

**Book Review:**

**Title:** *Proc SQL Beyond the Basics Using SAS*

**Author:** Kirk Paul Lafler

**Reviewed by:** **Bill Fehlner**, principal technical training specialist, SAS (Canada). Bill Fehlner designs and teaches SAS courses on a number of topics, including data warehousing, programming for ETL, and application development. Bill also presents papers at national and local user group meetings on a regular basis, and provides assistance on consulting projects. Bill received his Ph.D. in theoretical physics from the University of Illinois in 1971 and joined SAS in 1989 after 20 years of research, teaching, administration and consulting at four universities.

**Review:**

The primary value of this book is the task orientation it brings to SQL. It is a source book for SAS programmers with at least some limited experience using PROC SQL. Although a newcomer to SQL could certainly learn from this book where SQL might be used, and chapters generally begin with fundamental examples, it would be difficult to use this book as an entry point to programming in SQL.

It's a recent publication, released in 2004, and discusses SQL features available in SAS 8.2. Advanced topics include truncated string comparison operators, integrity constraints, use of short numeric variables, and a list of undocumented SQL options. Good references provide the reader with an opportunity to continue exploring beyond the limits of this book.

Lafler is skillful in motivating the reader to explore the details of SQL. He begins each chapter and section by carefully, yet simply, explaining the potential benefits of the topic at hand. For example, the first two pages in Chapter 8 carefully introduce views, "one of the more powerful features available in the SQL procedure." Lafler chooses to discuss the same SQL element in multiple chapters when this one element implements a number of different tasks.

Chapter 1 provides a short, self-contained summary of database design, just enough to appreciate that the case study is consistent with good database design. It makes normalization strategies understandable. Chapter 2 focuses on working with data in PROC SQL. This includes a major section on the dictionary tables. "Dictionary tables and their contents permit a SAS session's activities to be easily accessed and monitored." The dictionary tables are then used in Chapter 4 to develop macro tools.

Chapter 3 presents examples on how output can be formatted and produced with PROC SQL. Grouping data, sorting data, and selecting groups with the HAVING clause are covered here. One section illustrates how easy it is to enhance output with the Output Delivery System. Examples are provided for both Rich Text Format and HTML.

In Chapter 4, Lafler explores most of the ways in which conditional logic can be implemented in PROC SQL. This includes WHERE, HAVING, CASE expressions and COALESCE logic, topics that he covers well. The highlight of Chapter 5, which is on creating, populating and deleting tables, is the discussion of integrity constraints, a key component in SAS for maintaining the reliability of a database. The order in which tasks are presented is well thought-out. Unnecessary bells and whistles that would just confuse the discussion are simply ignored.

Chapter 6 discusses modifying and updating tables as well as the creation of indexes. Chapter 7 extends SQL to working with multiple tables, classifying the types of complex queries and then exploring the tasks appropriate to each type. Chapter 8 uses views to implement many tasks, from packaging complex logic, to reducing data redundancy, to providing controlled updates for base tables.

Chapter 9, on troubleshooting and debugging, and Chapter 10, on tuning for performance and efficiency, definitely take the reader beyond the basics. Lafler is practical in these chapters, explaining carefully with examples how various options can improve the performance of an SQL query.

This 365-page book has an effective index as well as good references; SQL references are gathered at the end of the book, and other references are embedded in the text. Lafler at times chooses to leave out some little used constructs in favor of clarity. Nevertheless, this book will assist the reader to extend the value of PROC SQL “beyond the basics”.