

## *Preface*

Oracle is one of the most widely used database systems in the world. It runs on virtually all platforms ranging from Windows-based PCs to UNIX servers. It also comes with an array of programming tools and environments and provides access to the database from a variety of high-level programming languages.

In recent years, more and more universities in the United States and elsewhere are using Oracle in their database courses as the primary vehicle to illustrate database concepts and principles. This has resulted in the need for a concise book on Oracle programming to supplement the traditional text in the database courses. The main motivation for writing this book is to satisfy this need. This book can also be used by nonacademic professionals interested in learning about Oracle programming.

In this current edition, three new chapters covering PL/SQL Web Programming, Java Servlet programming, and XML have been added, while one old chapter, Embedded SQL in C and C++, has been retired. The embedded SQL chapter will be made available on the Web for download for those users of the book who still need it. Oracle's recent database servers, starting from version 8*i*, have provided increasing support for database access on the Internet. This support has been vital to many application developers who have, in the recent past, been developing three-tier Web applications that are invoked from a Web browser. PL/SQL, the mainstay procedural language, has been enhanced with a Web Toolkit that allows dynamic Web pages to be developed with ease. Java Servlet and Java Server Pages technology from Sun Microsystems has been embraced by Oracle, and there is strong support for developing Web applications using this technology in Oracle9*i*. XML, the newest technology used in current data-interchange applications, is also being well supported by Oracle9*i*, including built-in XML parsers, XML data type for database columns, and support for importing XML data into and exporting XML data from an Oracle9*i* database. The three new chapters added in this edition cover these new technologies in detail.

The topics covered in this book are Oracle SQL, PL/SQL, Web application development using PL/SQL, database access in Java using JDBC and SQLJ, Web application development using Java Servlets and Java Server Pages, and Oracle support for XML. SQL and PL/SQL are two languages at the core of the Oracle database engine and are essential to learn before working with Oracle databases. Java has become a de facto language for many to program database applications in, and knowledge of JDBC and SQLJ is critical in developing applications that access Oracle databases. With the proliferation of the Internet, more and more applications that access Oracle databases are being made available over the Web. Learning the PL/SQL Web Toolkit and PL/SQL Server pages along with Java Servlets and Java Server Pages is becoming essential to programming such applications. The XML standard is making a major impact in current-day distributed and networked environments, and learning XML in the context of Oracle databases is proving to be an important skill for computer professionals.

Three sample databases are introduced early in the book, and most of the chapters use these databases for illustration purposes. These are the grade-book database, the mail-order database, and the portfolio database.

The grade-book database contains data typically tracked by an instructor of a course and includes information about students, courses being taught, which student is enrolled in which course, grading components for courses, and the individual's scores in these grading components. An application that allows instructors to update the database and students to access their grades is presented in the text.

The mail-order database contains data relevant to a mail-order company that sells items to customers. A variation of this database is used in the Web shopping application that allows users to shop on the Web for items. The users have the ability to search for items, add and update a shopping cart, and check out.

The portfolio database contains data about companies, their share prices, and members who have an account with the brokerage company. An application that allows members to sign on to the system, obtain stock quotes, place bids, and so on is developed in the text.

Several application programs are developed in their entirety in the different programming environments discussed in the text.<sup>1</sup> Other application programs are shown in part in the text, and the corresponding complete applications are available for download from the publisher's web site.

### ***Book Use***

This book is suitable as a supplemental text for an introductory database course that covers the relational model and uses Oracle as the database system for the course projects and assignments. Course projects can be developed using Embedded SQL in C or C++, JDBC or SQLJ. Web projects can be developed using the PL/SQL Web Toolkit, PL/SQL Server Pages, Java Servlets, or Java Server Pages. An entire chapter is devoted to suggestions for course projects. These course projects are typically assigned in introductory database courses where a team of students start with a problem statement, write the problem specifications, design the database, create the database in Oracle, and write application programs that access the database. Some of the chapters also have review problems for readers to go over to consolidate their understanding of the concepts presented in these chapters.

This book is also appropriate for nonacademic individuals interested in learning about Oracle. They can find materials on SQL, PL/SQL, PL/SQL Web Toolkit, PL/SQL Server

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<sup>1</sup> The programs and applications presented in this book have been included for their instructional value. They have been tested with care but are not guaranteed for any particular purpose. The publisher does not offer any warranties or representations, nor does it accept any liabilities with respect to the programs or applications.

Pages, Pro\*C/C++, JDBC, Java Servlets, Java Server Pages, SQLJ, and XML all in one text. This book can be considered a starting point in the exploration of what Oracle has to offer.

### ***Supplements***

The supplements for this book can be found at the following URL:

<http://www.aw.com>

Please follow the link to Supplements Central. These supplements include:

- Pro\*C/C++ chapter that will not be in the book.
- All the code to the three running examples in the book (Grade Book, Mail Order, and Portfolio Database). In the book, there are mostly code fragments.
- All the code to a couple of other projects to be assigned as exam/homework/quizzes.
- Solutions to end-of-chapter exercises.

All of the code to a couple of other projects and solutions to end-of-chapter exercises are available online for qualified instructors. Please contact your Addison-Wesley representative for information.

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