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SQL - More queries

SQL MySQL

Amateur

By: Guillaume, CTO at Holberton School

Weight: 1

Your score will be updated once you launch the project review.

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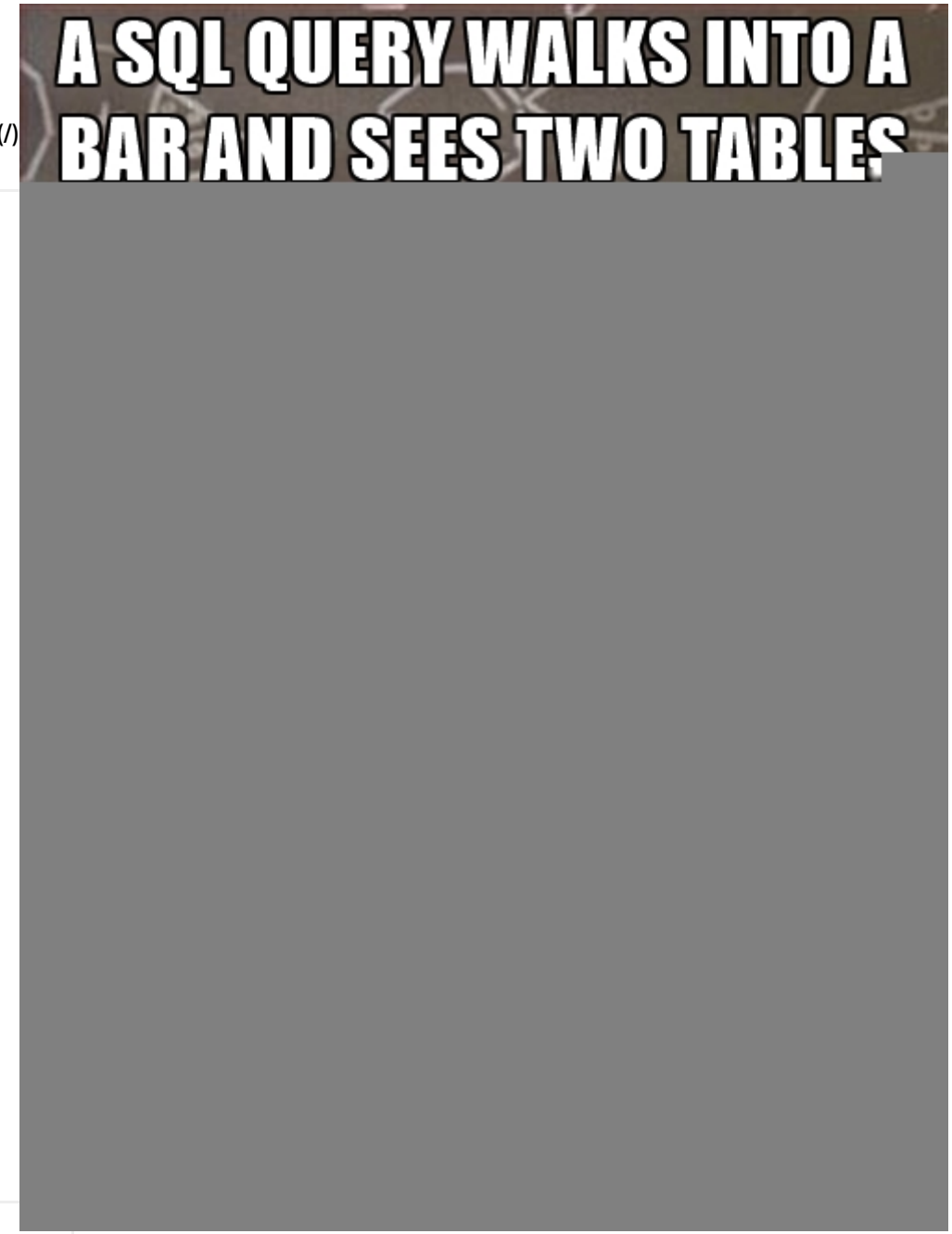

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Resources

Read or watch:

(/)

