Oracle Database: SQL Workshop

Course code: ORSQL

The course is intended for everyone who needs to know SQL. In addition to an introduction to what SQL is, participants will learn to write SQL queries from simple SELECT for data retrieval, through various conditions of conditions, data sorting, use of functions to complex SQL queries with aggregated data. DML commands for inserting, modifying and deleting data and DDL commands for creating, modifying and deleting tables and other objects, creating users, setting rights and access to objects, creating nested SQL queries, working with data and next.

What we will teach you

- Understand what SQL is and how to work with it
- Use the SELECT statement to display the contents of entire tables
- Select only selected columns
- Use the WHERE conditions to select only the rows you want
- Sort returned data
- Work with functions
- Convert data types using conversion functions
- Suppress duplicate data
- Group data according to selected requirements
- Use of aggregation functions (AVG, MIN, MAX, SUM, COUNT)
- Select data from multiple tables (JOINS)
- Create Subqueries
- Group query results using SET operators into one
- Insert, change and delete data in tables
- Create tables
- Change tables
- Get information from the data dictionary
- Create Sequences, Synonyms and Indexes
- Create VIEW views
- Manage objects in schemas
- Advanced work with subqueries, including correlated queries
- Advanced SQL statements for bulk data entry
- Save a dropped table or rows using FLASH BACK technology

Required input knowledge

- Basic computer work

Teaching method

- Expert explanation with practical examples and exercises on computers

Course syllabus

Introduction to SQL language

- What is SQL language, history and uses
- division of SQL statements into categories
- How the SQL query is processed

Retrieve data using the SELECT statement

- Select all columns
- Selection of specific columns
- Working with arithmetic expressions
- NULL values ??and SELECT
- Defining Aliases (naming columns and tables)

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- Joining columns and working with texts
- Suppress duplicates with DISTICT
- SELECT constraints using conditions and alphabetical sorting
- WHERE condition
- Conditions for equality, greater, smaller and unequal
- Conditions for the range of values ??using BETWEEN
- Multiple conditions using OR or AND
- Multiple conditions using IN
- Searches for text expressions using LIKE
- Search for NULL values
- Priority multiple conditions
- Sort the output alphabetically
- Limit selection to a certain number of rows
- Interactive query writing - Substitution variables

Single line functions

- Explanation of how to use them in SQL statements
- functions for working with text
- case sensitivity suppression function
- nesting functions
- functions for rounding and trimming decimal places
- MOD function to check the correctness of numbers
- date function

Conversion function

- Text conversion function
- Number conversion function
- Date conversion function
- How to understand date and number formats
- Functions for working and conversion with NULL values
- CASE and DECORE functions

Data merging and aggregation functions

- How to merge data using GROUP BY
- WHERE and HAVING conditions
- How to calculate Average, Minimum, Maximum, Sum and Count

Retrieving data from multiple tables

- Introduction - why data is obtained from multiple tables
- Queries over multiple INNER JOIN tables
- Queries over multiple LEFT, RIGHT, and FULL JOIN tables
- How to retrieve data from more than two tables
- Queries over multiple CROSS JOIN tables

Use of SUBQUIRIES

- What are subqueries good for (nested queries)
- Creation of subqueries in WHERE conditions
- Multiple rows returning subqueries - IN, ANY, ALL
- Multi-column subqueries

Use of SET operators

- How to combine the outputs of multiple queries into one result
- UNION

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- UNION ALL
- INTERSECT
- MINUS

Inserting, modifying and deleting data in tables using DML commands

- Data entry - INSERT
- Data change - UPDATE
- Deleting data - DELETE
- Delete the contents of the table using TRUNCATE TABLE
- Transactions and their termination using COMMIT or ROLLBACK
- Defining transactional CHECKPOINTS
- Consistent reading
- SELECT FOR UPDATE

Creating tables and introduction to DDL commands

- How to name columns, tables, and other objects
- How to create a table
- Data types in tables
- Defining DEFAULT values
- Restrictions - Primary key, Foreign key, UNIQUE, Not Null, CHECK
- Create a table using a subquery
- Editing tables (ALTER TABLE)
- DROP TABLE

Data dictionary views

- Explanation of what a data dictionary is
- Division of views into V $ and DBA views
- Views DBA, ALL, USER
- How to get the necessary information from the data dictionary

Creating sequences, synonyms and indexes

- Explanation of what a sequence is
- Creating sequences
- How to use sequences to generate key values ??during INSERT
- How to get sequence information
- An explanation of what a synonym is
- Creating and deleting synonyms
- What is a good index for
- Creating indexes
- Cancel indexes

VIEW

- Introduction what VIEW is and what it is used for
- Creating views
- Changing views
- Constraints in views
- How to create a VIEW that allows data editing
- Read-only views

Management and changes of objects in schemas

- How to add and remove constraints in tables
- Constraint Removal Online
- Cascading possibilities of constraints

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- Renaming columns, constraints and tables
- Switching constraints on and off
- Constraint states
- Delayable execution of constraints
- Delete a table with the PURGE option
- Working with temporary tables
- External tables

Data acquisition using subqueries
- Jednoduché subdotazy (opakování)
- Více sloupcové subtodaty
- Correlované subdotazy
- EXISTS a NOT EXISTS v subdotazech
- Subdotazy pomocí WITH klauzule

Manipulace dat pomcí subdotazů
- Vkládání dat pomocí subdotazů
- WITH CHECK constraint v subdotazech
- UPDATE v correlovaných subdotazech
- DELETE v correlovaných subdotazech

User access and rights control
- Introduction to system and object rights
- System rights
- Object rights
- Role
- Change user password
- Assigning and removing rights to users

Data manipulation using advanced queries
- Use DEFAULT values when entering data
- Insert data into multiple tables with a single command
- Conditional insertion of data into tables according to conditions
- MERGE statement for inserting or changing data
- Introduction to FLASHBACK technologies

Working with date and time in different time zones
- Introduction - time zones
- Different types of date and time acquisition with time zones and offsets
- Advanced data types for working with data

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