
# Projekt 2

**Autor**: Jindřich Šíma (231287)

**Obor**: Informační bezpečnost

**Předmět**: Bezpečnost databázových systémů

# Obsah

# Úvod

## Create a query that will retrieve only selected columns from the selected table

SELECT id_title, name, lenght FROM titles;

```
1  SELECT id_title, name, lenght FROM titles;
```

Data Output | Explain | Messages | Notifications

| | id_title integer | name character varying (45) | lenght integer |
|---|---|---|---|
| 1 | 1 | Cullers And Strangers | 328 |
| 2 | 2 | Companions Of The Void | 362 |
| 3 | 3 | Cruelty Of The Eclipse | 368 |
| 4 | 4 | Changing My Sweetheart | 31 |
| 5 | 5 | Clones Of The Stars | 96 |
| 6 | 6 | Source With A Goal | 431 |
| 7 | 7 | Student Without A Mouth | 445 |
| 8 | 8 | Lurking In My Dreams | 450 |
| 9 | 9 | Directors And Emperors | 15 |
| 10 | 10 | Pocket Of Miracles | 18 |
| 11 | 11 | Bored By Orbit | 75 |
| 12 | 12 | Searching For Dreams | 36 |
| 13 | 13 | Heroes Of The Sun | 432 |
| 14 | 14 | Oblivious In Nature | 25 |
| 15 | 15 | Hope Of Nowhere | 295 |
| 16 | 16 | Hope Of Nowhere | 341 |
| 17 | 17 | Afraid Of My Journey | 432 |
| 18 | 18 | Adopting The Darkness | 389 |
| 19 | 19 | Veteran Of New Earth | 107 |

## Create a query that will select user/person or similar table based on the email.

SELECT id_user, first_name, surname, email FROM public.user WHERE email = Mylescarrillo@stawicz.pl';

```
1  SELECT id_user, first_name, surname, email FROM public.user WHERE email = 'Mylescarrillo@stawicz.pl';
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) | email character varying (70) |
|---|---|---|---|---|
| 1 | 11 | Matilda | Bruce | Mylescarrillo@stawicz.pl |

# Create at least one UPDATE, INSERT, DELETE, and ALTER TABLE query

```
1  SELECT id_person, first_name, surname FROM public.person WHERE surname = 'Mahoney'
```

Data Output | Explain | Messages | Notifications

| | id_person [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 1 | 71 | Rudy | Mahoney |

UPDATE person SET first_name = 'Carey' WHERE surname = 'Mahoney';

```
1  UPDATE person SET first_name = 'Carey' WHERE surname = 'Mahoney';
2  SELECT id_person, first_name, surname FROM public.person WHERE surname = 'Mahoney';
```

Data Output | Explain | Messages | Notifications

| | id_person [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 1 | 71 | Carey | Mahoney |

INSERT INTO person(id_person, id_address, first_name, surname, date_of_birth) VALUES(101, 12, 'Tom', 'Jerry', '1969-04-20');

Query Editor | Query History

```
1  INSERT INTO person(id_person, id_address, first_name, surname, date_of_birth) VALUES(101, 12, 'Tom', 'Jerry', '1969-04-20');
2  SELECT id_person, first_name, surname FROM public.person WHERE id_person = 101;
```

Data Output | Explain | Messages | Notifications

| | id_person [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 1 | 101 | Tom | Jerry |

DELETE FROM favourites WHERE id_user = 3;

```
1  DELETE FROM favourites WHERE id_user = 3;
2  SELECT id_user, id_person FROM favourites;
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | id_person [PK] integer |
|---|---|---|
| 1 | 4 | 35 |
| 2 | 8 | 38 |
| 3 | 11 | 54 |
| 4 | 13 | 81 |
| 5 | 8 | 83 |
| 6 | 1 | 6 |
| 7 | 20 | 76 |
| 8 | 16 | 10 |
| 9 | 18 | 10 |
| 10 | 13 | 39 |
| 11 | 5 | 86 |
| 12 | 13 | 32 |
| 13 | 6 | 45 |
| 14 | 18 | 96 |
| 15 | 6 | 90 |
| 16 | 5 | 67 |
| 17 | 17 | 26 |
| | | |

ALTER TABLE favourites ADD COLUMN reason VARCHAR(256);

```
1  ALTER TABLE favourites ADD COLUMN reason VARCHAR(256)
2  SELECT * FROM favourites;
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | id_person [PK] integer | reason character varying (256) |
|---|---|---|---|
| 1 | 4 | 35 | [null] |
| 2 | 8 | 38 | [null] |
| 3 | 11 | 54 | [null] |
| 4 | 13 | 81 | [null] |
| 5 | 8 | 83 | [null] |
| 6 | 1 | 6 | [null] |
| 7 | 20 | 76 | [null] |
| 8 | 16 | 10 | [null] |
| 9 | 18 | 10 | [null] |
| 10 | 13 | 39 | [null] |
| 11 | 5 | 86 | [null] |
| 12 | 13 | 32 | [null] |
| 13 | 6 | 45 | [null] |
| 14 | 18 | 96 | [null] |
| 15 | 6 | 90 | [null] |
| 16 | 5 | 67 | [null] |
| 17 | 17 | 26 | [null] |
| | | | |

ALTER TABLE favourites DROP COLUMN reason;

```
1  ALTER TABLE favourites DROP COLUMN reason;
2  SELECT * FROM favourites;
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | id_person [PK] integer |
|---|---|---|
| 1 | 4 | 35 |
| 2 | 8 | 38 |
| 3 | 11 | 54 |
| 4 | 13 | 81 |
| 5 | 8 | 83 |
| 6 | 1 | 6 |
| 7 | 20 | 76 |
| 8 | 16 | 10 |
| 9 | 18 | 10 |
| 10 | 13 | 39 |
| 11 | 5 | 86 |
| 12 | 13 | 32 |
| 13 | 6 | 45 |
| 14 | 18 | 96 |
| 15 | 6 | 90 |
| 16 | 5 | 67 |
| 17 | 17 | 26 |

## Create a series of queries that will separately use the following:

### – WHERE

SELECT id_user, first_name, surname FROM public.user WHERE id_user >= 15;

```
1  SELECT id_user, first_name, surname FROM public.user WHERE id_user >= 15;
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 1 | 15 | Jaydin | Rivers |
| 2 | 16 | Jane | Price |
| 3 | 17 | Skylar | Mathis |
| 4 | 18 | Raina | Cabrera |
| 5 | 19 | Jaydin | Rivers |
| 6 | 20 | Jaydin | Bruce |

## – LIKE; NOT LIKE

SELECT id_user, first_name, surname FROM public.user WHERE first_name LIKE 'Nas%';

```
1  SELECT id_user, first_name, surname FROM public.user WHERE first_name LIKE 'Nas%';
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 1 | 5 | Nash | Rivers |
| 2 | 13 | Nash | Bruce |

SELECT id_user, first_name, surname FROM public.user WHERE surname NOT LIKE '%a%';

```
1  SELECT id_user, first_name, surname FROM public.user WHERE surname NOT LIKE '%a%';
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 1 | 5 | Nash | Rivers |
| 2 | 9 | Alden | Wilkins |
| 3 | 11 | Matilda | Bruce |
| 4 | 13 | Nash | Bruce |
| 5 | 15 | Jaydin | Rivers |
| 6 | 16 | Jane | Price |
| 7 | 19 | Jaydin | Rivers |
| 8 | 20 | Jaydin | Bruce |

## – SUBSTRING; TRIM

SELECT first_name, surname, substring(password from 1 for 10) FROM public.user;