- How To Create a New User and Grant Permissions in MySQL (/rltoken/lHs2JlyBMo8G6Ep9pwvThQ)
- How To Use MySQL GRANT Statement To Grant Privileges To a User (/rltoken/ooe6QpA9-XfQuRZs_VUWiQ)
- MySQL constraints (/rltoken/uf52UI9MLLG_8gu_4BoXCQ)
- SQL technique: subqueries (/rltoken/pRGNvfOn63qLFGXR69yaZA)
- Basic query operation: the join (/rltoken/5I-v1wme2qM4GCsIFPDEnw)
- SQL technique: multiple joins and the distinct keyword (/rltoken/DJjBmy-0o4t0RQPwsD9tmA)
- SQL technique: join types (/rltoken/huh3BRPJeNkTnAxfgtW7aQ)
- SQL technique: union and minus (/rltoken/glojho3CSw75-ODEZRhwUA)
- MySQL Cheat Sheet (/rltoken/oQYmtxj57SYU7cWunUohqg)
- The Seven Types of SQL Joins (/rltoken/2P9hJhoMvDWPaLf5TkfQnQ)
- MySQL Tutorial (/rltoken/UEI4lSIiZlKLo4cLMwGudg)
- SQL Style Guide (/rltoken/Hgle7s4CQxs7BBuVtvvTNQ)
- MySQL 5.7 SQL Statement Syntax (/rltoken/HeapePYEEQzqQXxKDCiyYA)

Extra resources around relational database model design:

- Design (/rltoken/j7en6sz-SBE7KmO-HP_YGA)
- Normalization (/rltoken/RfV1Nz7QSr8KLHnYo3HhMw)
- ER Modeling (/rltoken/zEyCPittnf1-WQohem_DSg)

Learning Objectives

At the end of this project, you are expected to be able to explain to anyone (/rltoken/V1ZsdPBJ0HX-TpFmdDoO-A), **without the help of Google**:

General

- How to create a new MySQL user
- How to manage privileges for a user to a database or table
- What's a `PRIMARY KEY`
- What's a `FOREIGN KEY`
- How to use `NOT NULL` and `UNIQUE` constraints
- How to retrieve datas from multiple tables in one request
- What are subqueries

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- What are `JOIN` and `UNION`

Requirements

(/)

General

- Recommended editors: `Visual studio code`
- All your files will be executed on Ubuntu 20.04 LTS using `MySQL 5.7` (version 5.7.8-rc)
- 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;
$
```

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Install MySQL 5.7 on Ubuntu 20.04 LTS

(/)

```
$ echo 'deb http://repo.mysql.com/apt/ubuntu/ trusty mysql-5.7-dmr' | sudo tee -a /etc/apt/sources.list
$ sudo apt-get update
$ sudo apt-get install mysql-server-5.7
...
$ mysql --version
mysql  Ver 14.14 Distrib 5.7.8-rc, for Linux (x86_64) using  EditLine wrapper
$
```

Don't forget your `root` password

If you had before MySQL 5.5 installed, please run these 2 commands after the installation of the version 5.7:

```
$ mysql_upgrade -u root -p
Password:
$ sudo service mysql restart
```

If you have some issues to upgrade to 5.7, don't hesitate to cleanup your server of any MySQL packages: `sudo apt-get remove --purge mysql-server mysql-client mysql-common`

Use "container-on-demand" to run MySQL

- Ask for container `Ubuntu 20.04 - Python 3.4`
- Connect via SSH
- Or via the WebTerminal
- In the container, you should start MySQL before playing with it:

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```
$ service mysql start
 * MySQL Community Server 5.7.8-rc 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-level_programming+/274/hbtn_0d_tvshows.sql" -s | my
sql -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
$
```

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Quiz questions

(/)

Great! You've completed the quiz successfully! Keep going! (Hide quiz)

Question #0

Is it possible to give only read access to a database to a user?

- [ ] No
- [x] Yes

Question #1

Which JOIN type doesn't exist? (please select all correct answers)

- [x] RIGHT AND LEFT
- [ ] INNER
- [ ] FULL OUTER
- [x] IN LEFT
- [x] TOP
- [ ] LEFT
- [x] FULL INNER

Question #2

Is it possible to give only delete access to a table to a user?

