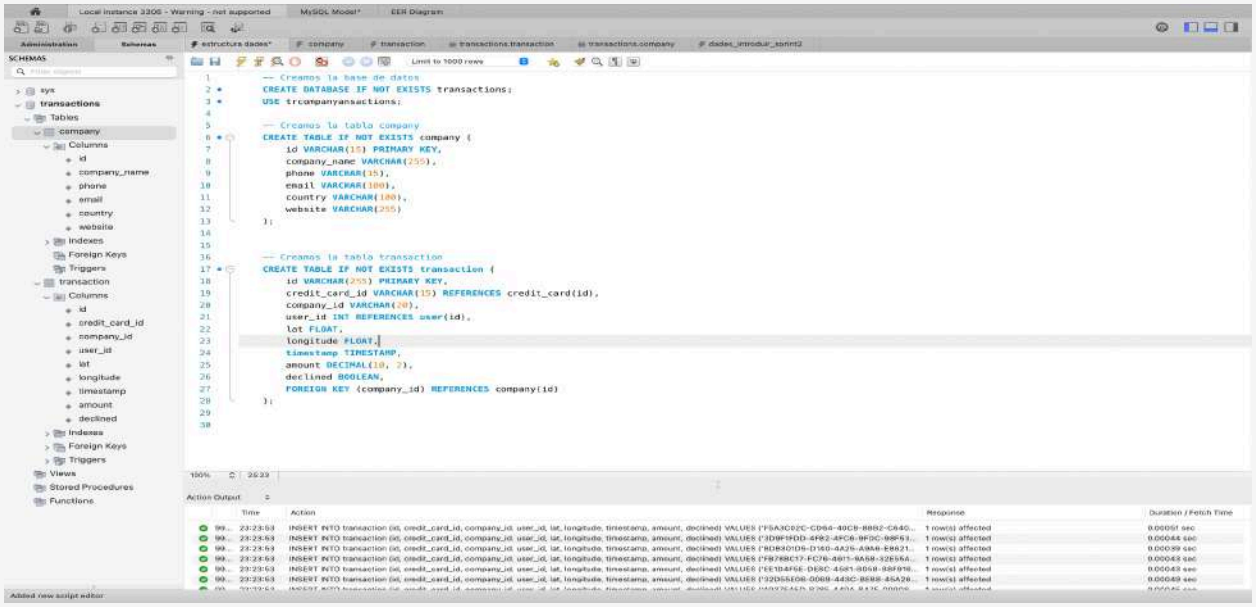
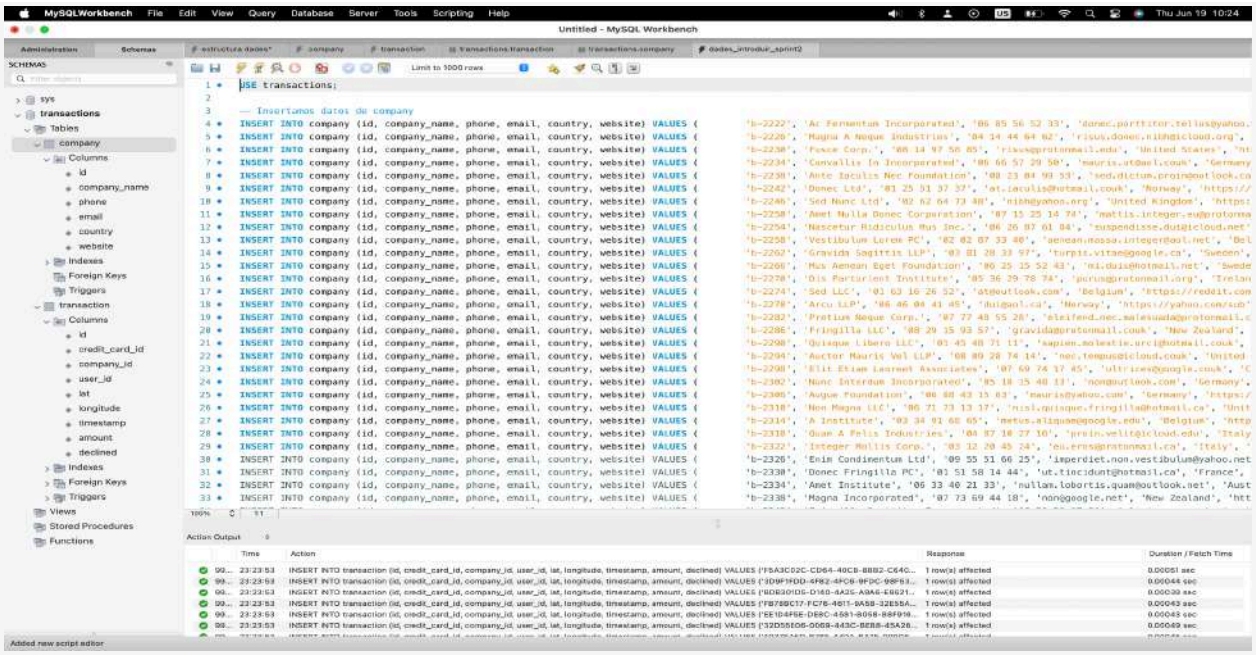
# Task S2.01. Basic SQL Notions

## Level 1

### Exercise 1:

From the attached documents (structure.data and data.enter), import the two tables. Shows the main characteristics of the created scheme and explains the different tables and variables that exist. Make sure to include a diagram that illustrates the relationship between the different tables and variables.



The scheme has two tables, which are the company and the transaction. The company table has 6 columns that store basic business information. The id column is the primary key for this table.

Info | Columns | Indexes | Triggers | Foreign keys | Partitions | Grants | DDL

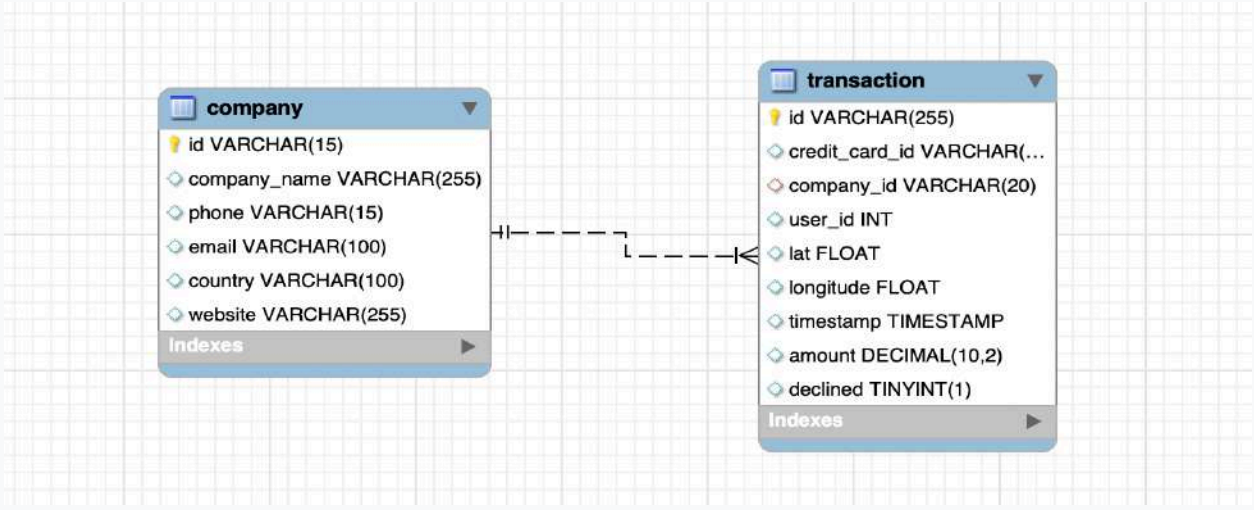
| Column | Type | Default Value | Nullable | Character Set | Collation | Privileges | Extra |
|---|---|---|---|---|---|---|---|
| company_name | varchar(255) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| country | varchar(100) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| email | varchar(100) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| id | varchar(15) | | NO | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| phone | varchar(15) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| website | varchar(255) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |

