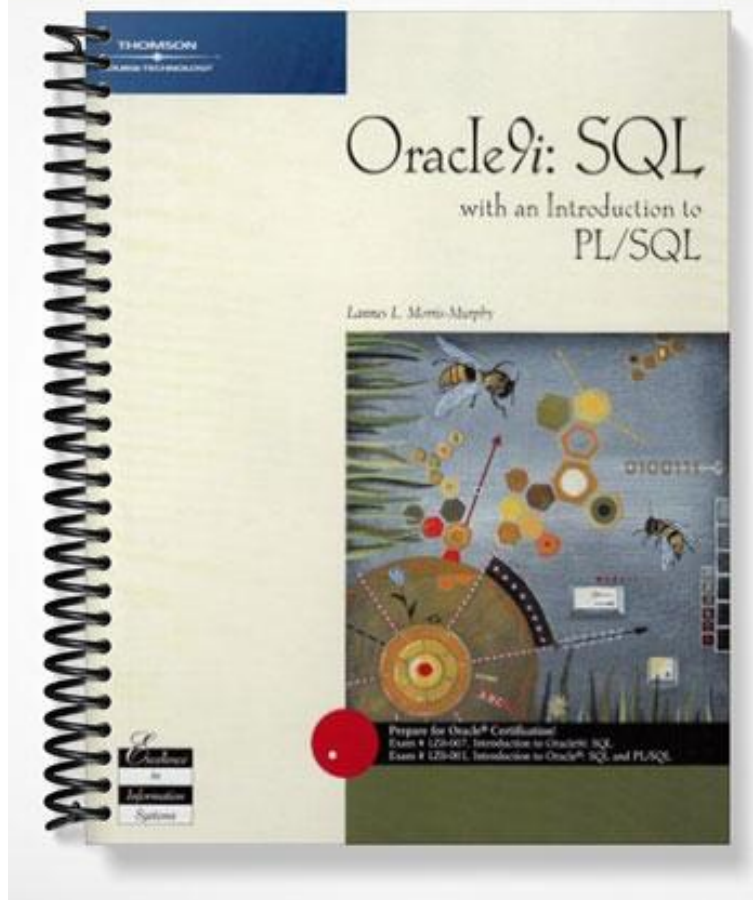


# SOLUTIONS MANUAL



## Chapter 2

### Basic SQL SELECT Statements

#### At a Glance

#### Instructor's Notes

- ◆ *Chapter Overview*
- ◆ *Chapter Objectives*
- ◆ *Teacher Notes*
- ◆ *Troubleshooting Tips*
- ◆ *Quick Quizzes*
- ◆ *Discussion Questions*
- ◆ *Key Terms*

## Chapter Overview

The purpose of this chapter is to learn the basic SELECT statement used to retrieve data from a database table. The students will learn to use the SELECT clause to retrieve all columns, one column, and multiple columns from a table specified in the FROM clause. In addition, students learn how to perform simple arithmetic operations and concatenation in the SELECT clause.

Students will need to execute the **bookscript.sql** script file. Each student should be assigned a different user name so the generated tables will be located in a different schema for each student. Each student should also be granted the DBA role to have sufficient privileges to execute the required statements in this textbook.

## Chapter Objectives

After completing this chapter, you should be able to do the following:

- ◆ Distinguish between an RDBMS and an ORDBMS.
- ◆ Identify keywords, mandatory clauses, and optional clauses in a SELECT statement.
- ◆ Select and view all fields in a table.
- ◆ Select and view one field from a table.
- ◆ Display multiple columns from a table.
- ◆ Use a column alias to clarify the contents of a particular column.
- ◆ Perform basic arithmetic operations in the SELECT clause.
- ◆ Remove duplicate lists, using either the DISTINCT or UNIQUE keyword.
- ◆ Combine data (fields, literals, etc).
- ◆ Format output for management

## Teacher Notes

### SELECT Statement Syntax

Every SELECT statement is required to have a SELECT and FROM clause. A clause always begins with a keyword. The SELECT clause is used to identify the column or columns to be retrieved from a table. The name of the table is identified in the FROM clause.

**Troubleshooting Tip**

Demonstrate that SQL\*Plus is not case sensitive in terms of the command keywords or column/table names when a command is executed. Also demonstrate the various methods of executing an SQL statement.

### Selecting All Data in a Table

The asterisk is used to represent all columns in a table. The asterisk is not a wildcard in the traditional sense. It has a specific use in SQL commands. If the asterisk is used in the SELECT clause, the clause can contain no other column references.

