0x00. MySQL advanced

Back-end SQL MySQL

Weight: 1

Project over - took place from Jul 10, 2024 6:00 AM to Jul 12, 2024 6:00 AM

An auto review will be launched at the deadline

In a nutshell…

- **Auto QA review:** 43.2/53 mandatory & 5.2/8 optional
- **Altogether: 134.49%**
  - Mandatory: 81.51%
  - Optional: 65.0%
  - Calculation: 81.51% + (81.51% * 65.0%) == **134.49%**

Concepts

For this project, we expect you to look at this concept:

- Advanced SQL (/concepts/555)

Resources

Read or watch:

- MySQL cheatsheet (/rltoken/8w9di_hk19DIMSBEV3EayQ)
- MySQL Performance: How To Leverage MySQL Database Indexing (/rltoken/2GJbZ48zRPA70o2YhTdH7g)
- Stored Procedure (/rltoken/K180X2OCzb6gzPngjn-EIg)
- Triggers (/rltoken/cJ1qA4o-rRm4rWIsqYKSZg)
- Views (/rltoken/vHg1z3UAOcWMvOt8xZHeiA)
- Functions and Operators (/rltoken/g-c1m6iljScpi4LeqxBRqQ)
- Trigger Syntax and Examples (/rltoken/gLVwKjQfRL0Jr_nWqAS7VQ)
- CREATE TABLE Statement (/rltoken/X789nJ22H6HVh1uCQPl0lg)
- CREATE PROCEDURE and CREATE FUNCTION Statements (/rltoken/mfrWMt1KL3NHXblJykM
- CREATE INDEX Statement (/rltoken/oCu8Rg9WfKyF4BhTt8dZGQ)
- CREATE VIEW Statement (/rltoken/FEZNlZFKZmD1ISnLINkCwQ)

Learning Objectives

At the end of this project, you are expected to be able to explain to anyone (/rltoken/NEA0Fr7muHfukI5iziVAhg), **without the help of Google**:

General

- How to create tables with constraints
- How to optimize queries by adding indexes
- What is and how to implement stored procedures and functions in MySQL
- What is and how to implement views in MySQL
- What is and how to implement triggers in MySQL

Requirements

General

- All your files will be executed on Ubuntu 18.04 LTS using `MySQL 5.7` (version 5.7.30)
- All your files should end with a new line
- All your SQL queries should have a comment just before (i.e. syntax above)
- All your files should start by a comment describing the task
- All SQL keywords should be in uppercase (`SELECT`, `WHERE`…)
- A `README.md` file, at the root of the folder of the project, is mandatory
- The length of your files will be tested using `wc`

More Info

Comments for your SQL file:

```
$ cat my_script.sql
-- 3 first students in the Batch ID=3
-- because Batch 3 is the best!
SELECT id, name FROM students WHERE batch_id = 3 ORDER BY created_at DESC LIMIT
3;
$
```

Use “container-on-demand” to run MySQL

- Ask for container `Ubuntu 18.04 - Python 3.7`
- Connect via SSH
- Or via the WebTerminal
- In the container, you should start MySQL before playing with it:

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My Profile(/users/my_profile)

```
$ service mysql start
 * MySQL Community Server 5.7.30 is started
$
$ cat 0-list_databases.sql | mysql -uroot -p my_database
Enter password:
Database
information_schema
mysql
performance_schema
sys
$
```

In the container, credentials are `root/root`

How to import a SQL dump

```
$ echo "CREATE DATABASE hbtn_0d_tvshows;" | mysql -uroot -p
Enter password:
$ curl "https://s3.amazonaws.com/intranet-projects-files/holbertonschool-higher-l
evel_programming+/274/hbtn_0d_tvshows.sql" -s | mysql -uroot -p hbtn_0d_tvshows
Enter password:
$ echo "SELECT * FROM tv_genres" | mysql -uroot -p hbtn_0d_tvshows
Enter password:
id  name
1   Drama
2   Mystery
3   Adventure
4   Fantasy
5   Comedy
6   Crime
7   Suspense
8   Thriller
$
```

Tasks

0. We are all unique!

mandatory

Score: 100.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a table `users` following these requirements:

