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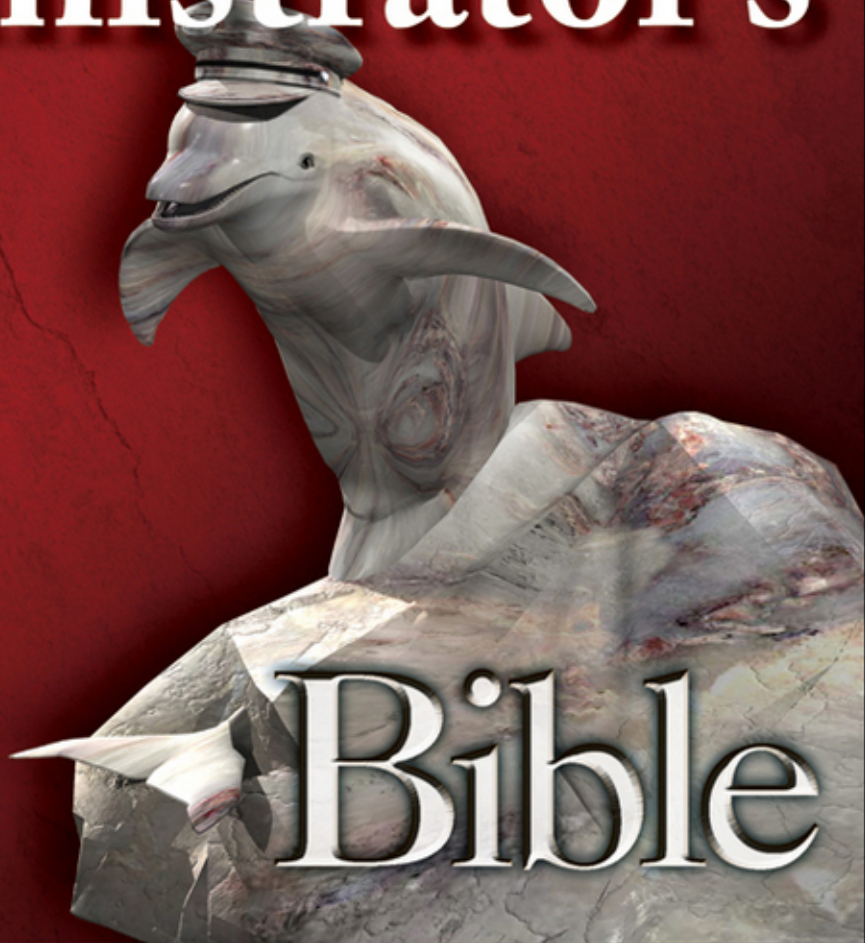
Sheeri K. Cabral and Keith Murphy

MySQL[®] Administrator's

Learn best practices for
administering MySQL

Transition from other
databases to MySQL

Optimize MySQL
queries and schemas



The book you need to succeed!

MySQL[®]
Administrator's
Bible

MySQL[®] Administrator's Bible

**Sheeri Cabral
Keith Murphy**



WILEY

Wiley Publishing, Inc.

MySQL® Administrator's Bible

Published by

Wiley Publishing, Inc.

10475 Crosspoint Boulevard

Indianapolis, IN 46256

www.wiley.com

Copyright © 2009 by Wiley Publishing, Inc., Indianapolis, Indiana

Published simultaneously in Canada

ISBN: 978-0-470-41691-4

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data:

Cabral, Sheeri, 1978-

MySQL administrator's bible / Sheeri Cabral, Keith Murphy.

p. cm.

Includes index.

ISBN 978-0-470-41691-4 (paper/website)

1. MySQL (Electronic resource) 2. Database management. 3. Relational databases. I. Cabral, Sheeri, 1978- II. Title.

QA76.9.D3C3178 2009

005.75'65 — dc22

2009005633

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*To Mitch Cherniack, who taught me databases and inspired my
love of them. In memory of Zvi Kramer and Yehoshua
Kritzer — may I be able to echo their strength and
spirit. — Sheeri Cabral*

For Rachel, the love of my life. — Keith Murphy

About the Authors

Sheeri K. Cabral is a Database Team Lead at the Pythian Group, a remote database administration solution. She has a master's degree in computer science specializing in databases from Brandeis University and a career background in systems administration. Unstoppable as a volunteer and activist since she was 14, Sheeri founded and organizes the Boston MySQL User Group. She also produces OurSQL: The MySQL Database Podcast for the Community, By the Community and many workshop videos. These resources are freely available at www.technocation.org, the website of Technocation, Inc. Sheeri is the Treasurer of Technocation, Inc, a not-for-profit organization providing resources and educational grants for IT professionals. Sheeri currently lives in the Boston area with her husband Tony Cabral and a myriad assortment of Muppets™. When she's not working or volunteering, she reads, knits, listens to podcasts, and enjoys time with her nieces and nephews.

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In addition he is the editor of MySQL Magazine (<http://www.mysqlzine.net>), the MySQL community's digital magazine about all things MySQL. It is his pleasure to work with some of the finest people in the community in this collaborative effort to increase both the amount and quality of the available information on MySQL server.

