DBMS - MINI PROJECT

PES UNIVERSITY

DROPS- A language learning app

Submitted By:

Name: JEFFREY S VARGHESE

SRN: PES1UG20CS651

V Semester

Section : K

CONTENTS

ABSTRACT

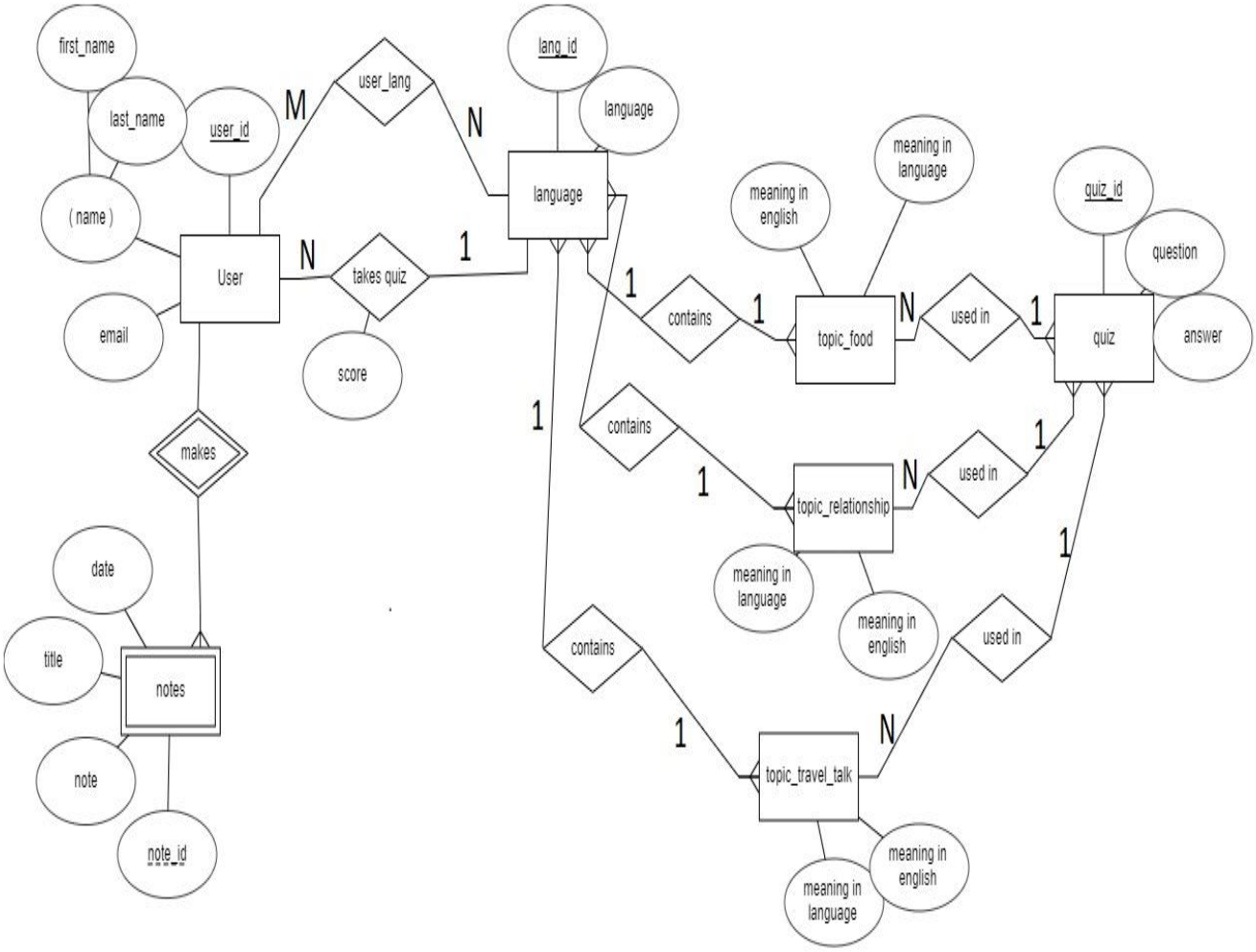
Drops is a language-learning app freely available on the Google play store that helps users learn new languages using visual aids and quizzes. This project aims to mimic the database of the drops app. The database has several tables which record the user's details, the language they wish to learn, the different words from different languages which are divided into 3 broad topics (food, travel talk and relationships between people), the quizzes they took, and their high scores. It also allows them to make notes for future reference.

SCOPE:

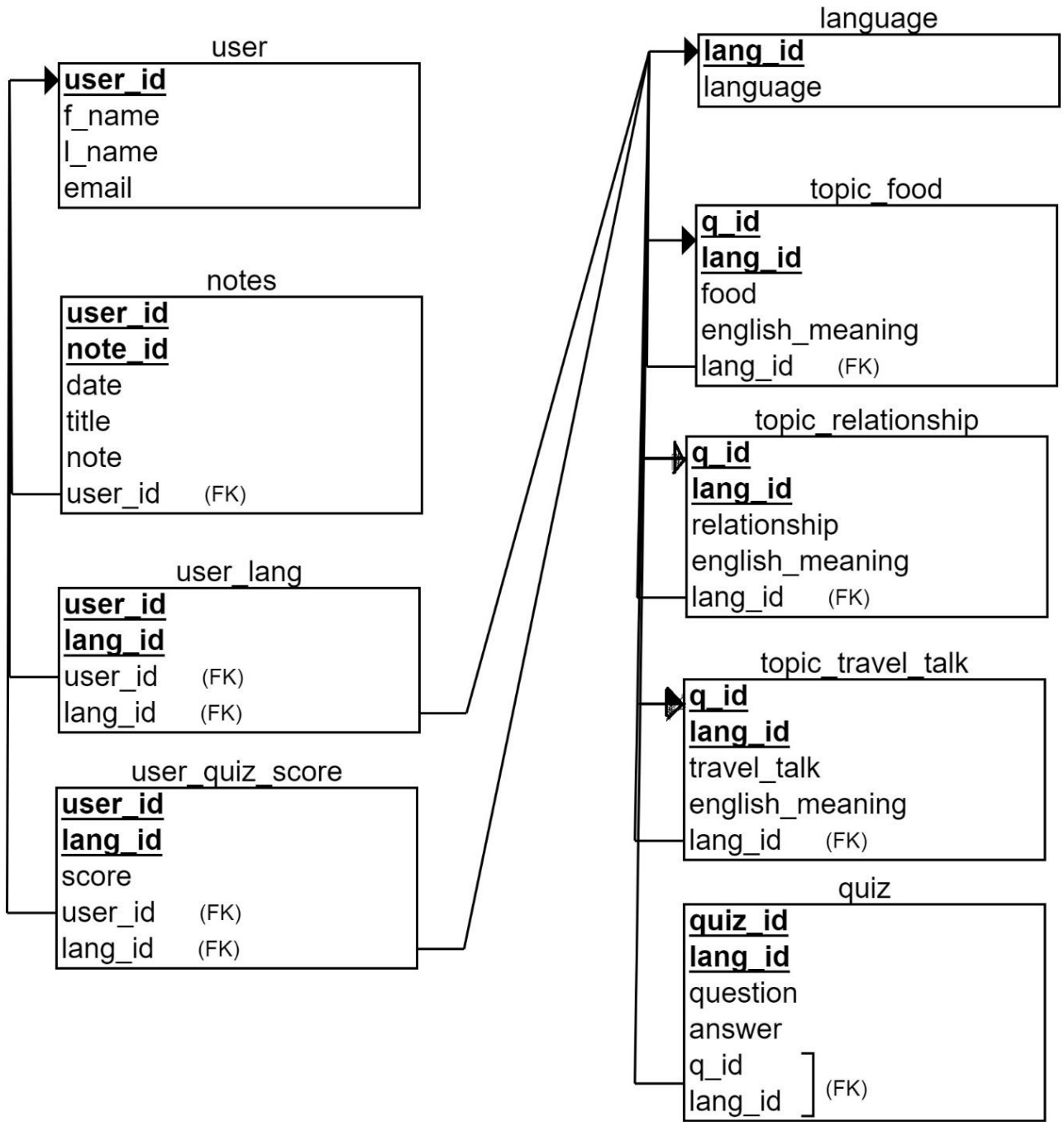
- Goals: To create a database that mimics the Drops language learning app on a smaller scale
- Deliverables:
    - ER diagram
    - Relational schema
    - Database (Maria DB) with populated tables
    - join queries (6)
    - aggregate queries
    - queries related to set operations(2)
    - Views(3)
    - Triggers(1)
    - Functions(1).

The database is connected to the GUI which was developed using streamlit. The front end supports CRUD operations on the user table, it provides a query box so that the user can query anything he/she wishes to and view the results on the user interface itself. The User interface also allows users to take quizzes and the scores are updated automatically to the database. The trigger and the function are fired through the front end.

ER Diagram


first_name
last_name
user_id
(name)
email
User
M
user_lang
N
lang_id
language
language
N
takes quiz
1
score
makes
date
title
notes
note
note_id
1
contains
1
topic_food
N
used in
1
quiz
quiz_id
question
answer
meaning in english
meaning in language
1
contains
1
topic_relationship
N
used in
1
meaning in language
meaning in english
1
contains
1
topic_travel_talk
N
used in
meaning in language
meaning in english

Relational Schema



DDL statements - Building the database

Before adding tables

```
MariaDB [DROPS_PES1UG20CS651]> SHOW TABLES;
Empty set (0.003 sec)

MariaDB [DROPS_PES1UG20CS651]> SHOW FULL TABLES;
Empty set (0.001 sec)
```