- With these attributes:
    - `id` , integer, never null, auto increment and primary key
    - `email` , string (255 characters), never null and unique
    - `name` , string (255 characters)
- If the table already exists, your script should not fail
- Your script can be executed on any database

Context: *Make an attribute unique directly in the table schema will enforced your business rules and avoid bugs in your application*

```
bob@dylan:~$ echo "SELECT * FROM users;" | mysql -uroot -p holberton
Enter password:
ERROR 1146 (42S02) at line 1: Table 'holberton.users' doesn't exist
bob@dylan:~$
bob@dylan:~$ cat 0-uniq_users.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ echo 'INSERT INTO users (email, name) VALUES ("bob@dylan.com", "Bo
b");' | mysql -uroot -p holberton
Enter password:
bob@dylan:~$ echo 'INSERT INTO users (email, name) VALUES ("sylvie@dylan.com", "S
ylvie");' | mysql -uroot -p holberton
Enter password:
bob@dylan:~$ echo 'INSERT INTO users (email, name) VALUES ("bob@dylan.com", "Jea
n");' | mysql -uroot -p holberton
Enter password:
ERROR 1062 (23000) at line 1: Duplicate entry 'bob@dylan.com' for key 'email'
bob@dylan:~$
bob@dylan:~$ echo "SELECT * FROM users;" | mysql -uroot -p holberton
Enter password:
id  email   name
1   bob@dylan.com   Bob
2   sylvie@dylan.com    Sylvie
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `0-uniq_users.sql`

Check submission | Get a sandbox | View results

1. In and not out

mandatory

Score: 100.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a table `users` following these requirements:

- With these attributes:
  - `id` , integer, never null, auto increment and primary key
  - `email` , string (255 characters), never null and unique
  - `name` , string (255 characters)
  - `country` , enumeration of countries: `US` , `CO` and `TN` , never null (= default will be the first element of the enumeration, here `US`)
- If the table already exists, your script should not fail
- Your script can be executed on any database

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```
bob@dylan:~$ echo "SELECT * FROM users;" | mysql -uroot -p holberton
Enter password:
ERROR 1146 (42S02) at line 1: Table 'holberton.users' doesn't exist
bob@dylan:~$
bob@dylan:~$ cat 1-country_users.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ echo 'INSERT INTO users (email, name, country) VALUES ("bob@dylan.co
m", "Bob", "US");' | mysql -uroot -p holberton
Enter password:
bob@dylan:~$ echo 'INSERT INTO users (email, name, country) VALUES ("sylvie@dyla
n.com", "Sylvie", "CO");' | mysql -uroot -p holberton
Enter password:
bob@dylan:~$ echo 'INSERT INTO users (email, name, country) VALUES ("jean@dylan.c
om", "Jean", "FR");' | mysql -uroot -p holberton
Enter password:
ERROR 1265 (01000) at line 1: Data truncated for column 'country' at row 1
bob@dylan:~$
bob@dylan:~$ echo 'INSERT INTO users (email, name) VALUES ("john@dylan.com", "Joh
n");' | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ echo "SELECT * FROM users;" | mysql -uroot -p holberton
Enter password:
id  email   name    country
1   bob@dylan.com   Bob US
2   sylvie@dylan.com    Sylvie  CO
3   john@dylan.com  John    US
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `1-country_users.sql`

Check submission | Get a sandbox | View results

2. Best band ever!

mandatory

Score: 100.0% (*Checks completed: 100.0%*)

Write a SQL script that ranks country origins of bands, ordered by the number of (non-unique) fans

Requirements:

- Import this table dump: metal_bands.sql.zip (/rltoken/uPn947gnZLaa0FJrrAFTGQ)
- Column names must be: `origin` and `nb_fans`
- Your script can be executed on any database

Context: *Calculate/compute something is always power intensive… better to distribute the load!*

