are enclosed in quotation marks
Character	SOUNDEX Function	Encodes a string to facilitate searching
Character	SPEDIS Function	Determines the likelihood of two words matching, expressed as the asymmetric spelling distance between the two words
Character	STRIP Function	Returns a character string with all leading and trailing blanks removed
Character	SUBPAD Function	Returns a substring that has a length you specify, using blank padding if necessary
Character	SUBSTR (left of =) Function	Replaces character value contents
Character	SUBSTR (right of =) Function	Extracts a substring from an argument
Character	SUBSTRN Function	Returns a substring, allowing a result with a length of zero
Character	TRANSLATE Function	Replaces specific characters in a character expression
Character	TRANTAB Function	Transcodes a data string by using a translation table
Character	TRANWRD Function	Replaces or removes all occurrences of a word in a character string
Character	TRIM Function	Removes trailing blanks from character expressions and returns one blank if the expression is missing
Character	TRIMN Function	Removes trailing blanks from character expressions and returns a null string (zero blanks) if the expression is missing
Character	UPCASE Function	Converts all letters in an argument to uppercase
Character	VERIFY Function	Returns the position of the first character that is unique to an expression
Currency Conversion	EUROCURR Function	Converts one European currency to another
DBCS	KCOMPARE Function	Returns the result of a comparison of character strings
DBCS	KCOMPRESS Function	Removes specific characters from a character string
DBCS	KCOUNT Function	Returns the number of double-byte characters in a string
DBCS	KCVT Function	Converts data from an encoding code to another encoding code
DBCS	KINDEX Function	Searches a character expression for a string of characters
DBCS	KINDEXC Function	Searches a character expression for specific characters
DBCS	KLEFT Function	Left aligns a character expression by removing unnecessary leading DBCS blanks and SO/SI
DBCS	KLENGTH Function	Returns the length of an argument
DBCS	KLOWCASE Function	Converts all letters in an argument to lowercase
DBCS	KREVERSE Function	Reverses a character expression
DBCS	KRIGHT Function	Right aligns a character expression by trimming trailing DBCS blanks and SO/SI
DBCS	KSCAN Function	Selects a specific word from a character expression
DBCS	KSTRCAT Function	Concatenates two or more character strings
DBCS	KSUBSTR Function	Extracts a substring from an argument
DBCS	KSUBSTRB Function	Extracts a substring from an argument according to the byte position of the substring in the argument
DBCS	KTRANSLATE Function	Replaces specific characters in a character expression
DBCS	KTRIM Function	Removes trailing DBCS blanks and SO/SI from character expressions
DBCS	KTRUNCATE Function	Truncates a numeric value to a specified length
DBCS	KUPCASE Function	Converts all single-byte letters in an argument to uppercase
DBCS	KUPDATE Function	Inserts, deletes, and replaces character value contents
DBCS	KUPDATEB Function	Inserts, deletes, and replaces the contents of the character value according to the byte position of the character value in the argument
DBCS	KVERIFY Function	Returns the position of the first character that is unique to an expression
Date and Time	DATDIF Function	Returns the number of days between two dates
Date and Time	DATE Function	Returns the current date as a SAS date value
Date and Time	DATEJUL Function	Converts a Julian date to a SAS date value
Date and Time	DATEPART Function	Extracts the date from a SAS datetime value
Date and Time	DATETIME Function	Returns the current date and time of day as a SAS datetime value
Date and Time	DAY Function	Returns the day of the month from a SAS date value
Date and Time	DHMS Function	Returns a SAS datetime value from date, hour, minute, and second
Date and Time	HMS Function	Returns a SAS time value from hour, minute, and second values
Date and Time	HOUR Function	Returns the hour from a SAS time or datetime value
Date and Time	INTCK Function	Returns the integer count of the number of interval boundaries between two

		dates, two times, or two datetime values
Date and Time	INTNX Function	Increments a date, time, or datetime value by a given interval or intervals, and returns a date, time, or datetime value