```
1  SELECT first_name, surname, substring(password from 1 for 10) FROM public.user;
```

Data Output | Explain | Messages | Notifications

| | first_name character varying (45) | surname character varying (45) | substring text |
|---|---|---|---|
| 1 | Mia | Carrillo | f53497b02c |
| 2 | Tiana | Molina | cb7818e62f |
| 3 | Heidy | Wall | 53d1c7e820 |
| 4 | Salvatore | Mann | 141fde3671 |
| 5 | Nash | Rivers | 49c614f0d5 |
| 6 | Toby | Brady | 15af05308f |
| 7 | Camille | Wall | c2fe1d4a7c |
| 8 | Mia | Shah | ca2ddec075 |
| 9 | Alden | Wilkins | 453d310aa4 |
| 10 | Ariella | Wall | ca8ce30fef |
| 11 | Matilda | Bruce | 220f10bb31 |
| 12 | Serenity | Crawford | 479fee2930 |
| 13 | Nash | Bruce | 2ade2f2db4 |
| 14 | Serenity | Mahoney | ccaa6e97ba |
| 15 | Jaydin | Rivers | f592e2db91 |
| 16 | Jane | Price | 36834d2a0e |
| 17 | Skylar | Mathis | ff31baf6d6 |
| 18 | Raina | Cabrera | c6793130e9 |
| 19 | Jaydin | Rivers | affa38692d |
| 20 | Jaydin | Bruce | bc5fe176e9 |

UPDATE public.user

SET first_name = TRIM(first_name),

surname = TRIM(surname);

```
UPDATE public.user
SET first_name = TRIM(first_name),
    surname = TRIM(surname);

SELECT * FROM public.user
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) | nick character varying (45) | email character varying (70) | password character varying (70) | user_created timestamp without time zone | id_address integer |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Mia | Carrillo | /aby Carrot | Elsamason@gmail.com | f53497b02c0c16e836e6d139071afe04e967247a9dd296a6a329cfdd66c867b9 | 2021-11-16 14:59:24.105582 | 2 |
| 2 | 2 | Tiana | Molina | Short +horts | mylesShah@gmail.com | cb7818e62f5b70743ca55db990b8c97d19595871a9d251c856a9d11772c75d01 | 2021-11-16 13:59:24.105582 | 15 |
| 3 | 3 | Heidy | Wall | Fre_kles | Mayacollins@god.heaven | 53d1c7e820a9574f4ab6367a2526656c2751bbb35c16c2ed447ffaabffacb298 | 2021-11-16 12:59:24.105582 | 16 |
| 4 | 4 | Salvatore | Mann | Tater T/t | Jayball@yahoo.com | 141fde3671ac31df2e245abe9f54ccf05b1677c78e4748eced37e7201b15fbb4 | 2021-11-16 11:59:24.105582 | 5 |
| 5 | 5 | Nash | Rivers | Bru)us | Nasirfields@yahoo.com | 49c614f0d5b1e8838b3bdd18fcbb6faf3eb8c9b36d7a720d94eaa8b1ab8af7f7 | 2021-11-16 10:59:24.105582 | 15 |
| 6 | 6 | Toby | Brady | ?pple | elsaMahoney@bigus.com | 15af05308fa2e80d26398fd47733fa5881db84fb62187d1117cc8436ce0a36d1 | 2021-11-16 09:59:24.105582 | 16 |
| 7 | 7 | Camille | Wall | Fre*k | MylesLawson@god.heaven | c2fe1d4a7c69dbfe413f18dda459a3fb8de767fde657d7de765f1dabb3c9cc90 | 2021-11-16 08:59:24.105582 | [null] |
| 8 | 8 | Mia | Shah | Monk(y | markusHebert@gmail.com | ca2ddec0758795cbad4d02edd0549bfe1bf02e480ce48a65fae2272c48ce5ea6 | 2021-11-16 07:59:24.105582 | 13 |
| 9 | 9 | Alden | Wilkins | Rubb-r | tobyball@yahoo.com | 453d310aa420e09826e1a358e56cd75a28fce37364c6126187fdb6a9d6b85d74 | 2021-11-16 06:59:24.105582 | 12 |
| 10 | 10 | Ariella | Wall | Grum_y | cynthiacarrillo@bigus.com | ca8ce30fef10ab5f53fd63317f5ee28dc64e177c5757a21366e8cae5df94fa5d | 2021-11-16 05:59:24.105582 | 1 |
| 11 | 11 | Matilda | Bruce | T(co | Mylescarrillo@stawicz.pl | 220f10bb314fa3c08ec252daa2a9cad25631884a7245c6cfc274646282686bae | 2021-11-16 04:59:24.105582 | [null] |
| 12 | 12 | Serenity | Crawford | Ps.cho | markusball@gmail.com | 479fee29301881a10598b6d6c9452c9307637e32104871088 9f3a05d00f9d65f | 2021-11-16 03:59:24.105582 | [null] |
| 13 | 13 | Nash | Bruce | Be_lo | janezavala@yahoo.com | 2ade2f2db49841e50255017d43bba1e4e2cfdf18aecfa3ded9a9a9fc4b3413e9 | 2021-11-16 02:59:24.105582 | 18 |
| 14 | 14 | Serenity | Mahoney | Ms. Congenial+ty | amelieMason@god.heaven | ccaa6e97ba2d8d18faeb42e4ac8328ce64d473fadef7aa352f3aea981c221630 | 2021-11-16 01:59:24.105582 | 18 |
| 15 | 15 | Jaydin | Rivers | W-iner | dantebrady@yahoo.com | f592e2db91fc837ee64783dbda1c7aee3f552c7d739fe80dfd92461282753505 | 2021-11-16 00:59:24.105582 | 14 |
| 16 | 16 | Jane | Price | P/ycho | IsabellWeiss@gmail.com | 36834d2a0e5d98f3ae3614abbcf4dadaf415692b61efc13242995ad78e8445d2 | 2021-11-15 23:59:24.105582 | 8 |
| 17 | 17 | Skylar | Mathis | Cree_ence | isabellshah@gmail.com | ff31baf6d639aaaf47b64bf7f0493df2648ff42356c09618a5e9a76e0dcecca7 | 2021-11-15 22:59:24.105582 | 7 |
| 18 | 18 | Raina | Cabrera | C-Da.g | tyroneMason@stawicz.pl | c6793130e99d5cfa7d270a88d1b5db319508f95b705d01c5c9d70b261e3e2552 | 2021-11-15 21:59:24.105582 | 15 |
| 19 | 19 | Jaydin | Rivers | Ba+bino | Jaycabrera@gmail.com | affa38692ddec847c7aa6821fd55a823be405678a4893147bcd76a9e790f1011 | 2021-11-15 20:59:24.105582 | 12 |
| 20 | 20 | Jaydin | Bruce | S-irk | Danteatkins@google.com | bc5fe176e9870b50d0ed70b8ae70b138ef00dfdf974becca75b7252fb02118bc | 2021-11-15 19:59:24.105582 | 13 |

## – COUNT; SUM; MIN; MAX; AVG;

SELECT COUNT(*) FROM public.user WHERE id_address <= 10;

```
SELECT COUNT(*) FROM public.user WHERE id_address <= 10;
```

Data Output | Explain | Messages | Notifications

| | count bigint |
|---|---|
| 1 | 5 |

SELECT SUM(lenght) as total_from_2000 FROM public.titles where year >= '2000-1-1';

```
1  SELECT SUM(lenght) as total_from_2000 FROM public.titles where year >= '2000-1-1';
```

Data Output | Explain | Messages | Notifications

| | total_from_2000 bigint |
|---|---|
| 1 | 4008 |

SELECT MIN(lenght) as minimal_from_50s FROM public.titles where year >= '1950-1-1' and year < '1960-1-1';

```
1  SELECT MIN(lenght) as minimal_from_50s FROM public.titles where year >= '1950-1-1' and year < '1960-1-1
```