```
bob@dylan:~$ cat metal_bands.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 2-fans.sql | mysql -uroot -p holberton > tmp_res ; head tmp_res
Enter password:
origin  nb_fans
USA 99349
Sweden  47169
Finland 32878
United Kingdom  32518
Germany 29486
Norway  22405
Canada  8874
The Netherlands 8819
Italy 7178
bob@dylan:~$
```

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Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `2-fans.sql`

Check submission | Get a sandbox | View results

3. Old school band

mandatory

Score: 73.75% (*Checks completed: 100.0%*)

Write a SQL script that lists all bands with `Glam rock` as their main style, ranked by their longevity

Requirements:

- Import this table dump: metal_bands.sql.zip (/rltoken/uPn947gnZLaa0FJrrAFTGQ)
- Column names must be: `band_name` and `lifespan` (in years **until 2022** - please use `2022` instead of `YEAR(CURDATE())`)
- You should use attributes `formed` and `split` for computing the `lifespan`
- Your script can be executed on any database

```
bob@dylan:~$ cat metal_bands.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 3-glam_rock.sql | mysql -uroot -p holberton
Enter password:
band_name	lifespan
Alice Cooper	56
Mötley Crüe	34
Marilyn Manson	31
The 69 Eyes	30
Hardcore Superstar	23
Nasty Idols	0
Hanoi Rocks	0
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `3-glam_rock.sql`

Check submission | Get a sandbox | View results

4. Buy buy buy

mandatory

Score: 73.75% (*Checks completed: 100.0%*)

Write a SQL script that creates a trigger that decreases the quantity of an item after adding a new order.

Quantity in the table `items` can be negative.