Creating tables – sql queries:

```
-- ------------------

-- Database: 'DROPS_PES1UG20CS651'

-- ------------------

--

-- Table structure for table `user`

--

CREATE TABLE user (

   `user_id` VARCHAR(6) CHARACTER SET utf8,

   `f_name` VARCHAR(8) CHARACTER SET utf8 NOT NULL,

   `l_name` VARCHAR(9) CHARACTER SET utf8,

   `email` VARCHAR(18) CHARACTER SET utf8 NOT NULL

);

--

-- Table structure for table `language`

--

CREATE TABLE language (

   `lang_id` VARCHAR(6) CHARACTER SET utf8,

   `language` VARCHAR(7) CHARACTER SET utf8

);

--

-- Table structure for table `topic_food`
```

```
--
CREATE TABLE topic_food (
   q_id VARCHAR(5) CHARACTER SET utf8,
   lang_id VARCHAR(6) CHARACTER SET utf8,
   food VARCHAR(12) CHARACTER SET utf8,
   english_meaning VARCHAR(6) CHARACTER SET utf8
);
--
-- Table structure for table `topic_travel_talk`
--
CREATE TABLE topic_travel_talk (
   `q_id` VARCHAR(5) CHARACTER SET utf8,
   `lang_id` VARCHAR(6) CHARACTER SET utf8,
   `travel_talk` VARCHAR(26) CHARACTER SET utf8,
   `english_meaning` VARCHAR(21) CHARACTER SET utf8
);
--
-- Table structure for table `topic_relationship`
--
CREATE TABLE topic_relationship (
   `q_id` VARCHAR(5) CHARACTER SET utf8,
   `lang_id` VARCHAR(6) CHARACTER SET utf8,
   `relationship` VARCHAR(8) CHARACTER SET utf8,
   `english_meaning` VARCHAR(8) CHARACTER SET utf8
);
--
-- Table structure for table `quiz`
--
```

```
CREATE TABLE quiz (
   `quiz_id` VARCHAR(5) CHARACTER SET utf8,
   `lang_id` VARCHAR(6) CHARACTER SET utf8,
   `question` VARCHAR(55) CHARACTER SET utf8,
   `answer` VARCHAR(22) CHARACTER SET utf8
);
--
-- Table structure for table `user_language`
--
CREATE TABLE user_lang (
   `user_id` VARCHAR(6) CHARACTER SET utf8,
   `lang_id` VARCHAR(6) CHARACTER SET utf8
);
--
-- Table structure for table `user_quiz_score`
--
CREATE TABLE user_quiz_score (
   `user_id` VARCHAR(6) CHARACTER SET utf8,
   `lang_id` VARCHAR(6) CHARACTER SET utf8,
   `score` INT
);
--
-- Table structure for table `notes`
--

CREATE TABLE notes (
   `user_id` VARCHAR(6) CHARACTER SET utf8,
   `note_id` VARCHAR(6) CHARACTER SET utf8,
```

```
    `date` DATE,
    `title` VARCHAR(12) CHARACTER SET utf8,
    `note` LONGTEXT
);
```

After creating tables

```
MariaDB [drops_pes1ug20cs651]> show full tables;
+-------------------------------+------------+
| Tables_in_drops_pes1ug20cs651 | Table_type |
+-------------------------------+------------+
| language                      | BASE TABLE |
| notes                         | BASE TABLE |
| quiz                          | BASE TABLE |
| topic_food                    | BASE TABLE |
| topic_relationship            | BASE TABLE |
| topic_travel_talk             | BASE TABLE |
| user                          | BASE TABLE |
| user_lang                     | BASE TABLE |
| user_quiz_score               | BASE TABLE |
+-------------------------------+------------+
9 rows in set (0.011 sec)
```

Adding Constraints

```
--
-- Indexes for table `user`
--
ALTER TABLE `user`
  ADD PRIMARY KEY (`user_id`);
--
-- Indexes for table `topic_food`
--
ALTER TABLE `topic_food`
  ADD PRIMARY KEY (`q_id`,`lang_id`);
--
-- Indexes for table `topic_relationship`
--
ALTER TABLE `topic_relationship`
```

```
  ADD PRIMARY KEY (`q_id`,`lang_id`);

--

-- Indexes for table `topic_travel_talk`

--

ALTER TABLE `topic_travel_talk`

  ADD PRIMARY KEY (`q_id`,`lang_id`);

--

-- Indexes for table `language`

--

ALTER TABLE `language`

  ADD PRIMARY KEY (`lang_id`);

--

-- Indexes for table `quiz`

--

ALTER TABLE `quiz`

  ADD PRIMARY KEY (`quiz_id`,`lang_id`);

--

-- Indexes for table `user_language`

--

ALTER TABLE `user_lang`

  ADD PRIMARY KEY (`user_id`,`lang_id`);

--

-- Indexes for table `user_quiz_score`

--

ALTER TABLE `user_quiz_score`

  ADD PRIMARY KEY (`user_id`,`lang_id`);

--

-- Indexes for table `notes`
```

--

ALTER TABLE `notes`

ADD PRIMARY KEY (`user_id`,`note_id`);

-- -------

-- **adding foreign key constraints on all tables**

-- -------

alter table user_quiz_score add constraint del_con1 foreign key(user_id) references user(user_id) on delete cascade;

alter table notes add constraint del_con2 foreign key(user_id) references user(user_id) on delete cascade;

alter table user_lang add constraint del_con3 foreign key(user_id) references user(user_id) on delete cascade;

alter table topic_food add constraint del_con4 foreign key(lang_id) references language(lang_id) on delete cascade;

alter table topic_relationship add constraint del_con5 foreign key(lang_id) references language(lang_id) on delete cascade;

alter table topic_travel_talk add constraint del_con6 foreign key(lang_id) references language(lang_id) on delete cascade;

alter table quiz add constraint del_con7 foreign key(lang_id) references language(lang_id) on delete cascade;

alter table user_lang add constraint del_con8 foreign key(lang_id) references language(lang_id) on delete cascade;

alter table user_quiz_score add constraint del_con9 foreign key(lang_id) references language(lang_id) on delete cascade;

Populating the Database

- INSERT INTO user VALUES

('USR_01','Harinder','Symons','harinder@gmail.com'),

('USR_02','Davis','Jefferson','davis@gmail.com'),

('USR_03','Madelyn','Rakes','madelyn@gmail.com'),

('USR_04','Roslyn','Plank','roslyn@gmail.com'),

('USR_05','Prunella','Benson','prunella@gmail.com'),

('USR_06','Melvin','Taft','melvin@gmail.com'),

('USR_07','Oneida','Steele','oneida@gmail.com'),

('USR_08','Linda','Bell','linda@gmail.com'),

('USR_09','Jolie','Love','jolie@gmail.com'),

('USR_10','Miles','Willard','miles@gmail.com');

- INSERT INTO language VALUES

('lang01','french'),

('lang02','german'),

('lang03','spanish');

- INSERT INTO topic_food VALUES

('q01_f','lang01','pain','bread'),

('q02_f','lang01','Beurre','butter'),

('q03_f','lang01','Le Lait','milk'),

('q04_f','lang01','citron','lemon'),

('q05_f','lang01','Patate','potato'),

('q01_f','lang02','brot','bread'),

('q02_f','lang02','Butter','butter'),

('q03_f','lang02','Milch','milk'),

('q04_f','lang02','Zitrone','lemon'),

('q05_f','lang02','Kartoffel','potato'),

('q01_f','lang03','pan de molde','bread'),

('q02_f','lang03','manteca','butter'),

('q03_f','lang03','Leche','milk'),

('q04_f','lang03','limón','lemon'),

('q05_f','lang03','papa','potato');

- INSERT INTO topic_travel_talk VALUES

('q01_t','lang01','bonjour','hello'),

('q02_t','lang01','Comment ça va','how are you'),

('q03_t','lang01','Aidez-moi, s"il vous plaît','please help me'),

('q04_t','lang01','je vais bien','I am fine'),

('q05_t','lang01','où est l"hôpital','where is the hospital'),

('q01_t','lang02','hallo','hello'),

('q02_t','lang02','wie gehts','how are you'),

('q03_t','lang02','Bitte hilf mir','please help me'),

('q04_t','lang02','Mir geht"s gut','I am fine'),

('q05_t','lang02','wo ist das Krankenhaus','where is the hospital'),

('q01_t','lang03','Hola','hello'),

('q02_t','lang03','cómo estás','how are you'),

('q03_t','lang03','por favor, ayúdame','please help me'),

('q04_t','lang03','Estoy bien','I am fine'),

('q05_t','lang03','Dónde está el hospital','where is the hospital');

- INSERT INTO topic_relationship VALUES

('q01_r','lang01','père','father'),

('q02_r','lang01','mère','mother'),

('q03_r','lang01','mari','husband'),

('q04_r','lang01','épouse','wife'),

('q05_r','lang01','fils','son'),

('q06_r','lang01','la fille','daughter'),

('q01_r','lang02','Vater','father'),

('q02_r','lang02','Mutter','mother'),

('q03_r','lang02','Ehemann','husband'),

('q04_r','lang02','Ehefrau','wife'),

('q05_r','lang02','Sohn','son'),

('q06_r','lang02','Tochter','daughter'),

('q01_r','lang03','padre','father'),

('q02_r','lang03','madre','mother'),

('q03_r','lang03','esposo','husband'),

('q04_r','lang03','esposa','wife'),

('q05_r','lang03','hijo','son'),

('q06_r','lang03','hija','daughter');

- INSERT INTO quiz VALUES

('q01_f','lang01','What is bread called in french?','pain'),

('q03_f','lang01','What is milk called in french?','Le Lait'),

('q02_t','lang01','How do you say-"How are you?" in French','Comment ça va'),

('q04_t','lang01','How do you say-"I am fine" in French','je vais bien'),

('q06_r','lang01','What is "son" in french?','fils'),

('q03_f','lang02','What is "milk" is German?','Milch'),

('q05_f','lang02','What is "potato" in German?','Kartoffel'),

('q03_t','lang02','How do you say "Please help me", in German?','Bitte hilf mir'),

('q05_t','lang02','How do you ask someone where the hospital is in German?','wo ist das Krankenhaus'),

('q01_r','lang02','What do you call your father in German?','Vater'),

('q04_f','lang03','What do you call a lemon in Spanish?','limón'),

('q05_f','lang03','What do you call a potato in Spanish?','papa'),

('q03_t','lang03','How do you ask for help politely in Spanish?','por favor, ayúdame'),

('q01_t','lang03','How do you say Hello in Spanish?','Hola'),

('q03_r','lang03','What is the Spanish word for "Husband"?','esposo');

- INSERT INTO user_lang VALUES

('USR_01','lang01'),

('USR_01','lang02'),

('USR_03','lang01'),

('USR_02','lang01'),

('USR_06','lang01'),

('USR_04','lang03'),

('USR_05','lang02'),

('USR_07','lang01'),

('USR_09','lang03'),

('USR_04','lang02');

- INSERT INTO user_quiz_score VALUES

('USR_01','lang01',8),

('USR_03','lang01',7),

('USR_04','lang03',10),

('USR_05','lang02',9),

('USR_07','lang01',8),

('USR_07','lang03',4),

('USR_09','lang03',6),

('USR_10','lang02',10);

- INSERT INTO notes VALUES

('USR_01','note01','2022-11-10 ','French day 1','revise the travel talk section once more'),

('USR_03','note01','2022-11-09 ','french quiz','improve on french scores in the quiz'),

('USR_01','note02','2022-11-12','reminder','remember to take the quiz on french tomorrow'),

('USR_01','note03','2022-11-13 ','reminder','brush up on french'),

('USR_07','note01','2022-11-14 ','test note','hey there, I am just exploring the app and I am lovin it!!!');

Tool Used

- Front end: Streamlit
- Backend: Xampp mariaDB

Queries

Join queries (at least 6)

Write the query in English Language, Show the equivalent SQL statement and also screenshot of the query and the results.

