

STAT 541

Creating Functions And Subroutines

Outline

- About PROC FCMP
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- Creating a Subroutine

PROC FCMP Syntax

- PROC FCMP statement must come first. The OUTLIB= option (which specifies a 3-level name of an output package where the compiled functions are stored) is REQUIRED.
- The FUNCTION statement gives the name of the function (with one or more optional arguments) and indicates the type of value (character or numeric) that is returned by the function.
- The RETURN statement specifies the value that is returned by the function.
- The ENDSUB statement ends the function definition.

Using the Function

- To use the function in a DATA step or in a PROC step, you must first specify the CMPLIB= system option.
- Here you specify the 2-level name of the data set where the functions are stored.
- Then the function can be used in a DATA step or in certain supported PROC steps.

Creating a Subroutine with PROC FCMP

- The SUBROUTINE statement in PROC FCMP names a block of code with parameters that can be used later.
- The subroutine is similar in purpose to a macro.
- The OUTARGS statements lists the output parameters that get updated when the subroutine runs.

Differences between Functions and Subroutines

- A function is an expression and returns a value, whereas a subroutine is a statement and modifies arguments.
- A function can be part of a SAS statement, whereas a subroutine is always used with a CALL statement.

Function	Subroutine
Is an Expression	Is a Statement
Returns a Value	Modifies arguments
Used in a statement	Used with CALL

Using Functions and Subroutines Created with PROC FCMP

- Most SAS programming language features can be used similarly in PROC FCMP
- In the DATA step, you can call function and subroutines you've created just as you can call any built-in SAS functions and subroutines
- Created functions and subroutines can be used in some procedures, such as PROC GENMOD, PROC MODEL, PROC MCMC, PROC NLIN, PROC NLMIXED, and others.

Examples of Functions and Subroutines

- The “ReverseName” function works on character variables.
- The “CombineName” function is similar, but takes two arguments.
- See example of simple inverse subroutine.
- The “Win Percentage” subroutine can be used on several variables.
- The “Years Until Turning 65” subroutine works with date variables.