

SQL Bootcamp

Group classes in NYC and onsite training is available for this course. For more information, email corporate@nobledesktop.com or visit: <https://www.nextgenbootcamp.com/classes/sql-bootcamp>



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Course Outline

Foundations of SQL & Databases

SQL Fundamental Concepts

- What is SQL & why is it used?
- Flavors of SQL: Postgres vs SQL Server, etc.
- Database Tables, Rows, & Columns
- Using ER (Entity Relationship) Diagrams to visual what's in a database

Exploring Databases & Writing SQL Statements (using the free DBeaver app)

- Connecting to a Database
- Database Navigator
- SQL Query Editor
- Using Code Hints
- Viewing the Results of your SQL query
- Setting Preferences

Writing SQL Queries

Writing SELECT Statements

- Syntax of a SELECT statement
- Selecting all columns or specific columns from a table
- Limiting the number of results using LIMIT
- Ordering the results using ORDER BY
- Returning only DISTINCT records (eliminating duplicates)

Filtering Results

- Data Types (Strings vs Numbers)
- Comparison Operators: equal to, greater or less than, not equal to, etc.
- Filtering results using WHERE, AND, OR, IN, and NOT
- Pattern Matching: Wildcard Filters

- Case Sensitivity

Using Joins to Combine Data from Multiple Tables

Understanding Table Relationships

- What are Primary vs Primary Keys
- Database Relations: One-to-One, One-to-Many, & Many-to-Many

Inner Joins

- The difference between Inner & Outer Joins
- Inner Joins
- Column & Table Aliases

Outer Joins & Finding NULLs

- Left Join
- Right Join
- Full Join
- Find NULL values

Manipulating, Aggregating, & Filtering Data

Using CAST to Change Data Types

Why and how to use CAST to make a data type fit your query's needs

Aggregate Functions

- Using Aggregate Functions to perform common statistical calculations
- Using SUM, COUNT, AVG, MAX & MIN

Working with Dates & Time

- Date Functions: Getting the desired part of a date/time (Year, Month, Day, etc.)
- Formatting dates, including the day of the week (Sunday, Monday, etc.)
- Calculating the difference between 2 dates

Grouping Data & Filtering Grouped Data

Grouping Data with Aggregate Functions

- Using GROUP BY to organize results into categories
- Applying Aggregate Functions to groups

Filtering Grouped Data with HAVING

- Using HAVING to filter the results of a GROUP BY
- HAVING vs WHERE

Advanced Query Techniques

Subqueries

- Subqueries: Queries within queries
- Single-Value vs Multi-Value vs Table-Value Subqueries

Aggregate Window Functions

Using OVER and PARTITION BY to apply Aggregate Functions

Conditionals with CASE

- Adding If-Else Logic with CASE
- Simple CASE vs Searched CASE

String Functions

- Manipulating text using string functions
- Using SUBSTRING, SPLIT_PART, UPPER, etc.

Self Join

- How a Self Join is different from other types of joins
- Using a Self Join

Views & User-Defined Functions

Views

- What are Views?
- The Advantages & Disadvantages of using Views
- How to Use & Query a View

Materialized Views

The difference between regular Views and Materialized Views

User-Defined Functions

- Using Scalar-Value (Single-Value) Functions
- Using Table-Value Functions