Course Title: SQL Fundamentals for Data Analysis

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Course Description:

This course serves as an introduction to Structured Query Language (SQL) for the aspiring data analyst, focusing on fundamental concepts and practical applications. The course is divided into two parts: the first part provides a foundational understanding of RDBMS, SQL, and access to databases, while the second part introduces applications of the SELECT statement, various functions, clauses, and operators. The course incorporates interactive video lectures, as well as weekly course exercises to reinforce learning.

Prerequisites:

There are no required prerequisites for this course.

Platform: YouTube
Duration: < 15 minutes

Course Content:

1. ***Week 1: Introduction to the course***
    a. Overview of material
2. ***Week 2: What is SQL?***
    a. What is a database?
    b. What is a RDBMS?
    c. Define SQL
    d. What is an SQL flavour? Are there differences between different SQL flavours?
3. ***Week 3: Getting Started with SQL***
    a. Register for SQLite Online
    b. Setting up the database
4. ***Week 4: What is in a SQL table?***
    a. Tabular data storage
    b. Primary Key
    c. Foreign Key
5. ***Week 5: Understand SQL commands and components***
    a. Types of SQL commands
    b. Components of a query
6. ***Week 6: What are the SQL data types?***
    a. Understanding the data types
        i. Boolean
        ii. Numeric
        iii. String
        iv. Datetime

    b. Identifying the data type of a column, or in a table
7. ***Week 7: Constructing a Select Statement***
    a. Selecting from a table
    b. Select All / Single Column / Multiple Columns
    c. Selecting Distinct values from a column
    d. Using Aliases
8. ***Week 8: Basic Aggregations Functions***
    a. Count
    b. Sum
    c. Avg
    d. Min
    e. Max
9. ***Week 9: Basic Formatting Functions***
    a. String Functions
        i. Lower()
        ii. Upper()
    b. Numeric Functions
        i. Floor()
        ii. Round()
    c. Datetime Functions
        i. Time(), Day(), Month(), Year()
        ii. Timestamp(), Date()
10. ***Week 10: Limit, Order By, Group By***
    a. Limit
    b. Order By
        i. Asc
        ii. Desc
    c. Group By
11. ***Week 11: Introduction to the Where & Having Statements***
    a. Where
    b. Having
12. ***Week 12: Logical & Comparison Operators***
    a. And / Or / Between / In
    b. Not / Is (Not) Null
    c. Like
    d. Greater (Than) / Less (Than)
    e. Equality / Inequality
13. ***Week 13: Arithmetic Operators***
    a. Addition
    b. Subtraction
    c. Product
    d. Division
    e. Modulo
14. ***Week 14: Use cases for the Case When statement***

a. Using case when w/ logical & comparison operators
b. Using case when w/ arithmetic operators

15. Week 15: Introduction to Joins

a. Left Join
b. Right Join
c. Inner Join
d. Outer Join

16. Week 16: How to properly structure a Query

a. Query Order
b. Query Format
c. Reference a Database
d. Common Errors & Debugging

Course Material:
https://github.com/filsan95/Course-SQL_Fundamentals_for_Data_Analysis

Resources (Optional):

- Oppel, A., & Sheldon, R. (2009). SQL A Beginner's Guide (3rd ed.). McGraw Hill. Retrieved from SQL: A Beginner's Guide
- W3Schools. (n.d.). SQL Tutorial. Retrieved from W3Schools SQL Tutorial