The transaction table has 9 columns that record each transaction made by users using credit cards. The company_id is associated with the id in the company table (foreign key).

Info | Columns | Indexes | Triggers | Foreign keys | Partitions | Grants | DDL

| Column | Type | Default Value | Nullable | Character Set | Collation | Privileges | Extra |
|---|---|---|---|---|---|---|---|
| amount | decimal(10,2) | | YES | | | select,insert,update,references | |
| company_id | varchar(20) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| credit_card_id | varchar(15) | | YES | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| declined | tinyint(1) | | YES | | | select,insert,update,references | |
| id | varchar(255) | | NO | utf8mb4 | utf8mb4_090... | select,insert,update,references | |
| lat | float | | YES | | | select,insert,update,references | |
| longitude | float | | YES | | | select,insert,update,references | |
| timestamp | timestamp | | YES | | | select,insert,update,references | |
| user_id | int | | YES | | | select,insert,update,references | |

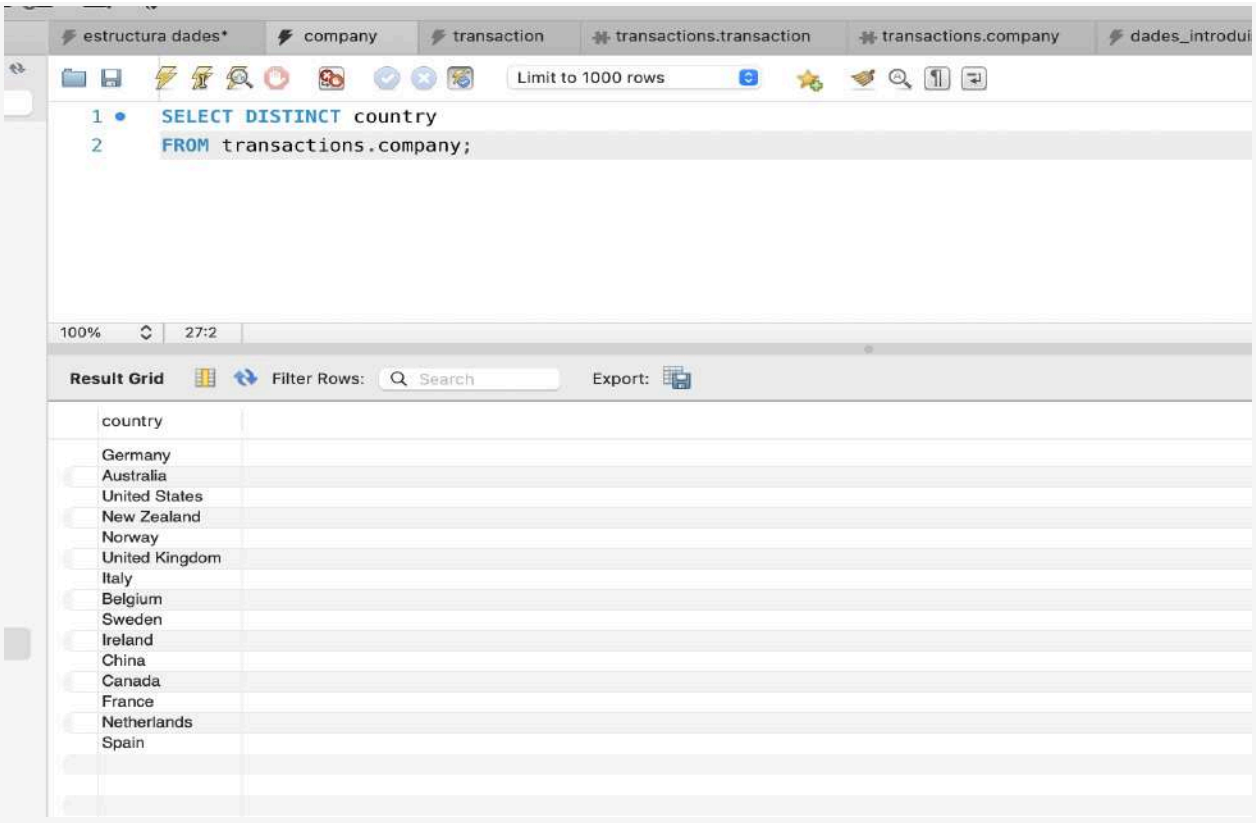
-The transaction establishes a 1-to-N relationship with the company (there can be multiple transactions in a company).
-There are no user and credit_card tables, but there are references to them.



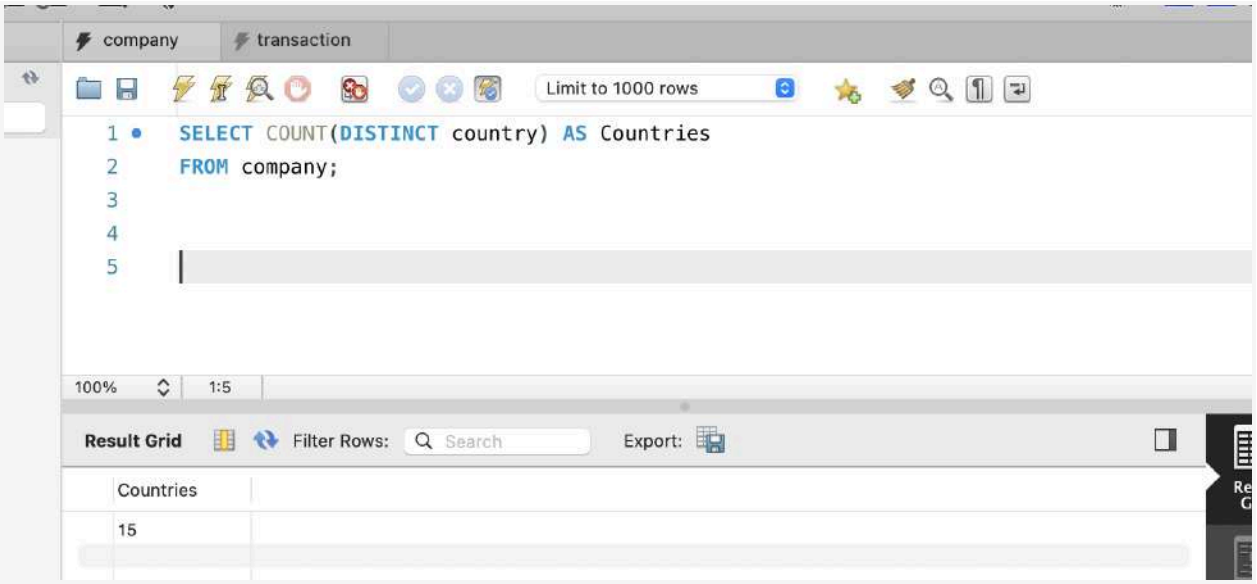
## Exercise 2:

