

Storing and Retrieving Data – Final project

Group members: 5

Percentage for the final score: 50%

Delivery date:

- December 27, 2020 23H59.

Final Deliverables:

- A report that contains: the names of the team members, the description of the fictitious online shop (up to 1 page) plus a figure with the ERD, the names of the entities and its attributes must be visible in the ERD.
- One single SQL script to recreate the database and the existing data on it.
- One SQL script with the queries from literal G.
- One Pentaho file for the ETL

NOTES:

- Deliveries is via Moodle, not via email. Only one member in the group is enough to deliver.
- For every day delayed in the delivery you will be penalized 1 point (up to 5).
- A reference solution for this project will not be available.

Description

- A. Create a fictitious online shop of products or services. Describe it in 1 page.
- B. Design and create an ERD in MySQL workbench for a small online shop of any products and/or services. Do not forget to consider the three normal forms when you design your database. The names of the entities and its attributes must be visible in the ERD. At the end of this document you can find an invoice example that can help you to have an idea about the fields that your DB design may have.
- C. Create two triggers: (1) one that updates the stock of products after the customer completes an order. And (2) a trigger that inserts a row in a "log" table if the price of a product is updated.
- D. Your online shop just acquired a small shop in a similar line of business that was near to bankruptcy. The old shop was not online and managed the customers in an excel table. You need to adjust your ERD to add these customers to make a promotional campaign for them. The teacher will provide the excel file with customers. Besides the fields in the excel, you need to add a new field for the customer email and a field for the spending category.

The excel file has some limitations that you need to address during the ETL process (using Pentaho) to upload the excel data into your database. Specifically:

- Names with 1 letter should not be uploaded.
- You can assume that the email of the customers is: CUSTOMER_NAME + AGE + "@yourBusinessDomain.com"
- The names are duplicated in the excel. You can assume that customers with same name and same age, are the same person. Duplicated data should not be uploaded to the database.
- You need to give a category to your customers according to the average spending score to segment the promotional campaign.

- E. Create a physical relational database based on your ERD.
- F. Insert some data into you newly created database (20 or 30 rows of sales transactions would be enough). Make sure that you have sales for at least 2 years of sales. If you want to add more than just a few rows, feel free to look for it on Internet for openly available dataset and/or generate random data.

G. Using MySQL, write que queries to retrieve the following information (not applicable to customers from excel):

1. List all the customer's names, dates, and products or services bought by these customers in a range of two dates.
2. List the best three customers (you are free to select the criteria that define a "best customer")
3. Get the average amount of sales (in euros) by month and by year for the whole sales history. This is, to calculate the average by month you need to divide all the total sales (in euros) by the total number of months. Likewise, to calculate the average by year, you need to divide all the total sales (in euros) by the number of years. This query only returns one record, for example:

| PeriodOfSales | TotalSales (euros) | YearlyAverage | MonthlyAverage |
|-------------------|--------------------|---------------|----------------|
| 01/2010 – 10/2021 | XXXXX € | XXXXX € | XXXX € |

4. Get the total sales by geographical location (city/country).
 5. List all the locations where products/services where sold and the product has customer's ratings.
- H. Create two views to recreate the information on the INVOICE (one for the head and totals, and another for the details).

INVOICE

INVOICE NUMBER DATE OF ISSUE
00001 mm/dd/yyyy



BILLED TO
Client Name
Street address
City, State, Country
ZIP Code

Your company name
123 Your Street
123 Your Street
564-555-1234
your@email.com
yourwebsite.com

| DESCRIPTION | UNIT COST | QTY / HR RATE | AMOUNT |
|----------------|-----------|---------------|--------|
| Your item name | \$0 | 1 | \$0 |
| Your item name | \$0 | 1 | \$0 |
| Your item name | \$0 | 1 | \$0 |
| Your item name | \$0 | 1 | \$0 |
| Your item name | \$0 | 1 | \$0 |
| Your item name | \$0 | 1 | \$0 |
| Your item name | \$0 | 1 | \$0 |

INVOICE TOTAL

\$2,000

| | |
|-------------------|-----|
| SUBTOTAL | \$0 |
| DISCOUNT | \$0 |
| (TAX RATE) | 0% |
| TAX | \$0 |
| TOTAL | \$0 |

TERMS

E.g. Please pay invoice by MM/DD/YYYY

FreshBooks makes it easier to get paid faster.



Figure 1: Invoice example 1 (Source: <https://www.freshbooks.com/invoice-templates/e-commerce>)