Date and Time	JULDATE Function	Returns the Julian date from a SAS date value
Date and Time	JULDATE7 Function	Returns a seven-digit Julian date from a SAS date value
Date and Time	MDY Function	Returns a SAS date value from month, day, and year values
Date and Time	MINUTE Function	Returns the minute from a SAS time or datetime value
Date and Time	MONTH Function	Returns the month from a SAS date value
Date and Time	NLDATE Function	Converts the SAS date value to the date value of the specified locale using the date-format modifiers
Date and Time	NLDATM Function	Converts the SAS datetime values to the time value of the specified locale using the datetime format modifiers
Date and Time	NLTIME Function	Converts the SAS time or datetime value to the time value of the specified locale using the time-format modifiers
Date and Time	QTR Function	Returns the quarter of the year from a SAS date value
Date and Time	SECOND Function	Returns the second from a SAS time or datetime value
Date and Time	TIME Function	Returns the current time of day
Date and Time	TIMEPART Function	Extracts a time value from a SAS datetime value
Date and Time	TODAY Function	Returns the current date as a SAS date value
Date and Time	WEEK Function	Returns the week number value
Date and Time	WEEKDAY Function	Returns the day of the week from a SAS date value
Date and Time	YEAR Function	Returns the year from a SAS date value
Date and Time	YRDIF Function	Returns the difference in years between two dates
Date and Time	YYQ Function	Returns a SAS date value from the year and quarter
Descriptive Statistics	CSS Function	Returns the corrected sum of squares
Descriptive Statistics	CV Function	Returns the coefficient of variation
Descriptive Statistics	GEOMEAN Function	Returns the geometric mean
Descriptive Statistics	GEOMEANZ Function	Returns the geometric mean, using zero fuzzing
Descriptive Statistics	HARMEAN Function	Returns the harmonic mean
Descriptive Statistics	HARMEANZ Function	Returns the harmonic mean, using zero fuzzing
Descriptive Statistics	IQR Function	Returns the interquartile range
Descriptive Statistics	KURTOSIS Function	Returns the kurtosis
Descriptive Statistics	LARGEST Function	Returns the kth largest non-missing value
Descriptive Statistics	MAD Function	Returns the median absolute deviation from the median
Descriptive Statistics	MAX Function	Returns the largest value
Descriptive Statistics	MEAN Function	Returns the arithmetic mean (average)
Descriptive Statistics	MEDIAN Function	Computes median values
Descriptive Statistics	MIN Function	Returns the smallest value
Descriptive Statistics	MISSING Function	Returns a numeric result that indicates whether the argument contains a missing value
Descriptive Statistics	N Function	Returns the number of nonmissing values
Descriptive Statistics	NMISS Function	Returns the number of missing values
Descriptive Statistics	ORDINAL Function	Returns any specified order statistic
Descriptive Statistics	PCTL Function	Computes percentiles
Descriptive Statistics	RANGE Function	Returns the range of values
Descriptive Statistics	RMS Function	Returns the root mean square
Descriptive Statistics	SKEWNESS Function	Returns the skewness
Descriptive Statistics	SMALLEST Function	Returns the kth smallest nonmissing value
Descriptive Statistics	STD Function	Returns the standard deviation
Descriptive Statistics	STDERR Function	Returns the standard error of the mean
Descriptive Statistics	SUM Function	Returns the sum of the nonmissing arguments
Descriptive Statistics	USS Function	Returns the uncorrected sum of squares
Descriptive Statistics	VAR Function	Returns the variance
External Files	DCLOSE Function	Closes a directory that was opened by the DOPEN function
External Files	DINFO Function	Returns information about a directory
External Files	DNUM Function	Returns the number of members in a directory
External Files	DOPEN Function	Opens a directory and returns a directory identifier value
External Files	DOPTNAME Function	Returns directory attribute information
External Files	DOPTNUM Function	Returns the number of information items that are available for a directory
External Files	DREAD Function	Returns the name of a directory member
