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 (@TheDataArchives)
Duration: < 15 minutes

Course Content:

1. **Week 1: Introduction to the course**
   a. Access to course content
   b. Overview of material
2. **Week 2: Understanding Databases, and 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?
   e. Understanding Schemas and Views in Databases
3. **Week 3: Getting Started with SQL**
   a. Register for SQLite Online
   b. Setting up the database
   c. Introducing the Chinook database
4. **Week 4: What is in a SQL table?**
   a. Tabular data storage
   b. Components of a table
   c. Primary Key
   d. Foreign Key
5. **Week 5: Understanding 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, and Keywords*
    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()
    d. Datetime Keywords
        i. Current_Timestamp, Current_Time, Now().

10. *Week 10: Limit, Order By, Group By*
    a. Limit
    b. Order By
        i. Asc
        ii. Desc
    c. Group By

11. *Week 11: Where & Having Clauses*
    a. Where
    b. Having

12. *Week 12: Arithmetic Operators*
    a. Addition
    b. Subtraction
    c. Multiplication
    d. Division
    e. Modulo

13. *Week 13: Logical & Comparison Operators*

      a. Logical Operators
- i. And / Or / Between / In
- ii. Not / Is (Not) Null
- iii. Like

      b. Comparison Operators
- i. Greater (Than) / Less (Than)
- ii. Equality / Inequality

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: Structuring a proper Query & Debugging Errors***
      a. Query Order
      b. Query Format
      c. Variable naming conventions
      d. Common Errors & Debugging
      e. Reference a Database

Course Material:
- ➢ https://www.youtube.com/@TheDataArchives
- ➢ 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