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SQL Syllabus (OCA)

Introduction

Relational Database Management System
Relational Database Concept
Definition of a Relational Database
Relational Database Terminology
Relational Database Properties
Communicating with a RDBMS Using SQL
SQL Statements

1 Writing Basic SQL SELECT Statements

Capabilities of SQL SELECT Statements
Basic SELECT Statement
Selecting All Columns
Selecting Specific Columns
Writing SQL Statements
Column Heading Defaults
Arithmetic Expressions
Using Arithmetic Operators
Operator Precedence
Using Parentheses
Defining a Null Value
Null Values in Arithmetic Expressions
Defining a Column Alias
Duplicate rows
Displaying Table Structure
Summary

2 Restricting and Sorting Data

Limiting Rows Using a Selection
Using the WHERE Clause
Comparison Conditions
Using the BETWEEN Condition
Using the IN Condition
Using the LIKE Condition
Using the NULL Conditions
Logical Conditions
Using the AND Operator
Using the OR Operator
Using the NOT Operator
Rules of Precedence
ORDER BY Clause
Sorting in Descending Order
Sorting by Multiple Columns

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Summary

3 Single-Row Functions

SQL Functions

Two Types of SQL Functions

Single-Row Functions

Character Functions

Case Manipulation Functions

Character-Manipulation Functions

Number Functions

Using the ROUND Function

Using the TRUNC Function

Using the MOD Function

Working with Dates

Arithmetic Operators with Dates

Date Functions

General Functions

NVL Function

Using the NVL2 Function

Using the COALESCE Function

The CASE Expression

Using the CASE Expression

The DECODE Function ORACLE

Summary

4 Aggregating Data Using Group Functions

What Are Group Functions?

Types of Group Functions

Group Functions Syntax

Using the AVG and SUM Functions

Using the MIN and MAX Functions

Using the COUNT Function

Using the DISTINCT Keyword

Group Functions and Null Values

Using the NVL Function with Group Functions

Creating Groups of Data: The GROUP BY Clause Syntax

Using the GROUP BY Clause on Multiple Columns

Excluding Group Results: The HAVING Clause

Nesting Group Functions

Summary

5 Displaying Data from Multiple Tables (Joins)

Obtaining Data from Multiple Tables

Cartesian Products

Generating a Cartesian Product

Types of Joins

Joining Tables Using Oracle Syntax

What is Equi Join?

Retrieving Records with Equijoins

Additional Search Conditions Using the AND Operator

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- Qualifying Ambiguous Column Names
- Using Table Aliases
- Joining More than Two Tables
- Non-Equi Joins
- Retrieving Records with Non-Equi Joins
- Outer Joins
- Outer Joins Syntax
- Using Outer Joins
- Self Joins
- Creating Joins with the `USING` Clause
- Retrieving Records with the `USING` Clause
- Creating Joins with the `ON` Clause
- Retrieving Records with the `ON` Clause
- INNER Vs OUTER JOIN
- Summary

6 Subqueries

- Using a Subquery to Solve a Problem
- Subquery Syntax
- Guidelines for Using Subqueries
- Types of Subqueries
- Single-Row Subqueries
- Executing Single-Row Subqueries
- Using Group Functions in a Subquery
- Multiple-Row Subqueries
- Using the `ANY` Operator in Multiple-Row Subqueries
- Using the `ALL` Operator in Multiple-Row Subqueries
- Null Values in a Subquery
- Summary

7 Manipulating Data

- Data Manipulation Language
- Adding a New Row to a Table
- The `INSERT` Statement Syntax
- Inserting New Rows
- Inserting Rows with Null Values
- Copying Rows from Another Table
- Changing Data in a Table
- The `UPDATE` Statement Syntax
- Updating Rows in a Table
- Updating Two Columns with a Subquery
- `DELETE` statement
- Deleting Rows from a Table
- Deleting Rows Based on another Table
- Using a Subquery in an `INSERT` Statement
- The `MERGE` Statement
- The `MERGE` Statement Syntax
- Database Transactions
- Advantages of `COMMIT` and `ROLLBACK` Statements
- Controlling Transactions

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Rolling Back Changes
Implicit Transaction Processing
State of the Data Before COMMIT or ROLLBACK
State of the Data after COMMIT
Committing Data
State of the Data after ROLLBACK
Implicit Locking
Summary

8 Creating and Managing Tables

Database Objects
Naming Rules
The CREATE TABLE Statement
Referencing Another User's Tables
The DEFAULT Option
Creating Tables
Tables in the Oracle Database
Querying the Data Dictionary
Creating a Table by Using a Subquery
The ALTER TABLE Statement
Adding a Column
Modifying a Column
Dropping a Column
The SET UNUSED Option
Dropping a Table
Changing the Name of an Object
Truncating a Table
Summary

9 Oracle Date Time Functions

Date Time Data Types
TIMESTAMP Data Type
TIMESTAMP WITH TIME ZONE Data Type
TIMESTAMP WITH LOCAL TIME Data Type
Summary

10 Pseudo columns

What is Pseudo columns ?
Rownum
Rownum in comparison
Summary

11 Including Constraints

Objectives
What are Constraints?
Constraint Guidelines
Defining Constraints
The NOT NULL Constraint

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- The UNIQUE Constraint
- The PRIMARY KEY Constraint
- The FOREIGN KEY Constraint
- FOREIGN KEY Constraint Keywords
- The CHECK Constraint
- Adding a Constraint Syntax
- Dropping a Constraint
- Disabling Constraints
- Enabling Constraints
- Viewing Constraints
- Summary

12 Sequence

- What is a Sequence?
- The CREATE SEQUENCE Statement Syntax
- Creating a Sequence
- Confirming Sequences
- NEXTVAL and CURRVAL Pseudocolumns
- Using a Sequence
- Modifying a Sequence
- Guidelines for Modifying a Sequence
- Removing a Sequence
- Summary

13 Creating Views

- Database Objects
- What is a View?
- Why to use Views?
- Simple Views and Complex Views
- Creating a View
- Retrieving Data from a View
- Querying a View
- Modifying a View
- Creating a Complex View
- Rules for Performing DML Operations on a View
- Using the WITH CHECK OPTION Clause
- Denying DML Operations (With read only Option)
- Removing a View
- Inline Views
- Summary

14. Index

- What is an Index?
- How Are Indexes Created?
- Creating an Index
- When to Create an Index
- When Not to Create an Index
- Confirming Indexes
- Removing an Index
- Summary

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15 Controlling User Access

- Objectives
- Controlling User Access
- Privileges
- System Privileges
- Creating Users
- User System Privileges
- Granting System Privileges
- What is a Role?
- Creating and Granting Privileges to a Role
- Changing Your Password
- Object Privileges
- Granting Object Privileges
- Using the WITH GRANT OPTION
- How to Revoke Object Privileges
- Revoking Object Privileges
- Summary

16. Synonyms

- What is Synonyms?
- How Are Synonyms Created?
- Removing Synonyms
- Summery

