

Hópverkefni 3

Readings

Ramakrishnan & Gehrke: Chapter 5. Read Postgres documentation for further details, if necessary.

Project outline

Disclaimer: The description of this project is entirely fictional.

Sipping your morning coffee over a large ER diagram you notice another letter sitting outside in the mailbox. In fact, there are two of them.

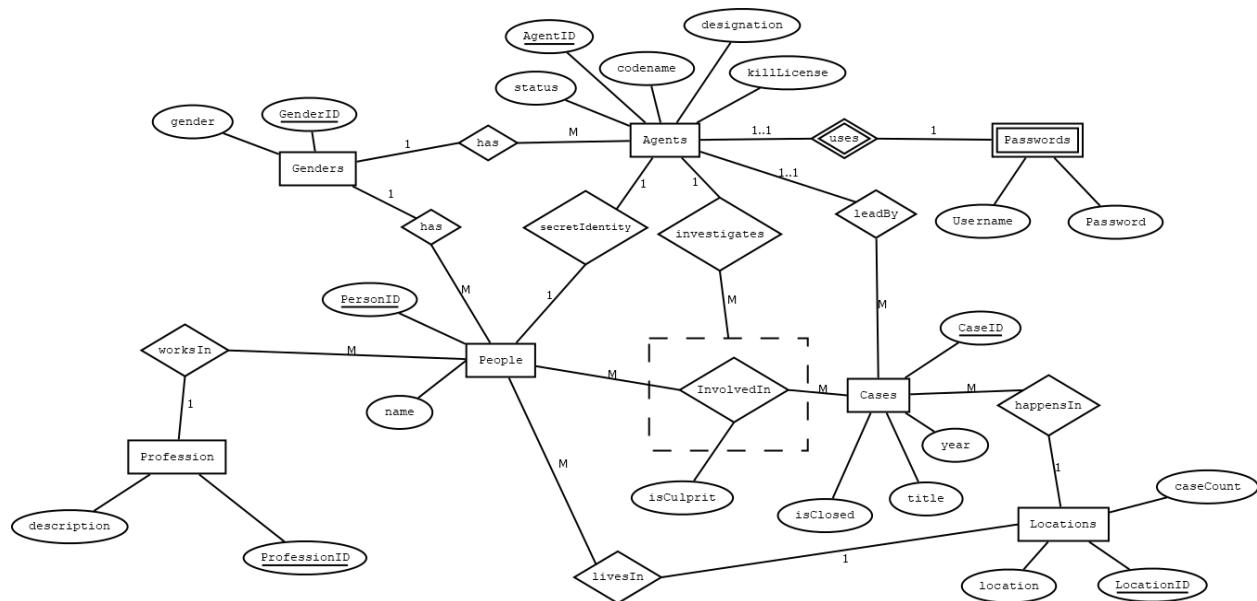
Hello Database Experts,

We have found your performance satisfactory. Welcome to The Bureau. The Director would like to personally congratulate you and also remind you that you are now forever bound to a vow of complete secrecy about everything that you see in the line of duty.

You, and your team, have been granted access to the live central database of The Bureau. The CREATE.sql, FILL.sql and DROP.sql files have been updated to include the new and more accurate information. We have tasked you with 10 more queries that the Director would like by the due date of 26. Feb.

Good luck. ALL HAIL THE HIGH EMPIRE!

-The Bureau.



Once you have solved these problems you will hear from us again.

-The Bureau.

Preparation

The project uses a database very similar to the one from Project 2—the tables are the same but the data is different. You must therefore a) create a database called PIII and b) run the commands in the files CREATE.sql and FILL.sql. You can then use the commands in the DROP.sql file to clean up afterwards.

The database holds far more data than the one from project 2 but it is very similar in nature. However, there are some differences. The Passwords table seems to now have hashed passwords which is of course a good security practice.

Your task

Write SQL commands to retrieve the information requested below from your PostgreSQL database. Each piece of information should be retrieved by a single query. You should make the queries as simple as you possibly can.