External Files	DROPNOTE Function	Deletes a note marker from a SAS data set or an external file
External Files	FAPPEND Function	Appends the current record to the end of an external file
External Files	FCLOSE Function	Closes an external file, directory, or directory member
External Files	FCOL Function	Returns the current column position in the File Data Buffer (FDB)
External Files	FDELETE Function	Deletes an external file or an empty directory
External Files	FEXIST Function	Verifies the existence of an external file associated with a fileref
External Files	FGET Function	Copies data from the File Data Buffer (FDB) into a variable
External Files	FILEEXIST Function	Verifies the existence of an external file by its physical name
External Files	FILENAME Function	Assigns or deassigns a fileref to an external file, directory, or output device
External Files	FILEREF Function	Verifies that a fileref has been assigned for the current SAS session

External Files	FINFO Function	Returns the value of a file information item
External Files	FNOTE Function	Identifies the last record that was read and returns a value that FPOINT can use
External Files	FOPEN Function	Opens an external file and returns a file identifier value
External Files	FOPTNAME Function	Returns the name of an item of information about a file
External Files	FOPTNUM Function	Returns the number of information items that are available for an external file
External Files	FPOINT Function	Positions the read pointer on the next record to be read
External Files	FPOS Function	Sets the position of the column pointer in the File Data Buffer (FDB)
External Files	FPUT Function	Moves data to the File Data Buffer (FDB) of an external file, starting at the FDB's current column position
External Files	FREAD Function	Reads a record from an external file into the File Data Buffer (FDB)
External Files	FREWIND Function	Positions the file pointer to the start of the file
External Files	FRLEN Function	Returns the size of the last record read, or, if the file is opened for output, returns the current record size
External Files	FSEP Function	Sets the token delimiters for the FGET function
External Files	FWRITE Function	Writes a record to an external file
External Files	MOPEN Function	Opens a file by directory id and member name, and returns the file identifier or a 0
External Files	PATHNAME Function	Returns the physical name of a SAS data library or of an external file, or returns a blank
External Files	SYSMSG Function	Returns the text of error messages or warning messages from the last data set or external file function execution
External Files	SYSRC Function	Returns a system error number
External Routines	CALL MODULE Routine	Calls the external routine without any return code
External Routines	CALL MODULEI Routine	Calls the external routine without any return code (in IML environment only)
External Routines	MODULEC Function	Calls an external routine and returns a character value
External Routines	MODULEIC Function	Calls an external routine and returns a character value (in IML environment only)
External Routines	MODULEIN Function	Calls an external routine and returns a numeric value (in IML environment only)
External Routines	MODULEN Function	Calls an external routine and returns a numeric value
Financial	COMPOUND Function	Returns compound interest parameters
Financial	CONVX Function	Returns the convexity for an enumerated cash flow
Financial	CONVXP Function	Returns the convexity for a periodic cash flow stream, such as a bond
Financial	DACCDB Function	Returns the accumulated declining balance depreciation
Financial	DACCDBSL Function	Returns the accumulated declining balance with conversion to a straight-line depreciation
Financial	DACCSL Function	Returns the accumulated straight-line depreciation
Financial	DACCSYD Function	Returns the accumulated sum-of-years-digits depreciation
Financial	DACCTAB Function	Returns the accumulated depreciation from specified tables
Financial	DEPDB Function	Returns the declining balance depreciation
Financial	DEPDBSL Function	Returns the declining balance with conversion to a straight-line depreciation
Financial	DEPSL Function	Returns the straight-line depreciation
Financial	DEPSYD Function	Returns the sum-of-years-digits depreciation
Financial	DEPTAB Function	Returns the depreciation from specified tables