Context: *Updating multiple tables for one action from your application can generate issue: network disconnection, crash, etc… to keep your data in a good shape, let MySQL do it for you!*

```
bob@dylan:~$ cat 4-init.sql
-- Initial
DROP TABLE IF EXISTS items;
DROP TABLE IF EXISTS orders;

CREATE TABLE IF NOT EXISTS items (
    name VARCHAR(255) NOT NULL,
    quantity int NOT NULL DEFAULT 10
);

CREATE TABLE IF NOT EXISTS orders (
    item_name VARCHAR(255) NOT NULL,
    number int NOT NULL
);

INSERT INTO items (name) VALUES ("apple"), ("pineapple"), ("pear");

bob@dylan:~$
bob@dylan:~$ cat 4-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 4-store.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 4-main.sql
Enter password:
-- Show and add orders
SELECT * FROM items;
SELECT * FROM orders;

INSERT INTO orders (item_name, number) VALUES ('apple', 1);
INSERT INTO orders (item_name, number) VALUES ('apple', 3);
INSERT INTO orders (item_name, number) VALUES ('pear', 2);

SELECT "--";

SELECT * FROM items;
SELECT * FROM orders;

bob@dylan:~$
bob@dylan:~$ cat 4-main.sql | mysql -uroot -p holberton
Enter password:
name    quantity
apple   10
pineapple   10
pear    10
--
--
name    quantity
apple   6
pineapple   10
pear    8
item_name   number
apple   1
apple   3
```

```
pear    2
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `4-store.sql`

Check submission | Get a sandbox | View results

5. Email validation to sent

mandatory

Score: 91.25% (*Checks completed: 100.0%*)

Write a SQL script that creates a trigger that resets the attribute `valid_email` only when the `email` has been changed.

Context: *Nothing related to MySQL, but perfect for user email validation - distribute the logic to the database itself!*

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```
bob@dylan:~$ cat 5-init.sql
-- Initial
DROP TABLE IF EXISTS users;

CREATE TABLE IF NOT EXISTS users (
    id int not null AUTO_INCREMENT,
    email varchar(255) not null,
    name varchar(255),
    valid_email boolean not null default 0,
    PRIMARY KEY (id)
);

INSERT INTO users (email, name) VALUES ("bob@dylan.com", "Bob");
INSERT INTO users (email, name, valid_email) VALUES ("sylvie@dylan.com", "Sylvi
e", 1);
INSERT INTO users (email, name, valid_email) VALUES ("jeanne@dylan.com", "Jeann
e", 1);

bob@dylan:~$
bob@dylan:~$ cat 5-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 5-valid_email.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 5-main.sql
Enter password:
-- Show users and update (or not) email
SELECT * FROM users;

UPDATE users SET valid_email = 1 WHERE email = "bob@dylan.com";
UPDATE users SET email = "sylvie+new@dylan.com" WHERE email = "sylvie@dylan.com";
UPDATE users SET name = "Jannis" WHERE email = "jeanne@dylan.com";

SELECT "--";
SELECT * FROM users;

UPDATE users SET email = "bob@dylan.com" WHERE email = "bob@dylan.com";

SELECT "--";
SELECT * FROM users;

bob@dylan:~$
bob@dylan:~$ cat 5-main.sql | mysql -uroot -p holberton
Enter password:
id  email   name    valid_email
1   bob@dylan.com   Bob 0
2   sylvie@dylan.com    Sylvie  1
3   jeanne@dylan.com    Jeanne  1
--
--
id  email   name    valid_email
1   bob@dylan.com   Bob 1
2   sylvie+new@dylan.com    Sylvie  0
3   jeanne@dylan.com    Jannis  1
```

```
--
--
id   email   name    valid_email
1   bob@dylan.com   Bob 1
2   sylvie+new@dylan.com    Sylvie  0
3   jeanne@dylan.com    Jannis  1
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `5-valid_email.sql`

Check submission | Get a sandbox | View results

6. Add bonus

mandatory

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a stored procedure `AddBonus` that adds a new correction for a student.

Requirements:

- Procedure `AddBonus` is taking 3 inputs (in this order):
  - `user_id`, a `users.id` value (you can assume `user_id` is linked to an existing `users`)
  - `project_name`, a new or already exists `projects` - if no `projects.name` found in the table, you should create it
  - `score`, the score value for the correction

Context: *Write code in SQL is a nice level up!*

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```
bob@dylan:~$ cat 6-init.sql
-- Initial
DROP TABLE IF EXISTS corrections;
DROP TABLE IF EXISTS users;
DROP TABLE IF EXISTS projects;

CREATE TABLE IF NOT EXISTS users (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    average_score float default 0,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS projects (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS corrections (
    user_id int not null,
    project_id int not null,
    score int default 0,
    KEY `user_id` (`user_id`),
    KEY `project_id` (`project_id`),
    CONSTRAINT fk_user_id FOREIGN KEY (`user_id`) REFERENCES `users` (`id`) ON DELETE CASCADE,
    CONSTRAINT fk_project_id FOREIGN KEY (`project_id`) REFERENCES `projects` (`id`) ON DELETE CASCADE
);

INSERT INTO users (name) VALUES ("Bob");
SET @user_bob = LAST_INSERT_ID();

INSERT INTO users (name) VALUES ("Jeanne");
SET @user_jeanne = LAST_INSERT_ID();

INSERT INTO projects (name) VALUES ("C is fun");
SET @project_c = LAST_INSERT_ID();

INSERT INTO projects (name) VALUES ("Python is cool");
SET @project_py = LAST_INSERT_ID();


INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_c, 80);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_py, 96);

INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @project_c, 91);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @project_py, 73);

bob@dylan:~$
```

```
bob@dylan:~$ cat 6-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 6-bonus.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 6-main.sql
Enter password:
-- Show and add bonus correction
SELECT * FROM projects;
SELECT * FROM corrections;

SELECT "--";

CALL AddBonus((SELECT id FROM users WHERE name = "Jeanne"), "Python is cool", 10
0);

CALL AddBonus((SELECT id FROM users WHERE name = "Jeanne"), "Bonus project", 10
0);
CALL AddBonus((SELECT id FROM users WHERE name = "Bob"), "Bonus project", 10);

CALL AddBonus((SELECT id FROM users WHERE name = "Jeanne"), "New bonus", 90);

SELECT "--";

SELECT * FROM projects;
SELECT * FROM corrections;

bob@dylan:~$
bob@dylan:~$ cat 6-main.sql | mysql -uroot -p holberton
Enter password:
id  name
1   C is fun
2   Python is cool
user_id project_id  score
1   1   80
1   2   96
2   1   91
2   2   73
--
--
--
--
id  name
1   C is fun
2   Python is cool
3   Bonus project
4   New bonus
user_id project_id  score
1   1   80
1   2   96
2   1   91
2   2   73
2   2   100
2   3   100
1   3   10
```

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```
 2   4   90
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `6-bonus.sql`

Check submission >_ Get a sandbox View results

7. Average score

mandatory

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a stored procedure `ComputeAverageScoreForUser` that computes and store the average score for a student. Note: An average score can be a decimal

