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Bible

Paul Nielsen

Microsoft[®] SQL Server[™] 2000 Bible

Paul Nielsen



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About the Authors

Paul Nielsen has been a programmer since 1979 and has focused exclusively on database development since the early '80s. After serving a term with the US Navy Submarine Service as a Data Systems Technician Petty Officer, Paul became a computer trainer and consultant, which led to writing computer magazine articles.

Paul co-authored a book with Peter Norton in the early '90s and contributed several chapters to various programming and database books. He was the initial technical editor for *Access Advisor Magazine*, and has spoken at several computer conferences including Microsoft Tech-Ed, and ICCM.

Over the course of a couple decades, Paul has developed several database projects using a variety of database products and tools. Much of the work has centered on the manufacturing industry, and insurance regulation databases. Recently, Paul was the data modeler and SQL Server developer for a team that built an MRP/II inventory system.

Of the 98,000 who have taken the *BrainBench.com RDBMS Concepts* certification test, at the time of this writing, Paul ranks fifth in the United States.

Currently, Paul is a database developer with Compassion International, a Christian organization dedicated to releasing children from poverty in Jesus' name. He is also a part-time SQL Server instructor with Learning Tree. When not thinking about database development, Paul plays a Taylor guitar, reads the *New Living Translation*, listens to Natalie Cole, and watches his kids grow up way too fast.

Brian Patterson currently works as a software developer in central Illinois. Brian has been writing for various Visual Basic publications since 1994 and has co-authored several .NET related books, including *Migrating to Visual Basic .NET* and *C# Bible*. Brian is exceptionally well rounded and in his spare time he likes to program, write about programming, and read about programming. He can generally be found posting in the MSDN newsgroups and is reachable by e-mail at briandpatterson@msn.com.

Pierre Boutquin is a senior software architect in the treasury of a major Canadian bank, where he helps develop leading-edge market risk management software. He has more than a decade of experience implementing PC-based computer systems, along with an in-depth knowledge of distributed systems design, data warehousing, Visual Basic, Visual C++, and SQL. He has co-authored many programming books and has also contributed material on C#, VB, COM+, XML, and SQL for others. Koshka and Sasha, his two adorable Burmese cats, own most of Pierre's spare time. While petting them, he often thinks how nice it would be to find more time and get back into chess or keep up with news from Belgium, his native country. Pierre can be reached at boutquin@hotmail.com.

Todd Meister is a developer specializing in Microsoft technologies. He has been a developer for over 10 years and has published articles for both *ActiveWeb Developer* and *MSDN Magazine*. Todd can be reached at tmeister@tmeister.com.

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*This work is dedicated to the author of the true Bible,
our heavenly Father, "Hallowed be Thy Name."*

*My heart, love, and blessing goes to you my wife, Melissa,
not for anything you do but because of who you are and
how you complete me. God blessed me greatly the day we met.
I can't imagine any other life or any better life. Thank you
for your love, compassion, faithfulness, and sweetness.
I will never forget.*

Preface

Welcome to this Book

SQL Server is an incredible database product. I have personally developed with about a dozen different database products and I enjoy working with SQL Server more than any other. It offers an excellent mix of performance, reliability, and ease of administration, yet enables the developer to control minute details when desired. SQL Server is a dream system for a database developer. Developing with SQL Server is a pleasure. The first goal of this book is to share with you the fun of working with SQL Server.

SQL Server is a big product. To cover every nuance of every command would consume several thousand pages. With that in mind, the second goal for this book is to provide a concise yet comprehensive guide to SQL Server based on the information I have found most useful in my experience as a database developer, consultant, and instructor.

A wise database developer once showed a box to an apprentice and asked, "How many sides do you see?" The apprentice replied, "There are six sides to the box." The experienced database developer then said, "Users may see six sides, but database developers only see two sides, the inside and the outside. To the database developer, the cool code goes inside the box." This book is about thinking inside the box.

The Writing Style

I don't like filler text, screen shots stepping through wizards, or page-length query results, so this book avoids them. If a result set is long, it is abbreviated with an ellipsis in the listing. Wizards are explained with a numbered list.

Chatty writing tends to get in the way of the facts. First person writing is generally reserved for when I want to write directly to you from my experience, or share my opinion. The goal for the writing style is that every sentence adds value to the book. I doubt I reached that goal, but that was my intent.

Conventions

This book uses the following style guidelines:

- ◆ New terms are *italicized* as they are defined in the text.
- ◆ When code is referenced within the text, the code words are set in mono-space type. Sometimes those same SQL keywords are used as concepts. For example, `inner join` is used both as SQL code and in referring to the concept of a type of join.
- ◆ Some of the code samples are long. To draw attention to the main point of the code, important keywords in code are highlighted in **bold**.
- ◆ For consistency sake, the code conventions are similar to those used by Microsoft SQL Server Books online.