The output should, for example, only have the columns and rows asked for, only select from the tables required, ordering should only be used if required, and so on. If possible, use joins in preference to nested queries, but some queries may only be possible using nested queries. Generally, the output should contain unique rows; yet, the key words DISTINCT or GROUP BY should be used only when needed. Note, in particular, that the construct ORDER BY ... LIMIT 1 cannot be used to find highest or lowest values.

The queries should also be well and consistently formatted, and as readable as possible, as SQL queries are generally part of your code base. You should create a script and use comments to tag the SQL queries to the information requests.

Note that some queries could return empty sets. In those cases, you should of course insert sufficient data to test the queries adequately. Also note that when “gender” is requested in the queries, this refers to the description of the gender (“male”, “female” or “other”) from the Gender table.

Always use the query “SELECT <number> AS Query;” to separate the results, as in the template solution QUERIES.txt, to make grading easier for the TAs.

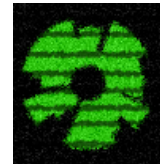
Queries

1. (10%) The PersonID, name, and case title of culprits that live in a location that starts with the same letter as the place they committed their crime.
2. (10%) The PersonID and name of women who are culprits and of men who are secret identities of agents.
3. (10%) Find the codenames of double-agents. A double agent is one who is a culprit in a case they lead.
4. (10%) The codename and designation of agents who have a license to kill or have led cases in at least 5 different cities.
5. (10%) The codename, secret identity name and designation of agents who have closed more cases in some town than some other agent. You can assume that only the agent that leads a case can close it.

6. (10%) The code name and designation of agents who lead one of the earliest cases in some location (by year), and have only lead cases in one other location (two locations total).
7. (10%) Show the ID, name and profession of People who have been involved in the most cases in each location, along with the number of cases they have been involved in for that location, the name of the location and a column called “secretly agent?” which contains 1 if the person is secretly an agent or 0 if the person is not an agent. If you can print ‘yes’ and ‘no’ instead of 1 and 0, all the better.
8. (10%) The designation and codename of agents who have never led a case in “Akranes”
9. (10%) Show the ID, title and location of all cases that have people involved of all genders.
10. (10%) The ID, title and location of all cases that have no known people involved at all.

Bonus

You take the other letter out from your mailbox. It’s sealed by a familiar logo. Carefully opening it, you begin to read the letter.



Resistance members,

We cannot believe you got into The Bureau. And so quick! You database people really are quite something, huh? Anyways... We have a mission for you. As you know, we have stationed many resistance operatives around the High Empire government. There are whispers around that the Passwords table can be decoded. Apparently, there is a hidden message in there.

We don’t know much because we have suddenly lost contact with the resistance cell that brought us this information. Let’s hope they just get to go to that prison of yours, and not anything worse. Here is the only message that they were able to send about this:

1. (10%) Find the hidden message in the Passwords table on the live database server. Take the fifth letter of each password of agents whose secret identities live in a fictional town, followed by the third letter of the password of all the agents that are neither male nor female except those whose codename contains at least three different vowels (aeiou). Return the result as a single string. Submit your query, as well as the secret message as a comment. Note that for both parts of the query the results should be ordered by AgentID.

This secret message could spell the beginning of the end of the High Empire, so please do your best.

*Regards,
GAG Resistance Leader*

Groups

The project is a group project. Each group should have 3 students – and you can choose your group yourself. You do not need to be in the same group as for last Hópverkefni, you are allowed to change groups if you want to, but you can also be in the same group if you would like that. Register for a group on Canvas, before handing in your group work (groups for Hópverkefni 3, start with H3). It is not enough to have registered a group for last Hópverkefni, you need to register again, in a group starting with H3 for this particular assignment.

Note: *It is possible to get an exception and submit alone, if for some reason collaboration is completely impossible. In order to request an exception, please email me at: islind@ru.is (or on Piazza through personal message there).*

Project deliverables

The project is a group project, with three students per group. The deadline is at 23:59 on Friday 26. February 2021. Late submissions will not be accepted, so make sure to submit your solutions on time.

Submit just one file:

- A) A text file named QUERIES.txt, containing all the SQL queries used to retrieve the data.

Note that for this project, you do NOT need to return a report. Also note, that you do NOT have to hand in RESULTS.txt (feel free to make a celebratory twirl now to celebrate skipping that step).