# Oracle Database 23ai: New Features for Developers Training

Duration: **2 Day**

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Oracle Database 23ai: New Features for Developers focuses on the latest capabilities introduced for database developers and the improvements made to existing Oracle Database development features.

The course places particular emphasis on SQL enhancements that provide greater flexibility when writing SELECT, DML, DDL, and Materialized View statements. Participants also explore improvements to Oracle's analytic platform, expanded JSON functionality, vectorized query processing, Materialized View enhancements, and the latest Globalization support capabilities.

## Prerequisites

Participants should have practical database development experience with a modern version of Oracle Database.

## Who Should Attend

This course is intended for database developers who want to use the latest Oracle Database 23ai capabilities to strengthen their development skills and improve productivity.

## What You Will Learn

By the end of the course, participants will be able to:

- Understand and apply SQL enhancements related to DML and DDL operations.
- Work with new and improved JSON capabilities in Oracle Database 23ai.
- Explore enhancements to Oracle's analytic platform.
- Apply new Vectorized Query Processing techniques.
- Use Staging Tables effectively.
- Take advantage of Materialized View enhancements.
- Work with the latest changes to date and time handling.
- Use updated Globalization Support capabilities.

## Training Outline

### SQL Enhancements for DML & DDL

- Learning objectives
- Using `DEFAULT ON NULL` with UPDATE statements
- Enhancements to SQL statements
- Annotations
- Improvements to `IF (NOT) EXISTS`
- Using column aliases or positions with `GROUP BY`

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- SELECT statements without a FROM clause
- Enhancements to the RETURNING clause
- SQL support for the BOOLEAN data type
- Table Value Constructor
- Aggregation over INTERVAL data types
- Direct Joins for UPDATE and DELETE operations
- Section summary

### JSON

- Learning objectives
- JSON Schema support
- SODA enhancements
- Improvements to JSON_TRANSFORM
- Comparing and sorting JSON data types
- Predicates for JSON_VALUE and JSON_QUERY
- JSON-Relational Duality View
- Lock-Free Concurrency Control
- CREATE_VIEW_ON_PATH
- Section summary

### Analytic Platform

- Learning objectives
- Data Quality Operators
- Enhancements to JSON Materialized Views
- Section summary

### Other New Features

- Learning objectives
- Vectorized Query Processing
- Staging Tables
- LPCT for Materialized View refresh and staleness tracking
- Section summary

### SQL Enhancements for Materialized Views

- Learning objectives
- Overview of Materialized Views (MV)
- Semi-Join Materialized Views
- ANSI Join Materialized Views
- Enhanced Materialized View refresh techniques
- DBMS_MVIEW Package APIs
- Section summary

### Other SQL Enhancements

- Learning objectives
- Transportable Binary XML (TBX)
- Indexes with Automatic Maintenance
- Enhanced Automatic Indexing
- Section summary

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## Time and Date Handling Changes

- Learning objectives
- Enhanced Time Zone Data Upgrade
- Considerations for changes to Time Zone definitions
- Optimizing Time Zone File upgrades
- Tables containing TIMESTAMP WITH TIME ZONE data
- New parameter in the init.ora file
- SYSDATE and SYSTIMESTAMP
- Date and time handling in Oracle Database
- Example of setting Database-Specific Time
- Section summary

## Globalization Support

- Learning objectives
- Globalization improvements
- Unicode IVS support
- Unicode 15.0 support
- Section summary