Data Output | Explain | Messages | Notifications

| | minimal_from_50s integer |
|---|---|
| 1 | 40 |

SELECT MAX(lenght) as maximal_from_90s FROM public.titles where year >= '1990-1-1' and year < '2000-1-1';

```
1  SELECT MAX(lenght) as maximal_from_90s FROM public.titles where year >= '1990-1-1' and year < '2000-1-1';
```

Data Output | Explain | Messages | Notifications

| | maximal_from_90s integer |
|---|---|
| 1 | 467 |

SELECT AVG(lenght) as average_A FROM public.titles where name LIKE 'A%';

```
1  SELECT AVG(lenght) as average_A FROM public.titles where name LIKE 'A%';
```

Data Output | Explain | Messages | Notifications

| | average_a numeric |
|---|---|
| 1 | 209.6000000000000000 |

## – GROUP BY; GROUP BY and HAVING; GROUP BY, HAVING, and WHERE;

SELECT id_user, AVG(rating) AS avg_rating  FROM rating GROUP BY id_user ORDER BY avg_rating DESC;

```
1  SELECT id_user, AVG(rating) AS avg_rating  FROM rating GROUP BY id_user ORDER BY avg_rating DESC;
2
```

Data Output | Explain | Messages | Notifications

| | id_user integer | avg_rating numeric |
|---|---|---|
| 1 | 14 | 9.0000000000000000 |
| 2 | 13 | 8.0000000000000000 |
| 3 | 12 | 8.0000000000000000 |
| 4 | 15 | 8.0000000000000000 |
| 5 | 16 | 6.3333333333333333 |
| 6 | 19 | 5.5000000000000000 |
| 7 | 8 | 5.0000000000000000 |
| 8 | 10 | 5.0000000000000000 |
| 9 | 17 | 4.3333333333333333 |
| 10 | 20 | 3.6666666666666667 |
| 11 | 5 | 3.0000000000000000 |
| 12 | 7 | 3.0000000000000000 |
| 13 | 9 | 2.5000000000000000 |
| 14 | 1 | 1.0000000000000000000 |

SELECT id_user, COUNT(id_person) AS avg_rating  FROM favourites GROUP BY id_user HAVING COUNT(id_person) >= 2 ORDER BY avg_rating DESC;

```
1  SELECT id_user, COUNT(id_person) AS avg_rating  FROM favourites GROUP BY id_user HAVING COUNT(id_person) >= 2 ORDER BY avg_rating DESC;
2
```

Data Output | Explain | Messages | Notifications

| | id_user integer | avg_rating bigint |
|---|---|---|
| 1 | 13 | 3 |
| 2 | 5 | 2 |
| 3 | 6 | 2 |
| 4 | 18 | 2 |
| 5 | 8 | 2 |

SELECT id_user, COUNT(id_person) AS avg_rating  FROM favourites WHERE id_user > 10 GROUP BY id_user HAVING COUNT(id_person) >= 2 ORDER BY avg_rating DESC;

```
1  SELECT id_user, COUNT(id_person) AS avg_rating  FROM favourites WHERE id_user > 10 GROUP BY id_user HAVING COUNT(id_person) >= 2 ORDER BY avg_rating DESC;
2
```

Data Output | Explain | Messages | Notifications

| | id_user integer | avg_rating bigint |
|---|---|---|
| 1 | 13 | 3 |
| 2 | 18 | 2 |

## – UNION ALL / UNION

SELECT * from genre_name UNION SELECT * from role_name;

```
1  SELECT * from genre_name UNION SELECT * from role_name;
```

Data Output | Explain | Messages | Notifications

| | id_genre_name integer | genre_name character varying (45) | description character varying (256) |
|---|---|---|---|
| 1 | 1 | Director | A film director controls a films artistic and dramatic aspects and visualizes the screenplay (or script) while guiding the film crew and actors in the fulfilment of that vision. |
| 2 | 2 | Writer | A screenplay writer (also called screenwriter for short), scriptwriter or scenarist, is a writer who practices the craft of screenwriting, writing screenplays on which mass media, such as films and television programs, are based. |
| 3 | 2 | Adventure | An adventure film is form of adventure fiction, and is a genre of film. Subgenres of adventure films include swashbuckler films, pirate films, and survival films. |
| 4 | 4 | Composer | A film score is original music written specifically to accompany a film. Scores are written by one or more composers in collaboration with, the films director or producer and are then usually performed by musicians – most often comprising an orch |
| 5 | 5 | Fantasy | Fantasy films are films that belong to the fantasy genre with fantastic themes, usually magic, supernatural events, mythology, folklore, or exotic fantasy worlds. |
| 6 | 1 | Action | Action film is a film genre in which the protagonist or protagonists are thrust into a series of events that typically include violence, extended fighting, physical feats, rescues and frantic chases |
| 7 | 5 | Camera operator | A camera operator, or depending on the context cameraman or camerawoman, is a professional operator of a film camera or video camera as part of a film crew. |
| 8 | 4 | Drama | In film and television, drama is a category of narrative fiction (or semi-fiction) intended to be more serious than humorous in tone. Drama of this kind is usually qualified with additional terms that specify its particular super-genre. |
| 9 | 6 | Horror | A horror film is one that seeks to elicit fear or disgust in its audience for entertainment purposes. Horror films additionally aim to evoke viewers nightmares, revulsions and terror of the unknown or the macabre. |
| 10 | 7 | Science fiction | Science fiction (or sci-fi) is a film genre that uses speculative, fictional science-based depictions of phenomena that are not fully accepted by mainstream science, such as extraterrestrial lifeforms, robots, interstellar travel or other technologies. |
| 11 | 3 | Actor | An actor or actress is a person who portrays a character in the traditional medium of the theatre or in modern media such as film, radio, and television. |
| 12 | 3 | Comedy | A comedy film is a category of film in which the main emphasis is on humor. These films are designed to make the audience laugh through amusement and most often work by exaggerating characteristics for humorous effect. |

## – DISTINCT

SELECT DISTINCT first_name from person where first_name LIKE 'A%';

```
1  SELECT DISTINCT first_name from person where first_name LIKE 'A%';
```

Data Output | Explain | Messages | Notifications

| | first_name character varying (45) |
|---|---|
| 1 | Ahmad |
| 2 | Akira |
| 3 | Amelie |
| 4 | Ariella |
| 5 | Alden |
| 6 | Aarav |

## – LEFT JOIN; RIGHT JOIN; FULL OUTER JOIN

SELECT id_genre_name, id_type, genre_name, type_name FROM genre_name g LEFT JOIN type t on t.id_type = g.id_genre_name;

```
1  SELECT id_genre_name, id_type, genre_name, type_name FROM genre_name g LEFT JOIN type t on t.id_type = g.id_genre_name;
```

Data Output | Explain | Messages | Notifications

| | id_genre_name integer | id_type integer | genre_name character varying (45) | type_name character varying (45) |
|---|---|---|---|---|
| 1 | 1 | 1 | Action | Movie |
| 2 | 2 | 2 | Adventure | TV show |
| 3 | 3 | 3 | Comedy | Theatre |
| 4 | 4 | 4 | Drama | Media clip |
| 5 | 5 | 5 | Fantasy | Ad |
| 6 | 6 | [null] | Horror | [null] |
| 7 | 7 | [null] | Science fiction | [null] |

SELECT country,country_name,city,language,flag,description FROM address a RIGHT JOIN country c on c.country_name = a.country;

```
1  SELECT country,country_name,city,language,flag,description FROM address a RIGHT JOIN country c on c.country_name = a.country;
```