Financial	DUR Function	Returns the modified duration for an enumerated cash flow
Financial	DURP Function	Returns the modified duration for a periodic cash flow stream, such as a bond
Financial	INTRR Function	Returns the internal rate of return as a fraction
Financial	IRR Function	Returns the internal rate of return as a percentage
Financial	MORT Function	Returns amortization parameters
Financial	NETPV Function	Returns the net present value as a fraction
Financial	NPV Function	Returns the net present value with the rate expressed as a percentage
Financial	PVP Function	Returns the present value for a periodic cash flow stream with repayment of principal at maturity, such as a bond
Financial	SAVING Function	Returns the future value of a periodic saving
Financial	YIELDP Function	Returns the yield-to-maturity for a periodic cash flow stream, such as a bond
Hyperbolic	COSH Function	Returns the hyperbolic cosine
Hyperbolic	SINH Function	Returns the hyperbolic sine
Hyperbolic	TANH Function	Returns the hyperbolic tangent
Macro	CALL EXECUTE Routine	Resolves an argument and issues the resolved value for execution
Macro	CALL SYMPUT Routine	Assigns DATA step information to a macro variable
Macro	CALL SYMPUTX Routine	Assigns a value to a macro variable and removes both leading and trailing blanks
Macro	RESOLVE Function	Returns the resolved value of an argument after it has been processed by the macro facility
Macro	SYMEXIST Function	Returns an indication of the existence of a macro variable
Macro	SYMGET Function	Returns the value of a macro variable during DATA step execution
Macro	SYMGLOBL Function	Returns an indication as to whether a macro variable is in a global scope to the DATA step during DATA step execution.
Macro	SYMLOCAL Function	Returns an indication as to whether a macro variable is in a local scope to the DATA step during DATA step execution
Mathematical	ABS Function	Returns the absolute value

Mathematical	AIRY Function	Returns the value of the airy function
Mathematical	BETA Function	Returns the value of the beta function
Mathematical	CALL ALLPERM Routine	Generates all permutations of the values of several variables
Mathematical	CALL LOGISTIC Routine	Returns the logistic value
Mathematical	CALL SOFTMAX Routine	Returns the softmax value
Mathematical	CALL STDIZE Routine	Standardizes the values of one or more variables
Mathematical	CALL TANH Routine	Returns the hyperbolic tangent
Mathematical	CNONCT Function	Returns the noncentrality parameter from a chi-squared distribution
Mathematical	COALESCE Function	Returns the first non-missing value from a list of numeric arguments.
Mathematical	COMB Function	Computes the number of combinations of n elements taken r at a time
Mathematical	CONSTANT Function	Computes some machine and mathematical constants
Mathematical	DAIRY Function	Returns the derivative of the AIRY function
Mathematical	DEVIANCE Function	Computes the deviance
Mathematical	DIGAMMA Function	Returns the value of the Digamma function
Mathematical	ERF Function	Returns the value of the (normal) error function
Mathematical	ERFC Function	Returns the value of the complementary (normal) error function
Mathematical	EXP Function	Returns the value of the exponential function
Mathematical	FACT Function	Computes a factorial
Mathematical	FNONCT Function	Returns the value of the noncentrality parameter of an F distribution
Mathematical	GAMMA Function	Returns the value of the Gamma function
Mathematical	IBESSEL Function	Returns the value of the modified bessel function
Mathematical	JBESSEL Function	Returns the value of the bessel function
Mathematical	LGAMMA Function	Returns the natural logarithm of the Gamma function
Mathematical	LOG Function	Returns the natural (base e) logarithm
Mathematical	LOG10 Function	Returns the logarithm to the base 10
Mathematical	LOG2 Function	Returns the logarithm to the base 2
Mathematical	LOGBETA Function	Returns the logarithm of the beta function
Mathematical	MOD Function	Returns the remainder from the division of the first argument by the second argument, fuzzed to avoid most unexpected floating-point results
Mathematical	MODZ Function	Returns the remainder from the division of the first argument by the second argument, using zero fuzzing
Mathematical	PERM Function	Computes the number of permutations of n items taken r at a time
