Getränke

November 26, 2021

1 Getränke

[2]:

```
# Hier ist nur Code zum Initialisieren der Umgebeung, bitte gehen Sie weiter,␣
 ↪es gibt nichts zu sehen.

# Keine langen Fehlermeldungen
import sys
ipython = get_ipython()

def exception_handler(exception_type, exception, traceback):
    print("%s: %s" % (exception_type.__name__, exception), file=sys.stderr)

ipython._showtraceback = exception_handler

# Lade die Erweiterung, damit wir SQL Befehle nutzen können
%reload_ext sql
%sql sqlite://
%sql PRAGMA foreign_keys = ON
```

```
 * sqlite://
Done.
```

[2]:

```
[]
```

[3]:

```
%%sql

DROP TABLE IF EXISTS RecipeIngredient;
DROP TABLE IF EXISTS Ingredient;
DROP TABLE IF EXISTS Recipe;

CREATE TABLE Ingredient (
id INTEGER NOT NULL PRIMARY KEY,
name  TEXT NOT NULL
);

CREATE TABLE Recipe (
id INTEGER NOT NULL PRIMARY KEY,
name  TEXT NOT NULL
);

CREATE TABLE RecipeIngredient (
recipe  INTEGER NOT NULL,
ingredient  INTEGER NOT NULL,
PRIMARY KEY (recipe, ingredient),
CONSTRAINT fkRecipeIngredientRecipe FOREIGN KEY (recipe) REFERENCES Recipe (id)␣
 ↪ON DELETE CASCADE ON UPDATE CASCADE,
CONSTRAINT fkRecipeIngredientIngredient FOREIGN KEY (ingredient) REFERENCES␣
 ↪Ingredient (id) ON DELETE CASCADE ON UPDATE CASCADE
);

INSERT INTO Ingredient('name') VALUES ('Vodka'), ('Rum'), ('Sherry'),␣
 ↪('Whiskey'), ('Cherry'), ('Orange'), ('Olive'), ('Gin'), ('Lemon Juice'),␣
 ↪('Orange Gin'), ('Sweet Vermouth'), ('7-Up'), ('Cranberry Juice'),␣
 ↪('Dekuyper Razzmatazz'), ('Orange Juice'), ('Sour Mix'), ('Dry Cider'),␣
 ↪('Lager'), ('Sloe Gin'), ('Southern Comfort'), ('Triple Sec'), ('Blue␣
 ↪Curacao'), ('Lime Juice'), ('Red Curacao'), ('Tequila');
INSERT INTO Recipe('name') VALUES ('Leap Year Cocktail'), ('Purple Gecko'),␣
 ↪('Slow Comfortable Screw In Between the Sheets'), ('Snakebite (UK)'),␣
 ↪('Stoner Delight'), ('Vodka'), ('Tequila'), ('Whiskey');

INSERT INTO RecipeIngredient VALUES (1, 9), (1, 8), (1, 10), (1, 11), (2, 22),␣
 ↪(2, 13), (2, 23), (2, 24), (2, 16), (2, 25), (3, 15), (3, 19), (3, 20), (3,␣
 ↪21), (3, 1), (4, 17), (4, 18), (5, 12), (5, 13), (5, 14), (5, 15), (5, 16),␣
 ↪(5, 1), (6, 1), (7, 25), (8, 4);
```

```
 * sqlite://
Done.
Done.
Done.
Done.
Done.
Done.
25 rows affected.
8 rows affected.
26 rows affected.
```

[3]:
```
[]
```

1.1 Aufgabe 1: Finden Sie Alle Zutaten des “Leap Year Coctail”s

[4]:
```
%%sql
SELECT
  r.name as Coctail, i.name as Zutat
FROM Recipe r JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (i.id = ri.ingredient)
```

```
WHERE
  r.name = 'Leap Year Cocktail';
```

```
 * sqlite://
Done.
```

```
[4]: [('Leap Year Cocktail', 'Lemon Juice'),
      ('Leap Year Cocktail', 'Gin'),
      ('Leap Year Cocktail', 'Orange Gin'),
      ('Leap Year Cocktail', 'Sweet Vermouth')]
```

1.2 Aufgabe 2: Finden Sie Alle Coctails, die Vodka enthalten

```
[5]: %%sql
     SELECT
       r.name as Coctail, i.name as Zutat
     FROM Recipe r JOIN RecipeIngredient ri ON (r.id = ri.recipe)
     JOIN Ingredient i ON (i.id = ri.ingredient)
     WHERE
       i.name LIKE '%Vodka%';
```

```
 * sqlite://
Done.
```

```
[5]: [('Slow Comfortable Screw In Between the Sheets', 'Vodka'),
      ('Stoner Delight', 'Vodka'),
      ('Vodka', 'Vodka')]
```