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- [ ] No

- Yes

(/)

Question #3

Is it possible to give only insert access to a table to a user?

- No
- Yes

Question #4

Is it possible to give only read access to multiple databases and tables to a user?

- No
- Yes

Question #5

Is it possible to give only read access to a table to a user?

- No
- Yes

Question #6

What DCL means?

- Data Control Language
- Document Control Line
- Document Control Language

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Data Concept Language

(/)

Tasks

0. My privileges!

mandatory

Write a script that lists all privileges of the MySQL users `user_0d_1` and `user_0d_2` on your server (in `localhost`).

```
guillaume@ubuntu:~/$ cat 0-privileges.sql | mysql -hlocalhost -uroot -p
Enter password:
ERROR 1141 (42000) at line 4: There is no such grant defined for user 'user_0d_1' on host 'localhost'
guillaume@ubuntu:~/$
guillaume@ubuntu:~/$ echo "CREATE USER 'user_0d_1'@'localhost';" |  mysql -hlocalhost -uroot -p
Enter password:
guillaume@ubuntu:~/$ echo "GRANT ALL PRIVILEGES ON *.* TO 'user_0d_1'@'localhost';" |  mysql -hlocalhost -uroot -p
Enter password:
guillaume@ubuntu:~/$ cat 0-privileges.sql | mysql -hlocalhost -uroot -p
Enter password:
Grants for user_0d_1@localhost
GRANT ALL PRIVILEGES ON *.* TO 'user_0d_1'@'localhost'
ERROR 1141 (42000) at line 4: There is no such grant defined for user 'user_0d_2' on host 'localhost'
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `0-privileges.sql`

Help | Check your code | >_ Get a sandbox

0/4 pts

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1. Root user

mandatory

(/)Write a script that creates the MySQL server user `user_0d_1`.

- `user_0d_1` should have all privileges on your MySQL server
- The `user_0d_1` password should be set to `user_0d_1_pwd`
- If the user `user_0d_1` already exists, your script should not fail

```
guillaume@ubuntu:~/$ cat 1-create_user.sql | mysql -hlocalhost -uroot -p
Enter password:
guillaume@ubuntu:~/$ cat 0-privileges.sql | mysql -hlocalhost -uroot -p
Enter password:
Grants for user_0d_1@localhost
GRANT ALL PRIVILEGES ON *.* TO 'user_0d_1'@'localhost'
ERROR 1141 (42000) at line 4: There is no such grant defined for user 'user_0d_2' on host 'localhost'
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `1-create_user.sql`

Help | Check your code | >_ Get a sandbox

0/2 pts

2. Read user

mandatory

Write a script that creates the database `hbtn_0d_2` and the user `user_0d_2`.

- `user_0d_2` should have only SELECT privilege in the database `hbtn_0d_2`
- The `user_0d_2` password should be set to `user_0d_2_pwd`

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- If the database `hbtn_0d_2` already exists, your script should not fail
- If the user `user_0d_2` already exists, your script should not fail