Requirements:

- Procedure `ComputeAverageScoreForUser` is taking 1 input:
  - `user_id`, a `users.id` value (you can assume `user_id` is linked to an existing `users`)

```
bob@dylan:~$ cat 7-init.sql
-- Initial
DROP TABLE IF EXISTS corrections;
DROP TABLE IF EXISTS users;
DROP TABLE IF EXISTS projects;

CREATE TABLE IF NOT EXISTS users (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    average_score float default 0,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS projects (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS corrections (
    user_id int not null,
    project_id int not null,
    score int default 0,
    KEY `user_id` (`user_id`),
    KEY `project_id` (`project_id`),
    CONSTRAINT fk_user_id FOREIGN KEY (`user_id`) REFERENCES `users` (`id`) ON DE
LETE CASCADE,
    CONSTRAINT fk_project_id FOREIGN KEY (`project_id`) REFERENCES `projects` (`i
d`) ON DELETE CASCADE
);

INSERT INTO users (name) VALUES ("Bob");
SET @user_bob = LAST_INSERT_ID();

INSERT INTO users (name) VALUES ("Jeanne");
SET @user_jeanne = LAST_INSERT_ID();

INSERT INTO projects (name) VALUES ("C is fun");
SET @project_c = LAST_INSERT_ID();

INSERT INTO projects (name) VALUES ("Python is cool");
SET @project_py = LAST_INSERT_ID();


INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_
c, 80);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_
py, 96);

INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @proje
ct_c, 91);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @proje
ct_py, 73);

bob@dylan:~$
```

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```
bob@dylan:~$ cat 7-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 7-average_score.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 7-main.sql
-- Show and compute average score
SELECT * FROM users;
SELECT * FROM corrections;

SELECT "--";
CALL ComputeAverageScoreForUser((SELECT id FROM users WHERE name = "Jeanne"));

SELECT "--";
SELECT * FROM users;

bob@dylan:~$
bob@dylan:~$ cat 7-main.sql | mysql -uroot -p holberton
Enter password:
id	name	average_score
1	Bob	0
2	Jeanne	0
user_id	project_id	score
1	1	80
1	2	96
2	1	91
2	2	73
--
--
--
--
id	name	average_score
1	Bob	0
2	Jeanne	82
bob@dylan:~$
```

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Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `7-average_score.sql`

Check submission | Get a sandbox | View results

Optimize simple search

mandatory

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates an index `idx_name_first` on the table `names` and the first letter of `name`.

Requirements:

- Import this table dump: names.sql.zip (/rltoken/BluyCCIlfw0NqcjqUiUdEw)
- Only the first letter of `name` must be indexed

Context: *Index is not the solution for any performance issue, but well used, it's really powerful!*

```
bob@dylan:~$ cat names.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ mysql -uroot -p holberton
Enter password:
mysql> SELECT COUNT(name) FROM names WHERE name LIKE 'a%';
+-------------+
| COUNT(name) |
+-------------+
|      302936 |
+-------------+
1 row in set (2.12 sec)
mysql>
mysql> exit
bye
bob@dylan:~$
bob@dylan:~$ cat 8-index_my_names.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ mysql -uroot -p holberton
Enter password:
mysql> SHOW index FROM names;
+-------+------------+-----------------+--------------+-------------+-----------+-
------------+----------+--------+------+------------+---------+---------------+
| Table | Non_unique | Key_name        | Seq_in_index | Column_name | Collation |
Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index_comment |
+-------+------------+-----------------+--------------+-------------+-----------+-
------------+----------+--------+------+------------+---------+---------------+
| names |          1 | idx_name_first  |            1 | name        | A         |
25 |        1 | NULL   | YES  | BTREE      |         |               |
+-------+------------+-----------------+--------------+-------------+-----------+-
------------+----------+--------+------+------------+---------+---------------+
1 row in set (0.00 sec)
mysql>
mysql> SELECT COUNT(name) FROM names WHERE name LIKE 'a%';
+-------------+
| COUNT(name) |
+-------------+
|      302936 |
+-------------+
1 row in set (0.82 sec)
mysql>
mysql> exit
bye
bob@dylan:~$
```

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Repo:

My Profile(/users/my_profile)

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `8-index_my_names.sql`

Check submission   Get a sandbox   View results

8. Optimize search and score

mandatory

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates an index `idx_name_first_score` on the table `names` and the first letter of `name` and the `score`.

Requirements:

- Import this table dump: names.sql.zip (/rltoken/BluyCClfw_ONqcZjqBiUdEw)
- Only the first letter of `name` AND `score` must be indexed