1.3 Aufgabe 3: Finden Sie die häufigste Zutat

```
[6]: %%sql
     SELECT
       i.name, COUNT(*) as qnty
     FROM RecipeIngredient ri JOIN Ingredient i ON (i.id = ri.ingredient)
     GROUP BY
       i.name
     ORDER BY
       qnty
     DESC LIMIT 1;
```

```
 * sqlite://
Done.
```

```
[6]: [('Vodka', 3)]
```

1.4 Aufgabe 4: Finden Sie Coctails, die, die Zutat 'Gin' *nicht* enthalten

Hier ist zu sagen, dass das Nichtenthalten von Elemeneten in SQL nicht trivial ist. Der naive Ansatz:

```
SELECT r.name
FROM Recipe r
JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (ri.ingredient = i.id)
WHERE i.name != 'Gin'
```

nicht.

Aufgabe 4.1: Machen Sie sich bewusst, warum obiges Statement nicht funktioniert

[7]:

```
%%sql
```

```
 * sqlite://
```

Aufgabe 4.2: Nutzen Sie einen Subselect, um die Coctails zu filtern

[8]:

```
%%sql

SELECT
  r.name
FROM Recipe r
WHERE r.id NOT IN (
  SELECT
    ri.recipe
  FROM RecipeIngredient ri
  JOIN Ingredient i
  ON (i.id = ri.ingredient)
  WHERE
  i.name = 'Gin'
);
```

```
 * sqlite://
Done.
```

[8]:

```
[('Purple Gecko',),
 ('Slow Comfortable Screw In Between the Sheets',),
 ('Snakebite (UK)',),
 ('Stoner Delight',),
 ('Vodka',),
 ('Tequila',),
 ('Whiskey',)]
```

Aufgabe 4.2: Nutzen Sie das Kreuzprodukt, um die Coctails zu filtern

[9]:

```
%%sql

SELECT r.name
FROM Recipe r, Ingredient i
LEFT JOIN RecipeIngredient ri ON (i.id = ri.ingredient AND r.id = ri.recipe)
WHERE i.name = 'Gin' AND ri.recipe is NULL;
```

```
 * sqlite://
Done.
```

```
[9]: [('Purple Gecko',),
      ('Slow Comfortable Screw In Between the Sheets',),
      ('Snakebite (UK)',),
      ('Stoner Delight',),
      ('Vodka',),
      ('Tequila',),
      ('Whiskey',)]
```

Aufgabe 4.3: geht das mit aggregate und filter?, um die Coctails zu filtern

Aggregationsfunktionen, wie SUM, COUNT etc. unterstützen seit SQL:2003 eine `FILTER` clause, die es erlaubt Ergebnisse aus der Aggregation zu entfernen Filter Clause auf dieser seite

```
[10]: %%sql

SELECT
 r.name,
 GROUP_CONCAT(i.name)
FROM Recipe r
JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (ri.ingredient = i.id)
GROUP BY r.name
HAVING(COUNT(i.name) FILTER (WHERE i.name LIKE "%Gin%") = 0);
```

```
 * sqlite://
Done.
```

```
[10]: [('Purple Gecko', 'Blue Curacao,Cranberry Juice,Lime Juice,Red Curacao,Sour
Mix,Tequila'),
 ('Snakebite (UK)', 'Dry Cider,Lager'),
 ('Stoner Delight', '7-Up,Cranberry Juice,Dekuyper Razzmatazz,Orange Juice,Sour
Mix,Vodka'),
 ('Tequila', 'Tequila'),
 ('Vodka', 'Vodka'),
 ('Whiskey', 'Whiskey')]
```

1.5 Aufgabe 5: Wie viele Zutaten hat mein Getränk eigentlich und welche?

Lösbar via gruppierung –> Eine Zeile Pro Coktail. Oder mit mehreren Zielen via subselects oder fensterfunktionen

```
[13]: %%sql

SELECT
 r.name,
 COUNT(i.name) as ingedient,
 GROUP_CONCAT(i.name, ", ") as Zutaten
```

```
FROM Recipe r
JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (ri.ingredient = i.id)
GROUP BY (r.name)
```

```
 * sqlite://
Done.
```

