

# uCertify

## SQL for Data Scientists



Lesson



Practice test



Live-Lab

08 Jun 2023

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- 2 Data Sources
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Get a hands-on experience in SQL with uCertify's course SQL for Data Scientists, which is designed to be a learning resource for anyone who wants to become (or who already is) a data analyst or data scientist. It teaches the ability to pull data from databases to build their own datasets without having to rely on others in the organization to query the source system and transform it into flat files (or spreadsheets) for them.

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### 1: Introduction

- Who This Course Is For?
- Why You Should Learn SQL if You Want to Be a Data Scientist?
- Conventions

### 2: Data Sources

- Data Sources
- Tools for Connecting to Data Sources and Editing SQL
- Relational Databases
- Dimensional Data Warehouses

- Asking Questions About the Data Source
- Introduction to the Farmer's Market Database
- A Note on Machine Learning Dataset Terminology
- Exercises

### 3: The SELECT Statement

- The SELECT Statement
- The Fundamental Syntax Structure of a SELECT Query
- Selecting Columns and Limiting the Number of Rows Returned
- The ORDER BY Clause: Sorting Results
- Introduction to Simple Inline Calculations
- More Inline Calculation Examples: Rounding
- More Inline Calculation Examples: Concatenating Strings
- Evaluating Query Output
- SELECT Statement Summary
- Exercises Using the Included Database

### 4: The WHERE Clause

- The WHERE Clause
- Filtering SELECT Statement Results
- Filtering on Multiple Conditions
- Multi-Column Conditional Filtering
- More Ways to Filter
- Filtering Using Subqueries
- Exercises Using the Included Database

## 5: CASE Statements

- CASE Statement Syntax
- Creating Binary Flags Using CASE
- Grouping or Binning Continuous Values Using CASE
- Categorical Encoding Using CASE
- CASE Statement Summary
- Exercises Using the Included Database

## 6: SQL JOINS

- Database Relationships and SQL JOINS

- A Common Pitfall when Filtering Joined Data
- JOINS with More than Two Tables
- Exercises Using the Included Database

## 7: Aggregating Results for Analysis

- GROUP BY Syntax
- Displaying Group Summaries
- Performing Calculations Inside Aggregate Functions
- MIN and MAX
- COUNT and COUNT DISTINCT
- Average
- Filtering with HAVING
- CASE Statements Inside Aggregate Functions
- Exercises Using the Included Database

## 8: Window Functions and Subqueries

- ROW NUMBER
- RANK and DENSE RANK



- NTILE
- Aggregate Window Functions
- LAG and LEAD
- Exercises Using the Included Database

## 9: Date and Time Functions

- Setting datetime Field Values
- EXTRACT and DATE\_PART
- DATE\_ADD and DATE\_SUB
- DATEDIFF
- TIMESTAMPDIFF
- Date Functions in Aggregate Summaries and Window Functions
- Exercises

## 10: Exploratory Data Analysis with SQL

- Demonstrating Exploratory Data Analysis with SQL
- Exploring the Products Table
- Exploring Possible Column Values

- Exploring Changes Over Time
- Exploring Multiple Tables Simultaneously
- Exploring Inventory vs. Sales
- Exercises

## 11: Building SQL Datasets for Analytical Reporting

- Thinking Through Analytical Dataset Requirements
- Using Custom Analytical Datasets in SQL: CTEs and Views
- Taking SQL Reporting Further
- Exercises

## 12: More Advanced Query Structures

- UNIONs
- Self-Join to Determine To-Date Maximum
- Counting New vs. Returning Customers by Week
- Summary
- Exercises

## 13: Creating Machine Learning Datasets Using SQL

- Datasets for Time Series Models
- Datasets for Binary Classification
- Taking Things to the Next Level
- Exercises

#### 14: Analytical Dataset Development Examples

- What Factors Correlate with Fresh Produce Sales?
- How Do Sales Vary by Customer Zip Code, Market Distance, and Demographic Data?
- How Does Product Price Distribution Affect Market Sales?

#### 15: Storing and Modifying Data

- Storing SQL Datasets as Tables and Views
- Adding a Timestamp Column
- Inserting Rows and Updating Values in Database Tables
- Using SQL Inside Scripts
- In Closing
- Exercises

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PRE-ASSESSMENTS QUESTIONS

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POST-ASSESSMENTS QUESTIONS

## 12 Live Labs

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**The SELECT Statement**

- Retrieving Data from Employee Department
- Listing Materials
- Analysing Total amount Paid By Customers'
- Concatenating the First and Last Names

**The WHERE Clause**

- Getting Details of Employees Residing in the US
- Retrieving details of Sellers Whose Name Starts with Kick
- Checking the Functionality of TRIM() Function
- Retrieving Data of Employees Lived in the US and Canada
- Analyzing the Man Power in a Company

**CASE Statements**

- Grading Employees Punctuality
- Checking the Availability of Items Used in Production

**SQL JOINS**

- Getting Detailed View for Analyzing Population
- Updating Post Office Databases
- Getting Employees History

**Aggregating Results for Analysis**

- Using the GROUP BY Keyword
- Getting the Sum of Number of Items
- Adding Unit Price
- Retrieving the Minimum and Maximum Price of the Commodity
- Retrieving Unique Places
- Analyzing the Items on the Basis of Price Category

### **Window Functions and Subqueries**

- Finding the Most Populated Territory
- Analyzing the Demography of Most Populated Territory
- Retrieving Pay Frequency
- Correcting the Entries of Database

### **Exploratory Data Analysis with SQL**

- Analyzing Country Codes

### **Building SQL Datasets for Analytical Reporting**

- Creating a Personalized Alias of a Query
- Creating a View

### **More Advanced Query Structures**

- Analyzing Gender Ratio Inside a Company
- Finding Overlap Records

### **Creating Machine Learning Datasets Using SQL**

- Retrieving Full Names

### **Analytical Dataset Development Examples**

- Finding Last Names

Storing and Modifying Data

- Using the DROP Command
- Updating a Record

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LIVE LABS

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VIDEO TUTORIALS

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MINUTES

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