Using JOIN you will make the following queries:

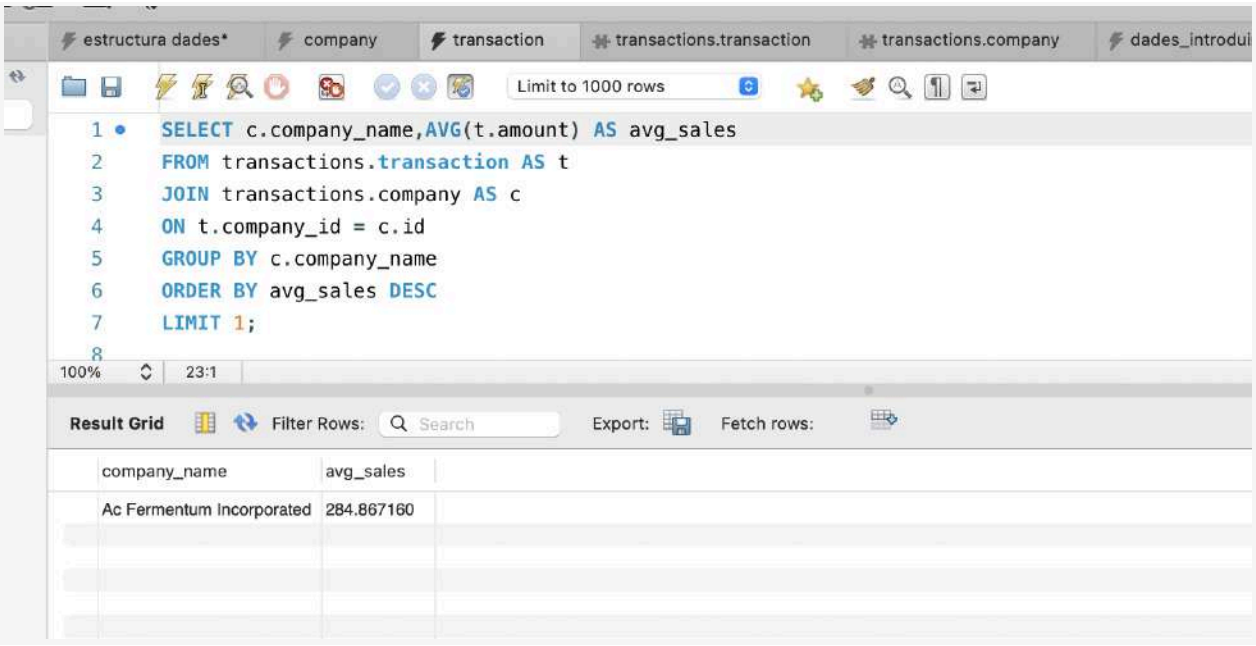
-List of countries that are generating sales.




-From how many countries sales are generated.



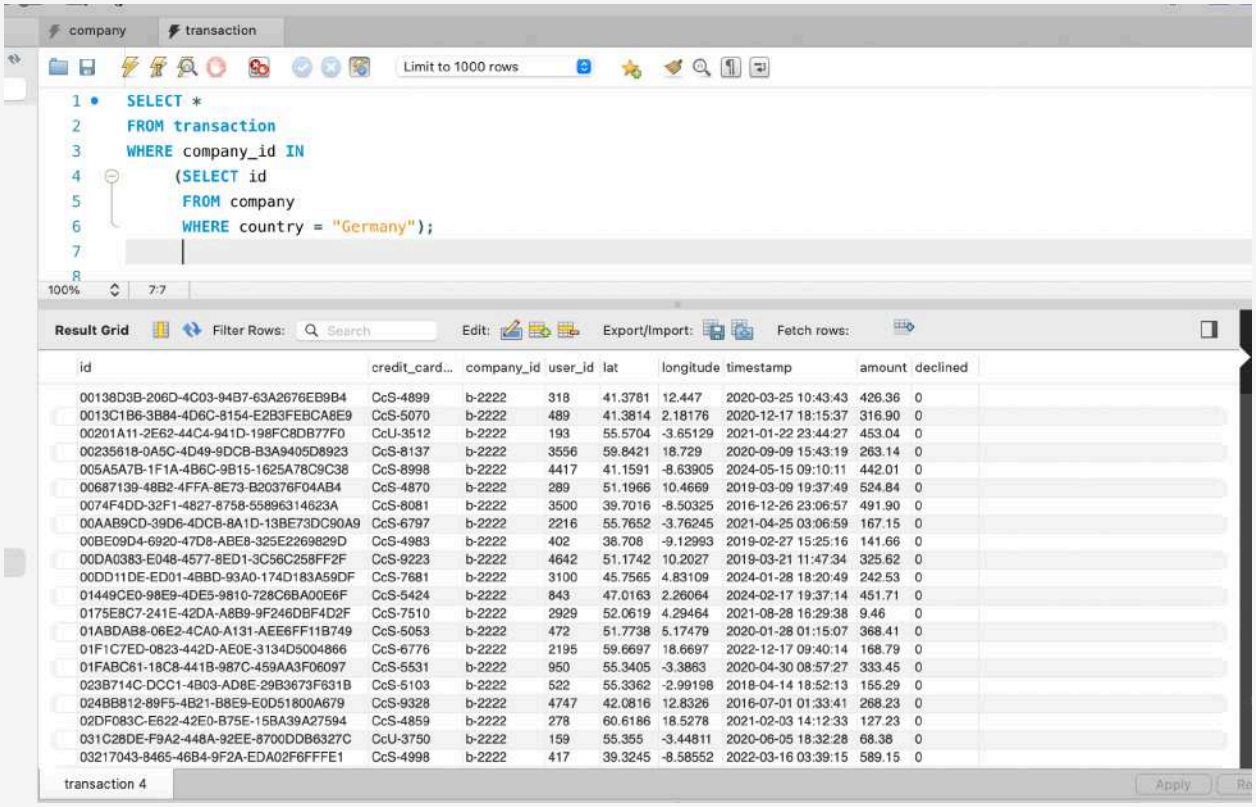
-It identifies the company with the highest average sales.