[13]:

```
[('Leap Year Cocktail', 4, 'Lemon Juice, Gin, Orange Gin, Sweet Vermouth'),
 ('Purple Gecko', 6, 'Blue Curacao, Cranberry Juice, Lime Juice, Red Curacao,
Sour Mix, Tequila'),
 ('Slow Comfortable Screw In Between the Sheets', 5, 'Orange Juice, Sloe Gin,
Southern Comfort, Triple Sec, Vodka'),
 ('Snakebite (UK)', 2, 'Dry Cider, Lager'),
 ('Stoner Delight', 6, '7-Up, Cranberry Juice, Dekuyper Razzmatazz, Orange
Juice, Sour Mix, Vodka'),
 ('Tequila', 1, 'Tequila'),
 ('Vodka', 1, 'Vodka'),
 ('Whiskey', 1, 'Whiskey')]
```

[ ]:

```
%%sql

SELECT
 r.name,
 i.name as ingedient,
 r2.num_ingredient
FROM Recipe r
JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (ri.ingredient = i.id)
JOIN (SELECT
 r.name as name,
 COUNT(i.name) as num_ingredient
FROM Recipe r
JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (ri.ingredient = i.id)
GROUP BY (r.name)) r2 ON (r.name = r2.name)
```

```
 * sqlite://
Done.
```

[ ]:

```
[('Leap Year Cocktail', 'Lemon Juice', 4),
 ('Leap Year Cocktail', 'Gin', 4),
 ('Leap Year Cocktail', 'Orange Gin', 4),
 ('Leap Year Cocktail', 'Sweet Vermouth', 4),
 ('Purple Gecko', 'Blue Curacao', 6),
 ('Purple Gecko', 'Cranberry Juice', 6),
 ('Purple Gecko', 'Lime Juice', 6),
 ('Purple Gecko', 'Red Curacao', 6),
 ('Purple Gecko', 'Sour Mix', 6),
 ('Purple Gecko', 'Tequila', 6),
 ('Slow Comfortable Screw In Between the Sheets', 'Orange Juice', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Sloe Gin', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Southern Comfort', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Triple Sec', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Vodka', 5),
 ('Snakebite (UK)', 'Dry Cider', 2),
 ('Snakebite (UK)', 'Lager', 2),
 ('Stoner Delight', '7-Up', 6),
 ('Stoner Delight', 'Cranberry Juice', 6),
 ('Stoner Delight', 'Dekuyper Razzmatazz', 6),
 ('Stoner Delight', 'Orange Juice', 6),
 ('Stoner Delight', 'Sour Mix', 6),
 ('Stoner Delight', 'Vodka', 6),
 ('Vodka', 'Vodka', 1),
 ('Tequila', 'Tequila', 1),
 ('Whiskey', 'Whiskey', 1)]
```

[ ]:
```
%%sql

SELECT
 r.name,
 i.name as ingedient,
 COUNT(i.name) OVER (PARTITION BY r.name) as num_ingredient
FROM Recipe r
JOIN RecipeIngredient ri ON (r.id = ri.recipe)
JOIN Ingredient i ON (ri.ingredient = i.id)
```

```
 * sqlite:///getraenke.db
Done.
```

[ ]:
```
[('Leap Year Cocktail', 'Lemon Juice', 4),
 ('Leap Year Cocktail', 'Gin', 4),
 ('Leap Year Cocktail', 'Orange Gin', 4),
 ('Leap Year Cocktail', 'Sweet Vermouth', 4),
 ('Purple Gecko', 'Blue Curacao', 6),
 ('Purple Gecko', 'Cranberry Juice', 6),
 ('Purple Gecko', 'Lime Juice', 6),
 ('Purple Gecko', 'Red Curacao', 6),
 ('Purple Gecko', 'Sour Mix', 6),
 ('Purple Gecko', 'Tequila', 6),
 ('Slow Comfortable Screw In Between the Sheets', 'Orange Juice', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Sloe Gin', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Southern Comfort', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Triple Sec', 5),
 ('Slow Comfortable Screw In Between the Sheets', 'Vodka', 5),
 ('Snakebite (UK)', 'Dry Cider', 2),
 ('Snakebite (UK)', 'Lager', 2),
 ('Stoner Delight', '7-Up', 6),
 ('Stoner Delight', 'Cranberry Juice', 6),
 ('Stoner Delight', 'Dekuyper Razzmatazz', 6),
 ('Stoner Delight', 'Orange Juice', 6),
 ('Stoner Delight', 'Sour Mix', 6),
 ('Stoner Delight', 'Vodka', 6),
 ('Tequila', 'Tequila', 1),
 ('Vodka', 'Vodka', 1),
 ('Whiskey', 'Whiskey', 1)]
```

[ ]:

```

```