Database Systems Lab Spring 2019 Lab Manual 3

INSTRUCTORS:

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INSTRUCTIONS:

- All queries should be in a single file or one file can be used for one activity.
- The queries should be properly documented i.e. you should write comments over each query as to what its purpose is. (You can comment a line by adding two hyphens in the beginning "--")
- For example:
  --Activity 1
  --Group Functions
  --Average
  SELECT AVG(UnitPrice) FROM Products
- Failure to follow instructions might result in -25% or even -50% score.

PURPOSE:

Develop understanding of:

- Group Functions
- Having Clause
- Column and Table Alias

1   Aggregate Functions

Aggregate functions allow you to perform a calculation on a set of values to return a single scalar value. The most common aggregate functions are:

- AVG
- MIN
- SUM
- COUNT
- STDEV
- STDEVP
- VAR
- VARP
- MAX

Note: All the Group function except COUNT ignore null values

Activity 1: Perform all the group function on Northwind Schema.

2   The GROUP BY Clause

The SQL **GROUP BY** clause is used in collaboration with the SELECT statement to arrange identical data into groups. This GROUP BY clause follows the WHERE clause in a SELECT statement and precedes the ORDER BY clause.

For example:

SELECT SupplierID, AVG(UnitPrice)

FROM Products

GROUP BY SupplierID

3   The HAVING Clause

The WHERE clause is a row filter, the HAVING clause is a group filter. Only groups for which the HAVING predicate evaluates to TRUE are returned by the HAVING phase to the next logical query processing phase. Groups for which the predicate evaluates to FALSE or UNKNOWN are discarded. Because the HAVING clause is processed after the rows have been grouped, you can refer to aggregate functions in the logical expression.

For example, in the query below, the HAVING clause has the logical expression COUNT(*****) > 1, meaning that the HAVING phase filters only groups (Title) with more than one row. The following fragment of query will help to retrieve required data:

```
SELECT Title, COUNT(*)
FROM Employees
GROUP BY Title
HAVING COUNT(*) >1
```
Activity 2: Perform all the group function using HAVING clause on Northwind Schema.

4 ALIASING TABLES AND COLUMNS

Aliases provide database administrators, as well as other database users, with the ability to reduce the amount of code required for a query, and to make queries simpler to understand. In addition, aliasing can be used as an obfuscation technique to protect the real names of database fields.

4.1 ALIASING COLUMNS
SELECT column_name AS alias_name FROM table_name;

4.2 ALIASING TABLES
SELECT column_name(s) FROM table_name AS alias_name;

Activity 3: Apply above syntax on arbitrary column on Northwind Schema.

Bonus: Find an alternate method to alias tables and columns in SQL Server.

5 FOOD FOR BRAIN

Here is some extra food for your brain which can help in further assignments:

- YEAR function is used to extract year from a date
- MONTH function is used to extract year from a date
- DAY function is used to extract day from a date.