Mathematical	SIGN Function	Returns the sign of a value
Mathematical	SQRT Function	Returns the square root of a value
Mathematical	TNONCT Function	Returns the value of the noncentrality parameter from the student's t distribution
Mathematical	TRIGAMMA Function	Returns the value of the Trigamma function
Probability	CDF Function	Computes cumulative distribution functions
Probability	LOGCDF Function	Computes the logarithm of a left cumulative distribution function
Probability	LOGPDF Function	Computes the logarithm of a probability density (mass) function
Probability	LOGSDF Function	Computes the logarithm of a survival function
Probability	PDF Function	Computes probability density (mass) functions
Probability	POISSON Function	Returns the probability from a Poisson distribution
Probability	PROBBETA Function	Returns the probability from a beta distribution
Probability	PROBBNML Function	Returns the probability from a binomial distribution
Probability	PROBBNRM Function	Computes a probability from the bivariate normal distribution
Probability	PROBCHI Function	Returns the probability from a chi-squared distribution
Probability	PROBF Function	Returns the probability from an F distribution
Probability	PROBGAM Function	Returns the probability from a gamma distribution
Probability	PROBHYPR Function	Returns the probability from a hypergeometric distribution
Probability	PROBMC Function	Computes a probability or a quantile from various distributions for multiple comparisons of means
Probability	PROBNEGB Function	Returns the probability from a negative binomial distribution
Probability	PROBNORM Function	Returns the probability from the standard normal distribution
Probability	PROBT Function	Returns the probability from a t distribution
Probability	SDF Function	Computes a survival function
Quantile	BETAINV Function	Returns a quantile from the beta distribution
Quantile	CINV Function	Returns a quantile from the chi-squared distribution
Quantile	FINV Function	Returns a quantile from the F distribution
Quantile	GAMINV Function	Returns a quantile from the gamma distribution
Quantile	PROBIT Function	Returns a quantile from the standard normal distribution
Quantile	QUANTILE Function	Computes the quantile from a specified distribution
Quantile	TINV Function	Returns a quantile from the t distribution
Random Number	CALL RANBIN Routine	Returns a random variate from a binomial distribution
Random Number	CALL RANCAU Routine	Returns a random variate from a Cauchy distribution
Random Number	CALL RANEXP Routine	Returns a random variate from an exponential distribution
Random Number	CALL RANGAM Routine	Returns a random variate from a gamma distribution
Random Number	CALL RANNOR Routine	Returns a random variate from a normal distribution
Random Number	CALL RANPERK Routine	Randomly permutes the values of the arguments, and returns a permutation of k out of n values
Random Number	CALL RANPERM Routine	Randomly permutes the values of the arguments

Random Number	CALL RANPOI Routine	Returns a random variate from a Poisson distribution
Random Number	CALL RANTBL Routine	Returns a random variate from a tabled probability distribution
Random Number	CALL RANTRI Routine	Returns a random variate from a triangular distribution
Random Number	CALL RANUNI Routine	Returns a random variate from a uniform distribution
Random Number	CALL STREAMINIT Routine	Specifies a seed value to use for subsequent random number generation by the RAND function
Random Number	NORMAL Function	Returns a random variate from a normal distribution
Random Number	RANBIN Function	Returns a random variate from a binomial distribution
Random Number	RANCAU Function	Returns a random variate from a Cauchy distribution
Random Number	RAND Function	Generates random numbers from a specified distribution
Random Number	RANEXP Function	Returns a random variate from an exponential distribution
Random Number	RANGAM Function	Returns a random variate from a gamma distribution
Random Number	RANNOR Function	Returns a random variate from a normal distribution
Random Number	RANPOI Function	Returns a random variate from a Poisson distribution
Random Number	RANTBL Function	Returns a random variate from a tabled probability distribution