Data Output | Explain | Messages | Notifications

| | country character varying (45) | country_name character varying (45) | city character varying (45) | language character varying (45) | flag character varying (256) | description character varying (256) |
|---|---|---|---|---|---|---|
| 1 | South Korea | South Korea | Winley | Korean | Red and blue jing jang lookalike between 12 black stripes on white field | South Korea has many beaches and is very beautiful. |
| 2 | Kenya | Kenya | Startown | Swahili | Red shield with spears on black,white,red,white,green horizontal stripes | Kenya has many rivers and is very beautiful. |
| 3 | Albania | Albania | Rockcester City | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 4 | Morocco | Morocco | Proford | Arabic | Green star on red field | Morocco has many lakes and is very beautiful. |
| 5 | Albania | Albania | Ostrava | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 6 | Spain | Spain | Capcaster | Spanish | Coat of arms on yellow stripe on red field | Spain has many rivers and is very beautiful. |
| 7 | Albania | Albania | Norgrad | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 8 | Belgium | Belgium | West Beachburgh | Dutsch | Black, yellow and red vertical stripes | Belgium has many beaches and is very beautiful. |
| 9 | Kenya | Kenya | Mannormouth | Swahili | Red shield with spears on black,white,red,white,green horizontal stripes | Kenya has many rivers and is very beautiful. |
| 10 | Belgium | Belgium | Greenbury | Dutsch | Black, yellow and red vertical stripes | Belgium has many beaches and is very beautiful. |
| 11 | Latvia | Latvia | Norland | Latvian | White horizontal stripe on red field | Latvia has many forests and is very beautiful. |
| 12 | Chad | Chad | Praha | Arabic | Blue, yellow and red vertical stripes | Chad has many fields and is very beautiful. |
| 13 | Albania | Albania | Kyoto | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 14 | [null] | Turkey | [null] | Turkish | White crescent with with star on red field | Turkey has many lakes and is very beautiful. |
| 15 | [null] | Sweden | [null] | Swedish | Yellow cross on blue field | Sweden has many lakes and is very beautiful. |

SELECT country,country_name,city,language,flag,description FROM address a FULL OUTER JOIN country c on c.country_name = a.country;

```
SELECT country,country_name,city,language,flag,description FROM address a FULL OUTER JOIN country c on c.country_name = a.country;
```

Data Output | Explain | Messages | Notifications

| | country character varying (45) | country_name character varying (45) | city character varying (45) | language character varying (45) | flag character varying (256) | description character varying (256) |
|---|---|---|---|---|---|---|
| 1 | South Korea | South Korea | Winley | Korean | Red and blue jing jang lookalike between 12 black stripes on white field | South Korea has many beaches and is very beautiful. |
| 2 | Kenya | Kenya | Startown | Swahili | Red shield with spears on black,white,red,white,green horizontal stripes | Kenya has many rivers and is very beautiful. |
| 3 | France | [null] | Bannborough Hills | [null] | [null] | [null] |
| 4 | Kyrgyzstan | [null] | West Beachburgh | [null] | [null] | [null] |
| 5 | Albania | Albania | Rockcester City | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 6 | Morocco | Morocco | Proford | Arabic | Green star on red field | Morocco has many lakes and is very beautiful. |
| 7 | Kyrgyzstan | [null] | Winley | [null] | [null] | [null] |
| 8 | Albania | Albania | Ostrava | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 9 | Czech republic | [null] | Dodgefolk | [null] | [null] | [null] |
| 10 | Spain | Spain | Capcaster | Spanish | Coat of arms on yellow stripe on red field | Spain has many rivers and is very beautiful. |
| 11 | Albania | Albania | Norgrad | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 12 | Belgium | Belgium | West Beachburgh | Dutsch | Black, yellow and red vertical stripes | Belgium has many beaches and is very beautiful. |
| 13 | Kenya | Kenya | Mannormouth | Swahili | Red shield with spears on black,white,red,white,green horizontal stripes | Kenya has many rivers and is very beautiful. |
| 14 | Belgium | Belgium | Greenbury | Dutsch | Black, yellow and red vertical stripes | Belgium has many beaches and is very beautiful. |
| 15 | Czech republic | [null] | Hardside | [null] | [null] | [null] |
| 16 | Latvia | Latvia | Norland | Latvian | White horizontal stripe on red field | Latvia has many forests and is very beautiful. |
| 17 | France | [null] | Cloudby | [null] | [null] | [null] |
| 18 | Chad | Chad | Praha | Arabic | Blue, yellow and red vertical stripes | Chad has many fields and is very beautiful. |
| 19 | Albania | Albania | Kyoto | Albanian | Black eagle on red field | Albania has many swamps and is very beautiful. |
| 20 | Japan | [null] | South Bellcester | [null] | [null] | [null] |
| 21 | [null] | Turkey | [null] | Turkish | White crescent with with star on red field | Turkey has many lakes and is very beautiful. |
| 22 | [null] | Sweden | [null] | Swedish | Yellow cross on blue field | Sweden has many lakes and is very beautiful. |

## Use in one query: LEFT JOIN, GROUP BY, HAVING, ORDER BY, AVG and DISTINCT

SELECT DISTINCT t.name, lenght, AVG(rating) AS average_rating FROM titles t LEFT JOIN rating r on t.id_title = r.id_title GROUP BY t.name, lenght HAVING AVG(rating) IS NOT NULL ORDER BY name;

```
SELECT DISTINCT t.name, lenght, AVG(rating) AS average_rating FROM titles t LEFT JOIN rating r on t.id_title = r.id_title GROUP BY t.name, lenght HAVING AVG(rating) IS NOT NU
```

Data Output | Explain | Messages | Notifications

| | name character varying (45) | lenght integer | average_rating numeric |
|---|---|---|---|
| 1 | Adopting The Darkness | 207 | 3.0000000000000000 |
| 2 | Animals In The Mirror | 18 | 1.0000000000000000000 |
| 3 | Battling In My School | 445 | 10.0000000000000000 |
| 4 | Bored By Orbit | 75 | 1.0000000000000000000 |
| 5 | Bored By Orbit | 175 | 1.0000000000000000000 |
| 6 | Boring At Fantasy | 190 | 10.0000000000000000 |
| 7 | Captains Of Our Destiny | 135 | 2.0000000000000000 |
| 8 | Cullers And Strangers | 328 | 10.0000000000000000 |
| 9 | Culmination Of Nightmares | 329 | 5.0000000000000000 |
| 10 | Equality Of The Stars | 312 | 1.0000000000000000000 |
| 11 | Extermination Of New Life | 304 | 6.0000000000000000 |
| 12 | Gift Of My Town | 105 | 4.3333333333333333 |
| 13 | Heroes Of The Sun | 432 | 6.0000000000000000 |
| 14 | Hope Of Nowhere | 295 | 4.0000000000000000 |
| 15 | Children Of New Earth | 419 | 10.0000000000000000 |
| 16 | Intruders Of The Void | 408 | 9.0000000000000000 |
| 17 | Kids Of Dreams | 381 | 4.0000000000000000 |
| 18 | Leaders Of The Past | 271 | 7.0000000000000000 |
| 19 | Lurking In My Dreams | 450 | 7.0000000000000000 |
| 20 | Monuments Of The Invaders | 398 | 3.0000000000000000 |
| 21 | Planets And Animals | 243 | 7.0000000000000000 |
| 22 | Planets And Animals | 418 | 2.0000000000000000 |
| 23 | Rats And Lords | 330 | 1.0000000000000000000 |
| 24 | Signs | 165 | 2.0000000000000000 |
| 25 | Spoofs Of Jokes | 383 | 9.0000000000000000 |
| 26 | Vampire Of The Mountain | 171 | 5.0000000000000000 |
| 27 | Vanished At The Tombs | 394 | 7.0000000000000000 |

## Create a query that will return the data from an arbitrary table for the last one and half days

(1day + 12 hours, i.e., 36 hours). Do not hard code the query (e.g., created at > 7-11-2021)!

– Do it programmatically with DATE functions.

