HA150

SAP HANA 2.0 SPS07 - SQLScript for SAP HANA

COURSE OUTLINE

Course Version: 19
Course Duration:

SAP Copyrights, Trademarks and Disclaimers

Typographic Conventions

American English is the standard used in this handbook.

The following typographic conventions are also used.

This information is displayed in the instructor's presentation	
Demonstration	
Procedure	
Warning or Caution	
Hint	
Related or Additional Information	
Facilitated Discussion	
User interface control	*Example text*
Window title	*Example text*

Contents

Course Overview

TARGET AUDIENCE

This course is intended for the following audiences:

- Application Consultant
- Development Consultant
- Technology Consultant
- Database Administrator
- Developer

UNIT 1 Fundamentals

Lesson 1: What is the Difference Between SQL and SQLScript?

Lesson Objectives

After completing this lesson, you will be able to:

- Understand SAP HANA
- Understand SQL
- Understand how SQLScript extends SQL

Lesson 2: Explaining SAP HANA XS Advanced and SAP HANA Deployment Infrastructure (HDI)

Lesson Objectives

After completing this lesson, you will be able to:

- Understand XS advanced and HDI

Lesson 3: Understanding HDI and Working with the Database Explorer

Lesson Objectives

After completing this lesson, you will be able to:

- Understand HDI and work with the Database Explorer

Lesson 4: Describing the SAP HANA Database Module

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the SAP HANA Database Module

Lesson 5: Working with the SAP Web IDE for SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Introduce the SAP Web IDE for SAP HANA
- Introduce the SQL Console of SAP Web IDE for SAP HANA

Lesson 6: Understanding the Course Data

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the sample database used throughout the course

UNIT 2 SQL - Refreshing the Essentials

Lesson 1: Understanding Motivation and Basic Concepts

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the motivation for and foundation of the relational model
- Understand SQL and its relationship to the relational model
- Understand database tables as the most important database objects

Lesson 2: Using Data from a Table or View

Lesson Objectives

After completing this lesson, you will be able to:

- Write simple database queries using SQL's SELECT statement and project columns in and out of queries using the SELECT clause
- Calculate column values, use built-in functions and the CASE expression in column lists
- Avoid duplicates in SELECT statement result sets
- Limit results sets to a given number of rows and browse through result sets
- Ensure a specific order in result sets
- Restrict the result set using the WHERE clause

Lesson 3: Understanding NULL Values

Lesson Objectives

After completing this lesson, you will be able to:

- Interpret NULL values in databases and understand why their presence can lead to unexpected query results

Lesson 4: Aggregating Data

Lesson Objectives

After completing this lesson, you will be able to:

- List the most important aggregate functions supported by HANA and use them to determine aggregated values on table columns using a single SELECT statement
- Determine aggregated values for groups of rows, using the GROUP BY clause
- Filter groups using the HAVING clause

Lesson 5: Understanding Unions and Joins

Lesson Objectives

After completing this lesson, you will be able to:

- Read data from multiple tables
- List the various types of JOIN constructs and use the appropriate JOIN construct to combine data from several tables using a single query

Lesson 6: Changing Data Stored in Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Add rows to database tables using SQL
- Change existing rows of a database table
- Remove existing rows from a database table

UNIT 3 SQL Logic Containers

Lesson 1: User-Defined Functions

Lesson Objectives

After completing this lesson, you will be able to:

- Create and use scalar and table user-defined functions

Lesson 2: Creating Database Procedures

Lesson Objectives

After completing this lesson, you will be able to:

- Create and use database procedures in SAP HANA

Lesson 3: Trapping Errors in SQLScript

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the need to trap errors
- Define customized error conditions
- Control program flow to deal with errors

Lesson 4: Creating User-Defined Libraries

Lesson Objectives

After completing this lesson, you will be able to:

- Create User-Defined Libraries

UNIT 4 Declarative Logic

Lesson 1: Using Declarative Logic

Lesson Objectives

After completing this lesson, you will be able to:

- Use declarative logic

UNIT 5

Best Practices and Troubleshooting

Lesson 1: Understanding the Tools and Views to Analyze and Optimize SQL

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the tools and views for analyzing and optimizing SQL in SAP HANA

Lesson 2: Applying Tools and Views to Optimize SQL Performance

Lesson Objectives

After completing this lesson, you will be able to:

- Apply Views and Tools to optimize SQL Performance

Lesson 3: Further Tools for Troubleshooting

Lesson Objectives

After completing this lesson, you will be able to:

- Usage of further tools for troubleshooting SQLScript

UNIT 6 Imperative Logic

Lesson 1: Implementing Imperative Logic

Lesson Objectives

After completing this lesson, you will be able to:

- Implement imperative logic

UNIT 7 Temporal Tables

Lesson 1: Working with Temporal Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Work with temporal tables

UNIT 8 OLAP Operations

Lesson 1: Using OLAP Analytic Features

Lesson Objectives

After completing this lesson, you will be able to:

- Introduce OLAP analytic features
- Use SQL Group By features
- Use window framing in SQL

UNIT 9 Hierarchies

Lesson 1: Working with Hierarchies

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the basics of hierarchies

UNIT 10 Appendix - SQL Fast Track

Lesson 1: Using Sub Queries

Lesson Objectives
After completing this lesson, you will be able to:

- Read data using sub queries

Lesson 2: Defining How Data Is Stored

Lesson Objectives
After completing this lesson, you will be able to:

- List the most important data types SAP HANA supports
- Create new database tables in HANA
- Change tables by adding, removing or renaming columns

Lesson 3: Using Views for Data Access

Lesson Objectives
After completing this lesson, you will be able to:

- Describe the use cases for and advantages of using database views, define database views and use them in queries

Lesson 4: Defining Data Access

Lesson Objectives
After completing this lesson, you will be able to:

- Understand database schemas and access tables in other schemas
- Explain when database indexes make sense in SAP HANA and create and delete indexes using SQL

Lesson 5: Explaining Database Transactions

Lesson Objectives
After completing this lesson, you will be able to:

- Explain database transactions and the ACID requirements
- Finish database transactions in SAP HANA using SQL statements
- Describe issues that arise if transactions are not mutually isolated
- Understand and control isolation levels of transactions and how SAP HANA handles concurrency