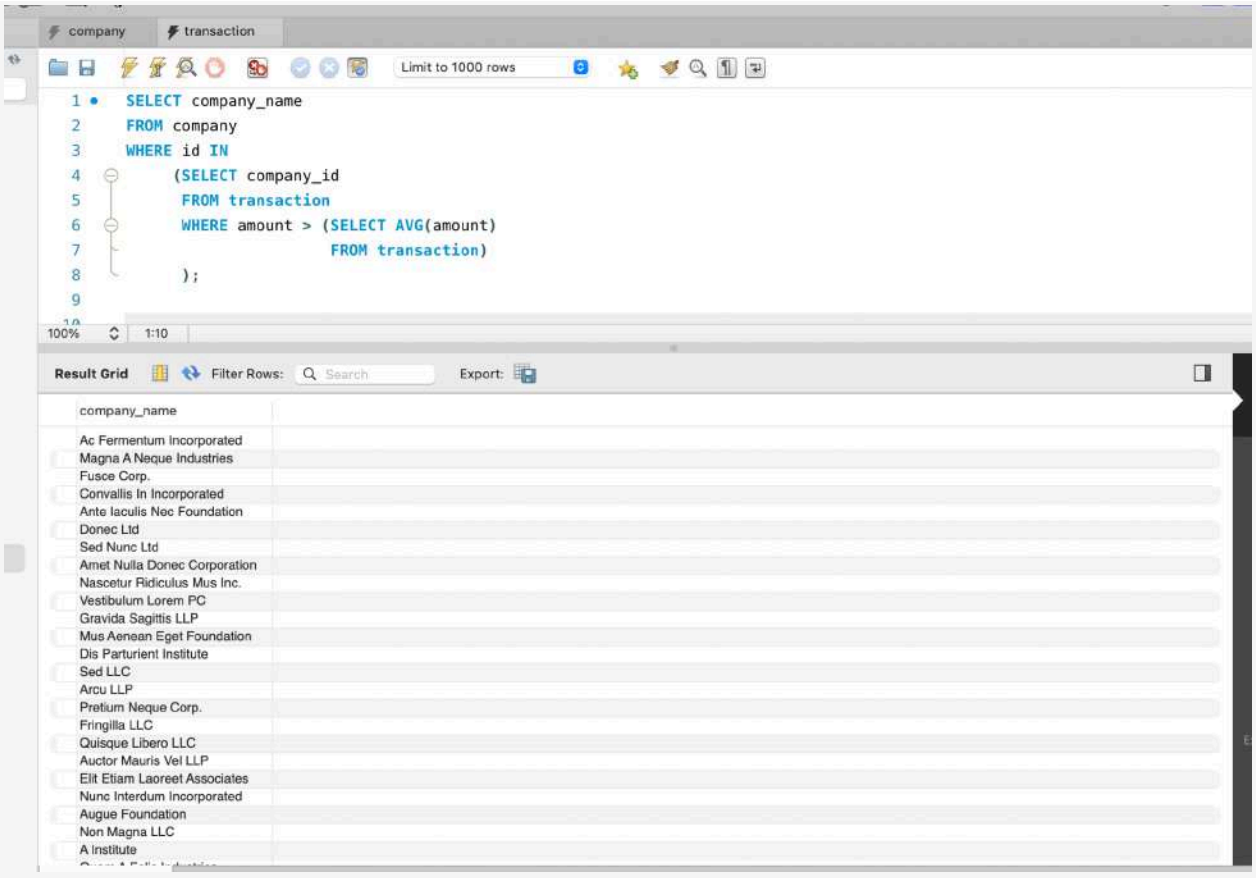

## Exercise 3:

Using only subconsults (not using JOIN):

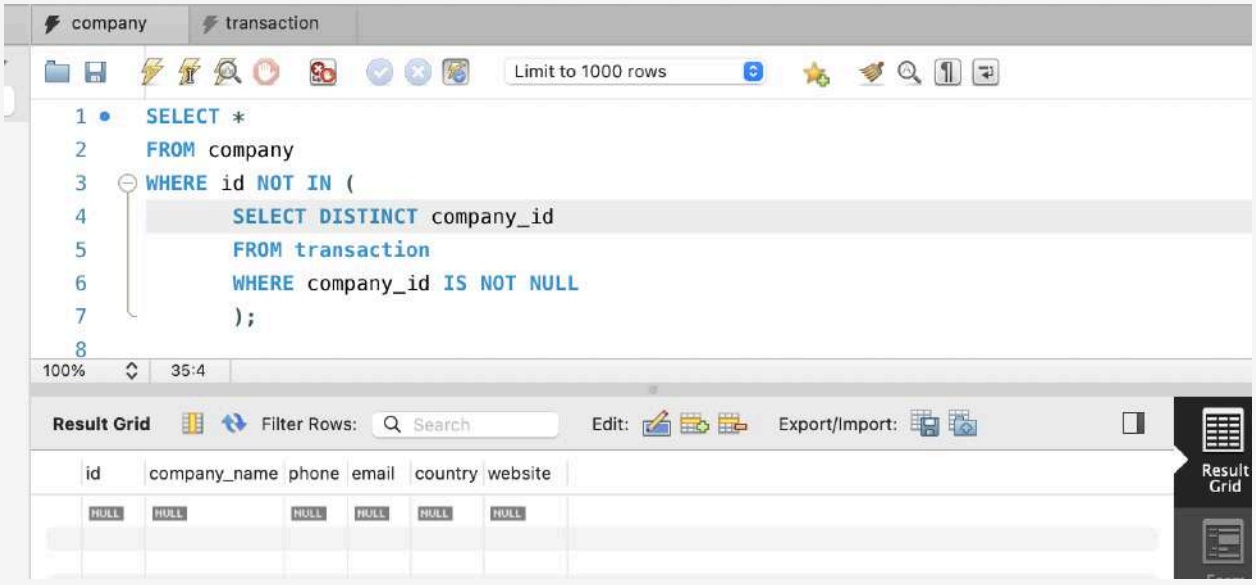
-Displays all transactions made by companies in Germany.



-List the companies that have made transactions for a higher amount than the average of all transactions.



