Preface

Why This Book?

Oracle is a widely used database engine. Due to its popularity, more and more schools and training organizations are using Oracle in their database courses to teach database principles and concepts. Given the current technological climate, the computer industry needs application developers who can write Oracle SQL code efficiently. This book employs a step-by-step systematic approach to learning Oracle SQL.

The current technological climate has generated a need for a concise book on Oracle/SQL programming tied to database principles and concepts. This book hopes to meet that need. It starts by presenting simple Oracle SQL concepts and slowly moves into more complex query development and PL/SQL. It also introduces SQL/XML. Each chapter includes numerous examples, which readers can assemble and execute themselves using Oracle. Each chapter ends with a series of exercises to reinforce and build on chapter material. In doing these exercises, we have provided a path for readers to learn SQL and the underlying principles of relational database.

ORACLE and SQL

SQL is an abbreviation for SEQUEL (Structured English Query Language) and was originally an IBM product. Since the 1970s, when SEQUEL was introduced, it has become the *de facto* standard "language" for accessing relational databases. SQL is not really a language as much as it is a database query tool. This book will concentrate on using the Oracle database engine interactively to learn and use SQL.

SQL allows you to define a relational database and create tables (in this sense, SQL is a Data Definition Language [DDL]). Oracle also provides a utility to load the created database with data -- the SQL*Loader. After the database is created and populated, SQL provides a way to modify the database definition (using DDL). It also provides a means to query the relational database in a most flexible way as well as change the data, that is, perform data manipulation. Therefore, SQL is a Data Manipulation Language [DML] as well as a DDL.

This book covers SQL as it is invoked via SQL*Plus, a command-line system to launch interactive commands. SQL*Plus is a powerful Oracle product that takes instructions for Oracle, checks them for correctness, submits them to the Oracle database engine, and then modifies or reformats the response Oracle gives. In short, SQL*Plus aids in interacting with Oracle smoothly and easily.

Audience and Coverage

This book provides a practical ancillary experience to a standard database course; or, it may be used as a "stand alone" text to learn SQL, Oracle, and relational database concepts. For this latter scenario, the Introduction provides basic database background material needed to begin using SQL and relational databases.

This book can be divided into two parts.

Part I (Chapters 1–10) covers topics meant for introductory-level database learning or a beginning SQL/Oracle class.

Part II (Chapters 11–14) is a *preview* of advanced topics, usually covered in advanced database classes. Part II is meant to introduce and encourage those who wish to pursue these non-introductory topics, and presumes students have some programming background or have had at least one programming course.

- The Introduction introduces some of the database terms used throughout the book and shows how and why the relational database model fits into the database world of today.
- Chapter 1 begins in a step-by-step manner, starting with "logging the user into Oracle." Then it covers basic Oracle/SQL topics such as SELECT, INSERT, and DELETE (DML commands). Simple editing concepts are also introduced.
- Chapter 2 covers more beginning SQL commands and builds on the material in Chapter 1.
- Chapter 3 introduces joins, a common way to combine relational tables.
- Chapters 4 and 5 begin the study of basic Oracle functions and query development as well as the use of views and other derived structures.
- Chapter 6 covers simple set operations.
- Chapters 7, 8, and 9 cover more advanced queries -- using subqueries, aggregate functions, and correlated subqueries.
- Chapters 10 through 13 introduce still more advanced SQL concepts, such as the load utility, start files, reports, some introductory PL/SQL, and triggers.
- Chapter 14 introduces SQL/XML.

Exercises are included at the end of every chapter to enforce learning of the material in the chapter and incorporate a review of previous chapters.

- Appendix 1 presents some elemental UNIX commands.
- Appendix 2 covers Data Dictionary concepts.
- Appendix 3 illustrates the **Student-Course** tables and other tables used throughout the book.

In addition to the above, a Glossary of Terms, a Glossary of Important Commands and Functions, an Index of Important Commands and Functions, and an Index of Terms are provided for easy reference. This book is ideal for a beginning Oracle user for an overview of what SQL and Oracle entail. It gives a very good "feel" for what Oracle is and the many ways Oracle can be used. Readers are strongly encouraged to experiment and tinker with all the suggested queries in the book. You will learn more if you try things, study the result, and see why the result is what it is. Make mistakes and ask yourself, "Why didn't this work?" Don't be afraid to ask questions of the database you think might be interesting. We have offered exercises and examples to foster your curiosity. You really shouldn't be able to damage the database, but if you do somehow manage to destroy the data, it can easily be re-loaded.

One more thing -- What you might call advice the authors want to share:

How to read this book (or any other educational textbook)

We would like to share a secret with you: Textbooks are not romance novels or mystery stories. There is no question about "Who done it?" or "Which hero/heroine will end up together?" Textbooks are meant to present material you will retain and use to build upon from one chapter to the next.

How Do You Read This or Any Textbook?

Open the book to page 1, chapter 1 and start reading? No. Try this paradigm:

1. Read the introductory material, chapter summary, or opening paragraph of the chapter first to get a feel for what's coming in the chapter. You don't have to master the summary of the chapter, but read it first to get an idea of what you'll learn.
2. Look at all the pictures and diagrams. See what's coming up in the chapter and get a sense of what you're about to read.
3. Look at all the headings in the chapter and again formulate an idea of what the material is about.
4. Now, having read the summary and looked at the pictures and diagrams and sub-chapter headings, ask yourself, "What am I going to learn when I read this chapter?"
5. If you're not sure of the answer to the previous question, go back to step 1 and start again.
6. If you know where you're going, THEN begin reading the chapter.
    a. In reading the chapter, you don't necessarily have to digest each word. It's okay to read the first sentence or two of every sub-chapter and see what seems interesting.
    b. Usually, textbook chapters are arranged so material flows from one sub-chapter to the next, but you don't have to worry about the reading-police arresting you if you skip around.
7. Every chapter has exercises at the end of it. Do all of the exercises and make up some of your own. If the chapter does not have exercises, sit quietly and ask yourself what you just read.
8. As you go through the material, experiment freely and often. Keep asking yourself, "But, what if I did it this way?" Try it and see what happens.

Remember, you are not looking for a heroine or a villain. You want to say, "I understand what the diagram on page 4 means or I understand why that concept is important." Picture the chapter as a device or machine with no manual, and you are trying to figure out how it works. The chapter itself is the manual; and like operating a washing machine or toaster, you need the manual. The manual is for instruction and reference rather than for reading entertainment. Please enjoy learning.

Supplements

The exercises at the end of each chapter are drawn from databases we created; they can be downloaded from http://www.cs.uwf.edu/~sbagui/. The download instructions are also available at this web site.

—Richard Walsh Earp and Sikha Saha Bagui