Icons

The following icons are used in this book to offer additional tips and information about the topics in the book:



In several places in this book, material overlaps. For example, when installing SQL Server, one decision has to do with the authentication mode used for security. Rather than constantly refer you to other parts of the book, I've tried to provide enough information so that the immediate issue is covered without being too redundant. Even so, there are numerous cross-references throughout the book so more detail on a topic may be easily looked up.



Best Practice

Best Practice icons indicate where I add to the factual material in the book with my opinions and lessons I've learned from my own experience.



Note icons emphasize additional facts about the topic at hand.



Caution icons caution you about potential negative effects if a procedure or process is not precisely executed.

Walking Through the Book

A well-designed database is born not in the code, but in the planning. The same is true for a book. There's a purpose to the organization of this book. So that you understand the direction and destination of this book, here's the reasoning behind its organization.

Development Philosophy

This book is based on a certain client/server development philosophy. The following themes reverberate throughout the book.

- ◆ Transactional Integrity (ACID) is fundamental to the database.
- ◆ SQL is a set-oriented environment and SQL code should be set-oriented rather than procedural or row-based.
- ◆ The physical database schema is designed to serve the query.
- ◆ Processing should be moved as close to the data as possible.
- ◆ Performance is designed into every aspect of the database; it's not a final optimization step. However, slow and right beats fast and wrong every time.
- ◆ Excellent database development requires a thorough understanding of the underlying theory, the best practices, and the database tools.

Organization

The chapter organization of the book went through several evolutions. The final chapter plan is designed to segment the chapters into the most logical sequence for study as well as reference.

Part I – Laying the Foundation

Provides a foundation for developing database projects with SQL Server. If you're new to SQL Server 2000, this part introduces SQL Server and the theory behind database development.

Part II – Developing SQL Server Databases

Covers actual database development from creating the database to advanced server-side code. The real fun of SQL Server development is writing server side code. This part explains how and provides some interesting code examples. If you're a server-side developer or a front-end developer who needs to learn more about SQL Server, this section is designed for you.

Part III – Data Connectivity

The database is the center of a multitude of applications using multiple data connectivity methods. Depending on your particular environment, choose the chapter that applies to you.

Part IV – Administering SQL Server

Every database requires administration, maintenance, and security. Whether administration is your primary responsibility or if it falls under the “other duties as assigned” part of your job description, this part of the book is for you.

Part V – Advanced Issues

Tuning and optimization is always a hot topic. The final part presents a few advanced topics to take the book to the next level.

The Sample Databases

This book is more than just the text on the pages. The CD-ROM includes the SQL DDL code to create the tables and stored procedures for the five sample databases, as well as the scripts to populate them with sample data. Appendix B contains more details about the sample databases.

Learning is a combination of new information and new experiences. To get the most out of this book, install the databases on your computer and work through the chapters’ sample code. I had fun writing the book and developing these databases; I hope your experience is equally as enjoyable.

www.IsNotNull.com

Paul Nielsen publishes the Web site www.IsNotNull.com, which contains a series of articles focused on SQL queries, database development, and optimization, in addition to sample code, on-line polls, recommended resources, and performance tips.

Your Input

I want to hear from you. Which sections did you enjoy? What did you learn? What section did you skip over? There will be new editions of this book that follow the new versions of SQL Server. What should be added to the next edition of the book? Your comments matter so please e-mail me at pauln@IsNotNull.com.

Acknowledgments

A special thank you to Dr. Breeze and everyone in the University Hospital Neuro ICU in Denver, Colorado for the gentle care given to my wife during her last two weeks with us.

To my daughter, Lauren, "Daddy loves his little girl." You are growing into an incredible young lady. And to my son, David, watching you develop in the family tradition of engineering brings me great joy. And, things are being put back together more often these days, too! I'm very proud of you both. Hey kids, the book's fi-na-lly done! Lauren, let's FedEx in some white pizza from Dante's in Hickory! Hey Dave! My multiplayer computer game suspension is over! Let's head to Best Buy and pick out a new game. I love you both.

To my friend, Kennedy Kinyanjui Wainaina in Kenya, I'm proud of you and your studies. Thank you for your prayers. Keep up the good work and God bless you.

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Hoorays to the entire Microsoft SQL Server team for developing a set of software that's truly a database developer's dream. Go Bill!

I'm indebted to Bobbie Townsend for her efforts as technical editor. She is one of the most professional instructors I know and she knows SQL Server inside and out. She is a Microsoft Certified Professional and has owned her own consulting company since 1992. Her company provides customized software development and training. She is a book author and has served as the technical editor for multiple books and classes. If any of you need professional SQL Server assistance, I would not hesitate to recommend Bobbie. She can be reached via email at BobbieTownsend@Hotmail.com.

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