(/)
```
guillaume@ubuntu:~/$ cat 2-create_read_user.sql | mysql -hlocalhost -uroot -p
Enter password:
guillaume@ubuntu:~/$ cat 0-privileges.sql | mysql -hlocalhost -uroot -p
Enter password:
Grants for user_0d_1@localhost
GRANT ALL PRIVILEGES ON *.* TO 'user_0d_1'@'localhost'
Grants for user_0d_2@localhost
GRANT USAGE ON *.* TO 'user_0d_2'@'localhost'
GRANT SELECT ON `hbtn_0d_2`.* TO 'user_0d_2'@'localhost'
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `2-create_read_user.sql`

Help | Check your code | >_ Get a sandbox

0/6 pts

3. Always a name

mandatory

Write a script that creates the table `force_name` on your MySQL server.

- `force_name` description:
  - `id` INT
  - `name` VARCHAR(256) can't be null
- The database name will be passed as an argument of the `mysql` command
- If the table `force_name` already exists, your script should not fail

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```
guillaume@ubuntu:~/$ cat 3-force_name.sql | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
guillaume@ubuntu:~/$ echo 'INSERT INTO force_name (id, name) VALUES (89, "Holberton School");' | mysql -hlocalhost -uroot -p hbtn_0
d_2
Enter password:
guillaume@ubuntu:~/$ echo 'SELECT * FROM force_name;' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
id  name
89  Holberton School
guillaume@ubuntu:~/$ echo 'INSERT INTO force_name (id) VALUES (333);' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
ERROR 1364 (HY000) at line 1: Field 'name' doesn't have a default value
guillaume@ubuntu:~/$ echo 'SELECT * FROM force_name;' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
id  name
89  Holberton School
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `3-force_name.sql`

Help | Check your code | >_ Get a sandbox

0/6 pts

4. ID can't be null

mandatory

Write a script that creates the table `id_not_null` on your MySQL server.

- `id_not_null` description:
  - `id` INT with the default value `1`
  - `name` VARCHAR(256)
- The database name will be passed as an argument of the `mysql` command

- If the table `id_not_null` already exists, your script should not fail

```
guillaume@ubuntu:~/$ cat 4-never_empty.sql | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
guillaume@ubuntu:~/$ echo 'INSERT INTO id_not_null (id, name) VALUES (89, "Holberton School");' | mysql -hlocalhost -uroot -p hbtn_
0d_2
Enter password:
guillaume@ubuntu:~/$ echo 'SELECT * FROM id_not_null;' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
id  name
89  Holberton School
guillaume@ubuntu:~/$ echo 'INSERT INTO id_not_null (name) VALUES ("Holberton");' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
guillaume@ubuntu:~/$ echo 'SELECT * FROM id_not_null;' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
id  name
89  Holberton School
1   Holberton
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `4-never_empty.sql`

Help | Check your code | >_ Get a sandbox

0/6 pts

5. Unique ID

mandatory

Write a script that creates the table `unique_id` on your MySQL server.

- `unique_id` description:
  - `id` INT with the default value `1` and must be unique
  - `name` VARCHAR(256)

- The database name will be passed as an argument of the `mysql` command
- If the table `unique_id` already exists, your script should not fail

```
guillaume@ubuntu:~/$ cat 5-unique_id.sql | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
guillaume@ubuntu:~/$ echo 'INSERT INTO unique_id (id, name) VALUES (89, "Holberton School");' | mysql -hlocalhost -uroot -p hbtn_0d
_2
Enter password:
guillaume@ubuntu:~/$ echo 'SELECT * FROM unique_id;' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
id  name
89  Holberton School
guillaume@ubuntu:~/$ echo 'INSERT INTO unique_id (id, name) VALUES (89, "Holberton");' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
ERROR 1062 (23000) at line 1: Duplicate entry '89' for key 'id'
guillaume@ubuntu:~/$ echo 'SELECT * FROM unique_id;' | mysql -hlocalhost -uroot -p hbtn_0d_2
Enter password:
id  name
89  Holberton School
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `5-unique_id.sql`

Help | Check your code | >_ Get a sandbox

0/6 pts

6. States table

mandatory

Write a script that creates the database `hbtn_0d_usa` and the table `states` (in the database `hbtn_0d_usa`) on your MySQL server.

- states table description:
  - `id` INT unique, auto generated, can't be null and is a primary key

- `name` VARCHAR(256) can't be null
- If the database `hbtn_0d_usa` already exists, your script should not fail
- If the table `states` already exists, your script should not fail

(/)

```
guillaume@ubuntu:~/$ cat 6-states.sql | mysql -hlocalhost -uroot -p
Enter password:
guillaume@ubuntu:~/$ echo 'INSERT INTO states (name) VALUES ("California"), ("Arizona"), ("Texas");' | mysql -hlocalhost -uroot -p
hbtn_0d_usa
Enter password:
guillaume@ubuntu:~/$ echo 'SELECT * FROM states;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  name
1   California
2   Arizona
3   Texas
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `6-states.sql`

Help | Check your code | >_ Get a sandbox

0/6 pts

7. Cities table

mandatory

Write a script that creates the database `hbtn_0d_usa` and the table `cities` (in the database `hbtn_0d_usa`) on your MySQL server.