Random Number	RANTRI Function	Returns a random variate from a triangular distribution
Random Number	RANUNI Function	Returns a random variate from a uniform distribution
Random Number	UNIFORM Function	Returns a random variate from a uniform distribution
SAS File I/O	ATTRC Function	Returns the value of a character attribute for a SAS data set
SAS File I/O	ATTRN Function	Returns the value of a numeric attribute for the specified SAS data set
SAS File I/O	CEXIST Function	Verifies the existence of a SAS catalog or SAS catalog entry
SAS File I/O	CLOSE Function	Closes a SAS data set
SAS File I/O	CUROBS Function	Returns the observation number of the current observation
SAS File I/O	DROPNOTE Function	Deletes a note marker from a SAS data set or an external file
SAS File I/O	DSNAME Function	Returns the SAS data set name that is associated with a data set identifier
SAS File I/O	EXIST Function	Verifies the existence of a SAS data library member
SAS File I/O	FETCH Function	Reads the next nondeleted observation from a SAS data set into the Data Set Data Vector (DDV)
SAS File I/O	FETCHOBS Function	Reads a specified observation from a SAS data set into the Data Set Data Vector (DDV)
SAS File I/O	GETVARC Function	Returns the value of a SAS data set character variable
SAS File I/O	GETVARN Function	Returns the value of a SAS data set numeric variable
SAS File I/O	IORCMSG Function	Returns a formatted error message for _IORC_
SAS File I/O	LIBNAME Function	Assigns or deassigns a libref for a SAS data library
SAS File I/O	LIBREF Function	Verifies that a libref has been assigned
SAS File I/O	NOTE Function	Returns an observation ID for the current observation of a SAS data set
SAS File I/O	OPEN Function	Opens a SAS data set
SAS File I/O	PATHNAME Function	Returns the physical name of a SAS data library or of an external file, or returns a blank
SAS File I/O	POINT Function	Locates an observation identified by the NOTE function
SAS File I/O	REWIND Function	Positions the data set pointer at the beginning of a SAS data set
SAS File I/O	SYSMSG Function	Returns the text of error messages or warning messages from the last data set or external file function execution
SAS File I/O	SYSRC Function	Returns a system error number
SAS File I/O	VARFMT Function	Returns the format assigned to a SAS data set variable
SAS File I/O	VARINFMT Function	Returns the informat assigned to a SAS data set variable
SAS File I/O	VARLABEL Function	Returns the label assigned to a SAS data set variable
SAS File I/O	VARLEN Function	Returns the length of a SAS data set variable
SAS File I/O	VARNAME Function	Returns the name of a SAS data set variable
SAS File I/O	VARNUM Function	Returns the number of a variable's position in a SAS data set
SAS File I/O	VARTYPE Function	Returns the data type of a SAS data set variable
Special	ADDR Function	Returns the memory address of a numeric variable on a 32-bit platform
Special	ADDRLONG Function	Returns the memory address of a character variable on 32-bit and 64-bit platforms
Special	CALL POKE Routine	Writes a value directly into memory on a 32-bit platform
Special	CALL POKELONG Routine	Writes a value directly into memory on 32-bit and 64-bit platforms
Special	CALL SLEEP Routine	Suspends the execution of a program that invokes this call routine for a specified period of time
Special	CALL SYSTEM Routine	Submits an operating environment command for execution
Special	DIF Function	Returns differences between the argument and its nth lag
Special	GETOPTION Function	Returns the value of a SAS system or graphics option
Special	INPUT Function	Returns the value produced when a SAS expression that uses a specified informat expression is read
Special	INPUTC Function	Enables you to specify a character informat at run time
Special	INPUTN Function	Enables you to specify a numeric informat at run time
Special	LAG Function	Returns values from a queue
Special	PEEK Function	Stores the contents of a memory address into a numeric variable on a 32-bit platform
Special	PEEKC Function	Stores the contents of a memory address in a character variable on a 32-bit platform

Special	PEEKCLONG Function	Stores the contents of a memory address in a character variable on 32-bit and 64-bit platforms
Special	PEEKLONG Function	Stores the contents of a memory address in a numeric variable on 32-bit and 64-bit platforms