SELECT * FROM public.user WHERE NOW() - user_created < INTERVAL '36 hours';

```
SELECT * FROM public.user WHERE NOW() - user_created < INTERVAL '36 hours';
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) | nick character varying (45) | email character varying (70) | password character varying (70) | user_created timestamp without time zone | id_address integer |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Mia | Carrillo | /aby Carrot | Elsamason@gmail.com | f53497b02c0c16e836e6d139071afe04e967247a9dd296a6a329cfdd66c867b9 | 2021-11-16 14:59:24.105582 | 2 |
| 2 | 2 | Tiana | Molina | Short +horts | mylesShah@gmail.com | cb7818e62f5b70743ca55db990b8c97d19595871a9d251c856a9d11772c75d01 | 2021-11-16 13:59:24.105582 | 15 |
| 3 | 3 | Heidy | Wall | Fre_kles | Mayacollins@god.heaven | 53d1c7e820a9574f4ab6367a2526656c2751bbb35c16c2ed447ffaabffacb298 | 2021-11-16 12:59:24.105582 | 16 |
| 4 | 4 | Salvatore | Mann | Tater T/t | Jayball@yahoo.com | 141fde36671ac31df2e245abe9f54ccf05b1677c78e4748eced37e7201b15fbb4 | 2021-11-16 11:59:24.105582 | 5 |
| 5 | 5 | Nash | Rivers | Bru)us | Nasirfields@yahoo.com | 49c614f0d5b1e8838b3bdd18fcbb6faf3eb8c9b36d7a720d94eaa8b1ab8af7f7 | 2021-11-16 10:59:24.105582 | 15 |
| 6 | 6 | Toby | Brady | ?pple | elsaMahoney@bigus.com | 15af05308fa2e80d26398fd47733fa5881db84fb62187d1117cc8436ce0a36d1 | 2021-11-16 09:59:24.105582 | 16 |
| 7 | 7 | Camille | Wall | Fre*k | MylesLawson@god.heaven | c2fe1d4a7c69dbfe413f18dda459a3fb8de767fde657d7de765f1dabb3c9cc90 | 2021-11-16 08:59:24.105582 | [null] |
| 8 | 8 | Mia | Shah | Monk(y | markusHebert@gmail.com | ca2ddec0758795cbad4d02edd0549bfe1bf02e480ce48a65fae2272c48ce5ea6 | 2021-11-16 07:59:24.105582 | 13 |
| 9 | 9 | Alden | Wilkins | Rubb-r | tobyball@yahoo.com | 453d310aa420e09826e1a358e56cd75a28fce37364c6126187fdb6a9d6b85d74 | 2021-11-16 06:59:24.105582 | 12 |
| 10 | 10 | Ariella | Wall | Grum_y | cynthiacarrillo@bigus.com | ca8ce30fef10ab5f53fd63317f5ee28dc64e177c5757a21366e8cae5df94fa5d | 2021-11-16 05:59:24.105582 | 1 |
| 11 | 11 | Matilda | Bruce | T(co | Mylescarrillo@stawicz.pl | 220f10bb314fa3c08ec252daa2a9cad25631884a7245c6cfc274646282686bae | 2021-11-16 04:59:24.105582 | [null] |
| 12 | 12 | Serenity | Crawford | Ps.cho | markusball@gmail.com | 479fee29301881a10598b6d6c9452c9307637e32104871088 9f3a05d00f9d65f | 2021-11-16 03:59:24.105582 | [null] |
| 13 | 13 | Nash | Bruce | Be_lo | janezavala@yahoo.com | 2ade2f2db49841e50255017d43bba1e4e2cfdf18aecfa3ded9a9a9fc4b3413e9 | 2021-11-16 02:59:24.105582 | 18 |
| 14 | 14 | Serenity | Mahoney | Ms. Congenial+ty | amelieMason@god.heaven | ccaa6e97ba2d8d18faeb42e4ac8328ce64d473fadef7aa352f3aea981c221630 | 2021-11-16 01:59:24.105582 | 18 |
| 15 | 15 | Jaydin | Rivers | W-iner | dantebrady@yahoo.com | f592e2db91fc837ee64783dbda1c7aee3f552c7d739fe80dfd92461282753505 | 2021-11-16 00:59:24.105582 | 14 |
| 16 | 16 | Jane | Price | P/ycho | IsabellWeiss@gmail.com | 36834d2a0e5d98f3ae3614abbcf4dadaf415692b61efc13242995ad78e8445d2 | 2021-11-15 23:59:24.105582 | 8 |
| 17 | 17 | Skylar | Mathis | Cree_ence | isabellshah@gmail.com | ff31baf6d639aaaf47b64bf7f0493df2648ff42356c09618a5e9a76e0dcecca7 | 2021-11-15 22:59:24.105582 | 7 |
| 18 | 18 | Raina | Cabrera | C-Da.g | tyroneMason@stawicz.pl | c6793130e99d5cfa7d270a88d1b5db319508f95b705d01c5c9d70b261e3e2552 | 2021-11-15 21:59:24.105582 | 15 |
| 19 | 19 | Jaydin | Rivers | Ba+bino | Jaycabrera@gmail.com | affa38692ddec847c7aa6821fd55a823be405678a4893147bcd76a9e790f1011 | 2021-11-15 20:59:24.105582 | 12 |
| 20 | 20 | Jaydin | Bruce | S-irk | Danteatkins@google.com | bc5fe176e9870b50d0ed70b8ae70b138ef00dfdf974becca75b7252fb02118bc | 2021-11-15 19:59:24.105582 | 13 |

## Create a query that will return data from the last month

(starting from the first day of the month)

SELECT id_user, first_name, surname, user_created FROM public.user WHERE user_created < date_trunc('month', CURRENT_DATE) AND user_created >= date_trunc('month', CURRENT_DATE - INTERVAL '1 months');

```
--INSERT INTO public.user VALUES (21,'Lukas','Parnik','BayBLade','lukasBAE@seznam.cz','ca2ddec0758795cbad4d02edd0549bfe1bf02e480ce48a65fae2272c48ce5ea6', CURRENT_TIMESTAMP -
--INSERT INTO public.user VALUES (22,'Pukas','Larnik','PukBLade','LarecKuj@seznam.cz','ca2ddec0758795cbad4d02edd0549bfe1bf02e480ce48a65fae2272c48ce5ea6', CURRENT_TIMESTAMP +

SELECT id_user, first_name, surname, user_created FROM public.user WHERE user_created < date_trunc('month', CURRENT_DATE) AND user_created >= date_trunc('month', CURRENT_DATE
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) | user_created timestamp without time zone |
|---|---|---|---|---|
| 1 | 21 | Lukas | Parnik | 2021-10-16 16:42:45.001223 |

## Write a select that will remove accents on a selected string

(e.g., ´a will be converted to a)

– Beforehand, you will need to save data that contain accents in the database (e.g., save some Czech surname in the database that has accents)

```
1  SELECT id_user, first_name, surname FROM public.user;
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | first_name character varying (45) | surname character varying (45) |
|---|---|---|---|
| 8 | 8 | Mia | Shah |
| 9 | 9 | Alden | Wilkins |
| 10 | 10 | Ariella | Wall |
| 11 | 11 | Matilda | Bruce |
| 12 | 12 | Serenity | Crawford |
| 13 | 13 | Nash | Bruce |
| 14 | 14 | Serenity | Mahoney |
| 15 | 15 | Jaydin | Rivers |
| 16 | 16 | Jane | Price |
| 17 | 17 | Skylar | Mathis |
| 18 | 18 | Raina | Cabrera |
| 19 | 19 | Jaydin | Rivers |
| 20 | 20 | Jaydin | Bruce |
| 21 | 21 | Lukas | Parnik |
| 22 | 22 | Pukas | Larnik |
| 23 | 23 | Ondra | Mlíkeš |
| 24 | 24 | Marie | Zaskočilová |

CREATE EXTENSION UNACCENT;

SELECT id_user, UNACCENT(first_name), UNACCENT(surname) FROM public.user;