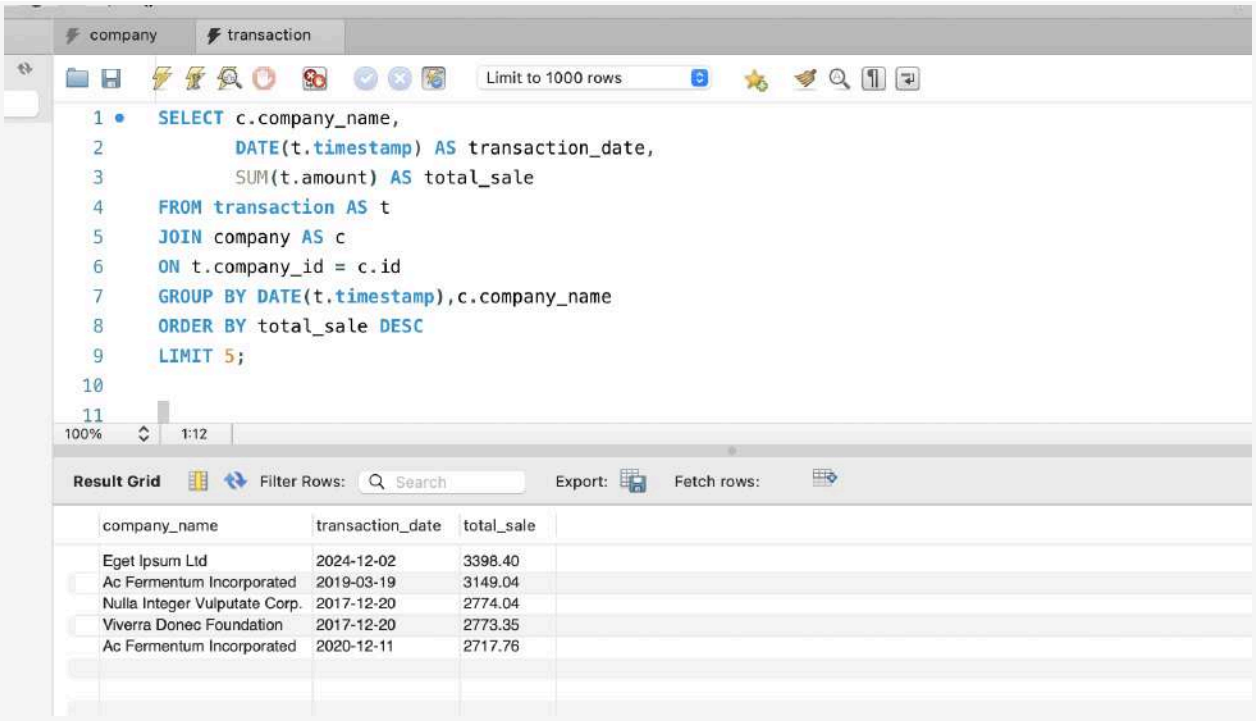

-They will remove from the system the companies that do not have registered transactions, deliver the list of these companies.



# Level 2

## Exercise 1:

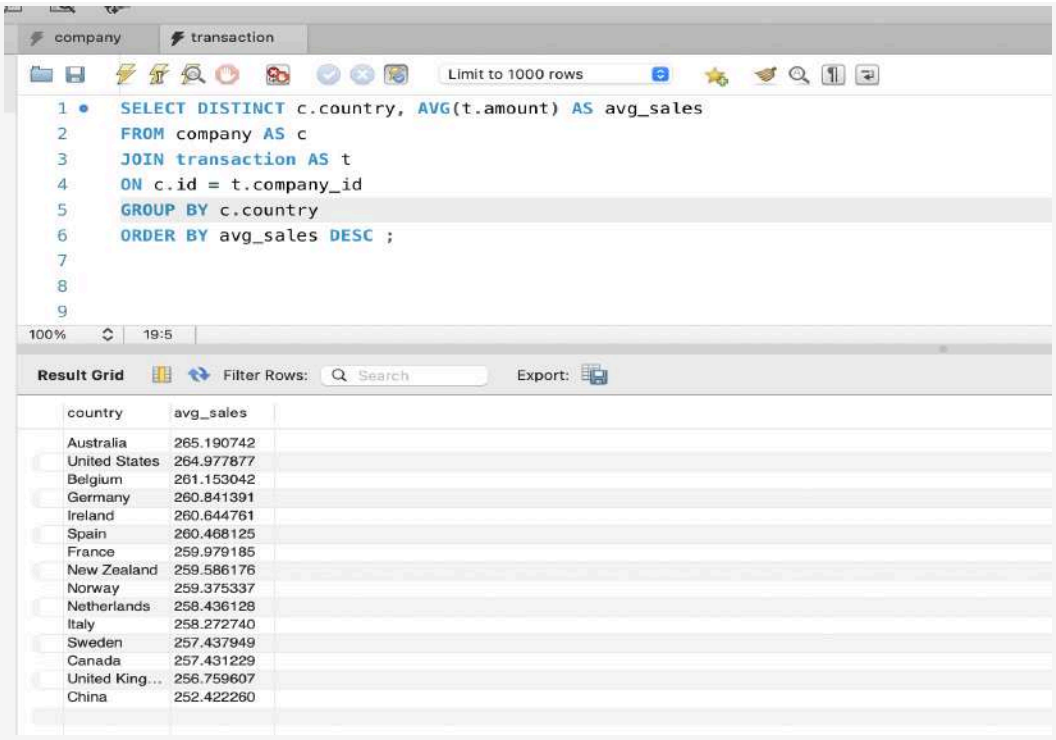
It identifies the five days that the largest amount of income was generated in the company by sales. Display the date of each transaction along with the total sales.



```
SELECT c.company_name,
       DATE(t.timestamp) AS transaction_date,
       SUM(t.amount) AS total_sale
FROM transaction AS t
JOIN company AS c
ON t.company_id = c.id
GROUP BY DATE(t.timestamp),c.company_name
ORDER BY total_sale DESC
LIMIT 5;
```

| company_name | transaction_date | total_sale |
|---|---|---|
| Eget Ipsum Ltd | 2024-12-02 | 3398.40 |
| Ac Fermentum Incorporated | 2019-03-19 | 3149.04 |
| Nulla Integer Vulputate Corp. | 2017-12-20 | 2774.04 |
| Viverra Donec Foundation | 2017-12-20 | 2773.35 |
| Ac Fermentum Incorporated | 2020-12-11 | 2717.76 |

**Exercise 2:** What is the average sales per country? It presents the results ordered from highest to lowest average.



```
SELECT DISTINCT c.country, AVG(t.amount) AS avg_sales
FROM company AS c
JOIN transaction AS t
ON c.id = t.company_id
GROUP BY c.country
ORDER BY avg_sales DESC ;
```

| country | avg_sales |
|---|---|
| Australia | 265.190742 |
| United States | 264.977877 |
| Belgium | 261.153042 |
| Germany | 260.841391 |
| Ireland | 260.644761 |
| Spain | 260.468125 |
| France | 259.979185 |
| New Zealand | 259.586176 |
| Norway | 259.375337 |
| Netherlands | 258.436128 |
| Italy | 258.272740 |
| Sweden | 257.437949 |
| Canada | 257.431229 |
| United King... | 256.759607 |
| China | 252.422260 |

## Exercise 3:

In your company, a new project is proposed to launch some advertising campaigns to make competition to the company "Non Institute". To do this, they ask you for the list of all the transactions carried out by companies that are located in the same country as this company.
-Display the list by applying JOIN and subconsults.