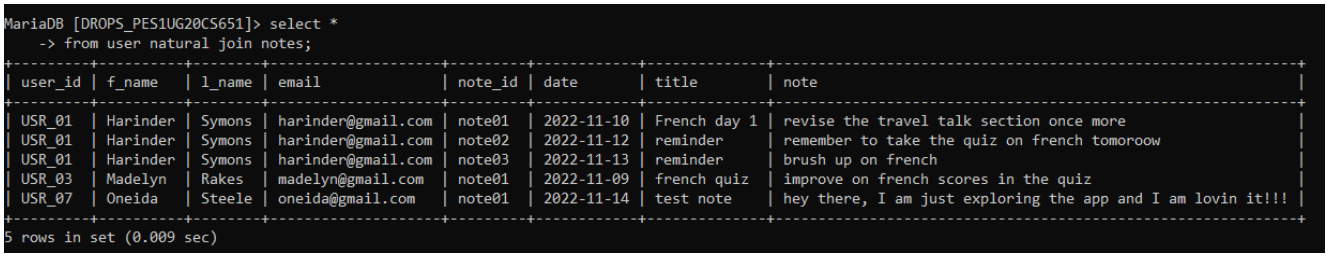
Include 2 regular join, 2 co-related and 2 nested queries

1. display details of user's along with the notes they have written (using natural join)

   Query:

   select *
   from user natural join notes;

   Screenshot:



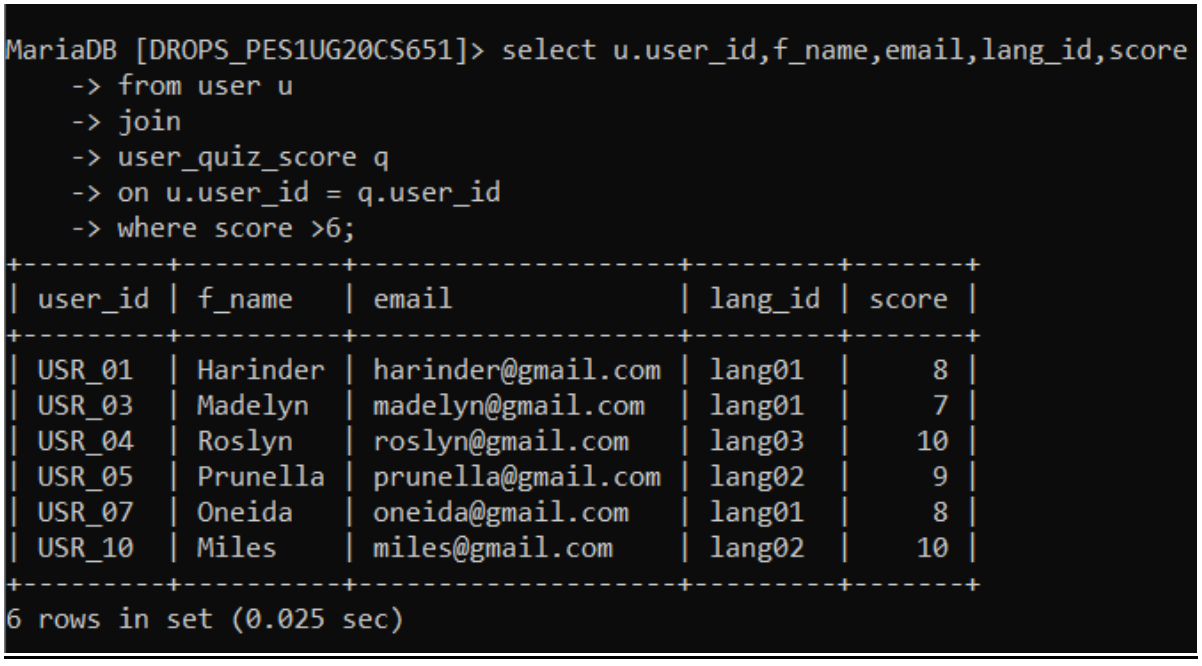
```
MariaDB [DROPS_PES1UG20CS651]> select *
    -> from user natural join notes;
+---------+----------+-------+-------------------+---------+------------+-------------+-----------------------------------------------------------+
| user_id | f_name   | l_name | email            | note_id | date       | title       | note                                                      |
+---------+----------+-------+-------------------+---------+------------+-------------+-----------------------------------------------------------+
| USR_01  | Harinder | Symons | harinder@gmail.com | note01  | 2022-11-10 | French day 1 | revise the travel talk section once more                  |
| USR_01  | Harinder | Symons | harinder@gmail.com | note02  | 2022-11-12 | reminder     | remember to take the quiz on french tomoroow              |
| USR_01  | Harinder | Symons | harinder@gmail.com | note03  | 2022-11-13 | reminder     | brush up on french                                        |
| USR_03  | Madelyn  | Rakes  | madelyn@gmail.com  | note01  | 2022-11-09 | french quiz  | improve on french scores in the quiz                      |
| USR_07  | Oneida   | Steele | oneida@gmail.com   | note01  | 2022-11-14 | test note    | hey there, I am just exploring the app and I am lovin it!!! |
+---------+----------+-------+-------------------+---------+------------+-------------+-----------------------------------------------------------+
5 rows in set (0.009 sec)
```

2. extract user_id , first name email and score of users who have got scores greater than 6 so that you can mail them their language certificates

   Query:

   select u.user_id,f_name,email,lang_id,score
   from user u
   join
   user_quiz_score q
   on u.user_id = q.user_id
   where score >6;

   Screenshot:



```
MariaDB [DROPS_PES1UG20CS651]> select u.user_id,f_name,email,lang_id,score
    -> from user u
    -> join
    -> user_quiz_score q
    -> on u.user_id = q.user_id
    -> where score >6;
+---------+----------+--------------------+---------+-------+
| user_id | f_name   | email              | lang_id | score |
+---------+----------+--------------------+---------+-------+
| USR_01  | Harinder | harinder@gmail.com | lang01  |     8 |
| USR_03  | Madelyn  | madelyn@gmail.com  | lang01  |     7 |
| USR_04  | Roslyn   | roslyn@gmail.com   | lang03  |    10 |
| USR_05  | Prunella | prunella@gmail.com | lang02  |     9 |
| USR_07  | Oneida   | oneida@gmail.com   | lang01  |     8 |
| USR_10  | Miles    | miles@gmail.com    | lang02  |    10 |
+---------+----------+--------------------+---------+-------+
6 rows in set (0.025 sec)
```

3. retrieve user_id and names of users who have signed up but are yet to select a language to learn (nested +correlated)

   Query:

   select u.user_id, f_name
   from user u
   where not exists

(select *
from user_lang l
where l.user_id = u.user_id);

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select u.user_id, f_name
    -> from user u
    -> where not exists
    -> (select *
    -> from user_lang l
    -> where l.user_id = u.user_id);
+---------+--------+
| user_id | f_name |
+---------+--------+
| USR_02  | Davis  |
| USR_06  | Melvin |
| USR_08  | Linda  |
| USR_10  | Miles  |
+---------+--------+
4 rows in set (0.010 sec)
```

4. retrieve topics in travel talk of german language which are not included in the quiz table (nested + correlated)

Query:

```
select *
from topic_travel_talk t
where not exists (select *
                  from quiz
                  where quiz_id like "%t" and quiz_id = t.q_id and lang_id = (select
lang_id

                  from language

                  where language="german"))
and lang_id =(select lang_id from language where language="german");
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select *
    -> from topic_travel_talk t
    -> where not exists (select *
    -> from quiz
    -> where quiz_id like "%t" and quiz_id = t.q_id and lang_id = (select lang_id
    -> from language
    -> where language="german"))
    -> and lang_id =(select lang_id from language where language="german");
+-------+---------+----------------+-----------------+
| q_id  | lang_id | travel_talk    | english_meaning |
+-------+---------+----------------+-----------------+
| q01_t | lang02  | hallo          | hello           |
| q02_t | lang02  | wie gehts      | how are you     |
| q04_t | lang02  | Mir geht's gut | I am fine       |
+-------+---------+----------------+-----------------+
3 rows in set (0.013 sec)
```

5. retrieve names of users who chose their language as spanish (used correlated queries)=

Query:

```
select u.user_id, f_name,l_name
from user u
where exists (select *
                    from user_lang l
                     where l.user_id = u.user_id and l.lang_id = (select lang_id
                                                                  from
language
                                                                  where
language="spanish"));
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select u.user_id, f_name,l_name
    -> from user u
    -> where exists (select *
    ->   from user_lang l
    ->    where l.user_id = u.user_id and l.lang_id = (select lang_id
    -> from language
    -> where language="spanish"));
+---------+--------+--------+
| user_id | f_name | l_name |
+---------+--------+--------+
| USR_04  | Roslyn | Plank  |
| USR_09  | Jolie  | Love   |
+---------+--------+--------+
2 rows in set (0.003 sec)
```

6. retrieve all user id's , names and scores of users who have taken french if they have taken the quiz or not (left join)

Query:

```
select u.user_id, p.f_name, u.lang_id, q.score
from (user_lang u join user p on u.user_id = p.user_id)
```

left join user_quiz_score q on u.user_id = q.user_id
where u.lang_id =(select lang_id from language where language = "french");

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select u.user_id, p.f_name, u.lang_id, q.score
    -> from (user_lang u join user p on u.user_id = p.user_id)
    -> left join user_quiz_score q on u.user_id = q.user_id
    -> where u.lang_id =(select lang_id from language where language = "french");
+---------+----------+---------+-------+
| user_id | f_name   | lang_id | score |
+---------+----------+---------+-------+
| USR_01  | Harinder | lang01  |     8 |
| USR_02  | Davis    | lang01  |  NULL |
| USR_03  | Madelyn  | lang01  |     7 |
| USR_06  | Melvin   | lang01  |  NULL |
| USR_07  | Oneida   | lang01  |     8 |
| USR_07  | Oneida   | lang01  |     4 |
+---------+----------+---------+-------+
6 rows in set (0.001 sec)
```

Aggregate Functions (at least 2)

Showcase at least 2 Aggregate function queries. Write the query in English Language, Show the equivalent SQL statement and also screenshot of the query and the results

1. calculate average score of each language.

   Query:

   select lang_id , avg(score)
   from user_quiz_score group by lang_id;

   Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select lang_id , avg(score)
    -> from user_quiz_score group by lang_id;
+---------+------------+
| lang_id | avg(score) |
+---------+------------+
| lang01  |     7.6667 |
| lang02  |     9.5000 |
| lang03  |     6.6667 |
+---------+------------+
3 rows in set (0.005 sec)
```

2. retrieve user_id, first name, language id, language and score of the user with highest score.

   Query:

   select u.user_id, u.f_name,q.lang_id,l.language,q.score
   from language l,user u, user_quiz_score q
   where u.user_id = q.user_id and l.lang_id = q.lang_id and q.score in

(select max(score)
from user_quiz_score);

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select u.user_id, u.f_name,q.lang_id,l.language,q.score
    -> from language l,user u, user_quiz_score q
    -> where u.user_id = q.user_id and l.lang_id = q.lang_id and q.score in
    -> (select max(score)
    -> from user_quiz_score);
+---------+--------+---------+----------+-------+
| user_id | f_name | lang_id | language | score |
+---------+--------+---------+----------+-------+
| USR_10  | Miles  | lang02  | german   |    10 |
| USR_04  | Roslyn | lang03  | spanish  |    10 |
+---------+--------+---------+----------+-------+
2 rows in set (0.008 sec)
```

3. find number of user's per language.