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Acknowledgments

Sheeri Cabral

When I was four years old, I refused to let anyone else tie my shoes, because I wanted to do it myself. There was only one problem — I did not know how to tie my shoes yet. I went around for months with untied shoes because I made it very clear that I was going to do it. Eventually I learned to tie my shoes. I also learned that I could do anything I put my mind to.

I could not have accomplished the herculean task of writing a book had I not had the encouragement of my stubbornness. To Mom, Dad, Lymor, Noam, Josh, and Elinor, thanks for putting up with me all these years, letting me try my way so that my failures and successes were my own, and teaching me to always do a good job so I can be proud of my work. My love of databases was inspired by the man who taught me the subject at Brandeis University, Professor Mitch Cherniack. Professionally, I would not be the person I am today without the guidance and example of Tom Limoncelli, an inspirational role model, great mentor, and good friend; and Tracy Gangwer, who taught me to be a super DBA/sysadmin by confirming and triple-checking everything. A huge thank you goes to Keith for being the lead author on this project, and of course for asking me to become involved. Of course, none of this could have been done without the support of Wiley Publishing, particularly our editors Ed Connor and Bob Elliott.

I used many two-dimensional resources while writing this book, but there's a limit to how much information is in manuals and books. Special thanks are due to Brian Aker for being a constant fountain of readily available knowledge and Martin Garden for software assistance. Jay Pipes provided permission for material used in the Query Analysis chapter, Roland Bouman helped me get a firm grip on the data dictionary, and Mark Atwood answered my questions about how storage engines work. I was encouraged and supported by Carsten Turner, Ronald Bradford, Patrick Galbraith, and many fans of the OurSQL Podcast who wrote to me asking when it was coming back.

Keith Murphy

There are many people involved in any book project. Without the crew of people from Wiley we could never have finished this book. Thank you, Bob Elliott (our Executive Editor) for taking a chance on me. I hope you weren't disappointed. Without our Development Editor, Ed Connor, I suspect we would have ended up in the ditch — never to get out. And thanks to all the other people at Wiley who I didn't have the chance to meet who help make this happen.

Acknowledgments

Sheeri, I could not have done this alone. I am grateful for all the long hours and the meticulous attention to detail that you brought to the project. If I ever get the notion to write another book you will be the first person I call. Of course you don't have to answer!

And a big thanks for all those in the MySQL community. It is you who help power this crazy thing we call Open Source. Thank you for taking the time help others learn and become better.

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Introduction

Welcome to the MySQL Administrator's Bible. Like all books in the Bible series, you can expect to find both hands-on tutorials and real-world practical application information, as well as reference and background information that provide a context for what you are learning. This book is a comprehensive resource on MySQL database administration. It covers almost every conceivable topic of database administration from the very basics, including server installation and user management, to some fairly complex topics such as security and high availability. By the time you have completed the MySQL Administrator's Bible you will be well-prepared to perform as a database administrator.

This book fully covers MySQL 5.1 plus early features of the 6.0 release (as of the time of writing). All of the examples work in both MySQL 5.1 and MySQL 6.0, except where noted.

Who Should Read This Book

This book is designed for two groups of people. The first group of people is those who have never worked on a database server and want to learn the fundamentals of database management using the world's number one open source database server. The second group of people is those who are currently using another database server and are looking to make a transition to MySQL server. They may be experienced database administrators, but are not experienced with MySQL.

How This Book Is Organized

The MySQL Administrator's Bible is divided into four parts.

Part I makes no assumptions on the knowledge level of the reader. Chapter 1 is a brief introduction to MySQL's history. After this introduction Part I covers:

- MySQL server installation (Chapter 2)
- Accessing MySQL server (Chapter 3)

Part II covers how MySQL compares to standards and MySQL's SQL syntax:

- How MySQL extends and deviates from standard SQL (Chapter 4)
- MySQL data types (Chapter 5)
- MySQL index types (Chapter 6)

Introduction

- Stored routines, triggers and events (Chapter 7)
- MySQL Views (Chapter 8)
- Transactions in MySQL (Chapter 9)

Part III is all about MySQL administration:

- Tuning the server (Chapter 10)
- MySQL storage engines (Chapter 11)
- Caching with MySQL (Chapter 12)
- Backups, recovery and disaster planning (Chapter 13)
- Managing MySQL users (Chapter 14)
- Partitioning in MySQL server (Chapter 15)
- Logging and replication (Chapter 16)
- Measuring performance (Chapter 17)

Part IV highlights intermediate topics ranging from further administrative tasks to performance tuning:

- Query analysis and index tuning (Chapter 18)
- Monitoring MySQL servers (Chapter 19)
- Securing MySQL (Chapter 20)
- The MySQL data dictionary (Chapter 21)
- Scaling MySQL server and high availability (Chapter 22)

In addition to the two parts there are three appendixes of additional material:

- Using the MySQL Proxy (Appendix A)
- MySQL Functions reference (Appendix B)
- Additional resources for MySQL (Appendix C)

Conventions and Features

There are many different organizational and typographical features throughout this book designed to help you get the most of the information.

Tips, Notes, and Cautions

Whenever the authors want to bring something important to your attention the information will appear in a Tip, Note, Caution or On the Website.

CAUTION

This information is important and is set off in a separate paragraph with a special icon. Cautions provide information about things to watch out for, whether simply inconvenient or potentially hazardous to your data or systems.