```
1  SELECT id_user, UNACCENT(first_name), UNACCENT(surname) FROM public.user;
```

Data Output | Explain | Messages | Notifications

| | id_user [PK] integer | unaccent text | unaccent text |
|---|---|---|---|
| 8 | 8 | Mia | Shah |
| 9 | 9 | Alden | Wilkins |
| 10 | 10 | Ariella | Wall |
| 11 | 11 | Matilda | Bruce |
| 12 | 12 | Serenity | Crawford |
| 13 | 13 | Nash | Bruce |
| 14 | 14 | Serenity | Mahoney |
| 15 | 15 | Jaydin | Rivers |
| 16 | 16 | Jane | Price |
| 17 | 17 | Skylar | Mathis |
| 18 | 18 | Raina | Cabrera |
| 19 | 19 | Jaydin | Rivers |
| 20 | 20 | Jaydin | Bruce |
| 21 | 21 | Lukas | Parnik |
| 22 | 22 | Pukas | Larnik |
| 23 | 23 | Ondra | Mlikes |
| 24 | 24 | Marie | Zaskocilova |

## Create a query for pagination in an application (use LIMIT and OFFSET)

SELECT id_title, name, description FROM titles LIMIT 20 OFFSET 10;

```
1  SELECT id_title, name, description FROM titles LIMIT 20 OFFSET 10;
```

Data Output | Explain | Messages | Notifications

| | id_title integer | name character varying (45) | description character varying (256) |
|---|---|---|---|
| 1 | 11 | Bored By Orbit | Bored By Orbit has great theme and side characters, s... |
| 2 | 12 | Searching For Dreams | Searching For Dreams has great moral of the story an... |
| 3 | 13 | Heroes Of The Sun | Heroes Of The Sun has great actors and side charact... |
| 4 | 14 | Oblivious In Nature | Oblivious In Nature has great character development ... |
| 5 | 15 | Hope Of Nowhere | Hope Of Nowhere has great script and moral of the st... |
| 6 | 16 | Hope Of Nowhere | Hope Of Nowhere has great camera and main charact... |
| 7 | 17 | Afraid Of My Journey | Afraid Of My Journey has great actors and character ... |
| 8 | 18 | Adopting The Darkness | Adopting The Darkness has great main characters an... |
| 9 | 19 | Veteran Of New Earth | Veteran Of New Earth has great moral of the story an... |
| 10 | 20 | Searching For Dreams | Searching For Dreams has great plot and moral of the... |
| 11 | 21 | Source With A Goal | Source With A Goal has great character development ... |
| 12 | 22 | Angel Of Aliens | Angel Of Aliens has great actors and side characters, ... |
| 13 | 23 | Signs | Signs has great script and camera, so if you like these... |
| 14 | 24 | Volunteers Of The Stars | Volunteers Of The Stars has great moral of the story a... |
| 15 | 25 | Enemy Of Life | Enemy Of Life has great camera and moral of the stor... |
| 16 | 26 | Changed By The End Of Earth | Changed By The End Of Earth has great camera and s... |
| 17 | 27 | Medic With Wings | Medic With Wings has great side characters and plot, ... |
| 18 | 28 | Thieves And Guardians | Thieves And Guardians has great camera and charact... |
| 19 | 29 | Enemies Of The Ocean | Enemies Of The Ocean has great main characters and... |
| 20 | 30 | Changed By The End Of Earth | Changed By The End Of Earth has great character dev... |

## Create a query that will use subquery in FROM

SELECT id_title, genre.genre_name, genre.description FROM (SELECT g.id_genre_name, id_title, genre_name, description FROM genre g JOIN genre_name n on g.id_genre_name = n.id_genre_name) genre;

```
SELECT id_title, genre.genre_name, genre.description FROM (SELECT g.id_genre_name, id_title, genre_name, description FROM genre g JOIN genre_name n on g.id_genre_name = n
```

Data Output | Explain | Messages | Notifications

| | id_title integer | genre_name character varying (45) | description character varying (256) |
|---|---|---|---|
| 1 | 1 | Drama | In film and television, drama is a category of narrative... |
| 2 | 2 | Action | Action film is a film genre in which the protagonist or ... |
| 3 | 3 | Fantasy | Fantasy films are films that belong to the fantasy genr... |
| 4 | 4 | Horror | A horror film is one that seeks to elicit fear or disgust ... |
| 5 | 5 | Horror | A horror film is one that seeks to elicit fear or disgust ... |
| 6 | 6 | Science fiction | Science fiction (or sci-fi) is a film genre that uses spe... |
| 7 | 7 | Comedy | A comedy film is a category of film in which the main ... |
| 8 | 8 | Adventure | An adventure film is form of adventure fiction, and is ... |
| 9 | 9 | Science fiction | Science fiction (or sci-fi) is a film genre that uses spe... |
| 10 | 10 | Science fiction | Science fiction (or sci-fi) is a film genre that uses spe... |
| 11 | 11 | Science fiction | Science fiction (or sci-fi) is a film genre that uses spe... |
| 12 | 12 | Horror | A horror film is one that seeks to elicit fear or disgust ... |
| 13 | 13 | Science fiction | Science fiction (or sci-fi) is a film genre that uses spe... |
| 14 | 14 | Comedy | A comedy film is a category of film in which the main ... |
| 15 | 15 | Action | Action film is a film genre in which the protagonist or ... |
| 16 | 16 | Fantasy | Fantasy films are films that belong to the fantasy genr... |
| 17 | 17 | Comedy | A comedy film is a category of film in which the main ... |

## Create a query that will use subquery in WHERE condition

SELECT * FROM titles WHERE lenght > (SELECT AVG(lenght) FROM titles) AND id_title < (SELECT AVG(id_title) FROM titles) - 40;

```
SELECT * FROM titles WHERE lenght > (SELECT AVG(lenght) FROM titles) AND id_title < (SELECT AVG(id_title) FROM titles) - 40;
```

Data Output | Explain | Messages | Notifications

| | id_title [PK] integer | id_type [PK] integer | id_country integer | name character varying (45) | year date | lenght integer | description character varying (256) |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 4 | 1 | Cullers And Strangers | 1903-05-09 | 328 | Cullers And Strangers has great character developme... |
| 2 | 2 | 3 | 3 | Companions Of The Void | 1949-12-23 | 362 | Companions Of The Void has great setting and settin... |
| 3 | 3 | 5 | 2 | Cruelty Of The Eclipse | 1958-04-09 | 368 | Cruelty Of The Eclipse has great main characters and ... |
| 4 | 6 | 3 | 8 | Source With A Goal | 1884-12-20 | 431 | Source With A Goal has great plot and main character... |
| 5 | 7 | 4 | 10 | Student Without A Mouth | 1993-08-22 | 445 | Student Without A Mouth has great camera and them... |
| 6 | 8 | 1 | 2 | Lurking In My Dreams | 1908-07-25 | 450 | Lurking In My Dreams has great theme and side chara... |

## Create a query that will use any aggregate function and GROUP BY with HAVING

SELECT name, SUM(lenght) FROM titles GROUP BY name HAVING COUNT(name) > 2;

```
1  SELECT name, SUM(lenght) FROM titles GROUP BY name HAVING COUNT(name) > 2;
```

Data Output | Explain | Messages | Notifications

| | name character varying (45) | sum bigint |
|---|---|---|
| 1 | Adopting The Darkness | 855 |
| 2 | Searching For Dreams | 780 |
| 3 | Cruelty Of The Eclipse | 932 |
| 4 | Volunteers Of The Stars | 548 |
| 5 | Changed By The End Of Earth | 569 |

## Create a query that will join at least five tables

SELECT name, type_name, genre_name, country_name FROM titles t JOIN type p on t.id_type = p.id_type JOIN genre g on g.id_title = t.id_title JOIN genre_name n on g.id_genre_name = n.id_genre_name JOIN country c on c.id_country = t.id_country;

