You have a relational database.

1. You can choose any database engine you prefer and use in tasks below as an assumption. Please write down which one DB you consider.
2. Draw your model structure: tables, fields, mark primary keys, foreign keys, draw relationships between tables.

Please use 3rd normal form (3NF) for database schema design.

It should be a database to store information about bank customers, their addresses, and payments they are making.

Your model should not contain all possible fields, but please read carefully questions below. Your model should cover demanded analysis to get all needed answers.

For all questions below please write SQL statement(s)/script(s) to get an answer. You should use your tables and fields, please consider performance – try to provide effective queries.

1. Please find the list of customers, which are duplicated. Meaning when the bank has the same customer entered twice. Consider customer identity by: name, surname, personal code and date of birth.
2. Please find customers, who spent/payed more money in March 2020, than in February 2020.
3. How many customers do we have from Australia (country of residence), who made payments to Germany during the April 2020.
4. Find customers who is resident of Latvia and never paid to Germany.
5. Please write script for customers deletion to remove duplicates, meaning after deletion your script from 3rd point should return 0.

**GIT:** [**https://github.com/kaarimovva/CUSTOMER\_DATABASE**](https://github.com/kaarimovva/CUSTOMER_DATABASE)

**Link to the database file:** [**https://drive.google.com/file/d/11Lt01ZRokS2fB8F\_fdr7PW-sXaTfxJOd/view?usp=sharing**](https://drive.google.com/file/d/11Lt01ZRokS2fB8F_fdr7PW-sXaTfxJOd/view?usp=sharing)

**The database is used in this task: MySQL (Phpmyadmin)**

**Schema:**

Table of Customer Info Table of Address of Customer:

|  |
| --- |
| CID |
| C\_PERSON\_CODE (PK) |
| C\_ACCOUNT\_NO |
| C\_NAME |
| C\_SURNAME |
| C\_DOB |

|  |
| --- |
| AID (PK) |
| STREET\_NAME |
| HOUSE\_NO |
| CITY |
| COUNTRY |
| ZIP\_CODE |
| CID (FK) |

Table of Payments:

|  |
| --- |
| PID (PK) |
| C\_PERSON\_CODE (FK) |
| C\_ACCOUNT\_NO(FK) |
| AMOUNT |
| P\_DATE |
| DESTINATION\_COUNTRY |
| CID (FK) |

**RELATION:**

**Diagram

Description automatically generated**

**SOLUTIONS:**

1. Please find the list of customers, which are duplicated. Meaning when the bank has the same customer entered twice. Consider customer identity by name, surname, personal code and date of birth

**STATEMENT:**

[SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) C\_NAME, C\_SURNAME, C\_PERSON\_CODE,C\_DOB, [COUNT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html#function_count)(\*) as Number\_Of\_Dublicate FROM customer\_info GROUP BY C\_PERSON\_CODE, C\_NAME HAVING [COUNT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html#function_count)(\*) > 1;

1. Please find customers, who spent/pay more money in March 2020, than in February 2020.

**STATEMENT:**

[SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) C\_NAME, C\_SURNAME, CID

FROM customer\_info

WHERE CID [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) MAR.CID

FROM ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) [SUM](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html#function_sum)(AMOUNT) AS amnt,CID

FROM payments

WHERE P\_DATE [LIKE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/string-comparison-functions.html#operator_like) '2020-03-%%'

GROUP BY CID) AS MAR

INNER JOIN ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) [SUM](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html#function_sum)(AMOUNT) AS amnt,CID

FROM payments

WHERE P\_DATE [LIKE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/string-comparison-functions.html#operator_like) '2020-02-%%'

GROUP BY CID) AS FEB ON MAR.CID = FEB.CID [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) MAR.amnt > FEB.amnt)

1. How many customers do we have from Australia (country of residence), who made payments to Germany during the April 2020.

**STATEMENT:**

[SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) [count](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html#function_count)(\*) as Number\_of\_Customers

FROM payments

WHERE CID [in](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) CID

FROM addresses

WHERE COUNTRY = "AUSTRALIA") [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) DESTINATION\_COUNTRY = "GERMANY"

[AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) P\_DATE [LIKE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/string-comparison-functions.html#operator_like) '2020-04-%%'

1. Find customers who is resident of Latvia and never paid to Germany.

**STATEMENT:**

[SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) C\_NAME, C\_SURNAME,CID FROM customer\_info WHERE CID [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) CID FROM payments WHERE CID [NOT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_not) [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) CID FROM payments WHERE DESTINATION\_COUNTRY = 'GERMANY') [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) CID [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) CID FROM addresses WHERE COUNTRY = "LATVIA") GROUP BY CID)

1. Please write script for customers deletion to remove duplicates, meaning after deletion your script from 3rd point should return 0

**STATEMENT:**

DELETE N1 FROM customer\_info N1 INNER JOIN customer\_info N2 ON N1.C\_PERSON\_CODE=N2.C\_PERSON\_CODE AND N1.C\_NAME=N2.C\_NAME AND N1.CID > N2.CID;