   Query:

   select lang_id, count(*) as users_per_lang
   from user_lang group by lang_id;

   Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select lang_id, count(*) as users_per_lang
    -> from user_lang group by lang_id;
+---------+-----------------+
| lang_id | users_per_lang |
+---------+-----------------+
| lang01  |               5 |
| lang02  |               2 |
| lang03  |               2 |
+---------+-----------------+
3 rows in set (0.001 sec)
```

Set Operations (at least 2)

Showcase at least 2 Set Operations queries . Write the query in English Language, Show the equivalent SQL statement and also screenshot of the query and the results

1. retrieve all words and their English meanings of all topics from the french language

   Query:

   select q_id, food as french_meaning, english_meaning
   from topic_food
   where lang_id = (select lang_id from language where language = "french")
   union
   select q_id,relationship as french_meaning,english_meaning
   from topic_relationship
   where lang_id =(select lang_id from language where language = "french")
   union
   select q_id, travel_talk as french_meaning, english_meaning

from topic_travel_talk
where lang_id = (select lang_id from language where language = "french");

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> select q_id, food as french_meaning, english_meaning
    -> from topic_food
    -> where lang_id = (select lang_id from language where language = "french")
    -> union
    -> select q_id,relationship as french_meaning,english_meaning
    -> from topic_relationship
    -> where lang_id =(select lang_id from language where language = "french")
    -> union
    -> select q_id, travel_talk as french_meaning, english_meaning
    -> from topic_travel_talk
    -> where lang_id = (select lang_id from language where language = "french");
+-------+---------------------------+----------------------+
| q_id  | french_meaning            | english_meaning      |
+-------+---------------------------+----------------------+
| q01_f | pain                      | bread                |
| q02_f | Beurre                    | butter               |
| q03_f | Le Lait                   | milk                 |
| q04_f | citron                    | lemon                |
| q05_f | Patate                    | potato               |
| q01_r | père                      | father               |
| q02_r | mère                      | mother               |
| q03_r | mari                      | husband              |
| q04_r | épouse                    | wife                 |
| q05_r | fils                      | son                  |
| q06_r | la fille                  | daughter             |
| q01_t | bonjour                   | hello                |
| q02_t | Comment ça va             | how are you          |
| q03_t | Aidez-moi, s'il vous plaît | please help me       |
| q04_t | je vais bien              | I am fine            |
| q05_t | où est l'hôpital          | where is the hospital |
+-------+---------------------------+----------------------+
16 rows in set (0.051 sec)
```

2. retrieve user id's of users who have opted to learn more than one language

Query:

```
(select user_id
from user_lang
where lang_id like"%1"
intersect (select user_id
        from user_lang
        where lang_id like "%2"))
union
(select user_id
from user_lang
where lang_id like"%1"
intersect (select user_id
        from user_lang
        where lang_id like "%3"))
union
(select user_id
```

```
from user_lang
where lang_id like "%2"
intersect (select user_id
        from user_lang
        where lang_id like "%3"));
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> (select user_id
    -> from user_lang
    -> where lang_id like"%1"
    -> intersect (select user_id
    ->             from user_lang
    ->             where lang_id like "%2"))
    -> union
    -> (select user_id
    -> from user_lang
    -> where lang_id like"%1"
    -> intersect (select user_id
    ->             from user_lang
    ->             where lang_id like "%3"))
    -> union
    -> (select user_id
    -> from user_lang
    -> where lang_id like "%2"
    -> intersect (select user_id
    ->             from user_lang
    ->             where lang_id like "%3"));
+---------+
| user_id |
+---------+
| USR_01  |
| USR_04  |
+---------+
2 rows in set (0.002 sec)
```

View (atleast 1)

Demonstrate creation and querying one view

1. Create a view having all words of spanish and create a new question bank for the quiz section for spanish by selecting 5 records randomly (using views):

   Query:

   ```
   create view spanish_words as
   select q_id, food as spanish_meaning, english_meaning
   from topic_food
   where lang_id = (select lang_id from language where language = "spanish")
   union
   ```

```
select q_id,relationship as spanish_meaning,english_meaning
from topic_relationship
where lang_id =(select lang_id from language where language = "spanish")
union
select q_id, travel_talk as spanish_meaning, english_meaning
from topic_travel_talk
where lang_id = (select lang_id from language where language = "spanish");

select * from spanish_words;
select * from spanish_words order by RAND() LIMIT 5;
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> create view spanish_words as
    -> select q_id, food as spanish_meaning, english_meaning
    -> from topic_food
    -> where lang_id = (select lang_id from language where language = "spanish")
    -> union
    -> select q_id,relationship as spanish_meaning,english_meaning
    -> from topic_relationship
    -> where lang_id =(select lang_id from language where language = "spanish")
    -> union
    -> select q_id, travel_talk as spanish_meaning, english_meaning
    -> from topic_travel_talk
    -> where lang_id = (select lang_id from language where language = "spanish");
Query OK, 0 rows affected (0.013 sec)

MariaDB [DROPS_PES1UG20CS651]>
MariaDB [DROPS_PES1UG20CS651]> select * from spanish_words;
+-------+-----------------------+-----------------------+
| q_id  | spanish_meaning       | english_meaning       |
+-------+-----------------------+-----------------------+
| q01_f | pan de molde          | bread                 |
| q02_f | manteca               | butter                |
| q03_f | Leche                 | milk                  |
| q04_f | limón                 | lemon                 |
| q05_f | papa                  | potato                |
| q01_r | padre                 | father                |
| q02_r | madre                 | mother                |
| q03_r | esposo                | husband               |
| q04_r | esposa                | wife                  |
| q05_r | hijo                  | son                   |
| q06_r | hija                  | daughter              |
| q01_t | Hola                  | hello                 |
| q02_t | cómo estás            | how are you           |
| q03_t | por favor, ayúdame    | please help me        |
| q04_t | Estoy bien            | I am fine             |
| q05_t | Dónde está el hospital | where is the hospital |
+-------+-----------------------+-----------------------+
16 rows in set (0.005 sec)

MariaDB [DROPS_PES1UG20CS651]> select * from spanish_words order by RAND() LIMIT 5;
+-------+--------------------+-----------------+
| q_id  | spanish_meaning    | english_meaning |
+-------+--------------------+-----------------+
| q03_t | por favor, ayúdame | please help me  |
| q06_r | hija               | daughter        |
| q01_t | Hola               | hello           |
| q03_r | esposo             | husband         |
| q04_f | limón              | lemon           |
+-------+--------------------+-----------------+
5 rows in set (0.005 sec)
```

2. Create a view having all words of french and create a new question bank for the quiz section for french by selecting 5 records randomly (using views):

Query:

```
create view french_words as
select q_id, food as french_meaning, english_meaning
from topic_food
where lang_id = (select lang_id from language where language = "french")
union
select q_id,relationship as french_meaning,english_meaning
from topic_relationship
where lang_id =(select lang_id from language where language = "french")
union
select q_id, travel_talk as french_meaning, english_meaning
from topic_travel_talk
where lang_id = (select lang_id from language where language = "french");

select * from french_words;
select * from french_words order by RAND() LIMIT 5;
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> create view french_words as
    -> select q_id, food as french_meaning, english_meaning
    -> from topic_food
    -> where lang_id = (select lang_id from language where language = "french")
    -> union
    -> select q_id,relationship as french_meaning,english_meaning
    -> from topic_relationship
    -> where lang_id =(select lang_id from language where language = "french")
    -> union
    -> select q_id, travel_talk as french_meaning, english_meaning
    -> from topic_travel_talk
    -> where lang_id = (select lang_id from language where language = "french");
Query OK, 0 rows affected (0.006 sec)

MariaDB [DROPS_PES1UG20CS651]>
MariaDB [DROPS_PES1UG20CS651]> select * from french_words;
+-------+---------------------------+----------------------+
| q_id  | french_meaning            | english_meaning      |
+-------+---------------------------+----------------------+
| q01_f | pain                      | bread                |
| q02_f | Beurre                    | butter               |
| q03_f | Le Lait                   | milk                 |
| q04_f | citron                    | lemon                |
| q05_f | Patate                    | potato               |
| q01_r | père                      | father               |
| q02_r | mère                      | mother               |
| q03_r | mari                      | husband              |
| q04_r | épouse                    | wife                 |
| q05_r | fils                      | son                  |
| q06_r | la fille                  | daughter             |
| q01_t | bonjour                   | hello                |
| q02_t | Comment ça va             | how are you          |
| q03_t | Aidez-moi, s'il vous plaît | please help me       |
| q04_t | je vais bien              | I am fine            |
| q05_t | où est l'hôpital          | where is the hospital |
+-------+---------------------------+----------------------+
16 rows in set (0.005 sec)

MariaDB [DROPS_PES1UG20CS651]> select * from french_words order by RAND() LIMIT 5;
+-------+---------------------------+----------------------+
| q_id  | french_meaning            | english_meaning      |
+-------+---------------------------+----------------------+
| q03_f | Le Lait                   | milk                 |
| q05_t | où est l'hôpital          | where is the hospital |
| q01_r | père                      | father               |
| q06_r | la fille                  | daughter             |
| q03_t | Aidez-moi, s'il vous plaît | please help me       |
+-------+---------------------------+----------------------+
5 rows in set (0.002 sec)
```

3. Create a view having all words of german and create a new question bank for the quiz section for german by selecting 5 records randomly (using views):