```
1  SELECT name, type_name, genre_name, country_name FROM titles t JOIN type p on t.id_type = p.id_type JOIN genre g on g.id_title = t.id_title JOIN genre_name n on g.id_gen
```

Data Output | Explain | Messages | Notifications

| | name character varying (45) | type_name character varying (45) | genre_name character varying (45) | country_name character varying (45) |
|---|---|---|---|---|
| 1 | Cullers And Strangers | Media clip | Drama | South Korea |
| 2 | Companions Of The Void | Theatre | Action | Albania |
| 3 | Cruelty Of The Eclipse | Ad | Fantasy | Turkey |
| 4 | Changing My Sweetheart | Movie | Horror | Sweden |
| 5 | Clones Of The Stars | TV show | Horror | Belgium |
| 6 | Source With A Goal | Theatre | Science fiction | Morocco |
| 7 | Student Without A Mouth | Media clip | Comedy | Kenya |
| 8 | Lurking In My Dreams | Movie | Adventure | Turkey |
| 9 | Directors And Emperors | Media clip | Science fiction | Latvia |
| 10 | Pocket Of Miracles | Media clip | Science fiction | Turkey |
| 11 | Bored By Orbit | Ad | Science fiction | Kenya |
| 12 | Searching For Dreams | Movie | Horror | Morocco |
| 13 | Heroes Of The Sun | Ad | Science fiction | Chad |
| 14 | Oblivious In Nature | TV show | Comedy | Chad |
| 15 | Hope Of Nowhere | Theatre | Action | Albania |
| 16 | Hope Of Nowhere | Ad | Fantasy | Latvia |
| 17 | Afraid Of My Journey | Movie | Comedy | Kenya |
| 18 | Adopting The Darkness | Media clip | Horror | Kenya |
| 19 | Veteran Of New Earth | Theatre | Science fiction | Turkey |
| 20 | Searching For Dreams | Movie | Science fiction | Turkey |
| 21 | Source With A Goal | TV show | Comedy | Belgium |
| 22 | Angel Of Aliens | Ad | Adventure | Spain |
| 23 | Signs | Ad | Drama | Spain |
| 24 | Volunteers Of The Stars | Ad | Adventure | Turkey |
| 25 | Enemy Of Life | Ad | Comedy | Chad |

## Create a query that will join at least three tables and will use GROUP BY, HAVING, and WHERE

SELECT name, u.first_name, SUM(rating) FROM rating r JOIN titles t on r.id_title = t.id_title JOIN public.user u on u.id_user = r.id_user WHERE r.id_user > 10 GROUP BY name, u.first_name HAVING SUM(rating) > 5;

```
SELECT name, u.first_name, SUM(rating) FROM rating r JOIN titles t on r.id_title = t.id_title JOIN public.user u on u.id_user = r.id_user WHERE r.id_user > 10 GROUP BY n
```

Data Output | Explain | Messages | Notifications

| | name character varying (45) | first_name character varying (45) | sum bigint |
|---|---|---|---|
| 1 | Heroes Of The Sun | Jaydin | 6 |
| 2 | Cullers And Strangers | Jaydin | 10 |
| 3 | Vanished At The Tombs | Serenity | 7 |
| 4 | Gift Of My Town | Nash | 9 |
| 5 | Extermination Of New Life | Jaydin | 6 |
| 6 | Battling In My School | Jane | 10 |
| 7 | Lurking In My Dreams | Nash | 7 |
| 8 | Intruders Of The Void | Serenity | 9 |
| 9 | Children Of New Earth | Jaydin | 10 |
| 10 | Spoofs Of Jokes | Serenity | 9 |
| 11 | Boring At Fantasy | Skylar | 10 |

## Modify the database from the first project assignment to improve integrity constraints (e.g.,reduce the size for varchar columns)

ALTER TABLE public.user ALTER COLUMN password TYPE VARCHAR(65);

– Set cascading, explain places where you used cascading and why?

ALTER TABLE favourites DROP constraint fk_favourites_user,ADD constraint fk_favourites_user FOREIGN KEY (id_user) REFERENCES public.user(id_user) ON DELETE CASCADE;

Aby když se smazal uživatel tak se smažou i jeho oblíbení herci.

ALTER TABLE rating DROP constraint fk_rating_user1,ADD constraint fk_rating_user1 FOREIGN KEY (id_user) REFERENCES public.user(id_user) ON DELETE CASCADE;

Aby když se smazal uživatel tak se smažou i jeho hodnocení.

ALTER TABLE rating DROP constraint fk_rating_titles1,ADD constraint fk_rating_titles1 FOREIGN KEY (id_title) REFERENCES public.titles(id_title) ON DELETE CASCADE;

Aby když se smazalo dílo tak se smažou i jeho hodnocení.

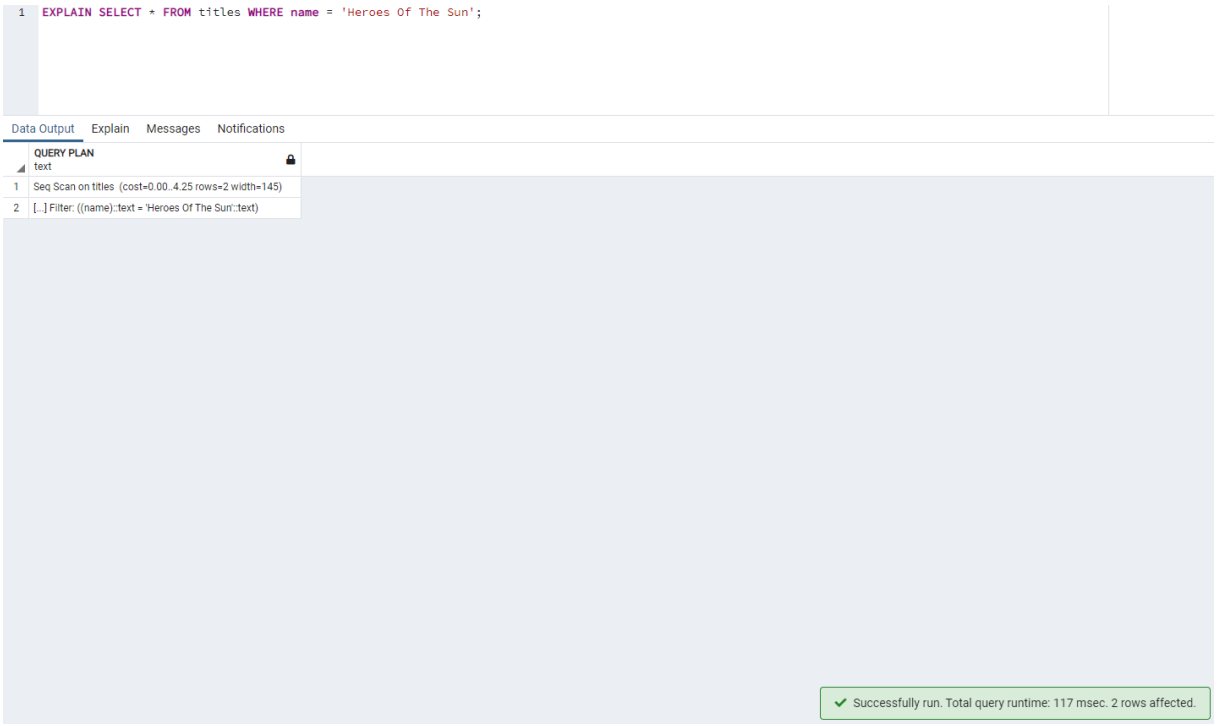
ALTER TABLE genre DROP constraint fk_genre_titles1,ADD constraint fk_genre_titles1 FOREIGN KEY (id_title) REFERENCES public.titles(id_title) ON DELETE CASCADE;

Aby když se smazalo dílo tak se smažou i jeho zastoupení v tabulce žánrů.

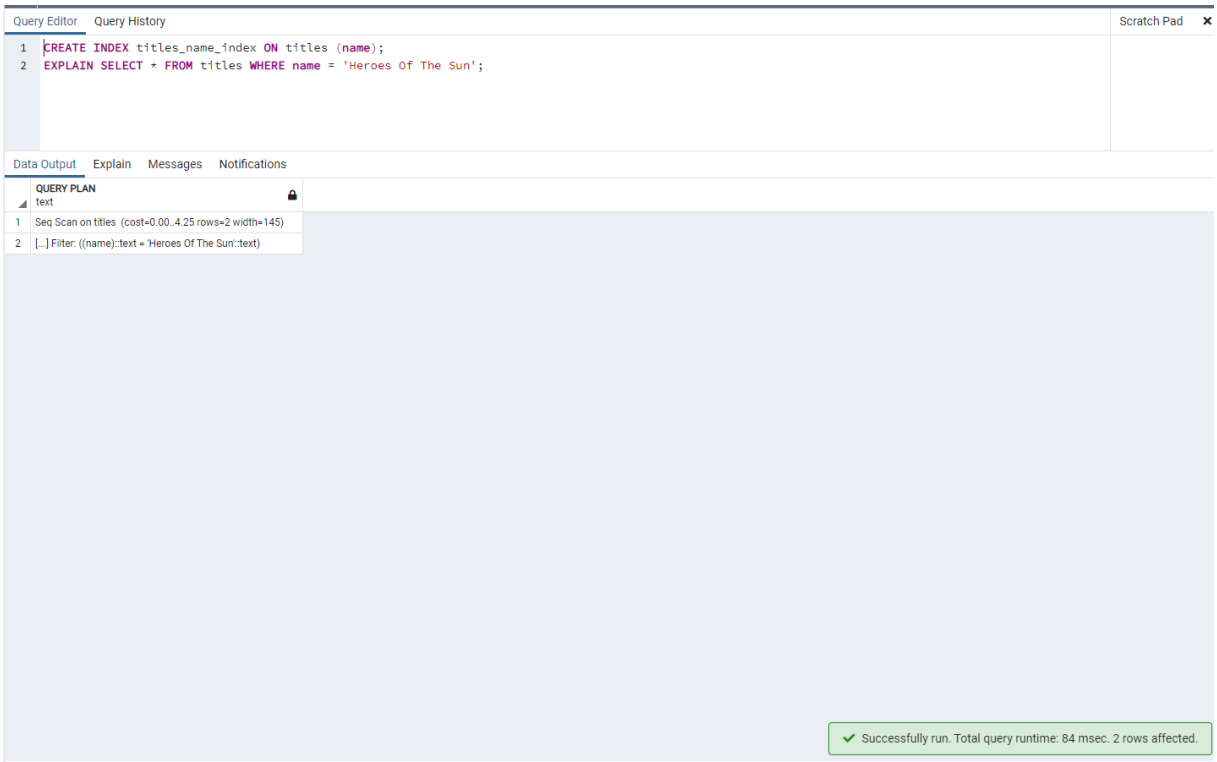
ALTER TABLE role DROP constraint fk_role_titles1,ADD constraint fk_role_titles1 FOREIGN KEY (id_title) REFERENCES public.titles(id_title) ON DELETE CASCADE;

Aby když se smazalo dílo tak se smažou jeho záznamy z tabulky role.

## Create database indexes (create it only on columns where it can make a sense – explain in theprovided document why it make sense on a certain column(s))




CREATE INDEX titles_name_index ON titles (name);




Dává to smysl protože se nemusí procházet všechny záznamy ale jen ty které vyhovují podmínce.

– Before you create a database index perform a query that will use WHERE condition on a column without index and then perform the same query on the column with index (note: use EXPLAIN keyword to note the differences – provide a comparison of the execution plans)

Po použití indexu je vyhledávání o něco rychlejší.

## Create arbitrary database procedure (consider some complex case)