```
bob@dylan:~$ cat names.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ mysql -uroot -p holberton
Enter password:
mysql> SELECT COUNT(name) FROM names WHERE name LIKE 'a%' AND score < 80;
+-------------+
| count(name) |
+-------------+
|       60717 |
+-------------+
1 row in set (2.40 sec)
mysql>
mysql> exit
bye
bob@dylan:~$
bob@dylan:~$ cat 9-index_name_score.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ mysql -uroot -p holberton
Enter password:
mysql> SHOW index FROM names;
+-------+------------+----------------------+--------------+-------------+-------
----+-------------+----------+--------+------+------------+---------+------------
---+
| Table | Non_unique | Key_name             | Seq_in_index | Column_name | Collat
ion | Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index_comme
nt |
+-------+------------+----------------------+--------------+-------------+-------
----+-------------+----------+--------+------+------------+---------+------------
---+
| names |          1 | idx_name_first_score |            1 | name        | A
|          25 |        1 | NULL   | YES  | BTREE      |         |               |
| names |          1 | idx_name_first_score |            2 | score       | A
|        3901 |     NULL | NULL   | YES  | BTREE      |         |               |
+-------+------------+----------------------+--------------+-------------+-------
----+-------------+----------+--------+------+------------+---------+------------
---+
2 rows in set (0.00 sec)
mysql>
mysql> SELECT COUNT(name) FROM names WHERE name LIKE 'a%' AND score < 80;
+-------------+
| COUNT(name) |
+-------------+
|       60717 |
+-------------+
1 row in set (0.48 sec)
mysql>
mysql> exit
bye
bob@dylan:~$
```

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Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `9-index_name_score.sql`

Check submission | Get a sandbox | View results

10. Safe divide

mandatory

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a function `SafeDiv` that divides (and returns) the first by the second number or returns 0 if the second number is equal to 0.

Requirements:

- You must create a function
- The function `SafeDiv` takes 2 arguments:
  - `a`, INT
  - `b`, INT
- And returns `a / b` or 0 if `b == 0`

```
bob@dylan:~$ cat 10-init.sql
-- Initial
DROP TABLE IF EXISTS numbers;

CREATE TABLE IF NOT EXISTS numbers (
    a int default 0,
    b int default 0
);

INSERT INTO numbers (a, b) VALUES (10, 2);
INSERT INTO numbers (a, b) VALUES (4, 5);
INSERT INTO numbers (a, b) VALUES (2, 3);
INSERT INTO numbers (a, b) VALUES (6, 3);
INSERT INTO numbers (a, b) VALUES (7, 0);
INSERT INTO numbers (a, b) VALUES (6, 8);

bob@dylan:~$ cat 10-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 10-div.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ echo "SELECT (a / b) FROM numbers;" | mysql -uroot -p holberton
Enter password:
(a / b)
5.0000
0.8000
0.6667
2.0000
NULL
0.7500
bob@dylan:~$
bob@dylan:~$ echo "SELECT SafeDiv(a, b) FROM numbers;" | mysql -uroot -p holberto
n
Enter password:
SafeDiv(a, b)
5
0.800000011920929
0.6666666865348816
2
0
0.75
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `10-div.sql`

Check submission | Get a sandbox | View results

11. No table for a meeting

mandatory

(/)

~~Score: 73.75% (*Checks completed: 100.0%*)~~

Home(/)

Write a SQL script that creates a view `need_meeting` that lists all students that have a score under 80 (strict) and no `last_meeting` or more than 1 month.

