

THE EXPERT'S VOICE® IN C#

SECOND EDITION

Beginning C# 5.0 Databases

*LEARN TO CREATE DATABASE OBJECTS
AND PROGRAM AGAINST THEM IN BOTH
T-SQL AND C#*

Vidya Vrat Agarwal

Apress®

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Second Edition



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*To my sweet daughters, Arshika (“Sparkly”) and Vamika (“Pearly”),
and my beautiful beloved and supportive wife, Rupali.
You are all precious in my eyes and honoured and I love you.*

—Vidya Vrat Agarwal

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About the Author



■ **Vidya Vrat Agarwal**, a Microsoft .NET purist and an MCT, MCPD, MCTS, MCSD.NET, MCAD.NET, and MCSD, works with Lionbridge Technologies (NASDAQ: LIOX), and his business card reads Technical Architect. He is also a lifetime member of the Computer Society of India (CSI). He started working on Microsoft .NET with its beta release. He has contributed as an author and technical reviewer to many books published by Apress.

He lives with his beloved wife, Rupali, and lovely daughters, Vamika (“Pearly”) and Arshika (“Sparkly”). He believes that nothing will turn into a reality without them. He is the follower of the concept “No pain, no gain.” He blogs at <http://Dotnetpassion.blogspot.com>. You can reach him at vidya_mct@yahoo.com.

About the Technical Reviewer



■ **Michael Mayberry** has been developing software with Microsoft technologies for more than 13 years. Over those years he has consistently adopted new solutions and tools to solve increasingly larger problems.

Michael currently serves as a software architect for a large nonprofit organization in the Dallas–Fort Worth area. He has become an expert in integration, providing solutions that allow new software to interact with existing systems. His experiences range from content management systems to data warehouses to CRM systems.

Michael has always valued team building and sharing his knowledge with others. Recently, he expanded his focus to include writing and reviewing. He has been a technical reviewer for many projects and has coauthored a book.

When he is not working, Michael enjoys spending time with his beautiful wife and four children.

Acknowledgments

I would like to thank my wife, Rupali, for being so understanding, patient, and helpful. I also would like to thank my two little angels, my daughters Arshika (“Sparkly”) and Vamika (“Pearly”); you are great kids.

Like my previously authored books, this book is also an outcome of the sacrifices my wife and kids made on daily basis so that I could remain focused.

Rupali, you are an amazing person who is an entrepreneur in the professional world and also managed the home and kids; all my successes are dedicated to you. I am so thankful to God for having the three of you in my life.

I also would like to thank my technical reviewer, Michael Mayberry, who comes with great experience in database programming and helped me refine this work for a better reader experience.

I also would like to thank Christine, Apress project manager, and Douglas, Apress editor, for helping me throughout this book with schedule and editing.

Introduction

Welcome to this book. You have in your hands a book of ready-made solutions to common problems encountered while writing SQL to run against an Oracle database. I've written this book for the person in a hurry who needs to solve a specific problem and then get on with the job. Each recipe addresses a specific problem and presents a solid, working solution to that problem. For those who are interested, each recipe also provides an extended discussion of the solution and sometimes alternative solutions.

Who This Book Is For

If you are an application developer who likes to interact with databases using C#, this book is for you, because it covers programming SQL Server 2012 using C# 5.0. This book does not require or even assume that you have sound knowledge of C# 2.0 or SQL Server 2000 and database concepts. I have covered all the fundamentals that other books assume a reader must have before moving on with the chapters.

This book is a must for any application developer who intends to interact with databases using C# 2012 as the development tool; if this is you, then this book is a must.

How This Book Is Structured

I've split the book into four parts, each covering one broad aspect of building database applications using C# 5.0 and SQL Server 2012 database.

Part 1 deals with understanding the fundamentals of databases.

Part 2 covers the concepts of working with databases and XML.

Part 3 discusses working with data using ADO.NET.

Part 4 is a compendium of special topics and ranges from advanced ADO.NET features to SQL CLR.

Conventions

Throughout the book, I've kept a consistent style for presenting SQL and results. Where a piece of code, a SQL reserved word, or a fragment of SQL appears in the text, it is presented in fixed-width Courier font, such as this (working) example:

```
select * from dual;
```

Where I discuss the syntax and options of SQL commands, I've used a