ORACLES

PROGRAMMING:

A PRIMER

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To

My mother
Saraswathi Sunderraman
for her love and hard work

My father
Sq. Ldr. Rajagopala Sunderraman
for his love and encouragement

My wife
Radhika
for her love and caring

My children
Nandita and Naveen
for their love and innocence
Oracle is the most widely used database system in the world. It runs on virtually all platforms ranging from the PC to mainframes. 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 texts in the database courses. The main motivation for writing this book is to satisfy this need. This book can also be used by a non-academic professional who is interested in learning about SQL, PL/SQL, embedded-SQL programming, JDBC, and SQLJ.

The topics discussed in this book are Oracle SQL, PL/SQL, embedded programming with Pro*C/C++, JDBC, and SQLJ. A brief introduction to the object features of Oracle8 is also presented in the book. To work with Oracle, it is absolutely essential to learn about SQL and PL/SQL, the two languages at the core of the Oracle database engine. Embedded-SQL (Pro*C/C++), JDBC access to Oracle, and the relatively new SQLJ standard are some of the important environments in which to develop applications. Java is an emerging language that will have a significant impact on computing in the coming years and Oracle is investing in this technology by providing JDBC drivers, SQLJ translators, and other related tools to develop applications, especially on the Web. Embedded-SQL is part of the SQL standards and is also an important technique for database programmers to learn.
Three sample databases are introduced early in the book and most of the chapters use these databases for illustration purposes. Several application programs are developed in their entirety in the different programming environments discussed in the text.

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**Book Use**

This book is suitable as a supplemental text for an introductory database course which 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 (Pro*C/C++), JDBC, or SQLJ. 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 the reader to go over to consolidate their understanding of the concepts presented in these chapters.

This book is also appropriate for a non-academic individual who is interested in learning about Oracle. He or she can find materials on SQL, PL/SQL, Pro*C/C++, JDBC, and SQLJ, all in one text. This book can be considered a starting point in the exploration of what Oracle has to offer.

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**World Wide Web Support**

Most of the code presented in the book can also be found at the following World Wide Web site:


In addition, the author will attempt to include other related materials to be developed in the near future at this Web site.

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1. The programs and the 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.
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Finally, I would like to acknowledge the support my family has shown to me during the writing of this edition of the book. Thank you, Radhu, for all the hard work and understanding and thanks, Nammu and Nammi, for encouraging me to write this book so that I can buy you candy and toys from the money I get!
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ORACLE8™ PROGRAMMING
A PRIMER

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This programming companion provides a streamlined approach to Oracle SQL, the most prevalent database language used in industry and on campus today. This book focuses on the most up-to-date aspects of Oracle8 and is designed as a detailed guide for new users of this application. Readers of this primer will be able to complete projects in a number of different programming environments (PRO*C++, FL/SQL, JDBC, and SQLJ). This book is suitable for use as a supplement in a database course that uses Oracle, as well as a reference for those in a nonacademic environment interested in learning about Oracle.

HIGHLIGHTS
- Covers the basics of programming with Oracle
- Presents new material on Pro*C++
- Includes a new chapter on SQLJ
- Devotes a complete chapter to JDBC
- Introduces Oracle8 objects
- Suggests an extensive list of problems and projects that reflect Oracle8

ABOUT THE AUTHOR
Rajshekhar Sunderraman is an associate professor of computer science at Georgia State University in Atlanta, Georgia. Professor Sunderraman received his Ph.D. in computer science from Iowa State University and has been teaching computer science for more than 10 years. He has published numerous articles on a wide range of topics, including inconsistencies in relational databases, negation in deductive databases, declarative specification of objects in object-oriented databases, and database querying of Web data.

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