Optimization, Efficiency Tips & Techniques

Course Length: 2 days   **CEUs** 1.2
Format: Hands on Training

AUDIENCE

Working efficiently in SAS® is crucial, especially when processing large files or information on computers with resource or technology constraints. Students will learn techniques to reduce program execution time and unnecessary use of resources. Merging many data files has always been a resource burden. We examine the different ways of pulling data together without using merge processing. We found other techniques that save coding and processing time, while being easy to use. We discuss how indexes help speed up searching through data. This class also covers how to give different views of the same data to different users, without giving them code. Coding for the end user becomes much simpler. We teach how to improve the performance and efficiency of your SAS programs. This course is designed for experienced SAS users to enhance existing skills. Efficient SAS programming methods and techniques are studied in depth.

BENEFITS

After completing this course, you should be able to:
- Understand how to benchmark to choose the right programming method
- Organize and sort SAS data sets
- Index and compress SAS data sets
- Evaluate the best table look up techniques to avoid merging
- Make the best use of system resources

PREREQUISITES

Completion of SAS Programming II: Data Manipulation Using the Data Step and an understanding of:
- HTML output
- Creating summary information
- SAS functions
- Transforming data
- DROP, KEEP and RENAME processing
- Match merging and interleaving data
- Data step compile and execution phases
- Basic operating system commands
- Operating system file structures
- Libname statements
- Array Processing and Do Loops
- Macro Processing

COURSE TOPICS

Efficiency Techniques and Benchmarking
- CPU, I/O and memory
- STIMER, FULLSTIMER and MEMRPT options

Optimization, Efficiency Tips & Techniques

- Reducing disk space
- Reducing memory requirements with BUFFNO and BUFSIZE

Data Storage Methods and Compression

- SAS engines
- Space reduction
- Data set compression

Indexing Techniques and Uses

- When to use indexes
- Creating and deleting indexes
- Index advantages and disadvantages

SAS Data Set Modification and Space Reduction

- Data set library structure
- Multi-engine architecture
- Proc Access
- Stored Program facility
- Data step views
- Using the libname statement against RDBMs

Table Lookup Techniques

- Looksups using formats
- Looksups using indexes and KEY=
- Looksups using merges
- Looksups using arrays
- Looksups using SQL joins
- Looksups using macros

The Where Clause and Data Set Options

- The where clause comparisons
- Combining data set options
- Keep and drop options
- Other data set options

Sorting Techniques and Efficiencies for Large Data Sets

- Working with duplicates
- Controlling secondary sort orders
- Using the sort flag
- SAS sort vs. Host Sort
- Using the where statement
- Appending
- Using the tagsort option
- Determining sorting resources
- Sorting RDBMs information

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Managing Multiple Data Sets
- Interleaving, concatenating and merging data sets
- Updating and modifying data sets
- Using the OPEN= SET statement option for efficiency

Primary Efficiency Considerations
- When to use indexes
- Creating and deleting indexes
- Index advantages and disadvantages

SAS Data Set Modification and Space Reduction
- Efficiently reading data
- Efficiently creating multiple files
- Using the contribution (IN=) option
- The difference between CLASS and BY statements
- Overlaying data sets to save space

Rapid Program Development
- Setting up generic code for reuse
- Using macros
- Maintaining format libraries