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Oracle HTML DB Handbook

Develop Database-Centric Web Applications Quickly and Easily

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Oracle HTML DB Handbook

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Oracle HTML DB Handbook

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This book is dedicated to those that gave.
To TUSC and Brad Brown who gave me the opportunity to write this book.
To my parents who gave me the work ethic to keep going when work gets hard.
To my teenagers, Rainer and Anneke, who gave up precious family time on
evenings and weekends.
To my lovely wife MaeBe of 25 years, who gave me much needed love, support,
and encouragement and who also gave up so much of our together time.
Finally and most importantly to God, who gave the greatest gift, his only son,
Jesus Christ, who gave me life and everything in it.

—Larry Linnemeyer

This book is dedicated to my wonderful wife Kristen, my compassionate son
Austin, and my driven daughter Paige.

—Brad Brown

About the Authors

Lawrence Linnemeyer (Larry), Frederick, CO, is a Technical Management Consultant with TUSC, winner of the 2002 and 2004 Oracle Partner of the Year Award. He has been involved with Information Technology on and off since receiving a degree in Software Engineering from Mesa State in his hometown of Grand Junction, Colorado in 1986. Larry first started with Oracle technologies as a Systems Automation Officer with the U.S. Army in 1996. He has been with TUSC's Denver office since 1998, specializing in custom application development with Oracle technologies including HTML DB, Forms, Reports, JDeveloper/JSP, Warehouse Builder, PL/SQL Server Pages, Portal, Discoverer, and Designer.

Bradley D. Brown is chairman of the board, chief architect and co-founder of TUSC. Thomas Kurian, senior vice president, Oracle Server Technologies Division, says, "Brad is among the foremost experts on Oracle's technology in the world." For Brad, web development isn't just a job, it's his passion. He is the Oracle source who technologists around the world turn to when they seek expertise and experience in that discipline. Oracle Application Server 10g, HTML DB, Oracle Portal, XML, wireless, and Java are only a few of the technologies he has mastered over a career that spans more than 20 years.

This book marks the fifth title he has published through Oracle Press and McGraw-Hill/Osborne. Brad's most recent contribution was *Oracle Application Server 10g*, which was co-authored with TUSC Technical Management Consultant Christopher Ostrowski in 2004. In 2001, Brad combined his many years of experience into *Oracle9i Web Development*, which was a follow-up to *Oracle8i Web Development* he released two years before that. Brad's debut in the publishing industry came with *Oracle Application Server Web Toolkit Reference* in 1997.

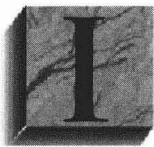
While Brad is easily recognized as an accomplished Oracle author and world-renowned speaker, it is his technological expertise that clearly is his identity. While he has enjoyed a countless number of major implementation successes over the years, one milestone that clearly stands out centers around the development of "Periscope" that he released through TUSC in 2002. Periscope is breakthrough software that makes data from other data sources (i.e., Microsoft Access, Sybase, SQL Server, DB2, Web Services, file systems, APIs, etc.) appear as if it's in one big Oracle database. The data also can be inserted, updated, and deleted from many source databases. The groundbreaking tool works with more than 100 databases.

Brad's vast experience and expertise have earned him roles as chief information officer of Open Access Broadband Networks and board member for Geekcruises, Lantech Inc., Colorado Uplift, and Cactus Strategies. He's currently the Breakfast of Champions chairperson for the Colorado chapter of the Young Presidents Organization after having previously served as its chapter chair, on-boarding chair, education chairperson, inventory of skills chairperson, technology officer, assistant education chairperson, and membership chairperson. Brown also was a co-founder and acting chief technology officer for Eventconnex Inc.

Along with co-founders Richard J. Niemiec and Joseph C. Trezzo, Brad is part of an award-winning company that earned the 2004 North America Oracle PartnerNetwork Partner Solution of the Year in the category of Oracle Application Server, as well as Internet Platform Partner of the Year in 2002. TUSC also has won the 2001 Ernst & Young Entrepreneur of the Year Award in the category of "E-developer," was inducted into the Chicago-Area Entrepreneurship Hall of Fame in 1998, and earned an Arthur Andersen-Chicago Best Practices Award for "Unleashing the Power of Technology."



Introduction



I really enjoyed moving from developing with Oracle Forms and Report to developing JSPs with JDeveloper, Java, and tools such as STRUTS, but the learning curve was very steep and productivity could have been much better. So I was really excited when I learned about HTML DB and how easy it was to use to quickly produce viable real-world applications.

My introduction to HTML DB came in the form of the request, “Here’s a new product, install it and figure out how it works.” Needless to say the user’s manual that comes with it is not meant to be a tutorial, although it is a pretty good reference if you know what you are looking for. So my learning experience consisted of a *lot* of trial and error and a whole lot of frustration until I figured out how HTML DB fully functioned. Hopefully, this book will allow you to learn HTML DB without the level of frustration that I experienced.

