

Paper 240-27

10 Things Experienced SAS® Programmers Don't Know – But Should

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ABSTRACT

Many SAS programmers have years of experience, but sometimes only within a narrow set of procedures and techniques. For this paper, numerous SAS professionals were asked for their views. These are their recommendations for an advanced SAS Programmer skill set.

The list covers SAS Version 6 as well as Version 8. Base SAS products listed as a part of this are ODS, Proc SQL dictionary tables, data step, macro language, Proc Report. Each topic includes references for further information.

INTRODUCTION

What makes a well-rounded, experienced SAS programmer?

Why do some of us get locked in to a particular SAS approach to programming tasks? What are 10 things that experienced SAS programmers should know well?

These questions were posed to several audiences within the past year. The first round went to the many worldwide participants in the SAS-L discussion group. Next enlisted were a more select group of the author's professional SAS contacts. Eighteen final sets of responses scored on a 1-to-10 scale were tallied. Many more impromptu answers as well as thoughtful essays were received.

Some of the suggestions were technically specific, for example, "the Scan function", or Proc Report. Many others suggested foundational theory, such as System Life Cycle Development methodology. Some suggested that it is an unreasonable question; that programming skill is specific to the industry you work in. Still others waxed philosophical: "Programming and musical composition have much in common", or "the 'well-rounded SAS programmers' that I know got that way either by eating too much or by first learning how to do a few things well and then studying alternative methods".

This paper lists some of these potentially alternative methods. The 10 areas that appeared with most emphasis will be shown of course, but this will also present some of the rest in list form.

LEARNING SAS SKILLS

Included is also guidance to answer the question,

"How do I learn xyz in SAS?"

In some cases specific suggestions were offered with respect to learning the skill in question. Otherwise, general advice from newsgroup participants can be summarized as follows

"SAS Institute offers training courses...I highly recommend"

"SAS course notes and SUGI ...conference proceedings for help first before... manuals "

My favorite is "SAS Language and Procedures".

So you want to become a SAS Programmer

<http://groups.google.com/groups?hl=en&selm=88f2gg%24r60%241%40nnrp1.deja.com>

THE TOP TEN (1= MOST IMPORTANT, 10=LEAST)

1. Macros - basic knowledge of macro language (Score=63/180)
Learning help:

- "SAS manuals 'SAS Macro Language' and 'SAS Guide to Macro Processing' are the best. You will gain a lot with playing examples in both books.";
- "The Little SAS Book, A Primer", 2nd edition."
- "Carpenter's Complete Guide to the SAS Macro Language"

2. Data step - basic knowledge of (60)

- The Secret Life of the Data Step, by Thomas Miron (SUGI21-26)

3. Data file manipulation - INFILE, UPDATE, SET intricacies etc (59)

4. ODS - capabilities and more broadly, SAS8 improvements (53)

5. Efficiency (49)

- PDV width may be more significant than number of rows
- Sorting by character variables is more efficient than sorting by numeric variables
- In terms of programming time, you'll save a lot by getting rid of the warning messages up front

6. Data Step Vector - how it works (47)

- The Secret Life of the Data Step, by Thomas Miron (SUGI21-26)

7. Macros - knowing how to write macros that write SAS programs (46)

8. System Development Life Cycle processes (44)

- Code Complete by Steve McConnell

9. SAS Help - How to get it (40)

- SAS Tech Support <http://www.sas.com/service/index.html>
- SAS Tech Support (919) 877-8008 (be sure to have your site number)
- WWW newsgroup comp.soft-sys.sas
- <http://groups.google.com> using Advanced Group Search with comp.soft-sys.sas as the Group (contains archives of the newsgroup discussions)
- SAS8 Help CD

10. Proc Report (34)

THE NEXT 12 (RECEIVED AT LEAST 4 VOTES)

11. SQL Dictionary tables - basics of retrieving SAS metadata (31)
 - Data About Data: An Introduction To Dictionary Tables by Dilorio and Michal, SUGI21-32
12. Proc Summary/Means (28)
13. Debugging Techniques - DEBUG facility and other techniques (27)
14. Proc SQL (27)
15. Structured programming concepts (24)
16. Proc Format (18)
17. Relational Database Design (18)
18. Web technology - HTML, JavaScript, SAS IntrNet, etc (17)
19. Your Operating System native (and other) languages - REXX, unix scripts, VBScript, Syncsort (17)
20. Proc Transpose (16)
21. Data step reports - "Data _null_" report writing (14)
22. SCL - SCL Functions usable in e.g., Base SAS data steps (14)
 - SCL for the Rest of Us: Nonvisual Uses of Screen Control Language by Michael L. Davis

CONCLUSION

This paper lists the results of an informal survey of experienced SAS programmers regarding the most important skills needed by experienced SAS programmers. Future surveys driven by SAS programmers should include greater diversity in the sample and possibly more explicit recommended-reading/learning questions.

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