SQL assignment specification

Contents

1. Purpose

The intention of setting this assignment is for you to partially obtain learning outcome 4 of this course. The process of attempting the assignment is more valuable than the mark received for the completion of the assignment.

In attempting and completing this assignment correctly, it is intended you will improve your:

- Data-based problem solving skills.
    - The answers to most of the questions will likely require you to tackle the problem bit-by-bit (a form of abstraction or "divide and conquer" problem solving).
    - Some questions require you to explore the dataset's metadata and to understand what the data involved looks like.
    - Trial and error is not an effective way to solve data problems. Make use of techniques that will save you time and progress toward a solution, e.g. reading the database diagram.
- Ability to manipulate relational data using SQL SELECT statements.
    - The answers require you to know when and how to correctly use scalar functions, WHERE clauses, JOINs, aggregate functions, HAVING clauses and subqueries.
- Patience.

2. Guidelines

2.1 Submission

For each question, submit your answer to the appropriate Canvas quiz before **17 May at 23:59** as stated on the quizzes. You have three untimed attempts at each quiz.

Each question requires you to write a single SQL SELECT query to discover a single value answer. You need only submit your answer, not your SQL code, or anything else. **However, you are required to keep a record of your working as evidence of your progress.**

2.2 Weighting

This assignment is worth 15% of your final grade. There are 20 questions.

2.3 Academic honesty and integrity

Assignments are individual assessments. You must complete all the work yourself. Do not submit work that you did not produce. Do not work in a way which could result in parties producing the same or very similar work.

In attempting this assignment you agree to adhere to all the principles and practices of academic honesty and integrity for the University of Auckland outlined here: https://www.auckland.ac.nz/en/about/learning-and-teaching/policies-guidelines-and-procedures/academic-integrity-info-for-students.html. Any form of cheating, plagiarism, assistance in cheating, unfair collaboration, or other behaviour deemed to be academic misconduct will not be tolerated. Academic misconduct will be dealt with according to the University's Student Academic Conduct Statute.

3. Data and submission

3.1 AWLT database for SQL Assignment

A canvas quiz will be set up for this assignment. The AWLT database for the SQL assignment (named "AWLTSQLASGMT.mdf") will be downloadable via Canvas. You should attach the AWLT database provided with the quiz to SSMS to work on the quiz questions.

Assignment questions are given in your Canvas quizzes. You must attempt the quiz to see the questions. The questions and answers are identical across all 3 attempts. You have three untimed attempts at each quiz. The "Questions and tasks" section below contains additional information or advice for some questions.

3.2 Canvas quiz peculiarities

- All submitted answers for all questions are **treated as text and matched for exact character sequence** (the matching is case-insensitive). Examples:
  - "1234567" is not the same as "1,234,567"
  - "1" is not the same as "1.0"
  - "1.2", "1.20", "1.200", "01.2" are all different
  - "2017-01-01" is not the same as "2017/01/01"
  - "hello." is not the same as "hello"
  - "Hello" *is* the same as "hello"
- Enter text without quotation marks, unless the question explicitly states otherwise.
- Enter integers without decimal points.
- Enter decimal numbers exactly as required the by the question. This is usually "padded and rounded to 2dp". Examples of padding and rounding to 2dp:
- 100 becomes 100.00 (no rounding, but padding needed)
- 100.1 becomes 100.10 (no rounding, but padding needed)
- 100.159 becomes 100.16 (rounding to 2dp needed)
- Once you make a submission, that submission counts as an attempt for all questions in the quiz. If you leave any questions blank, those questions will be marked as incorrect and awarded no marks.
- For each question in a submitted quiz, correct answers will provide no comment (that's how you know it is correct), and incorrect answers will be labelled as incorrect (that is how you know it is wrong).
- Correct answers are not revealed, even after the quiz is over. Some common mistakes and questions will be discussed in class.

4. Questions and tasks

There may be multiple ways to answer a question, but the best answer (and the one you should work towards writing) is a *single* SQL SELECT statement which will produce the correct answer in a single step without any manual work. E.g. consider two methods to answer the question, "How many different sizes are used for products belonging to the category named 'Mountain Bikes'?"

Method 1: The value returned by the following query produces the answer.

```
SELECT COUNT(DISTINCT Size)
FROM SalesLT.Product p
    INNER JOIN SalesLT.ProductCategory pc ON p.ProductCategoryID =
pc.ProductCategoryID
WHERE pc.Name = 'Mountain Bikes'
```

Method 2: Manually inspect the ProductCategory table to find the ID number for "Mountain Bikes". Then using the result from the query below, manually count how many different sizes appear.

```
SELECT *
FROM SalesLT.Product p
WHERE ProductCategoryID = 5
ORDER BY Size
```

Both methods yield the correct answer, but the student who uses method 2 is not proficient in SQL. In an ideal world, a student who uses method 1 to answer the question would pass the SQL test and a student that does not would fail the test.

4.1 Question 16

Let's say your final query is

```
SELECT
    ProductCategoryID,
    Name AS ProductCategoryName,
    ParentProductCategoryID,
    0 AS ParentSubCatCount
FROM SalesLT.ProductCategory
WHERE ProductCategoryID < 1000
```

then its "answerToSubmit" value is 1283. This number is calculated by the query below, using the template query provided in the question:

```
SELECT SUM(ProductCategoryID + LEN(ProductCategoryName) + ParentProductCategoryID +
ParentSubCatCount) AS answerToSubmit
FROM (
    SELECT
        ProductCategoryID,
        Name AS ProductCategoryName,
        ParentProductCategoryID,
        0 AS ParentSubCatCount
    FROM SalesLT.ProductCategory
    WHERE ProductCategoryID < 1000
) q16
```

5. Document change history

v1.2 2021/04/28

- Update for new semester

v1.1 2020/09/28

- Update for new semester

v1.0 2020/05/05

- Initial release