company | transaction

Limit to 1000 rows

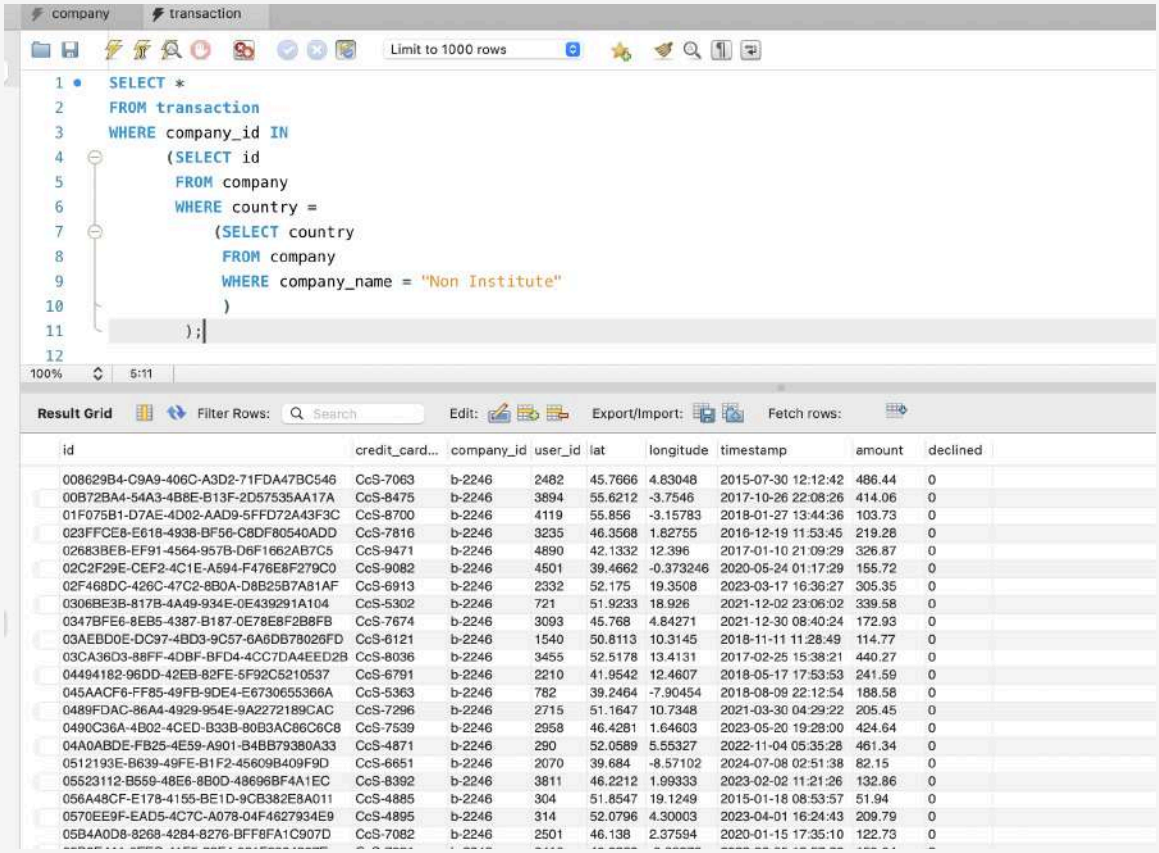
```sql
SELECT t.*
FROM transaction AS t
JOIN company AS c
ON t.company_id = c.id
WHERE c.country =(
    SELECT country
    FROM company
    WHERE company_name = "Non Institute"
    );
```

100% 23:4

Result Grid | Filter Rows: Search | Export: | Fetch rows:

| id | credit_card... | company_id | user_id | lat | longitude | timestamp | amount | declined |
|---|---|---|---|---|---|---|---|---|
| 008629B4-C9A9-406C-A3D2-71FDA47BC546 | CcS-7063 | b-2246 | 2482 | 45.7666 | 4.83048 | 2015-07-30 12:12:42 | 486.44 | 0 |
| 00B72BA4-54A3-4B8E-B13F-2D57535AA17A | CcS-8475 | b-2246 | 3894 | 55.6212 | -3.7546 | 2017-10-26 22:08:26 | 414.06 | 0 |
| 01F075B1-D7AE-4D02-AAD9-5FFD72A43F3C | CcS-8700 | b-2246 | 4119 | 55.856 | -3.15783 | 2018-01-27 13:44:36 | 103.73 | 0 |
| 023FFCE8-E618-4938-BF56-C8DF80540ADD | CcS-7816 | b-2246 | 3235 | 46.3568 | 1.82755 | 2016-12-19 11:53:45 | 219.28 | 0 |
| 02683BEB-EF91-4564-957B-D6F1662AB7C5 | CcS-9471 | b-2246 | 4890 | 42.1332 | 12.396 | 2017-01-10 21:09:29 | 326.87 | 0 |
| 02C2F29E-CEF2-4C1E-A594-F476E8F279C0 | CcS-9082 | b-2246 | 4501 | 39.4662 | -0.373246 | 2020-05-24 01:17:29 | 155.72 | 0 |
| 02F468DC-426C-47C2-8B0A-D8B25B7A81AF | CcS-6913 | b-2246 | 2332 | 52.175 | 19.3508 | 2023-03-17 16:36:27 | 305.35 | 0 |
| 0306BE3B-817B-4A49-934E-0E439291A104 | CcS-5302 | b-2246 | 721 | 51.9233 | 18.926 | 2021-12-02 23:06:02 | 339.58 | 0 |
| 0347BFE6-8EB5-4387-B187-0E78E8F2B8FB | CcS-7674 | b-2246 | 3093 | 45.768 | 4.84271 | 2021-12-30 08:40:24 | 172.93 | 0 |
| 03AEBD0E-DC97-4BD3-9C57-6A6DB78026FD | CcS-6121 | b-2246 | 1540 | 50.8113 | 10.3145 | 2018-11-11 11:28:49 | 114.77 | 0 |
| 03CA36D3-88FF-4DBF-BFD4-4CC7DA4EED2B | CcS-8036 | b-2246 | 3455 | 52.5178 | 13.4131 | 2017-02-25 15:38:21 | 440.27 | 0 |
| 04494182-96DD-42EB-82FE-5F92C5210537 | CcS-6791 | b-2246 | 2210 | 41.9542 | 12.4607 | 2018-05-17 17:53:53 | 241.59 | 0 |
| 045AACF6-FF85-49FB-9DE4-E6730655366A | CcS-5363 | b-2246 | 782 | 39.2464 | -7.90454 | 2018-08-09 22:12:54 | 188.58 | 0 |
| 0489FDAC-86A4-4929-954E-9A2272189CAC | CcS-7296 | b-2246 | 2715 | 51.1647 | 10.7348 | 2021-03-30 04:29:22 | 205.45 | 0 |
| 0490C36A-4B02-4CED-B33B-80B3AC86C6C8 | CcS-7539 | b-2246 | 2958 | 46.4281 | 1.64603 | 2023-05-20 19:28:00 | 424.64 | 0 |
| 04A0ABDE-FB25-4E59-A901-B4BB79380A33 | CcS-4871 | b-2246 | 290 | 52.0589 | 5.55327 | 2022-11-04 05:35:28 | 461.34 | 0 |
| 0512193E-B639-49FE-B1F2-45609B409F9D | CcS-6651 | b-2246 | 2070 | 39.684 | -8.57102 | 2024-07-08 02:51:38 | 82.15 | 0 |
| 05523112-B559-48E6-8B0D-48696BF4A1EC | CcS-8392 | b-2246 | 3811 | 46.2212 | 1.99333 | 2023-02-02 11:21:26 | 132.86 | 0 |
| 056A48CF-E178-4155-BE1D-9CB382E8A011 | CcS-4885 | b-2246 | 304 | 51.8547 | 19.1249 | 2015-01-18 08:53:57 | 51.94 | 0 |
| 0570EE9F-EAD5-4C7C-A078-04F4627934E9 | CcS-4895 | b-2246 | 314 | 52.0796 | 4.30003 | 2023-04-01 16:24:43 | 209.79 | 0 |
| 05B4A0D8-8268-4284-8276-BFF8FA1C907D | CcS-7082 | b-2246 | 2501 | 46.138 | 2.37594 | 2020-01-15 17:35:10 | 122.73 | 0 |
| 05B8E441-6FEC-41F5-86F4-061F0034367E | CcS-7991 | b-2246 | 3410 | 40.3368 | -3.26072 | 2023-08-05 18:57:23 | 159.04 | 0 |
| 06002FEA-C7B0-4B7D-97FE-A93B1AD99153 | CcS-6071 | b-2246 | 1490 | 52.3959 | 19.5064 | 2020-12-03 20:04:59 | 114.09 | 0 |
| 06249924-FD42-49AF-9EF5-6AED20BE725B | CcS-6676 | b-2246 | 2095 | 55.0364 | -3.92437 | 2015-03-17 23:10:56 | 535.77 | 0 |

