SQL Nanodegree Program Syllabus

Contact Info

While going through the program, if you have questions about anything, you can reach us at support@udacity.com. For help from Udacity Mentors and your peers visit the Udacity Classroom.

Nanodegree Program Info

Perform analysis on data stored in relational and non-relational database systems to power strategic decision-making. Learn to determine, create, and execute SQL and NoSQL queries that manipulate and dissect large scale datasets. Begin by leveraging the power of SQL commands, functions, and data cleaning methodologies to join, aggregate, and clean tables, as well as complete performance tune analysis to provide strategic business recommendations. Finally, apply relational database management techniques to normalize data schemas in order to build the supporting data structures for a social news aggregator.

Prerequisite Skills

A well-prepared learner is able to:

- Comfortable using Spreadsheet programs (Microsoft Excel, Google Spreadsheets)
- Comfortable identifying the type of data held in a data table.
- Basic Computer skills

Required Software

- sql workspace

Version: 1.0.0

Length of Program: 51 Days*

* This is a self-paced program and the length is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. Actual hours may vary.

Part 1: Welcome to the SQL Nanodegree Program

Welcome to the SQL Nanodegree program! Learn more about the pre-requisites, structure of the program,

and getting started!

Part 2: Introduction to SQL

When it comes to extracting insights from stored data, SQL is one of the most versatile tools available. Learn how to execute core SQL commands to define, select, manipulate, control access, aggregate and join data and data tables. Understand when and how to use subqueries, several window functions, as well as partitions to complete complex tasks. Clean data, optimize SQL queries, and write select advanced JOINs to enhance analysis performance. Explain which cases you would want to use particular SQL commands, and apply the results from queries to address business problems.

Project: Deforestation Exploration

In this project, students will be putting their SQL skills to the test to help determine where to concentrate efforts to combat deforestation.

Supporting Lessons

Lesson	Summary
Basic SQL	In this section, you will gain knowledge about SQL basics for working with a single table. You will learn the key commands to filter a table in many different ways.
SQL Joins	In this lesson, you will learn how to combine data from multiple tables together.
SQL Aggregations	In this lesson, you will learn how to aggregate data using SQL functions
SQL Subqueries & Temporary Tables	In this lesson, you will learn about subqueries, a fundamental advanced SQL topic. This lesson will walk you through the appropriate applications of subqueries, the different types of subqueries, and review subquery syntax and examples.
SQL Data Cleaning	Cleaning data is an important part of the data analysis process. You will be learning how to perform data cleaning using SQL in this lesson.
SQL Window Functions	Window functions allow users to compare one row to another without doing any joins using one of the most powerful concepts in SQL data analysis.
SQL Advanced JOINS & Performance Tuning	Learn advanced joins and how to make queries that run quickly across giant datasets. Most of the examples in the lesson involve edge cases, some of which come up in interviews.

Part 3: Management of Relational & Non-Relational Databases

Databases need to be structured properly to enable efficient and effective querying and analysis of data. Build normalized, consistent, and performant relational data models. Use SQL Database Definition Language (DDL) to create the data schemas designed in Postgres and apply SQL Database Manipulation Language (DML) to migrate data from a denormalized schema to a normalized one. Understand the tradeoffs between relational databases and their non-relational counterparts, and justify which one is best for different scenarios. With a radical shift of paradigms, learn about MongoDB and Redis to get an understanding of the differences in behaviors and requirements for non-relational databases.

Project: Udiddit, A Social News Aggregator

Investigate a poorly designed database for Udiddit, a social news aggregator. You'll design a new, normalized and performant database and migrate over data from the previous database.

Supporting Lessons

Lesson	Summary
Intro to DBMS: Relational and Non-Relational Databases	Get introduced to database management systems, as well as learning the difference between relational and non-relational databases.
Normalizing Data	Find out about the different forms of normalized data for optimizing database storage.
Data Definition Language (DDL)	Learn about the data definition language, such as creating tables and different data types.
Data Manipulation Language (DML)	Dive into the data manipulation language in order to alter existing tables and data.
Consistency with Constraints	Find out how to keep consistency amongst your data by adding constraints.
Performance with Indexes	Maximize your database performance by using indexes when and where appropriate.
Intro to Non-Relational Databases	With your relational database skills in hand, you're ready for a look into the other side of data, with non-relational databases.

Part 4: Career Services

The Careers team at Udacity is here to help you move forward in your career - whether it's finding a new job,

exploring a new career path, or applying new skills to your current job.

Project: Improve Your LinkedIn Profile

Find your next job or connect with industry peers on LinkedIn. Ensure your profile attracts relevant leads that will grow your professional network.

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