```
CREATE OR REPLACE PROCEDURE change_title_type(
        title int,
        new_type VARCHAR(45)
)
LANGUAGE SQL
AS $$
   UPDATE titles
        SET id_type = (SELECT id_type FROM type WHERE type_name = new_type)
        WHERE id_title = title;
$$;
```

```
call change_title_type(1,'Ad');
select * from titles order by id_title;
```

Data Output | Explain | Messages | Notifications

| | id_title [PK] integer | id_type [PK] integer | id_country integer | name character varying (45) | year date | lenght integer | description character varying (256) |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 5 | 1 | Cullers And Strangers | 1903-05-09 | 328 | Cullers And Strangers has great character development and setting, so if you like these features you will like it. |

## Create arbitrary database trigger

```
CREATE FUNCTION after_user_insert() RETURNS TRIGGER AS $trigger$
BEGIN
        RAISE NOTICE 'Another one bites a dust!';
        RETURN NEW;
END;
$trigger$ LANGUAGE plpgsql;

CREATE TRIGGER adter_user_insert AFTER INSERT ON public.user EXECUTE PROCEDURE
after_user_insert();
```

```
INSERT INTO public.user VALUES(24, 'Marie', 'Zaskočilová','Skákačka','makoc@google.com','ff31baf6d639aaaf47b64bf7f0493df2648ff42356c09618a5e9a76e0dcec
```

Data Output | Explain | Messages | Notifications

```
NOTICE:  Another one bites a dust!
INSERT 0 1
```

## Create arbitrary database view (consider some complex case)

CREATE VIEW five_most_popular AS (SELECT first_name, surname, COUNT(r.id_person) AS most_popular FROM role r JOIN person p on r.id_person = p.id_person GROUP BY first_name,surname ORDER BY most_popular DESC LIMIT 5);

## Create database materialized view (consider some complicated SQL query with several joins, aggregate function, GROUP BY with HAVING and complex WHERE condition). Explain why this materialized view is beneficial/needed.

CREATE MATERIALIZED VIEW good_long_titles AS (SELECT t.id_title, name, p.type_name, n.genre_name, t.year, t.lenght, AVG(r.rating) FROM titles t JOIN type p ON t.id_type = p.id_type JOIN genre g ON t.id_title = g.id_title JOIN genre_name n ON n.id_genre_name = g.id_genre_name JOIN rating r ON r.id_title = t.id_title WHERE t.lenght > 120 GROUP BY t.id_title, name, p.type_name, n.genre_name, t.year, t.lenght HAVING AVG(r.rating) >= 5);

Kdykoliv se někdo chce kouknout na dlouhé dobré dílo stačí použít tento view a nemusí se dotazovat z databáze a tím ji zatěžovat.

## Create two roles teacher and student in your database. Assign for teacher privileges to SELECT, INSERT, UPDATE, and DELETE everything in arbitrary table. Furthermore, set for teacher the possibility to view only certain fields (e.g., without salary from ” person“ or your ”user“ object). For student assign a possibility to select only certain tables.

CREATE ROLE teacher NOSUPERUSER;

REVOKE ALL ON ALL TABLES IN SCHEMA public FROM teacher;

GRANT SELECT, INSERT, UPDATE, DELETE ON public.user TO teacher;

CREATE VIEW teacher_only AS (SELECT id_user, first_name, surname, email, id_address FROM public.user);

GRANT SELECT ON teacher_only TO teacher;

CREATE ROLE student NOSUPERUSER;

REVOKE ALL ON ALL TABLES IN SCHEMA public FROM student;

GRANT SELECT ON titles,type,genre,genre_name,role,role_name,person,rating,country TO student;