Special	PTRLONGADD Function	Returns the pointer address as a character variable on 32-bit and 64-bit platforms
Special	PUT Function	Returns a value using a specified format
Special	PUTC Function	Enables you to specify a character format at run time
Special	PUTN Function	Enables you to specify a numeric format at run time
Special	SLEEP Function	Suspends the execution of a program that invokes this function for a specified period of time
Special	SYSGET Function	Returns the value of the specified operating environment variable
Special	SYSPARM Function	Returns the system parameter string
Special	SYSPROCESSID Function	Returns the process id of the current process
Special	SYSPROCESSNAME Function	Returns the process name associated with a given process id or the name of the current process
Special	SYSPROD Function	Determines if a product is licensed
Special	SYSTEM Function	Issues an operating environment command during a SAS session and returns the system return code
Special	UUIDGEN Function	Returns the short or binary form of a Universal Unique Identifier (UUID)
State and ZIP Code	FIPNAME Function	Converts two-digit FIPS codes to uppercase state names
State and ZIP Code	FIPNAMEL Function	Converts two-digit FIPS codes to mixed case state names
State and ZIP Code	FIPSTATE Function	Converts two-digit FIPS codes to two-character state postal codes
State and ZIP Code	STFIPS Function	Converts state postal codes to FIPS state codes
State and ZIP Code	STNAME Function	Converts state postal codes to uppercase state names
State and ZIP Code	STNAMEL Function	Converts state postal codes to mixed case state names
State and ZIP Code	ZIPCITY Function	Returns a city name and the two-character postal code that corresponds to a ZIP code
State and ZIP Code	ZIPFIPS Function	Converts ZIP codes to two-digit FIPS codes
State and ZIP Code	ZIPNAME Function	Converts ZIP codes to uppercase state names
State and ZIP Code	ZIPNAMEL Function	Converts ZIP codes to mixed case state names
State and ZIP Code	ZIPSTATE Function	Converts ZIP codes to two-character state postal codes
Trigonometric	ARCOS Function	Returns the arccosine
Trigonometric	ARSIN Function	Returns the arcsine
Trigonometric	ATAN Function	Returns the arc tangent
Trigonometric	ATAN2 Function	Returns the arc tangent of two numeric variables
Trigonometric	COS Function	Returns the cosine
Trigonometric	SIN Function	Returns the sine
Trigonometric	TAN Function	Returns the tangent
Truncation	CEIL Function	Returns the smallest integer that is greater than or equal to the argument, fuzzed to avoid unexpected floating-point results
Truncation	CEILZ Function	Returns the smallest integer that is greater than or equal to the argument, using zero fuzzing
Truncation	FLOOR Function	Returns the largest integer that is less than or equal to the argument, fuzzed to avoid unexpected floating-point results
Truncation	FLOORZ Function	Returns the largest integer that is less than or equal to the argument, using zero fuzzing
Truncation	FUZZ Function	Returns the nearest integer if the argument is within 1E-12
Truncation	INT Function	Returns the integer value, fuzzed to avoid unexpected floating-point results
Truncation	INTZ Function	Returns the integer portion of the argument, using zero fuzzing
Truncation	ROUND Function	Rounds the first argument to the nearest multiple of the second argument, or to the nearest integer when the second argument is omitted
Truncation	ROUNDE Function	Rounds the first argument to the nearest multiple of the second argument, and returns an even multiple when the first argument is halfway between the two nearest multiples
Truncation	ROUNDZ Function	Rounds the first argument to the nearest multiple of the second argument, with zero fuzzing
Truncation	TRUNC Function	Truncates a numeric value to a specified length
Variable Control	CALL LABEL Routine	Assigns a variable label to a specified character variable
Variable Control	CALL SET Routine	Links SAS data set variables to DATA step or macro variables that have the same name and data type
Variable Control	CALL VNAME Routine	Assigns a variable name as the value of a specified variable
Variable Information	CALL VNEXT Routine	Returns the name, type, and length of a variable that is used in a DATA step
