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Introduction

[Structured Query Language](#) is a powerful language to manage and manipulate data stored in databases. SQL is widely used in the field of data science and is considered an essential skill to have if you work with data. After being introduced in the 70s, it has become the standard querying language for relational databases. Over the years, data storage techniques have evolved to handle the enormous variety and volume of data, relational databases are still used across the industry.

Companies are now combining different databases like SQL and NoSQL to get the best results from both technologies. If you're interested in data management and data analytics, learning SQL is a must.

Moreover, the demand for SQL developers is on the rise, according to glassdoor the average salary of an SQL developer is 80000\$ in the US. So if you're interested in a career as a data scientist, data analyst, or SQL developer, SQL is the skill to add to your resume.

For those just starting out in the industry, you will face challenges related to learning SQL. Which is exactly what we will be talking about in this article. Assuming you study for about 10 hours per week, here is a roadmap for you to learn SQL in just 4 weeks.



Without further ado, let's jump right in.

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Important SQL Commands

To learn SQL, we need to focus on three main types of SQL commands:

- Data Manipulation Language (DML)
 - As the name suggests, DML is used to manipulate data in databases
 - It mainly includes the SELECT, INSERT, UPDATE, and DELETE statements
- Data Definition Language (DDL)
 - DDL commands are used for designing and modifying the structure of Databases
 - The CREATE, ALTER, and DROP statements fall under this category
- Data Control Language (DCL)
 - DCL statements are used to grant access level permissions to data stored in databases.
 - The GRANT and REVOKE statements are used to control the access levels to users in a database.

So in our roadmap, we will be covering all these topics, in weeks 1 and 2 we will be working on the basics of databases, installation, and DML statements. During week 3 we will learn DDL and we will finish learning in week 4 with DCL commands.

Roadmap to Learn SQL in 2023

Now that you have understood what topics need to be covered in 4 weeks, let us start out with what we will be learning in week 1. In order to achieve the best results using this roadmap we recommend that you put in at least 10 hours per week.

WEEK 1: Getting Started with SQL

Step by Step Roadmap to Learn SQL in 2023 •

WEEK 1: Getting Started with SQL



Overview of Databases, Including:

- Types of Databases:
- Relational & Non-Relational
- How they are different
- How data is stored
- ACID Properties of Relational Databases
- Database Management System



Set up your Machine to Run SQL

- You may either install MySQL on your machine
- A complete Installation guide is provided in our SQL Free Course
- Or you may use online tools like SQLBolt, SQLTeaching, W3Schools, etc.



Basic Data Manipulation by Performing SELECT Statements on Pre-existing Database with MySQL:

- WHERE, Order By, Group By, Having, Conditional Statements, etc.
- So, at the end of week 1, you will have understood databases and will be able to query and manipulate data in a single table.

This week you will be getting familiar with databases and setting up SQL on your machines. You will learn the basics of SQL and understand how we can use SQL to manipulate data. You will also be learning about different types of databases. Also, you will learn about ACID properties in SQL databases.

You will also set up SQL on your machines, the complete guide to install SQL is provided in our free course for SQL. You can also use any online SQL editor to practice SQL. Finally, you'll learn how to perform basic querying by performing SELECT statements on a database, using WHERE, Order By, Group By, Having, and Conditional Statements.

So to summarize this is what week 1 of learning SQL will teach you:

- Overview of Databases, including:
 - Types of Databases:
 - Relational & Non-Relational
 - How they are different
 - How data is stored
 - ACID Properties of Relational Databases
 - Database Management System
- Set up your machine to Run SQL
 - You may either install MySQL on your machine
 - A complete installation guide is provided in our SQL Free Course
 - Or you may use online tools like SQLBolt, SQLTeaching, W3Schools, etc.
- Basic Data Manipulation by performing SELECT statements on pre-existing Database with MySQL:
 - WHERE, Order By, Group By, Having, Conditional Statements, etc.

So, at the end of week 1, you will have understood databases and will be able to query and manipulate data in a single table.

WEEK 2: Working with Multiple Tables

In the second week, you'll learn how to work with multiple tables in SQL. You'll learn about keys, including primary and foreign keys, and how they relate to the tables. You'll also learn about different types of joins, and how to use them in SQL. Finally, you'll learn about subqueries and how to use aggregate functions like SUM, AVG, MAX, MIN, and COUNT.

As an SQL developer, you must know how to work with multiple tables. The only way to master this is by practicing. After covering topics like joins and subqueries, we would recommend you practice on any online resource that you like. For those who do not know, some resources to practice are hackerrank.com and w3schools.com.

Summarizing week 2:

- Concept of Keys: Primary, Foreign, Candidate, Super, etc
- Joins: Inner, Outer, Right, Left
- Sub-Query
- Aggregation Functions: SUM, AVG, MAX, MIN, COUNT, etc.



WEEK 3: Creating and Managing Databases and Tables

In week 3, you'll learn how to create and manage databases and tables using CRUD operations. You'll learn how to create databases, create tables, insert records, and retrieve records from these tables. You'll then learn to update and delete records as required. You'll also learn about constraints, which is a crucial concept to understand when creating tables. These steps are called C.R.U.D. operations in SQL.

We learned about the concept of keys during the last week, this week you will be able to create databases, you will be able to create tables with the proper constraints, and insert data into these tables. By the end of week 3, you can now create a proper database.

Summary of week 3:

- Create Databases
 - Creating Tables within and inserting records
 - Data Types
- Updating Tables
- Deleting records and tables using drop, delete, and truncate
- Constraints – Unique, Primary, Not Null, Check, Default, etc.

WEEK 4: Data Control Statements and Optimization

In the final week, you will learn about data control and optimization of databases. This is where you will focus on views, triggers, stored procedures, query optimization, and data normalization. You'll learn how all these concepts affect database performance. You will also learn about admin access and get the chance to work on a project to put your skills to the test.

By the end of this week, you now have the complete knowledge required to build full-fledged database systems. We recommend that you work on projects like movie database, music library, social media database, etc.

Here is a summary of week 4:

- Views
- Triggers
- Stored Procedures
- Query Optimization
- Data Normalization
 - How does it affect Database Design?
- Module, Package, Trigger, Cursor
- Admin Access
- Project – Movie

Conclusion

SQL is an excellent skill to have in the tech industry. It is a powerful and versatile language that is widely used for managing and analyzing data. In this 4-week roadmap, you can learn and build a strong foundation that will help you in your career. With a bit of dedication and practice, you can master SQL and make yourself an invaluable asset to any company.

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