-Display the list by applying only subconsults

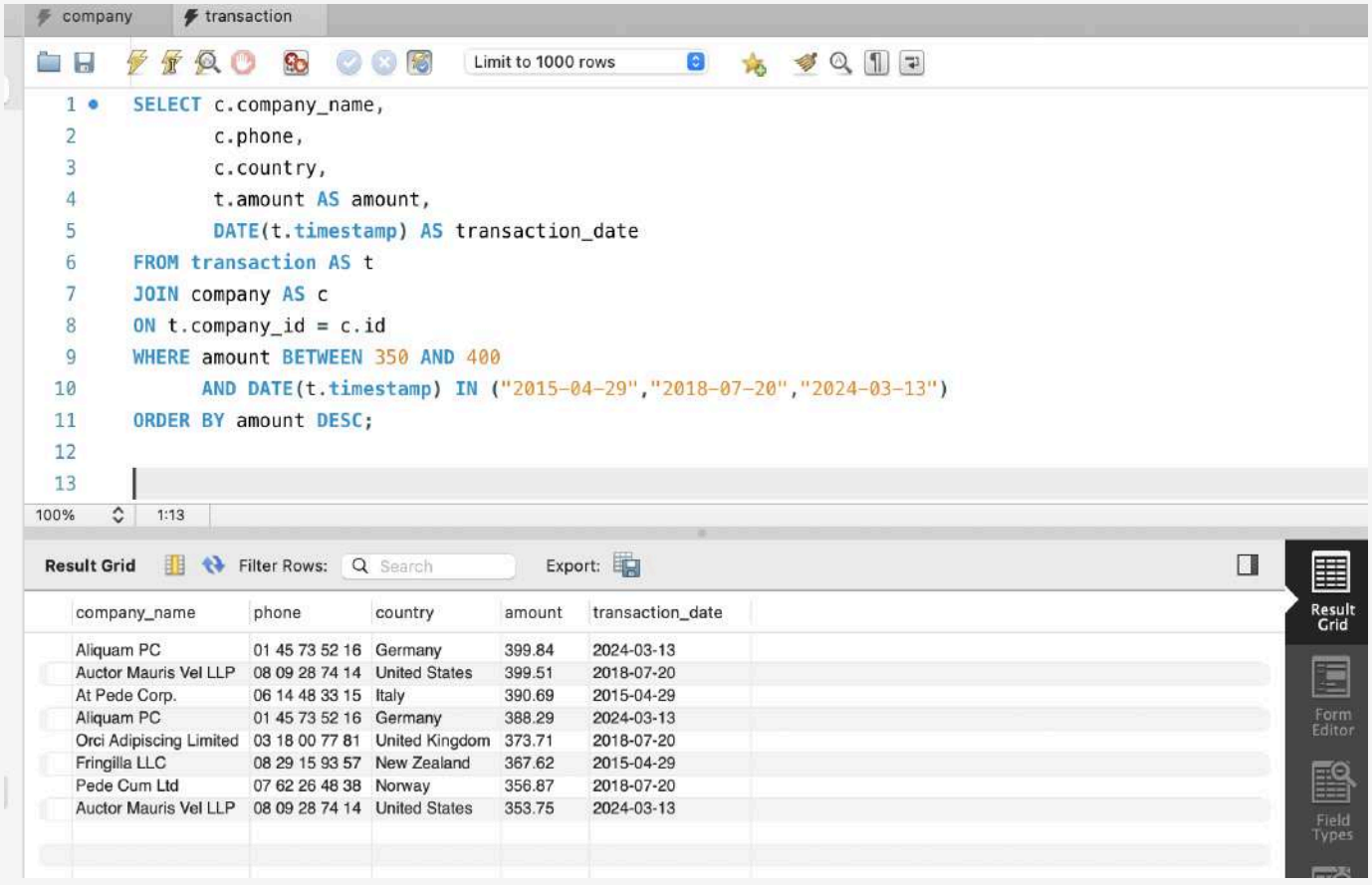



| id | credit_card... | company_id | user_id | lat | longitude | timestamp | amount | declined |
|---|---|---|---|---|---|---|---|---|
| 008629B4-C9A9-406C-A3D2-71FDA47BC546 | CcS-7063 | b-2246 | 2482 | 45.7666 | 4.83048 | 2015-07-30 12:12:42 | 486.44 | 0 |
| 00B72BA4-54A3-4B8E-B13F-2D57535AA17A | CcS-8475 | b-2246 | 3894 | 55.6212 | -3.7546 | 2017-10-26 22:08:26 | 414.06 | 0 |
| 01F075B1-D7AE-4D02-AAD9-5FFD72A43F3C | CcS-8700 | b-2246 | 4119 | 55.856 | -3.15783 | 2018-01-27 13:44:36 | 103.73 | 0 |
| 023FFCE8-E618-4938-BF56-C8DF80540ADD | CcS-7816 | b-2246 | 3235 | 46.3568 | 1.82755 | 2016-12-19 11:53:45 | 219.26 | 0 |
| 02683BEB-EF91-4564-957B-D6F1662AB7C5 | CcS-9471 | b-2246 | 4890 | 42.1332 | 12.396 | 2017-01-10 21:09:29 | 326.87 | 0 |
| 02C2F29E-CEF2-4C1E-A594-F476E8F279C0 | CcS-9082 | b-2246 | 4501 | 39.4662 | -0.373246 | 2020-05-24 01:17:29 | 155.72 | 0 |
| 02F468DC-426C-47C2-8B0A-D8B25B7A81AF | CcS-6913 | b-2246 | 2332 | 52.175 | 19.3508 | 2023-03-17 16:36:27 | 305.35 | 0 |
| 0306BE3B-817B-4A49-934E-0E439291A104 | CcS-5302 | b-2246 | 721 | 51.9233 | 18.926 | 2021-12-02 23:06:02 | 339.58 | 0 |
| 0347BFE6-8EB5-4387-B187-0E78E8F2B8FB | CcS-7674 | b-2246 | 3093 | 45.768 | 4.84271 | 2021-12-30 08:40:24 | 172.93 | 0 |
| 03AEBD0E-DC97-4BD3-9C57-6A6DB78026FD | CcS-6121 | b-2246 | 1540 | 50.8113 | 10.3145 | 2018-11-11 11:28:49 | 114.77 | 0 |
| 03CA36D3-88FF-4DBF-BFD4-4CC7DA4EED2B | CcS-8036 | b-2246 | 3455 | 52.5178 | 13.4131 | 2017-02-25 15:38:21 | 440.27 | 0 |
| 04494182-96DD-42EB-82FE-5F92C5210537 | CcS-6791 | b-2246 | 2210 | 41.9542 | 12.4607 | 2018-05-17 17:53:53 | 241.59 | 0 |
| 045AACF6-FF85-49FB-9DE4-E6730655366A | CcS-5363 | b-2246 | 782 | 39.2464 | -7.90454 | 2018-08-09 22:12:54 | 188.58 | 0 |
