

The Definitive Guide to SQLite



Michael Owens

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The source code for this book is available to readers at <http://www.apress.com> in the Source Code section.

To my family: Gintana, Natalie, and Riley

To my parents: Larry and Nancy

And to my grandfather: C. R. Clough

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Foreword

When I first began coding SQLite in the spring of 2000, I never imagined that it would be so enthusiastically received by the programming community. Today, there are millions and millions of copies of SQLite running unnoticed inside computers and gadgets made by hundreds of companies from around the world. You have probably used SQLite before without realizing it. SQLite might be inside your new cell phone or MP3 player or in the set-top box from your cable company. At least one copy of SQLite is probably found on your home computer; it comes built in on Apple's Mac OS X and on most versions of Linux, and it gets added to Windows when you install any of dozens of third-party software titles. SQLite backs many websites thanks in part to its inclusion in the PHP5 programming language. And SQLite is also known to be used in aircraft avionics, modeling and simulation programs, industrial controllers, smart cards, decision-support packages, and medical information systems. Since there are no reporting requirements on the use of SQLite, there are without doubt countless other deployments that are unknown to me.

Much credit for the popularity of SQLite belongs to Michael Owens. Mike's articles on SQLite in *The Linux Journal* (June 2003) and in *The C/C++ Users Journal* (March 2004) introduced SQLite to countless programmers. The traffic at the SQLite website jumped noticeably after each of these articles appeared. It is good to see Mike apply his expository talents in a larger work: the book you now peruse. I am sure you will not be disappointed. This volume contains everything you are likely to ever need to know about SQLite. You will do well to keep it within arm's reach.

SQLite is free software. *Free* as in *freedom*. Though I am its architect and principal coder, SQLite is not my program. SQLite does not belong to anyone. It is not covered by copyright. Everyone who has ever contributed code to the SQLite project has signed an affidavit releasing their contributions to the public domain and I keep the originals to those affidavits in the fire-safe at my office. I have also taken great care to ensure that no patented algorithms are used in SQLite. These precautions mean that you are free to use SQLite in any way you wish without having to pay royalties or license fees or abide by any other restrictions.

SQLite continues to improve and advance. But the other SQLite developers and I are committed to maintaining its core values. We will keep the code small—never exceeding 250KB for the core library. We will maintain backward compatibility both in the published API and the database file format. And we will continue to work to make sure SQLite is thoroughly tested and as bug-free as possible. We want you to always be able to drop newer versions of SQLite into your older programs, in order to take advantage of the latest features and optimizations, with little or no code change on your part and without having to do any additional debugging. We did break backward compatibility on the transition from version 2 to version 3 in 2004, but since then we have achieved all of these goals and plan to continue doing so into the future. There are no plans for a SQLite version 4.

I hope that you find SQLite to be useful. On behalf of all the contributors to SQLite, I charge you to use it well: make good and beautiful things that are fast, reliable, and simple to use. Seek forgiveness for yourself and forgive others. And since you have received SQLite for free, please give something for free to someone else in return. Volunteer in your community, contribute to some other software project, or find some other way to pay the debt forward.

Richard Hipp
Charlotte, NC
April 11, 2006

About the Author



MICHAEL OWENS is the IT director for a major real estate firm in Fort Worth, Texas, where he's charged with the development and management of the company's core systems. His prior experience includes time spent at Oak Ridge National Laboratory as a process design engineer, and at Nova Information Systems as a C++ programmer. He is the original creator of PySQLite, the Python extension for SQLite. Michael earned his bachelor's degree in chemical engineering from the University of Tennessee in Knoxville.

Michael enjoys jogging, playing guitar, snow skiing, and hunting with his buddies in the Texas panhandle. He lives with his wife, two daughters, and two rat terriers in Fort Worth, Texas.

About the Technical Reviewer



PRESTON HAGAR has a broad range of computer skills and experience. He has served as a system administrator, consultant, DBA, programmer, and web developer. He currently works for one of the largest single office real estate companies in the country, where he focuses on programming and database administration. He is lead developer and maintainer of iBroker3, a QT/C++ real estate software suite that manages all facets of a real estate business. Preston is also author of PNF and a partner in Linterra, a consulting company whose primary focus is to provide Linux server solutions for small- to medium-sized businesses.

Preston enjoys skiing and playing tennis. He lives with his wife in North Richland Hills, Texas.

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First and foremost, thanks to my family for putting up with all the nights, weekends, vacations, and holidays that I have spent working on this book. I recall seeing so many instances in other books where authors beg the forgiveness of their loved ones, and now I understand why.

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I am grateful to Jamis Buck, Roger Binns, Wez Furlong (Dr. Evil), and Christian Werner for their comments on the various language extensions. I am also grateful to Vladimir Vukicevic for telling me how the Mozilla project uses SQLite, Eric Kustarz for his input on NFS, as well as David Gleason and Ernest Prabhakar at Apple for information on Mac OS X.

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