Variable Information	VARRAY Function	Returns a value that indicates whether the specified name is an array
Variable Information	VARRAYX Function	Returns a value that indicates whether the value of the specified argument is an array
Variable Information	VARTRANSCODE Function	Returns the transcode attribute of a SAS data set variable
Variable Information	VFORMAT Function	Returns the format that is associated with the specified variable
Variable Information	VFORMATD Function	Returns the format decimal value that is associated with the specified variable
Variable Information	VFORMATDX Function	Returns the format decimal value that is associated with the value of the specified argument

Variable Information	VFORMATN Function	Returns the format name that is associated with the specified variable
Variable Information	VFORMATNX Function	Returns the format name that is associated with the value of the specified argument
Variable Information	VFORMATW Function	Returns the format width that is associated with the specified variable
Variable Information	VFORMATWX Function	Returns the format width that is associated with the value of the specified argument
Variable Information	VFORMATX Function	Returns the format that is associated with the value of the specified argument
Variable Information	VINARRAY Function	Returns a value that indicates whether the specified variable is a member of an array
Variable Information	VINARRAYX Function	Returns a value that indicates whether the value of the specified argument is a member of an array
Variable Information	VINFORMAT Function	Returns the informat that is associated with the specified variable
Variable Information	VINFORMATD Function	Returns the informat decimal value that is associated with the specified variable
Variable Information	VINFORMATDX Function	Returns the informat decimal value that is associated with the value of the specified argument
Variable Information	VINFORMATN Function	Returns the informat name that is associated with the specified variable
Variable Information	VINFORMATNX Function	Returns the informat name that is associated with the value of the specified argument
Variable Information	VINFORMATW Function	Returns the informat width that is associated with the specified variable
Variable Information	VINFORMATWX Function	Returns the informat width that is associated with the value of the specified argument
Variable Information	VINFORMATX Function	Returns the informat that is associated with the value of the specified argument
Variable Information	VLABEL Function	Returns the label that is associated with the specified variable
Variable Information	VLABELX Function	Returns the variable label for the value of the specified argument
Variable Information	VLENGTH Function	Returns the compile-time (allocated) size of the specified variable
Variable Information	VLENGTHX Function	Returns the compile-time (allocated) size for the value of the specified argument
Variable Information	VNAME Function	Returns the name of the specified variable
Variable Information	VNAMEX Function	Validates the value of the specified argument as a variable name
Variable Information	VTRANSCODE Function	Returns a value that indicates whether transcoding is on or off for the specified character variable
Variable Information	VTRANSCODEX Function	Returns a value that indicates whether transcoding is on or off for the specified argument
Variable Information	VTYPE Function	Returns the type (character or numeric) of the specified variable
Variable Information	VTYPEX Function	Returns the type (character or numeric) for the value of the specified argument
Variable Information	VVALUE Function	Returns the formatted value that is associated with the variable that you specify
Variable Information	VVALUEX Function	Returns the formatted value that is associated with the argument that you specify
Web Tools	HTMLDECODE Function	Decodes a string containing HTML numeric character references or HTML character entity references and returns the decoded string
Web Tools	HTMLENCODE Function	Encodes characters using HTML character entity references and returns the encoded string
Web Tools	URLDECODE Function	Returns a string that was decoded using the URL escape syntax
Web Tools	URLENCODE Function	Returns a string that was encoded using the URL escape syntax