

“To err is human, to forgive divine.”

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Introduction

This presentation will introduce the user to troubleshooting SAS error messages.

The user will learn how to locate and correct logical programming errors, identify and edit syntax errors, and review and cleanse data errors.

Error Correction Agenda

- SAS Supervisor
- Error types
- Interpreting the SAS log
- Program development checklists

The “Super” SAS Supervisor

SAS Supervisor Knowledge

- Error understanding requires knowledge of the SAS Supervisor.
- The SAS Supervisor is part of SAS and it is responsible for executing SAS programs.

SAS Supervisor Program Execution

- Syntax check reads statements and data
- Statement translation into machine code
- Data set creation
- Procedure calls
- Error messages printed
- Terminates job

“Smart” SAS Supervisor

- Data step statement form and types
- Proc step statement types and options
- Scans all statements as individual words until to process program steps
- Error location flagged and explanation printed
- Unrecognizable words are assumed to be errors

Error Processing

- Errors or detected error locations are underlined and uniquely numbered
- SAS syntax check mode reads remaining program statements for syntax and underlining

Batch or non-interactive processing

- Data step errors cause syntax mode for remainder of program
- Data or Proc steps that create external files or data sets are not executed
- SAS data set procedures executed do not contain any observations
- Non-SAS data sets execute

- Proc step syntax errors are isolated within the Proc step
- Errors produce log messages written upon step completion

“You’ll get all types”

Error Types

Error Types

- Syntax
- Execution-time
- Data
- Semantic

Syntax Errors

- Found in the SAS statements of the program
- Examples are misspelled keywords, missing or invalid punctuation, and invalid statement or data set options
- Detected as each Data or Proc step is compiled

Execution-time errors

- Uncovered when submitted for execution
- Minor errors of this type produce notes in the SAS log but the program is allowed to run to completion
- Major errors cause error messages and the halt of all processing

Data Errors

- A type of execution-time error
- Raw data contains invalid values
- An example is numeric variables in the INPUT statement for character data
- Do not cause programs to halt but do generate SAS log notes.

Semantic Errors

- Another type of execution-time errors
- SAS statement form is correct but some element usage is wrong
- Wrong number of function arguments, numeric variable name for character variables, and an unassigned libref

“Check your log.”

Interpreting the SAS log

Error detection

- Upon compilation: ERROR printed; error location identified; and error explanation printed.
- Program execution attempted in a logical fashion depending on SAS statements
- Multiple errors in the same program may not be detected or detected differently in a group of errors during the first execution.

Execution-time error detection

- Illogical mathematical operations
- Unsorted observations for BY-group processing
- Misspelled INFILE statement references

Execution-time error processing

- Notes, warnings, error messages printed by Supervisor
- Program data vector values may be listed
- Error severity determines program halt or continuation

Data error detection

- Processing continues
- Note describing the error are printed.
- Input Buffer values are listed.
- Program Data Vector values are listed
- SAS can not detect intended data submission.

Program Data Vector

- `_N_` (Data step iteration)
- `_ERROR_` (0 or 1)
- Automatic variables generated by SAS printed but not stored in data set.

Common Syntax errors

- Syntax check, especially semi-colons.
 - Beginning and ending quotation marks, single or double, must match.
 - Keywords begin SAS statements except in assignment or sum statements.
 - DO and SELECT statements must be concluded with an END statement.
“Go down your list.”
- Program development checklists

Error Checklist

- Syntax
- Program Order
- Input statement and data

Syntax checklist

- Statements end in semi-colon
- Single or double quotations marks match
- Begin most SAS statements with a SAS keyword except in assignment statements and sum statements
- Do and Select statements should be followed with an END statement

Program order checklist

- Assure that SAS statements are properly processed by sequential order.
- For instance, INFILE statements must precede INPUT statements.
- End steps with a Run statement to prompt the previous step to be execute.

Input Statement and Data Checklist

- Input statement should agree with to data values.
- Method of input corresponds with data arrangement.

“Drop me a line.”

Contact Information

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