

# HA150

## SAP HANA 2.0 SPS07 - SQLScript for SAP HANA

### COURSE OUTLINE

Course Version: 19  
Course Duration:

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# 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

## vii Course Overview

### 1 Unit 1: Fundamentals

|   |  |
|---|--|
| 1 | Lesson: What is the Difference Between SQL and SQLScript?                            |
| 1 | Lesson: Explaining SAP HANA XS Advanced and SAP HANA Deployment Infrastructure (HDI) |
| 1 | Lesson: Understanding HDI and Working with the Database Explorer                     |
| 1 | Lesson: Describing the SAP HANA Database Module                                      |
| 1 | Lesson: Working with the SAP Web IDE for SAP HANA                                    |
| 2 | Lesson: Understanding the Course Data  |

### 3 Unit 2: SQL - Refreshing the Essentials

|   |   |
|---|---|
| 3 | Lesson: Understanding Motivation and Basic Concepts |
| 3 | Lesson: Using Data from a Table or View             |
| 3 | Lesson: Understanding NULL Values                   |
| 3 | Lesson: Aggregating Data                            |
| 4 | Lesson: Understanding Unions and Joins              |
| 4 | Lesson: Changing Data Stored in Tables              |

### 5 Unit 3: SQL Logic Containers

|   |   |
|---|---|
| 5 | Lesson: User-Defined Functions          |
| 5 | Lesson: Creating Database Procedures    |
| 5 | Lesson: Trapping Errors in SQLScript    |
| 5 | Lesson: Creating User-Defined Libraries |

### 7 Unit 4: Declarative Logic

|   |                                 |
|---|---------------------------------|
| 7 | Lesson: Using Declarative Logic |
|---|---------------------------------|

### 9 Unit 5: Best Practices and Troubleshooting

|   |   |
|---|---|
| 9 | Lesson: Understanding the Tools and Views to Analyze and Optimize SQL |
| 9 | Lesson: Applying Tools and Views to Optimize SQL Performance          |
| 9 | Lesson: Further Tools for Troubleshooting                             |

### 11 Unit 6: Imperative Logic

|    |                                       |
|----|---------------------------------------|
| 11 | Lesson: Implementing Imperative Logic |
|----|---------------------------------------|

### 13 Unit 7: Temporal Tables

|    |                                      |
|----|--------------------------------------|
| 13 | Lesson: Working with Temporal Tables |
|----|--------------------------------------|

|           |                 |  |
|-----------|-----------------|--|
| <b>15</b> | <b>Unit 8:</b>  | <b>OLAP Operations</b>                   |
| 15        |                 | Lesson: Using OLAP Analytic Features     |
| <b>17</b> | <b>Unit 9:</b>  | <b>Hierarchies</b>                       |
| 17        |                 | Lesson: Working with Hierarchies         |
| <b>19</b> | <b>Unit 10:</b> | <b>Appendix - SQL Fast Track</b>         |
| 19        |                 | Lesson: Using Sub Queries                |
| 19        |                 | Lesson: Defining How Data Is Stored      |
| 19        |                 | Lesson: Using Views for Data Access      |
| 19        |                 | Lesson: Defining Data Access             |
| 19        |                 | Lesson: Explaining Database Transactions |

# Course Overview

## **TARGET AUDIENCE**

This course is intended for the following audiences:

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





## 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

## 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

## 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





## 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



## Lesson 1: Implementing Imperative Logic

### Lesson Objectives

After completing this lesson, you will be able to:

- Implement imperative logic



## Lesson 1: Working with Temporal Tables

### Lesson Objectives

After completing this lesson, you will be able to:

- Work with temporal tables



## 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





## Lesson 1: Working with Hierarchies

### Lesson Objectives

After completing this lesson, you will be able to:

- Understand the basics of hierarchies



## 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