My Planning(/planning/me)

Requirements:

- The view `need_meeting` should return all students name when:
  - They score are under (strict) to 80
  - **AND** no `last_meeting` date **OR** more than a month

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```
bob@dylan:~$ cat 11-init.sql
-- Initial
DROP TABLE IF EXISTS students;

CREATE TABLE IF NOT EXISTS students (
    name VARCHAR(255) NOT NULL,
    score INT default 0,
    last_meeting DATE NULL
);

INSERT INTO students (name, score) VALUES ("Bob", 80);
INSERT INTO students (name, score) VALUES ("Sylvia", 120);
INSERT INTO students (name, score) VALUES ("Jean", 60);
INSERT INTO students (name, score) VALUES ("Steeve", 50);
INSERT INTO students (name, score) VALUES ("Camilia", 80);
INSERT INTO students (name, score) VALUES ("Alexa", 130);

bob@dylan:~$ cat 11-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 11-need_meeting.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 11-main.sql
-- Test view
SELECT * FROM need_meeting;

SELECT "--";

UPDATE students SET score = 40 WHERE name = 'Bob';
SELECT * FROM need_meeting;

SELECT "--";

UPDATE students SET score = 80 WHERE name = 'Steeve';
SELECT * FROM need_meeting;

SELECT "--";

UPDATE students SET last_meeting = CURDATE() WHERE name = 'Jean';
SELECT * FROM need_meeting;

SELECT "--";

UPDATE students SET last_meeting = ADDDATE(CURDATE(), INTERVAL -2 MONTH) WHERE na
me = 'Jean';
SELECT * FROM need_meeting;

SELECT "--";

SHOW CREATE TABLE need_meeting;

SELECT "--";

SHOW CREATE TABLE students;
```

(/)

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My Profile(/users/my_profile)

```
bob@dylan:~$
bob@dylan:~$ cat 11-main.sql | mysql -uroot -p holberton
Enter password:
name
Jean
Steeve
--
--
name
Bob
Jean
Steeve
--
--
name
Bob
Jean
--
--
name
Bob
--
--
name
Bob
Jean
--
--
View    Create View character_set_client    collation_connection
XXXXXX<yes, here it will display the View SQL statement :-) >XXXXXX
--
--
Table   Create Table
students    CREATE TABLE `students` (\n  `name` varchar(255) NOT NULL,\n  `score`
int(11) DEFAULT '0',\n  `last_meeting` date DEFAULT NULL\n) ENGINE=InnoDB DEFAULT
CHARSET=latin1
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `11-need_meeting.sql`

Check submission   Get a sandbox   View results

12. Average weighted score

#advanced

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a stored procedure `ComputeAverageWeightedScoreForUser` that computes and store the average weighted score for a student.

Requirements:

- Procedure `ComputeAverageScoreForUser` is taking 1 input:
  - `user_id`, a `users.id` value (you can assume `user_id` is linked to an existing `users`)

Tips:

- Calculate-Weighted-Average (/rltoken/QHx92mlF43zF6GTEil-Cyw)

```
bob@dylan:~$ cat 100-init.sql
-- Initial
DROP TABLE IF EXISTS corrections;
DROP TABLE IF EXISTS users;
DROP TABLE IF EXISTS projects;

CREATE TABLE IF NOT EXISTS users (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    average_score float default 0,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS projects (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    weight int default 1,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS corrections (
    user_id int not null,
    project_id int not null,
    score float default 0,
    KEY `user_id` (`user_id`),
    KEY `project_id` (`project_id`),
    CONSTRAINT fk_user_id FOREIGN KEY (`user_id`) REFERENCES `users` (`id`) ON DE
LETE CASCADE,
    CONSTRAINT fk_project_id FOREIGN KEY (`project_id`) REFERENCES `projects` (`i
d`) ON DELETE CASCADE
);

INSERT INTO users (name) VALUES ("Bob");
SET @user_bob = LAST_INSERT_ID();

INSERT INTO users (name) VALUES ("Jeanne");
SET @user_jeanne = LAST_INSERT_ID();

INSERT INTO projects (name, weight) VALUES ("C is fun", 1);
SET @project_c = LAST_INSERT_ID();

INSERT INTO projects (name, weight) VALUES ("Python is cool", 2);
SET @project_py = LAST_INSERT_ID();


INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_
c, 80);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_
py, 96);

INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @proje
ct_c, 91);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @proje
ct_py, 73);
```

