Lab Five: Sorting, Grouping & Aggregation

At the end of this lab, you should have:

- practiced the use of `SHOW CREATE TABLE` commands and commenting to inform yourself;
- practiced crafting and utilising queries to sort data;
- practiced crafting and utilising queries to group and aggregate data;
- practiced the use of aliases for naming results within queries.

You should also have answered the relevant questions at the end of the lab sheet. The above statements are the *learning outcomes* of this laboratory and will be achieved in concert with the other learning activities that you undertake for this unit.

Task One: Helping You Write Queries

1. Utilise the `SHOW CREATE TABLE` command to view the commands that would be used to create the `Transaction` and `TransactionItem` tables. Interpret the outputs to ensure that you can answer the questions at the end of the practical/lab.

2. Choose a particular type of commenting that you with to use and write this down in the question space at the end of the practical/lab. Please note that using the `/* */` style comments of will require a semicolon (`;`) at the end of each comment (at the end of the line, after the closing */) due to the limitations of MySQL Shell.

Task Two: Sorting Data

3. Write (and execute) queries to select all columns of the relevant table listed below, sorted by the criteria listed in the item:

    a. Descriptions in the `TransactionItem` table from Z to A.

    b. Whether or not the item has GST applied (from No to Yes) and its unit price (from smallest to largest) in the `TransactionItem` table.

    c. Items in the `Transaction` table from newest to oldest.

    d. Items in the `Transaction` table from newest to oldest and then by the customer name from Z to A.

Task Three: Grouping and Aggregating Data

4. Write (and execute) queries to aggregate and select the following data, as explained by each dot point below:

    a. The average unit price of each `TransactionItem`, grouped by GST status;

    b. The number of transactions in each month of each year in the `Transaction` table;

    c. The smallest total price of each `TransactionItem`, grouped by the quantity first and GST status second;

    d. The average unit price of each `TransactionItem` costing over $100 per unit, grouped by GST status.

Task Four: Putting it all Together

5. Write (and execute) queries to aggregate, rename, sort and select the following data, as explained by each dot point below:

    a. The number of transactions in each month of each year in the `Transaction` table, denoted as `numTransactions`, sorted from newest (most recent) "month and year" to oldest (least recent);

    b. The smallest total price (denoted as `minPrice`) of each `TransactionItem`, grouped by the quantity first and the GST status second, sorted from the largest to smallest value of the quantity and then by the GST status from Yes first to No second;

    c. The number of transactions (denoted as `numTransactions`) solely by the month of the date within the `Transaction` table, however not showing the month of the date, from largest to smallest value (of the number of transactions);

    d. The largest unit price for each `TransactionItem` (denoted as `largePrice`), when grouped by the quantity first and the GST status second, for items costing less than $100 in total, sorted from the largest to smallest value of the quantity and then by the GST status from Yes first to No second.

End of activities. Please see the next page for the questions you may wish to answer.

Questions

Ensure you can answer these questions to cement your understanding of the lab.

1. Write down the queries you have written that answer the above questions.

End of Lab Three.