   Query:

   create view german_words as
   select q_id, food as german_meaning, english_meaning
   from topic_food
   where lang_id = (select lang_id from language where language = "german")
   union

```
select q_id,relationship as german_meaning,english_meaning
from topic_relationship
where lang_id =(select lang_id from language where language = "german")
union
select q_id, travel_talk as german_meaning, english_meaning
from topic_travel_talk
where lang_id = (select lang_id from language where language = "german");

select * from german_words;
select * from german_words order by RAND() LIMIT 5;
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> create view german_words as
    -> select q_id, food as german_meaning, english_meaning
    -> from topic_food
    -> where lang_id = (select lang_id from language where language = "german")
    -> union
    -> select q_id,relationship as german_meaning,english_meaning
    -> from topic_relationship
    -> where lang_id =(select lang_id from language where language = "german")
    -> union
    -> select q_id, travel_talk as german_meaning, english_meaning
    -> from topic_travel_talk
    -> where lang_id = (select lang_id from language where language = "german");
Query OK, 0 rows affected (0.005 sec)

MariaDB [DROPS_PES1UG20CS651]>
MariaDB [DROPS_PES1UG20CS651]> select * from german_words;
+-------+-----------------------+-----------------------+
| q_id  | german_meaning        | english_meaning       |
+-------+-----------------------+-----------------------+
| q01_f | brot                  | bread                 |
| q02_f | Butter                | butter                |
| q03_f | Milch                 | milk                  |
| q04_f | Zitrone               | lemon                 |
| q05_f | Kartoffel             | potato                |
| q01_r | Vater                 | father                |
| q02_r | Mutter                | mother                |
| q03_r | Ehemann               | husband               |
| q04_r | Ehefrau               | wife                  |
| q05_r | Sohn                  | son                   |
| q06_r | Tochter               | daughter              |
| q01_t | hallo                 | hello                 |
| q02_t | wie gehts             | how are you           |
| q03_t | Bitte hilf mir        | please help me        |
| q04_t | Mir geht's gut        | I am fine             |
| q05_t | wo ist das Krankenhaus | where is the hospital |
+-------+-----------------------+-----------------------+
16 rows in set (0.014 sec)

MariaDB [DROPS_PES1UG20CS651]> select * from german_words order by RAND() LIMIT 5;
+-------+-----------------------+-----------------------+
| q_id  | german_meaning        | english_meaning       |
+-------+-----------------------+-----------------------+
| q04_t | Mir geht's gut        | I am fine             |
| q03_t | Bitte hilf mir        | please help me        |
| q04_f | Zitrone               | lemon                 |
| q02_t | wie gehts             | how are you           |
| q05_t | wo ist das Krankenhaus | where is the hospital |
+-------+-----------------------+-----------------------+
5 rows in set (0.001 sec)
```

Functions and Triggers

Write a **function** to select the best score given new score

Query:

```
DELIMITER $$

CREATE FUNCTION update_score(useri varchar(6), langi varchar(6), new_score int)

RETURNS int

 BEGIN

    DECLARE max_score int;

    DECLARE current_score int;

    select q.score into current_score from user_quiz_score q where q.user_id = useri and q.lang_id = langi;

            IF  current_score>=new_score then

              SET max_score = current_score;

            ELSE

              SET max_score = new_score;

    END IF;

            return max_score;

END; $$

DELIMITER ;

select update_score('USR_07','lang03',6);

select update_score('USR_07','lang03',2);
```

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> DELIMITER $$
MariaDB [DROPS_PES1UG20CS651]> CREATE FUNCTION update_score(useri varchar(6), langi varchar(6), new_score int)
    -> RETURNS int
    ->  BEGIN
    ->     DECLARE max_score int;
    ->     DECLARE current_score int;
    ->     select q.score into current_score from user_quiz_score q where q.user_id = useri and q.lang_id = langi;
    -> IF  current_score>=new_score then
    ->    SET max_score = current_score;
    -> ELSE
    ->    SET max_score = new_score;
    ->     END IF;
    -> return max_score;
    -> END; $$
Query OK, 0 rows affected (0.039 sec)

MariaDB [DROPS_PES1UG20CS651]> DELIMITER ;
```

```
MariaDB [DROPS_PES1UG20CS651]> select update_score('USR_07','lang03',6);
+-----------------------------------+
| update_score('USR_07','lang03',6) |
+-----------------------------------+
|                                 6 |
+-----------------------------------+
1 row in set (0.005 sec)

MariaDB [DROPS_PES1UG20CS651]> select update_score('USR_07','lang03',2);
+-----------------------------------+
| update_score('USR_07','lang03',2) |
+-----------------------------------+
|                                 4 |
+-----------------------------------+
1 row in set (0.001 sec)
```

Create a **trigger** before updating the score of a user after they take the score, update the score only if the new score is higher than the previous score i.e. the score table must always store the highest score of a particular user.

Query:

```
DELIMITER $$

CREATE or replace TRIGGER before_update_score

BEFORE UPDATE

ON user_quiz_score FOR EACH ROW

BEGIN

   DECLARE useri varchar(6);

   DECLARE langi varchar(6);

   DECLARE new_score int;

   DECLARE max_score int;


   set useri = new.user_id;

   set langi = new.lang_id;

   set new_score = new.score;


   set max_score = update_score(useri,langi,new_score);


   set new.score = max_score;
```

END; $$

DELIMITER ;

update user_quiz_score set score = 2 where user_id='USR_07' and lang_id='lang03';

select * from user_quiz_score;

update user_quiz_score set score = 6 where user_id='USR_07' and lang_id='lang03';

select * from user_quiz_score;

Screenshot:

```
MariaDB [DROPS_PES1UG20CS651]> DELIMITER $$
MariaDB [DROPS_PES1UG20CS651]> CREATE or replace TRIGGER before_update_score
    -> BEFORE UPDATE
    -> ON user_quiz_score FOR EACH ROW
    -> BEGIN
    ->     DECLARE useri varchar(6);
    ->     DECLARE langi varchar(6);
    ->     DECLARE new_score int;
    ->     DECLARE max_score int;
    ->
    ->     set useri = new.user_id;
    ->     set langi = new.lang_id;
    ->     set new_score = new.score;
    ->
    ->     set max_score = update_score(useri,langi,new_score);
    ->
    ->     set new.score = max_score;
    ->
    -> END; $$
Query OK, 0 rows affected (0.011 sec)

MariaDB [DROPS_PES1UG20CS651]> DELIMITER ;
```

```
MariaDB [DROPS_PES1UG20CS651]> update user_quiz_score set score = 2 where user_id='USR_07' and lang_id='lang03';
Query OK, 0 rows affected (0.001 sec)
Rows matched: 1  Changed: 0  Warnings: 0

MariaDB [DROPS_PES1UG20CS651]> select * from user_quiz_score;
+---------+---------+-------+
| user_id | lang_id | score |
+---------+---------+-------+
| USR_01  | lang01  |     8 |
| USR_03  | lang01  |     7 |
| USR_04  | lang03  |    10 |
| USR_05  | lang02  |     9 |
| USR_07  | lang01  |     8 |
| USR_07  | lang03  |     4 |
| USR_09  | lang03  |     6 |
| USR_10  | lang02  |    10 |
+---------+---------+-------+
8 rows in set (0.001 sec)
```