- `cities` description:
  - `id` INT unique, auto generated, can't be null and is a primary key
  - `state_id` INT, can't be null and must be a `FOREIGN KEY` that references to `id` of the `states` table
  - `name` VARCHAR(256) can't be null
- If the database `hbtn_0d_usa` already exists, your script should not fail

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- If the table `cities` already exists, your script should not fail

```
guillaume@ubuntu:~/$ cat 7-cities.sql | mysql -hlocalhost -uroot -p
Enter password:
guillaume@ubuntu:~/$ echo 'INSERT INTO cities (state_id, name) VALUES (1, "San Francisco");' | mysql -hlocalhost -uroot -p hbtn_0d_
usa
Enter password:
guillaume@ubuntu:~/$ echo 'SELECT * FROM cities;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  state_id    name
1   1   San Francisco
guillaume@ubuntu:~/$ echo 'INSERT INTO cities (state_id, name) VALUES (10, "Paris");' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
ERROR 1452 (23000) at line 1: Cannot add or update a child row: a foreign key constraint fails (`hbtn_0d_usa`.`cities`, CONSTRAINT
`cities_ibfk_1` FOREIGN KEY (`state_id`) REFERENCES `states` (`id`))
guillaume@ubuntu:~/$ echo 'SELECT * FROM cities;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  state_id    name
1   1   San Francisco
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `7-cities.sql`

Help | Check your code | >_ Get a sandbox

0/6 pts

8. Cities of California

mandatory

Write a script that lists all the cities of California that can be found in the database `hbtn_0d_usa` .

- The `states` table contains only one record where `name = California` (but the `id` can be different, as per the example)
- Results must be sorted in ascending order by `cities.id`

- You are not allowed to use the `JOIN` keyword
- The database name will be passed as an argument of the `mysql` command

(/)
```
guillaume@ubuntu:~/$ echo 'SELECT * FROM states;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  name
1   California
2   Arizona
3   Texas
4   Utah
guillaume@ubuntu:~/$ echo 'SELECT * FROM cities;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  state_id    name
1   1   San Francisco
2   1   San Jose
4   2   Page
6   3   Paris
7   3   Houston
8   3   Dallas
guillaume@ubuntu:~/$ cat 8-cities_of_california_subquery.sql | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  name
1   San Francisco
2   San Jose
guillaume@ubuntu:~/$
```

Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `8-cities_of_california_subquery.sql`

Help | Check your code | >_ Get a sandbox

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9. Cities by States

mandatory

(/)Write a script that lists all cities contained in the database `hbtn_0d_usa` .

- Each record should display: `cities.id - cities.name - states.name`
- Results must be sorted in ascending order by `cities.id`
- You can use only one `SELECT` statement
- The database name will be passed as an argument of the `mysql` command

```
guillaume@ubuntu:~/$ echo 'SELECT * FROM states;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  name
1   California
2   Arizona
3   Texas
4   Utah
guillaume@ubuntu:~/$ echo 'SELECT * FROM cities;' | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  state_id    name
1   1   San Francisco
2   1   San Jose
4   2   Page
6   3   Paris
7   3   Houston
8   3   Dallas
guillaume@ubuntu:~/$ cat 9-cities_by_state_join.sql | mysql -hlocalhost -uroot -p hbtn_0d_usa
Enter password:
id  name    name
1   San Francisco   California
2   San Jose    California
4   Page    Arizona
6   Paris   Texas
7   Houston Texas
8   Dallas  Texas
guillaume@ubuntu:~/$
```

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Repo:

- GitHub repository: `alx_database`
- Directory: `SQL_more_queries`
- File: `9-cities_by_state_join.sql`

(/)

Help | Check your code | >_ Get a sandbox

0/6 pts

Score

Your score will be updated once you launch the project review.

Please review **all the tasks** before you start the peer review.

Review all the tasks

Skip this project

Previous project (/projects/2087)

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