**Assignment 2 – Relational Database**

**Questions**

Use the Customers.sql file to populate your assignment database.

1. Make a database and name it ‘Assignment2’ and add the data from Customers.sql to your database.

**Execution: 1.5 marks**

**Accuracy: 0.5 mark**

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Description automatically generated

1. Use a single line SQL command to return the structure of the table from Q1. In your report, tell me what command you would use to generate a list of all the tables in your database.

**Execution: 1 mark**

**Written answer: 1 mark**

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Description automatically generated

SHOW CREATE TABLE customerdatabase.Customers;

1. Add a column named *bonus* to your table. Place it after *surname*. Enable the users to store bonuses with values such as: 1099.99 or 2.00 by choosing the proper data type for *bonus*. In your report, mention the data type you chose and another that you considered but chose not to use.

**Execution: 1 mark**

**Accuracy: 2 marks**

**Written answer: 1 mark**

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Description automatically generated

The DECIMAL data type is an ideal choice for storing monetary values due to its ability to provide precise control over the number of decimal places, ensuring accuracy without introducing floating-point rounding errors. In this case, the data type of ‘bonus’ is related to monetary values so that FLOAT or DOUBLE data may affect the data accuracy and prevent potential rounding discrepancies.

1. Using a CASE command fill the data for the bonus column.
   1. Non-credit card holders will receive a bonus of zero.
   2. Customers who hold a VISA or who live in New Brunswick the bonus will be $140
   3. All American Express holders will get $100
   4. Customers who live in any province other than New Brunswick and have a Mastercard, will get $70 as bonus.
   5. Then, customers with any other credit cards will get $55.99 as bonus.

In your report, explain the considerations that were made in constructing this statement.

**Execution: 1 mark**

**Accuracy: 5 marks**

**Written answer: 1 mark**

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Description automatically generated**

Default Bonus Value: Set a default bonus value of $55.99 for all customers.

Non-Credit Card Holders: Customers with NULL credit card types receive a bonus of $0.

VISA Holders and New Brunswick Residents: Customers with either a VISA credit card or those residing in New Brunswick receive a bonus of $140.

American Express Holders: Customers with an American Express credit card receive a bonus of $100.

Mastercard Holders Outside New Brunswick: Customers living in provinces other than New Brunswick with a Mastercard receive a bonus of $70.

Other Credit Card Holders: Customers not covered by the above conditions receive a bonus of $55.99.

1. Let’s increase the bonuses. Please increase all the bonuses by 20% for customers who are born in August or work for the company Freedom Map. But, please only apply this increase to the people who were only getting a bonus of less than $140.

**Execution: 1 mark**

**Accuracy: 4 marks**

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Description automatically generated

1. We need to calculate the total dollar value of bonuses being given to customers in each province.
   1. List each province and tabulate the average value of bonus dollars provided to customers in that province and name the new column as *average\_bonuses*.
   2. Sort the list alphabetically by province.

In your report, explain the considerations that were made in constructing this statement.

**Execution: 1 mark**

**Accuracy: 3 marks**

**Written answer: 1 mark**

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Description automatically generated

province: We pick the "province" column, which tells us the province each customer is from.

AVG(bonus) AS average\_bonuses: We use the AVG function to figure out the average value of the "bonus" column for each province.

GROUP BY means that we want to see the average bonuses for each province separately.

ORDER BY: We add this to make sure the list is sorted alphabetically by the "province" column.

1. Generate a list displaying *only* the five longest occupations in customers’ table. In two columns display the *occupation*, and the character length of the occupation in a field called *occupation\_length*. Please have the list sorted from longest to shortest. In your comments, how you would return occupations 6 though 10 of this same list. An example table is provided with occupations 1 through 5, your results should mirror what is presented below.

occupation occupation\_length

Food and tobacco roasting, baking, and drying machine operator 62

Extruding, forming, pressing, and compacting machine tender 59

Water and wastewater treatment plant and system operator 56

Cleaning, washing, and metal pickling equipment operator 56

Cleaning, washing, and metal pickling equipment tender 54

**Execution: 1 mark**

**Accuracy: 3 marks**

**Written answer: 1 mark**

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Description automatically generated**

Selecting Columns: choose to include two columns in the result: "occupation" and "occupation\_length," which represents the character length of the occupation.

Sorting by Occupation Length: The results are sorted in descending order based on the "occupation\_length" column, arranging the longest occupations at the top.

Limiting Results: We use the LIMIT clause to restrict the output to the top 5 longest occupations.

1. Write a query to show customers’ full names, street address and city.
   1. Please return their last name in all capital letters, followed by there first name.
   2. Please call the name column 'full\_name' and include both their first and last name as shown.

|  |  |  |
| --- | --- | --- |
| full\_name | streetaddress | city |
| RUFFNER, Rosa | 3846 St. Paul Street | St Catharines |

**Execution: 1 mark**

**Accuracy: 3 marks**

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Description automatically generated

1. Write a query to show how many customers have MasterCards and how many are using Visa. In your comments, explain how you would sort this table alphabetically by credit card type. An example table is provided below; these numbers are fictitious.

|  |  |
| --- | --- |
| cctype | num\_customers |
| Visa | 589 |
| MC | 432 |

**Execution: 1 mark**

**Accuracy: 3 marks**

**Written Answer: 1 mark**

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Description automatically generated

Selecting the "cctype" column represents the type of credit card each customer has.

The COUNT(\*) function to count the number of customers for each credit card type.

GROUP BY groups the results by credit card type.

ORDER BY: We add this to make sure the list is sorted alphabetically by credit card type.

1. If you were asked to add a *total\_bonuses* column to the output results of Q9’s query tabulating the total amount of bonuses provided to Visa vs MC customers,? How you would do so?

**Written Answer: 3 marks**

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Description automatically generated

The SUM function could add up all the bonus values in each group.