| 0489FDAC-86A4-4929-954E-9A2272189CAC | CcS-7296 | b-2246 | 2715 | 51.1647 | 10.7348 | 2021-03-30 04:29:22 | 205.45 | 0 |
| 0490C36A-4B02-4CED-B33B-80B3AC86C6C8 | CcS-7539 | b-2246 | 2958 | 46.4281 | 1.64603 | 2023-05-20 19:28:00 | 424.64 | 0 |
| 04A0ABDE-FB25-4E59-A901-B4BB79380A33 | CcS-4871 | b-2246 | 290 | 52.0589 | 5.55327 | 2022-11-04 05:35:28 | 461.34 | 0 |
| 0512193E-B639-49FE-B1F2-45609B409F9D | CcS-6651 | b-2246 | 2070 | 39.684 | -8.57102 | 2024-07-08 02:51:38 | 82.15 | 0 |
| 05523112-B559-48E6-8B0D-48696BF4A1EC | CcS-8392 | b-2246 | 3811 | 46.2212 | 1.99333 | 2023-02-02 11:21:26 | 132.86 | 0 |
| 056A48CF-E178-4155-BE1D-9CB382E8A011 | CcS-4885 | b-2246 | 304 | 51.8547 | 19.1249 | 2015-01-18 08:53:57 | 51.94 | 0 |
| 0570EE9F-EAD5-4C7C-A078-04F4627934E9 | CcS-4895 | b-2246 | 314 | 52.0796 | 4.30003 | 2023-04-01 16:24:43 | 209.79 | 0 |
| 05B4A0D8-8268-4284-8276-BFF8FA1C907D | CcS-7082 | b-2246 | 2501 | 46.138 | 2.37594 | 2020-01-15 17:35:10 | 122.73 | 0 |

# Level 3

## Exercise 1:

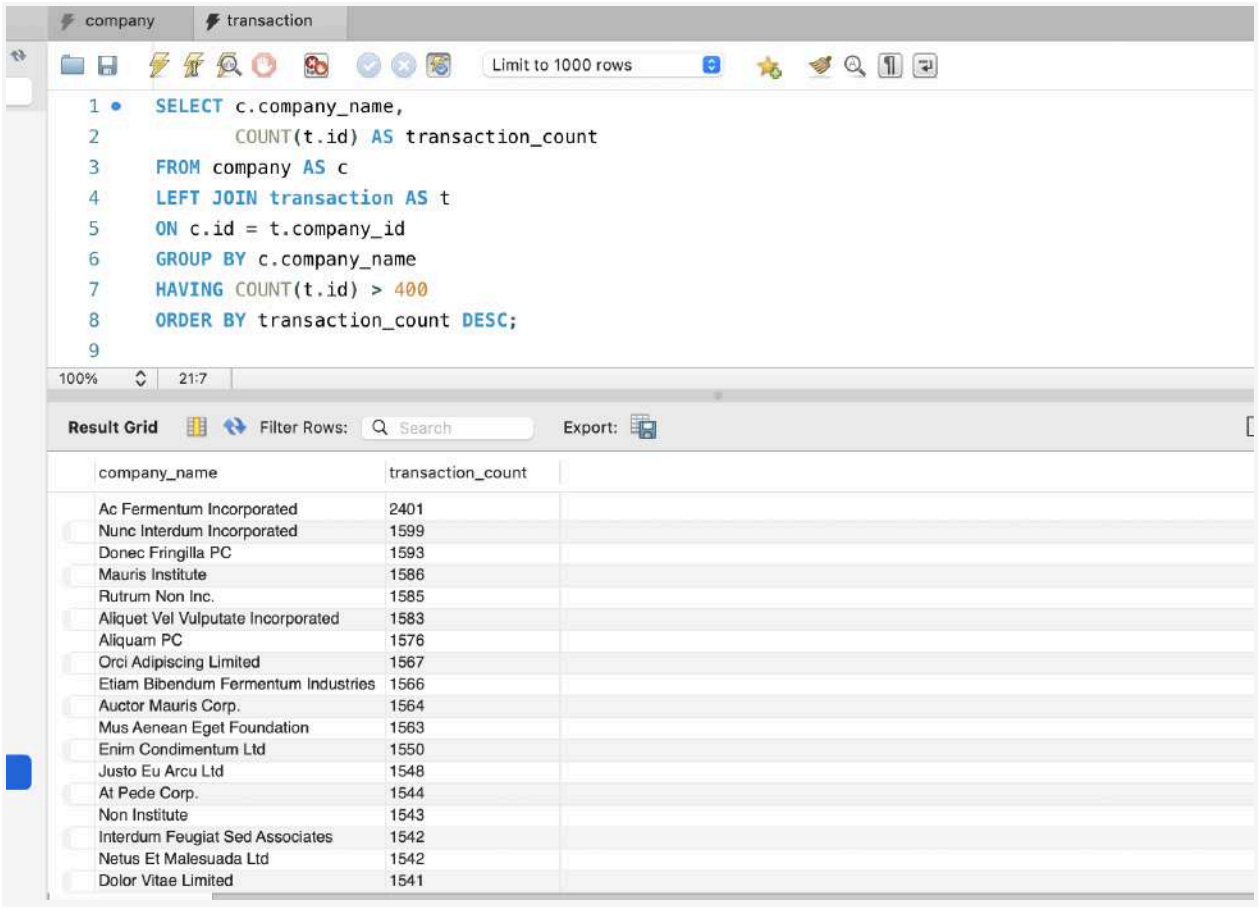
It presents the name, telephone, country, date and amount of those companies that made transactions with a value between 350 and 400 euros and on any of these dates: April 29, 2015, July 20, 2018 and March 13, 2024. Sort results from highest to lowest quantity.




## Exercise 2:

We need to optimize the allocation of resources and it will depend on the operational capacity that is required, so they ask you for information about the amount of transactions carried out by companies, but the human resources department is demanding and wants a list of companies where you specify if they have more than 400 transactions or less.

-List of companies that have more than 400 transactions




-List of companies that have less than 400 transactions