### Selecting One Column from a Table

To select a specific column from a table, list the name of the column after the SELECT keyword. Note that the column name can be entered in upper case, lower case, or mixed case. However, the column name is displayed in upper-case characters by default.

### Selecting Multiple Columns from a Table

If more than one column name is specified in the SELECT clause of the SELECT statement, they must be separated by a comma. Spaces between the column names and commas will not affect the results of the statement.

**Troubleshooting Tip**

For practice, have the students retrieve data from various tables. Start with selecting all the columns from a table, then just one, then several columns.

## Operations Within the SELECT Statement

### Using Column Aliases

A column alias can be used to give a more descriptive heading to a column of data. It should be listed directly after the column name, without a comma. If the alias consists of spaces or special symbols, or to retain the case, enclose the alias in double-quotation marks. Otherwise, simply list the column alias. The optional keyword AS can be used to denote the column alias.

### Using Arithmetic Operations

Any basic arithmetic operation can be performed with the exception of exponential operations. Oracle9i follows the standard order of operations, which can be overridden using parentheses. The operation can be specified in the column list just like a column name. However, a column alias should be assigned or the column heading will display the express in the output.

**Troubleshooting Tip**

For practice, have the students calculate the profit, profit margin %, etc., and include a column alias.

## Using DISTINCT and UNIQUE

To suppress duplicate rows in the output, enter the DISTINCT or UNIQUE keyword after the SELECT command. The keyword will apply to all columns listed in the SELECT clause, even though it is entered only once in the clause.

**Troubleshooting Tip**

Select a couple of columns from the BOOKS table and include the DISTINCT or UNIQUE keyword. Demonstrate that unless the entire row being displayed is identical, the same category name will be listed several times.

## Creating Concatenation

Columns can be combined through the use of the concatenation operator. However, to include spaces or string literals, they must be enclosed in single quotation marks. Commas cannot be used in front of the concatenation operator or an error message will be returned. The CHR(10) code can be included through concatenation to add a line break when necessary.

## Quick Quiz – SELECT Statement Syntax

1. How do you retrieve all columns from a table without listing the column names? ANSWER: Use an asterisk in the SELECT clause
2. How do you separate multiple columns listed in a SELECT statement? ANSWER: Use commas
3. Are keywords case sensitive? ANSWER: no
4. Are column names case sensitive? ANSWER: no
5. Where do you identify the table containing the specified columns? ANSWER: In the FROM clause

## Quick Quiz – Operations Within the SELECT Statement

1. What is required if a column alias contains a blank space? ANSWER: The alias must be enclosed in double quotation marks
2. What symbol is used for concatenation? ANSWER: two vertical bars, ||
3. What arithmetic operations can be used in a SELECT statement? ANSWER: \*, /, +, -

4. How can Oracle9i identify a column alias without the AS keyword? ANSWER: There is no comma separating the column name from its alias

5. Why use a column alias? ANSWER: To provide a more descriptive column heading

## Discussion Questions

1. Discuss the link(s) between the SELECT and FROM clauses.
2. Discuss case sensitivity and how it relates to the SELECT statement.

## Key Terms

**character field** — A field composed of non-numeric data. This field will not display a heading longer than the width of the data stored in the field.

**clause** — Each section of a statement that begins with a keyword (SELECT clause, FROM clause, WHERE clause, etc.).

**column alias** — Another name substituted for a column name. A column alias is created in a query and displayed in the results.

**concatenation** — The combining the contents of two or more columns or character strings. Two vertical bars, or pipes (||), instruct Oracle9i to concatenate the output of a query.

**keywords** — Words used in a SQL query that have a predefined meaning to Oracle9i. Common keywords include SELECT, FROM, and WHERE

**numeric column** — A column composed of only numeric data. In output, the column will display the entire column heading, regardless of the width of the field. (Also known as a *numeric field*)

**object relational database management system (ORDBMS)** — Oracle9i is an ORDBMS because it can reference individual data elements and objects composed of individual data elements.

**projection** — Choosing specific column(s) in a SELECT statement.

**query** — A question posed to the database.

**relational database management system (RDBMS)** — A software program used to create a relational database. It has functions that allow users to enter, manipulate, and retrieve data.

**string literal** — Alpha-numeric data, enclosed within single quotation marks, that instructs the software to interpret “literally” exactly what has been entered and to show it in the resulting display.

**syntax** — The basic structure, pattern, or rules, for a SQL statement. For an SQL statement to execute properly, the correct syntax must be used.