```
MariaDB [DROPS_PES1UG20CS651]> update user_quiz_score set score = 6 where user_id='USR_07' and lang_id='lang03';
Query OK, 1 row affected (0.003 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [DROPS_PES1UG20CS651]> select * from user_quiz_score;
+---------+---------+-------+
| user_id | lang_id | score |
+---------+---------+-------+
| USR_01  | lang01  |     8 |
| USR_03  | lang01  |     7 |
| USR_04  | lang03  |    10 |
| USR_05  | lang02  |     9 |
| USR_07  | lang01  |     8 |
| USR_07  | lang03  |     6 |
| USR_09  | lang03  |     6 |
| USR_10  | lang02  |    10 |
+---------+---------+-------+
8 rows in set (0.000 sec)
```

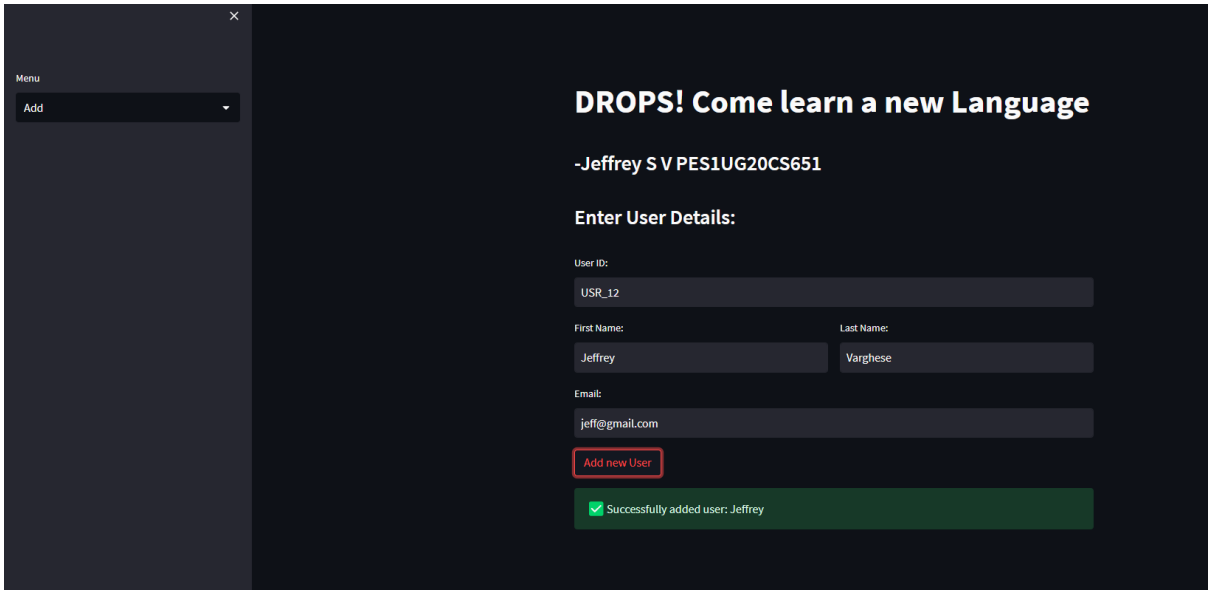
Developing a Frontend

1. Inserting new record

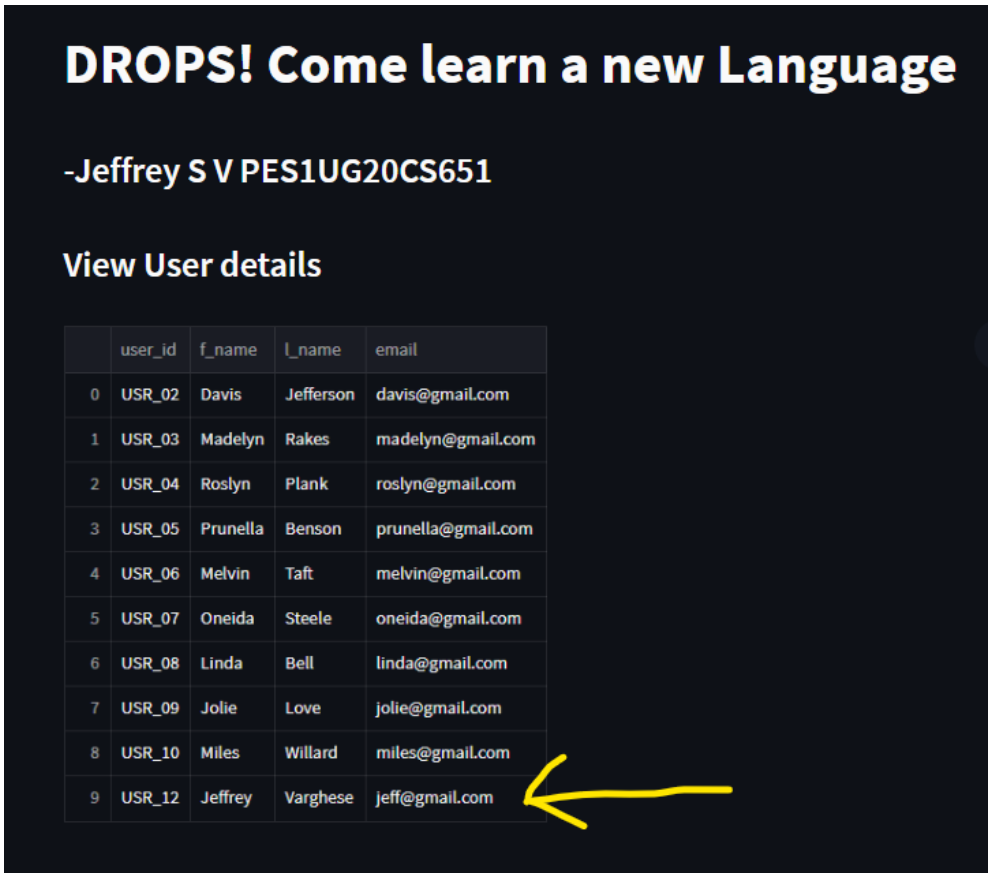
Current users:

	user_id	f_name	l_name	email
0	USR_02	Davis	Jefferson	davis@gmail.com
1	USR_03	Madelyn	Rakes	madelyn@gmail.com
2	USR_04	Roslyn	Plank	roslyn@gmail.com
3	USR_05	Prunella	Benson	prunella@gmail.com
4	USR_06	Melvin	Taft	melvin@gmail.com