Once developers become familiar with the HTML DB environment and its capabilities, they will truly be able to rapidly develop real-world applications. Many IT departments will come to find that HTML DB is the answer to their backlog of custom application requests.

Components Needed

To run all of the examples in this book you will need at least an installation of an Oracle Database release 9.2.0.3 or higher, and an Oracle HTTP Server and `mod_plsql`. The HTTP server could be in the form of an Oracle 9i Database release 2 (9.2) or higher or Oracle 9i Application Server release 1 (1.0.2.2) or higher. That being said, by the time this book is published the final version of Oracle 10g Express should be released, which will include HTML DB (recently renamed *Oracle Application Express*). Your last alternative is to run all of the examples on Oracle’s hosted site. You can request a workspace at <http://apex.oracle.com> or <http://htmldb.oracle.com>.

Audience

This book is intended for HTML DB application developers at the beginning and intermediate levels. Due to the limitation of the number of pages that this book contains, the depth at which some subjects could be covered had to be limited.

How This Book Is Organized

This book comprises seven parts: “Introduction” (Part I), “Creating Applications” (Part II), “Building Web Pages and Components” (Part III), “Website and Application Examples” (Part IV), “Security and Administration” (Part V), “Advanced Topics” (Part VI), and “Appendixes” (Part VII). The best approach to using this book is to work through it cover to cover following along with the examples provided.

Part I: “Introduction”

Chapter 1: “An Introduction to HTML DB”

Chapter 1 explores the evolution of Oracle Web Tools and the history of HTML DB as a product. It then provides an overview of HTML DB and how it functions. Next, this chapter compares HTML DB to Portal, JDeveloper, the PL/SQL Web Toolkit, and Designer. Finally, this chapter discusses when it is best to use HTML DB.

Chapter 2: “Installing HTML DB”

This chapter covers the installation of HTML DB, both as part of an installation of a 10g database and an HTTP server or an installation of only HTML DB as a standalone addition to an existing database and HTTP server.

Chapter 3: “Using the SQL Workshops”

Chapter 3 explores the capabilities of the SQL Workshops by looking into each of the five major areas. Object Browser allows you to browse existing database objects as well as create new ones. Query Builder provides a graphical interface for generating and running queries. SQL Commands provides a command window similar to SQL Plus, where you can execute SQL commands. SQL Scripts provides a tool for maintaining and executing SQL Scripts. Utilities provide a means for data import and export, generating DDL, viewing object reports, and monitoring the database.

Part II: “Creating Applications”

Chapter 4: “Using the Application Builder”

This chapter starts to look at the heart of the HTML DB development environment, the Application Builder. Details of the application attributes are examined along with an introduction to application shared components. Finally, the main sections of the page definition are introduced.

Chapter 5: “Creating and Running Applications”

Chapter 5 walks through the various wizards by which applications can be created. This includes creating applications from scratch, based on tables, views or queries, or based on a spreadsheet. Additionally, creation of the demonstration applications is explored as well as a methodology for converting an MS Access application into an HTML DB application.

Chapter 6: “Working with Themes and Templates”

The look and feel of HTML DB applications are controlled by themes and templates. Chapter 6 explores the different types of templates, how they work, and their use of substitution variables. Finally, the chapter takes an in-depth look into all the sections of the page template.

Chapter 7: “Using the Application Utilities”

Chapter 7 examines the different utilities available in HTML DB. These utilities allow the developer to translate applications into different languages; manage Cascading Style Sheets, image files, and static files; utilize web services; and generate and view multiple application reports.

Part III: “Building Web Pages and Components”**Chapter 8: “Building Web Pages”**

The main building block of an application is web pages. This chapter looks at adding, editing, and deleting pages in an application. It also examines the primary functions of the HTML DB engine, page rendering and processing, and session state management. Regions contain everything placed on a page, so this chapter also examines the different types of regions and how they are positioned on a page.

Chapter 9: “Working with Reports”

Chapter 9 examines the creation of reports including report attributes, use of custom report templates for formatting, break formatting, and pagination. This chapter also looks at the use of tabular reports that allow editing of multiple rows at one time.

Chapter 10: “Defining and Processing Forms”

Many elements are needed to implement a form in HTML DB; thankfully, a wizard is provided to greatly ease the creation of these elements. Chapter 10 addresses the automatic and manual creation of forms and looks at all of the pieces that make up a form including items, buttons, processes, and branches.

Chapter 11: “Navigating Between Pages”

The difference between a good web application and a poor web application can sometimes be attributed to the ease of navigation around the different areas of the application. Chapter 11 examines all of the different navigational elements provided by HTML DB including navigation bars, tabs, menus, lists, trees, and embedded URLs.