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```
bob@dylan:~$
bob@dylan:~$ cat 100-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 100-average_weighted_score.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 100-main.sql
-- Show and compute average weighted score
SELECT * FROM users;
SELECT * FROM projects;
SELECT * FROM corrections;

CALL ComputeAverageWeightedScoreForUser((SELECT id FROM users WHERE name = "Jeann
e"));

SELECT "--";
SELECT * FROM users;

bob@dylan:~$
bob@dylan:~$ cat 100-main.sql | mysql -uroot -p holberton
Enter password:
id  name    average_score
1   Bob 0
2   Jeanne  82
id  name    weight
1   C is fun    1
2   Python is cool  2
user_id project_id  score
1   1   80
1   2   96
2   1   91
2   2   73
--
--
id  name    average_score
1   Bob 0
2   Jeanne  79
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `100-average_weighted_score.sql`

Check submission | Get a sandbox | View results

13. Average weighted score for all!

#advanced

Score: 65.0% (*Checks completed: 100.0%*)

Write a SQL script that creates a stored procedure `ComputeAverageWeightedScoreForUsers` that computes and store the average weighted score for all students.

(/)

Requirements:

- Procedure `ComputeAverageWeightedScoreForUsers` is not taking any input.

Tips:

- Calculate-Weighted-Average (/rltoken/QHx92mlF43zF6GTEil-Cyw)

```
bob@dylan:~$ cat 101-init.sql
-- Initial
DROP TABLE IF EXISTS corrections;
DROP TABLE IF EXISTS users;
DROP TABLE IF EXISTS projects;

CREATE TABLE IF NOT EXISTS users (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    average_score float default 0,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS projects (
    id int not null AUTO_INCREMENT,
    name varchar(255) not null,
    weight int default 1,
    PRIMARY KEY (id)
);

CREATE TABLE IF NOT EXISTS corrections (
    user_id int not null,
    project_id int not null,
    score float default 0,
    KEY `user_id` (`user_id`),
    KEY `project_id` (`project_id`),
    CONSTRAINT fk_user_id FOREIGN KEY (`user_id`) REFERENCES `users` (`id`) ON DE
LETE CASCADE,
    CONSTRAINT fk_project_id FOREIGN KEY (`project_id`) REFERENCES `projects` (`i
d`) ON DELETE CASCADE
);

INSERT INTO users (name) VALUES ("Bob");
SET @user_bob = LAST_INSERT_ID();

INSERT INTO users (name) VALUES ("Jeanne");
SET @user_jeanne = LAST_INSERT_ID();

INSERT INTO projects (name, weight) VALUES ("C is fun", 1);
SET @project_c = LAST_INSERT_ID();

INSERT INTO projects (name, weight) VALUES ("Python is cool", 2);
SET @project_py = LAST_INSERT_ID();


INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_
c, 80);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_bob, @project_
py, 96);

INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @proje
ct_c, 91);
INSERT INTO corrections (user_id, project_id, score) VALUES (@user_jeanne, @proje
ct_py, 73);
```

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```
bob@dylan:~$
bob@dylan:~$ cat 101-init.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 101-average_weighted_score.sql | mysql -uroot -p holberton
Enter password:
bob@dylan:~$
bob@dylan:~$ cat 101-main.sql
-- Show and compute average weighted score
SELECT * FROM users;
SELECT * FROM projects;
SELECT * FROM corrections;

CALL ComputeAverageWeightedScoreForUsers();

SELECT "--";
SELECT * FROM users;

bob@dylan:~$
bob@dylan:~$ cat 101-main.sql | mysql -uroot -p holberton
Enter password:
id  name    average_score
1   Bob 0
2   Jeanne  0
id  name    weight
1   C is fun    1
2   Python is cool  2
user_id project_id  score
1   1   80
1   2   96
2   1   91
2   2   73
--
--
id  name    average_score
1   Bob 90.6667
2   Jeanne  79
bob@dylan:~$
```

Repo:

- GitHub repository: `alx-backend-storage`
- Directory: `0x00-MySQL_Advanced`
- File: `101-average_weighted_score.sql`

Check submission | Get a sandbox | View results