5	USR_07	Oneida	Steele	oneida@gmail.com
6	USR_08	Linda	Bell	linda@gmail.com
7	USR_09	Jolie	Love	jolie@gmail.com
8	USR_10	Miles	Willard	miles@gmail.com

Adding a user:

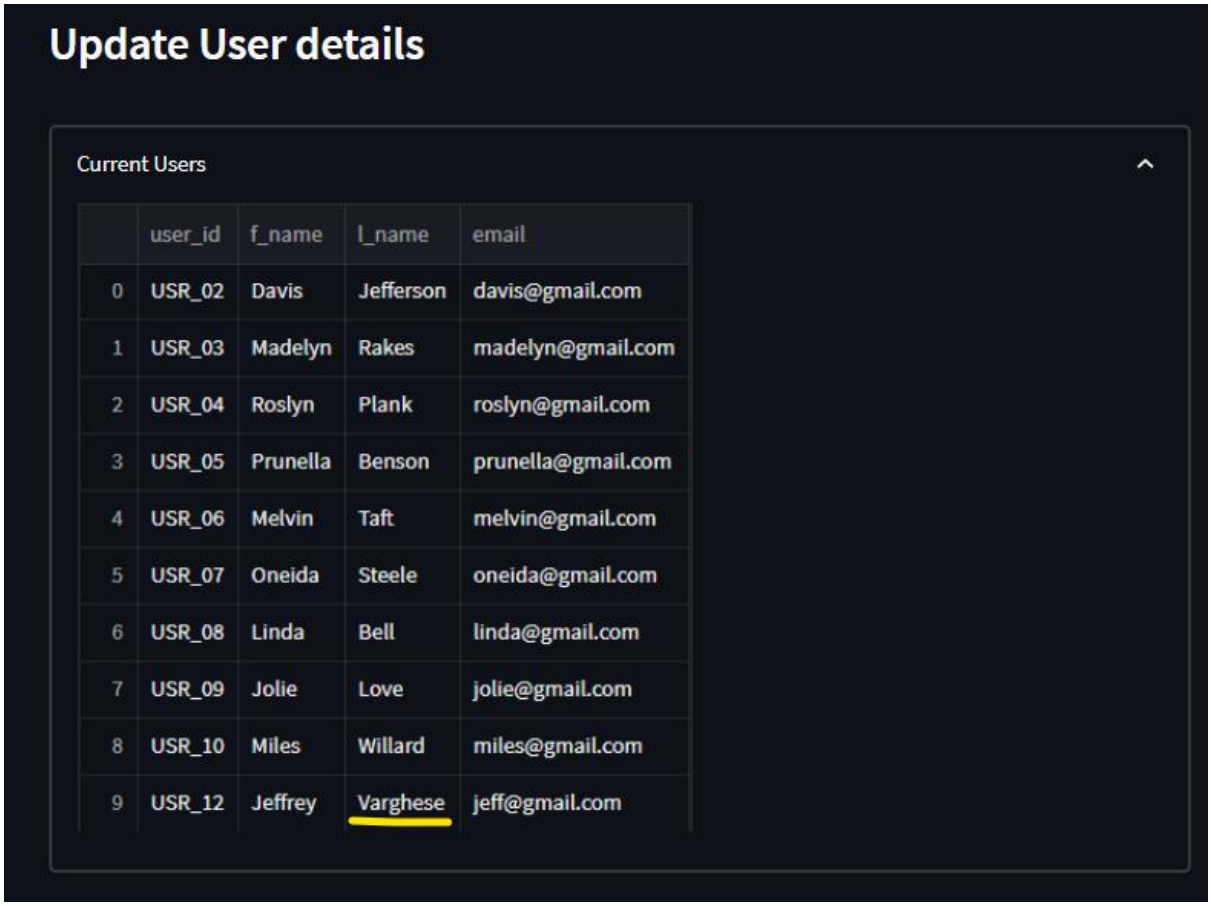


Viewing after adding a user

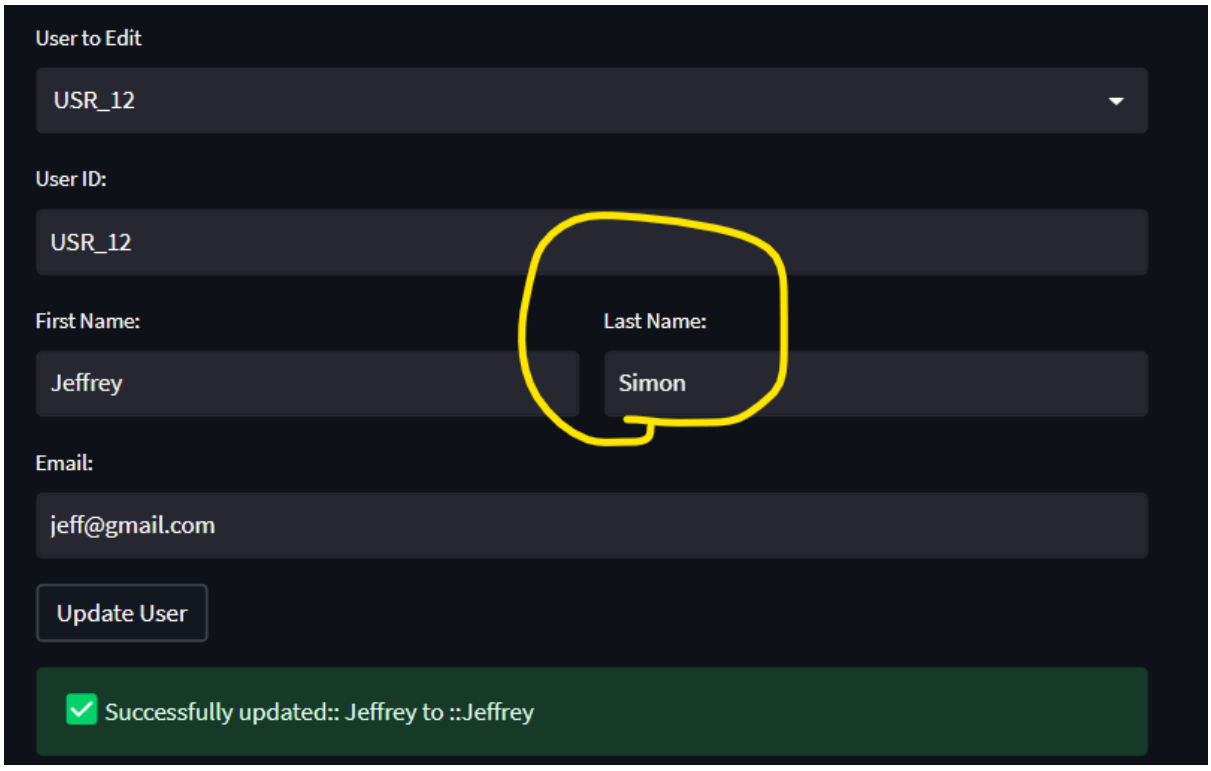


2. Updating a record

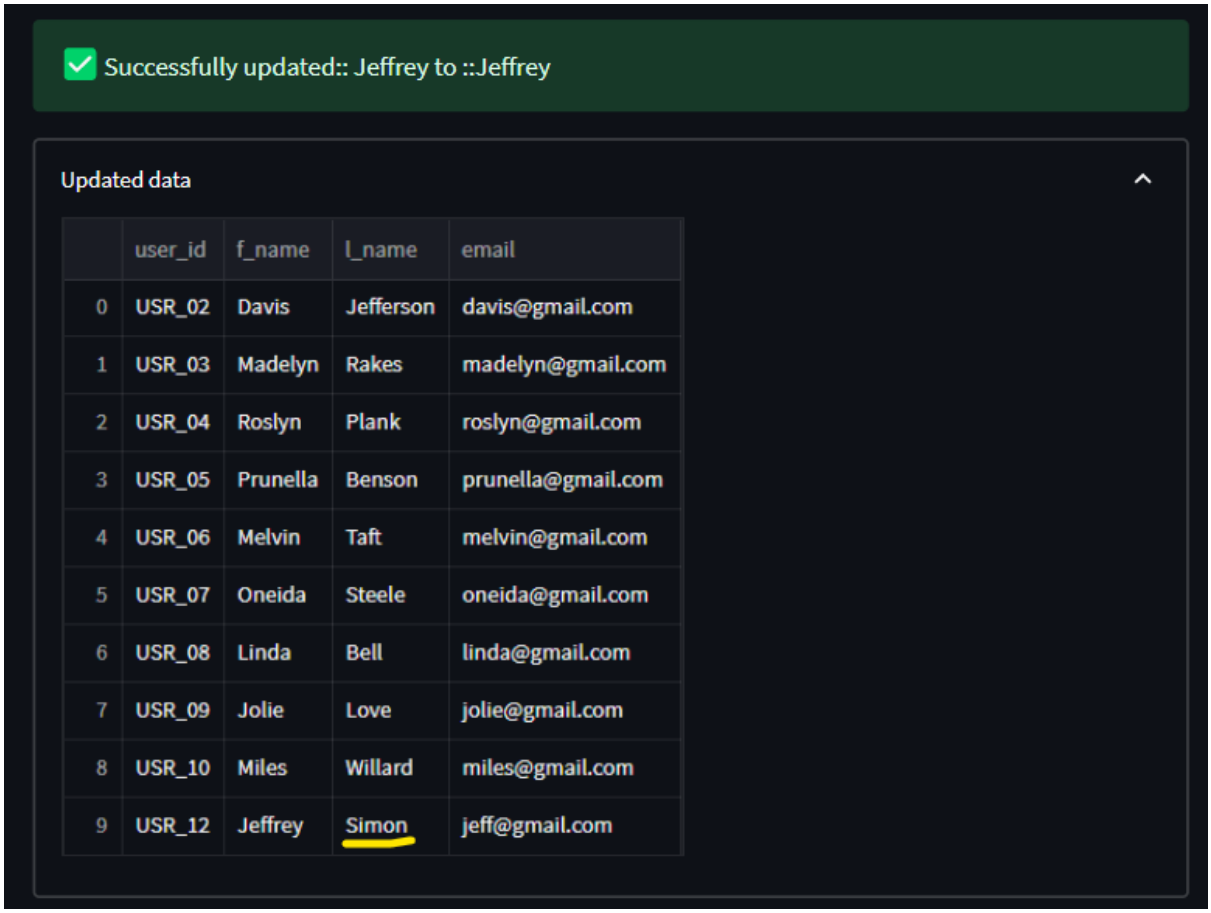
Before update



Update:



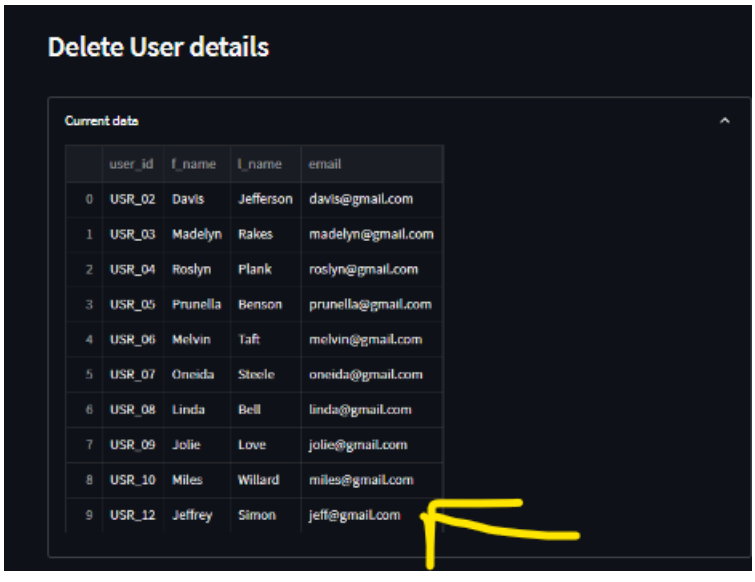
After update:



	user_id	f_name	l_name	email
0	USR_02	Davis	Jefferson	davis@gmail.com
1	USR_03	Madelyn	Rakes	madelyn@gmail.com
2	USR_04	Roslyn	Plank	roslyn@gmail.com
3	USR_05	Prunella	Benson	prunella@gmail.com
4	USR_06	Melvin	Taft	melvin@gmail.com
5	USR_07	Oneida	Steele	oneida@gmail.com
6	USR_08	Linda	Bell	linda@gmail.com
7	USR_09	Jolie	Love	jolie@gmail.com
8	USR_10	Miles	Willard	miles@gmail.com
9	USR_12	Jeffrey	Simon	jeff@gmail.com

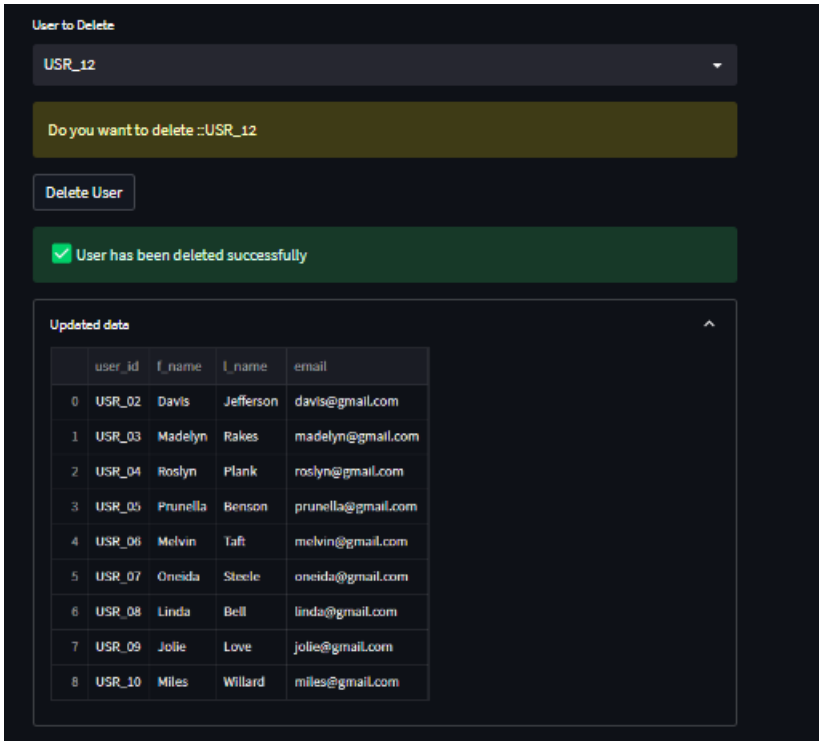
3. Deleting a record

Before delete

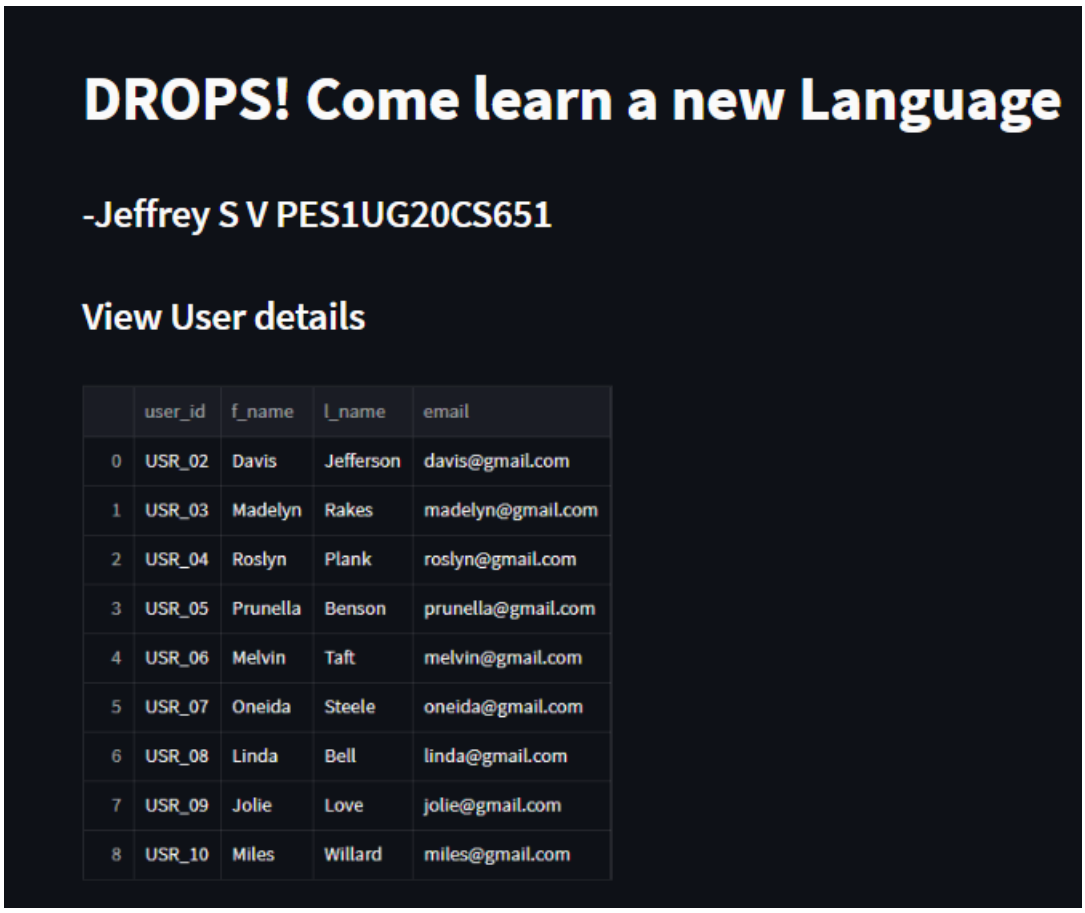


	user_id	f_name	l_name	email
0	USR_02	Davis	Jefferson	davis@gmail.com