Chapter 12: “Building Other Components”

One of the primary benefits of HTML DB is the ability to quickly produce robust applications. This is made possible through the myriad of wizards that assist in rapidly producing standard application components. Chapter 12 covers the creation of not-so-standard components such as lists of values, shortcuts, graphs, and calendars, which can all be created through the assistance of wizards.

Chapter 13: “Adding Computations, Processes, and Validations”

Three major areas provide the brains behind an HTML DB application. Chapter 13 explores the creation and implementation of computations, processes, and validations, without which an application would be nothing more than standard web pages.

Part IV: “Website and Application Examples”

Chapter 14: “Building an Event Scheduling Application”

Chapter 14 takes a high-level look at the thought processes involved and decisions made while creating an event scheduling application. This chapter provides an opportunity to see how the different elements previously covered are used to quickly create a real-world application that shortly produces real-world costs savings.

Chapter 15: “Building a Test Administering Application”

This chapter provides yet another look at the implementation of an actual application. During this walkthrough, different approaches are examined and the benefits of each are weighed. A close look at some of the details provides insight into the use of the features of HTML DB covered in previous chapters.

Part V: “Security and Administration”

Chapter 16: “Security”

Security for a web application can often be an area of great concern—not so for HTML DB applications. Chapter 16 examines the different security elements provided by HTML DB. It includes a close look at Authentication, which controls initial access to your application, and Authorization, which extends your security by allow programmatic control of access to pages, regions, and even individual items within your application.

Chapter 17: “Administration Functions”

This chapter covers HTML DB administrative functions. It starts by providing an understanding of users and roles. It then looks at the overall HTML DB instanced administration, which includes the creation, provisioning, and monitoring of workspaces. Finally, workspace administration is covered, which includes details on managing services, managing workspace users, and monitoring workspace activity.

Part VI: “Advanced Topics”

Chapter 18: “Tips and Techniques”

For a fairly new product there is an enormous amount of tips and techniques that can be found for HTML DB, enough to fill an entire book. This chapter provides some of the more valuable ones and perhaps more importantly, it directs you to the many resources available for HTML DB.

Chapter 19: “Best Practices”

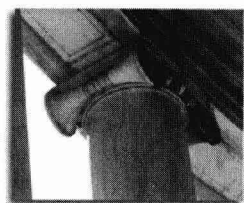
This chapter provides a number of best practices in the areas of installation, development, security, and testing.

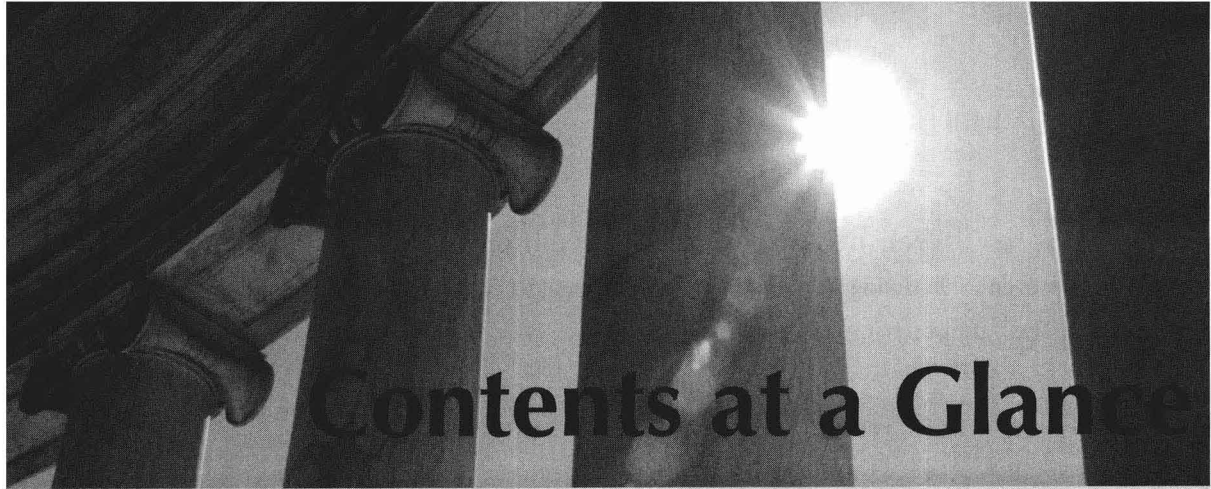
Part VII: “Appendixes”**Appendix A: “The HTML DB Packages, Procedures, Functions, and Views”**

There are many internal packages, procedures, functions, and views included in the HTML DB installation. Many of these are available to developers for their own use. Appendix A highlights the ones most commonly used by developers.

Appendix B: “PL/SQL Web Toolkit and Packages”

The PL/SQL Web Toolkit is a set of PL/SQL packages that can be used in HTML DB dynamic regions. Appendix B provides an overview of those packages. A web version of Appendix B is also available, which provides a detailed explanation of the packages.





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