

Oracle Database 12c: SQL II - Intermediate

Course Summary

Description

This course builds upon the prerequisite introductory volume from the Oracle Database 12c: SQL Expert Series and considers intermediate-level SQL topics such as writing database queries using the SQL-99 syntax and exploiting the power of built-in functions that extend the capabilities of SQL.

You will learn how to complete of an application schema definition by creating database objects such as relational views, sequences, synonyms, indexes and others to compliment the table definitions. The crucial topic of data integrity and how this is protected using declarative constraints is covered.

With this course we will also leave the idyllic realm of the learning environment and begin to explore such practical real-world considerations as database object security and database performance.

Objectives

By the end of this course, students will be able to demonstrate how one can build intermediate-level and even advanced queries using the SQL-99 join syntax, along with other advanced query topics. It also considers both ANSI/ISO and native Oracle SQL built-in functions and the tremendous power that functions offer to SQL operations. It is difficult for one to use SQL within a production environment without liberal use of the built-in functions. Among many other tasks, the built-in functions allow one to move beyond the use of primitive date data types and values to include timestamps, time zones and to address other realistic date and time challenges. Finally attention is given to how one completes an application schema by creating database objects to compliment table definitions. One cannot implement a production database application simply with table and column definitions but needs to create and manage views, indexes, constraints and other object types.

Topics

- The Data Dictionary Structure
- About The SQL-99 Standard
- Enhancing Groups With Rollup & Cube
- Using The Case Expression
- SQL Functions: Character Handling
- SQL Functions: Numeric Handling
- SQL Functions: Date Handling
- Database Objects: About Database Objects
- Database Objects: Relational Views
- Database Objects: Indexes
- Database Objects: Creating Other Objects
- Database Objects: Object Management Using DDL
- Database Objects: Security
- Data Integrity Using Constraints
- Managing Constraint Definitions
- Understanding The Data Models

Audience

- Business and non-IT professionals
- Application designers and developers
- Business Intelligence (BI) analysts and consumers
- Database administrators
- Web server administrators

Prerequisites

Oracle Database 12c: SQL I – Introduction

Duration

Three days

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Course Outline

- I. Understanding The Data Models**
 - A. The Company Data Model
 - B. The Electronics Data Model
- II. About The SQL-99 Standard**
 - A. SQL-92 & SQL-99
 - B. Cross Joins
 - C. Natural Joins
 - D. Inner Joins
 - E. Implicit Inner Join
 - F. Outer Joins
 - G. Anti Joins
 - H. Named Sub-Queries
- III. Enhancing Groups With Rollup & Cube**
 - A. Using Rollup
 - B. The GROUPING() Function
 - C. Using Cube
- IV. Using The Case Expression**
- V. SQL Functions: Character Handling**
 - A. What Are The SQL Functions?
 - B. String Formatting Functions
 - C. UPPER(), LOWER() Example
 - D. INITCAP() Example
 - E. Character Codes Functions
 - F. CHR(), ASCII() Examples
 - G. Pad & Trim Functions
 - H. RPAD() Example
 - I. RTRIM() Example
 - J. TRIM() Example
 - K. String Manipulation Functions
 - L. DECODE() Example
 - M. SUBSTR() Example
 - N. INSTR() Example
 - O. TRANSLATE() Example
 - P. REPLACE() Example
 - Q. String Comparison Functions
 - R. LEAST() Example
 - S. Phonetic Search Function
 - T. SOUNDEX() Example
- VI. SQL Functions: Numeric Handling**
 - A. About The Numeric Data Functions
 - B. GREATEST() Example
 - C. ABS() Example
 - D. ROUND() Example
 - E. TRUNC() Example
 - F. SIGN() Example
 - G. TO_NUMBER() Example & Data Type Conversions
 - H. Null Values Functions
 - I. NVL() & NVL2() Function
 - J. NVL() Example (Character)
 - K. NVL() Example (Numeric Loss Of Data)
 - L. NVL() Example (Numeric Output)
 - M. NVL2() Example
 - N. COALESCE() Function
 - O. NULLIF() Function
- VII. SQL Functions: Date Handling**
 - A. Date Formatting Functions
 - B. TO_CHAR() & TO_DATE() Format Patterns
 - C. TO_CHAR() Examples
 - D. TO_DATE() Examples
 - E. EXTRACT() Example
 - F. Date Arithmetic Functions
 - G. MONTHS_BETWEEN() Example
 - H. ADD_MONTHS() Example
 - I. LAST_DAY() Example
 - J. NEXT_DAY() Example
 - K. TRUNC(), ROUND() Dates Example
 - L. NEWTIME() Example
 - M. About V\$TIMEZONE_NAMES
 - N. CAST() Function & Time Zones
- VIII. Database Objects: About Database Objects**
 - A. About Database Objects
 - B. About Schemas
 - C. Making Object References

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Course Outline (con't)

- IX. Database Objects: Relational Views**
 - A. About Relational Views
 - B. The Create View Statement
 - C. Why Use Views?
 - D. Accessing Views With DML
 - E. Maintaining View Definitions
 - F. Alter View
 - G. Drop View
 - H. DDL Using SQL Developer
- X. Database Objects: Indexes**
 - A. About Indexes
 - B. Create & Drop Index Statements
 - C. Indexes & Performance
 - D. Data Dictionary Storage
- XI. Database Objects: Creating Other Objects**
 - A. About Sequences
 - B. Referencing NEXTVAL
 - C. Referencing CURRVAL
 - D. Within The Default Clause
 - E. Alter Sequence & Drop Sequence
 - F. Alter Sequence
 - G. Drop Sequence
 - H. About Identity Columns
 - I. Create Table ... Generated As Identity
 - J. Alter Table ... Generated As Identity
 - K. Start With Limit Value
 - L. Alter Table ... Drop Identity
 - M. About Synonyms
 - N. Create & Drop Synonym Statements
 - O. Create Synonym
 - P. Drop Synonym
 - Q. Public Vs. Private Synonyms
 - R. Create Schema Authorization
- XII. Database Objects: Object Management Using DDL**
 - A. The Rename Statement
 - B. Tablespace Placement
 - C. Create Table ... Tablespace
 - D. The Comment Statement
 - E. The Truncate Table Statement
- XIII. Database Objects: Security**
 - A. About Object Security
 - B. Grant Object Privileges
 - C. Revoke Object Privileges
 - D. Object Privileges & SQL Developer
- XIV. Data Integrity Using Constraints**
 - A. About Constraints
 - B. Not Null Constraint
 - C. Not Null Example
 - D. Check Constraint
 - E. Unique Constraint
 - F. Primary Key Constraint
 - G. References Constraint
 - H. On Delete Cascade Example
 - I. On Delete Set Null Example
 - J. Constraints On Existing Tables
 - K. Constraints & SQL Developer
- XV. Managing Constraint Definitions**
 - A. Renaming & Dropping Constraints
 - B. Enabling & Disabling Constraints
 - C. Deferred Constraint Enforcement
 - D. Set Constraints
 - E. Handling Constraint Exceptions
 - F. Constraints With Views
 - G. Data Dictionary Storage
- XVI. The Data Dictionary Structure**
 - A. More About The Data Dictionary
 - B. Object-Specific Dictionary Views
 - C. USER_UPDATABLE_COLUMNS
 - D. The Dictionary Structure
 - E. Metadata & SQL Developer