1	USR_03	Madelyn	Rakes	madelyn@gmail.com
2	USR_04	Roslyn	Plank	roslyn@gmail.com
3	USR_05	Prunella	Benson	prunella@gmail.com
4	USR_06	Melvin	Taft	melvin@gmail.com
5	USR_07	Oneida	Steele	oneida@gmail.com
6	USR_08	Linda	Bell	linda@gmail.com
7	USR_09	Jolie	Love	jolie@gmail.com
8	USR_10	Miles	Willard	miles@gmail.com
9	USR_12	Jeffrey	Simon	jeff@gmail.com

Delete and after delete

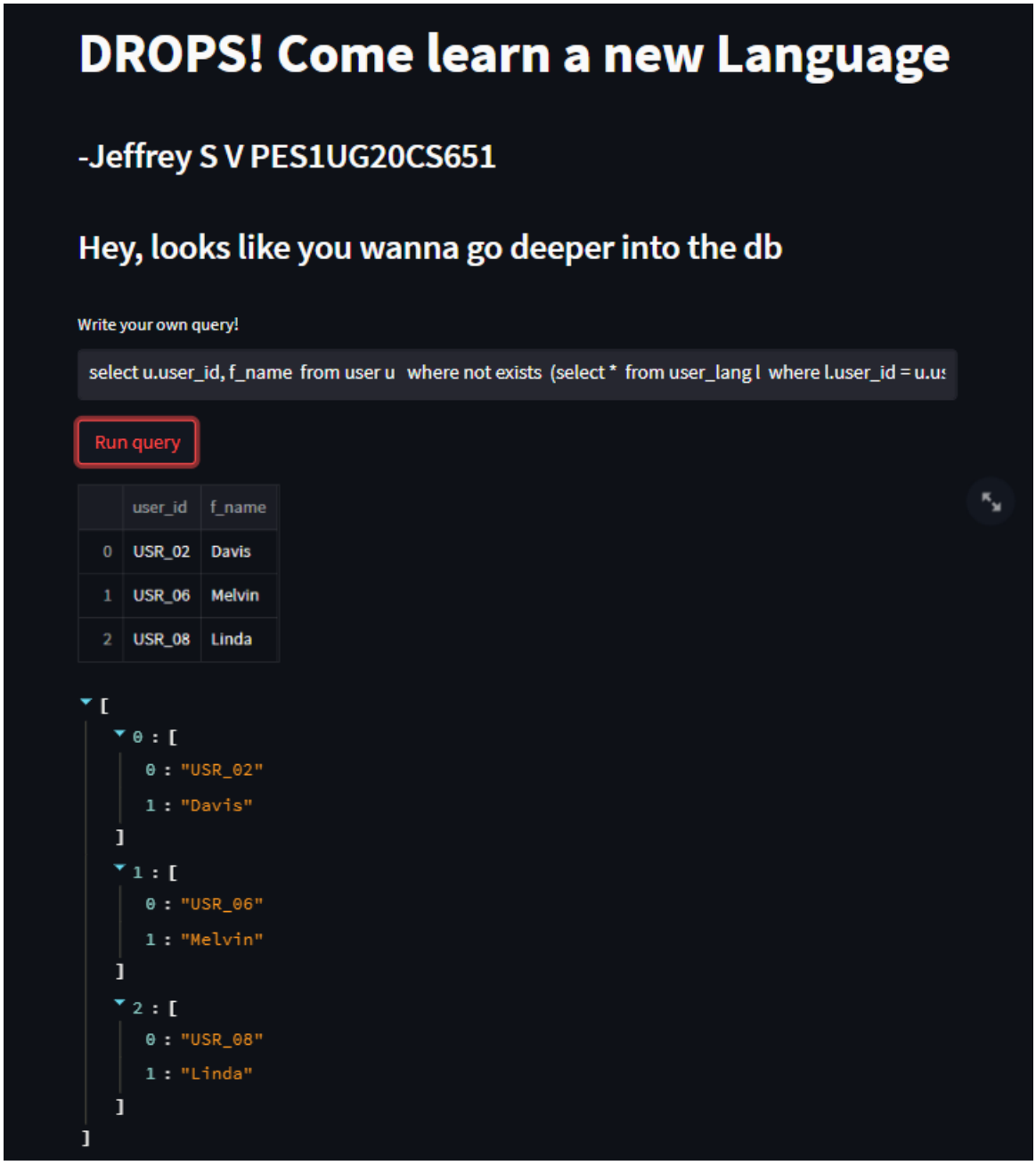


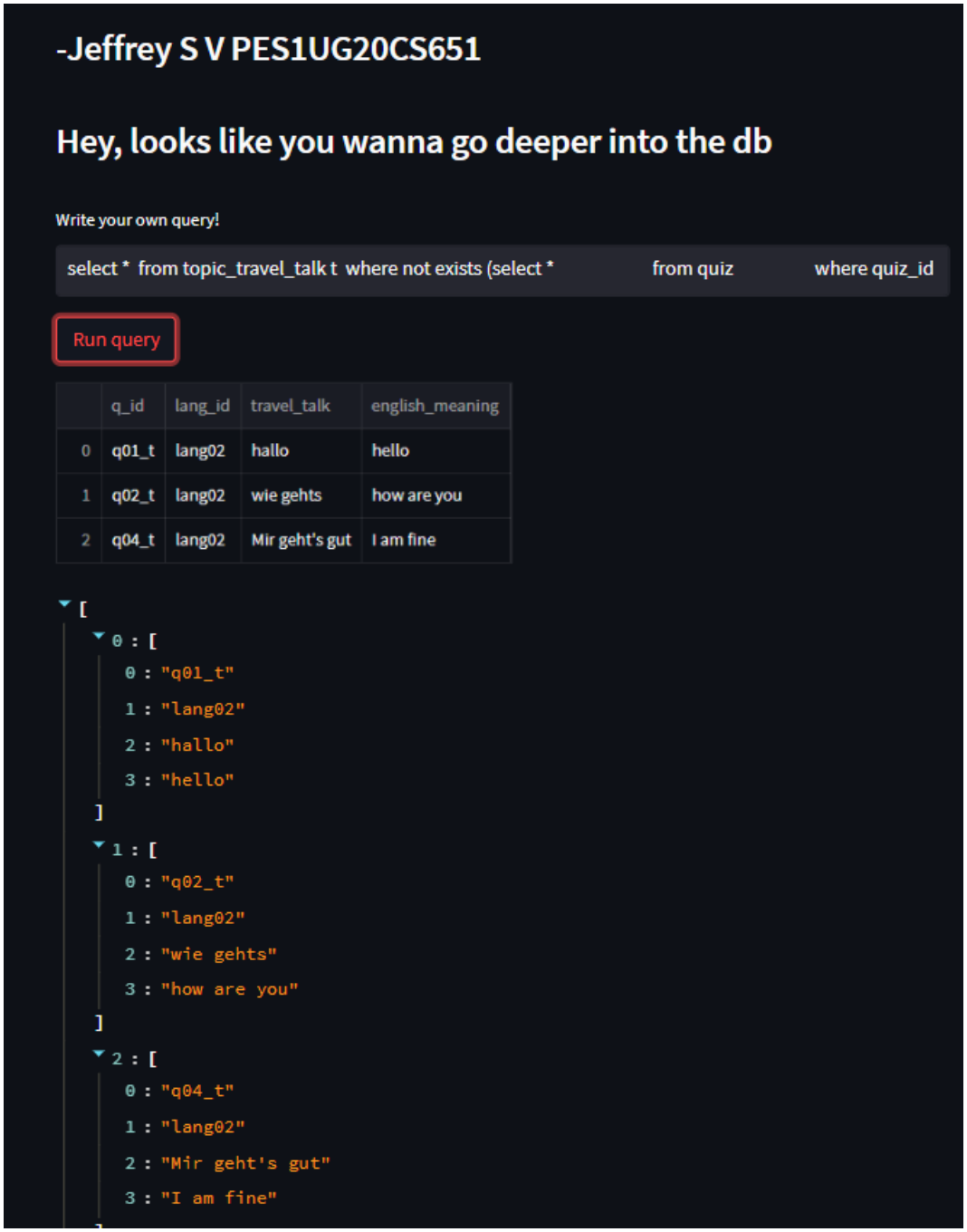
4. Viewing records



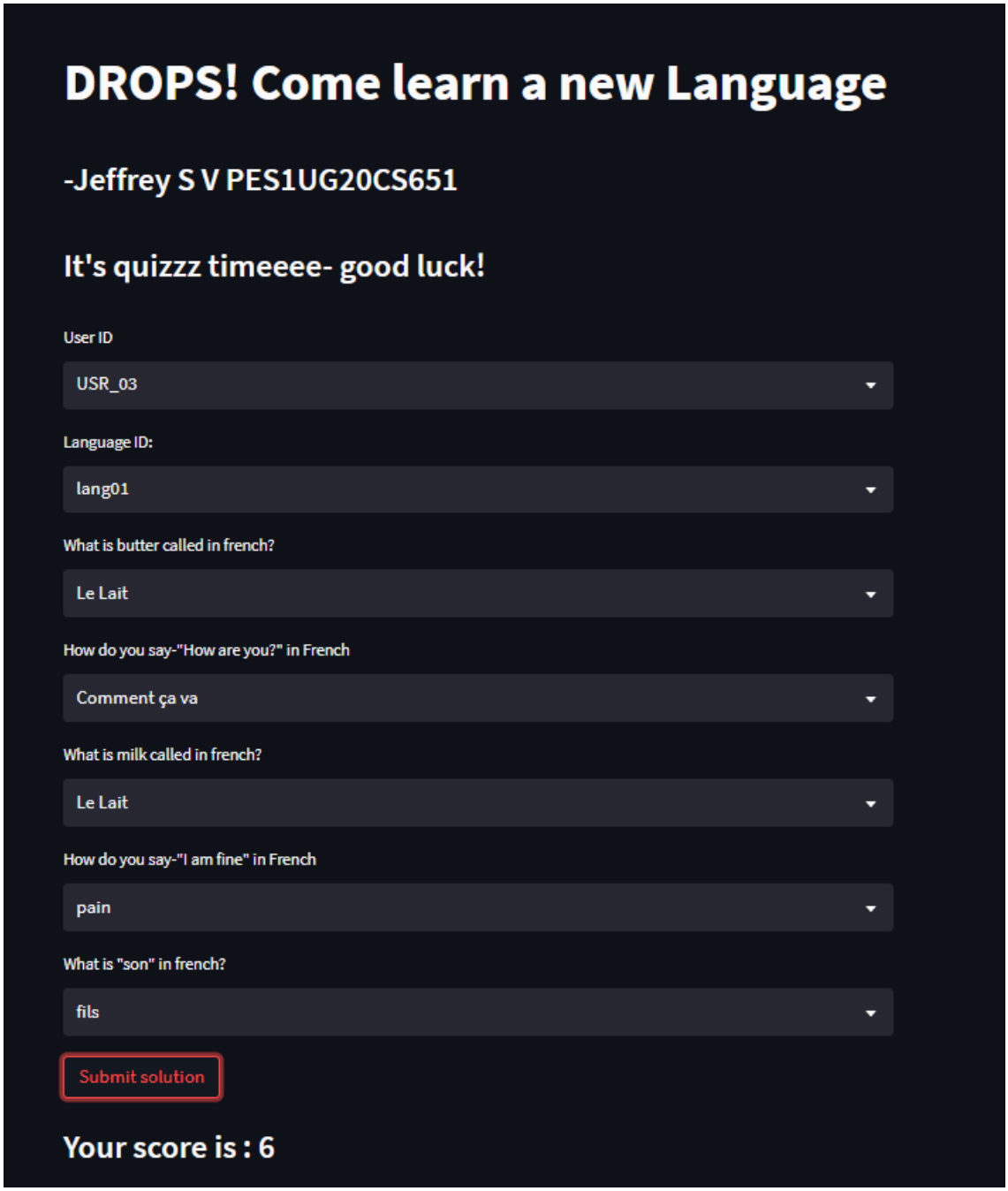
5. Write you own query

Output in both tabular format and JSON format





6. Quiz(firing trigger and function from front end to update user_quiz_score table)


DROPS! Come learn a new Language
-Jeffrey S V PES1UG20CS651
It's quizzz timeeee- good luck!
User ID
USR_03
Language ID:
lang01
What is butter called in french?
Le Lait
How do you say-"How are you?" in French
Comment ça va
What is milk called in french?
Le Lait
How do you say-"I am fine" in French
pain
What is "son" in french?
fils
Submit solution
Your score is : 6