Nivell 1

Exercici 1

A partir dels documents adjunts (estructura_dades i dades_introduir), importa les dues taules. Mostra les característiques principals de l'esquema creat i explica les diferents taules i variables que existeixen. Assegura't d'incloure un diagrama que il·lustri la relació entre les diferents taules i variables.

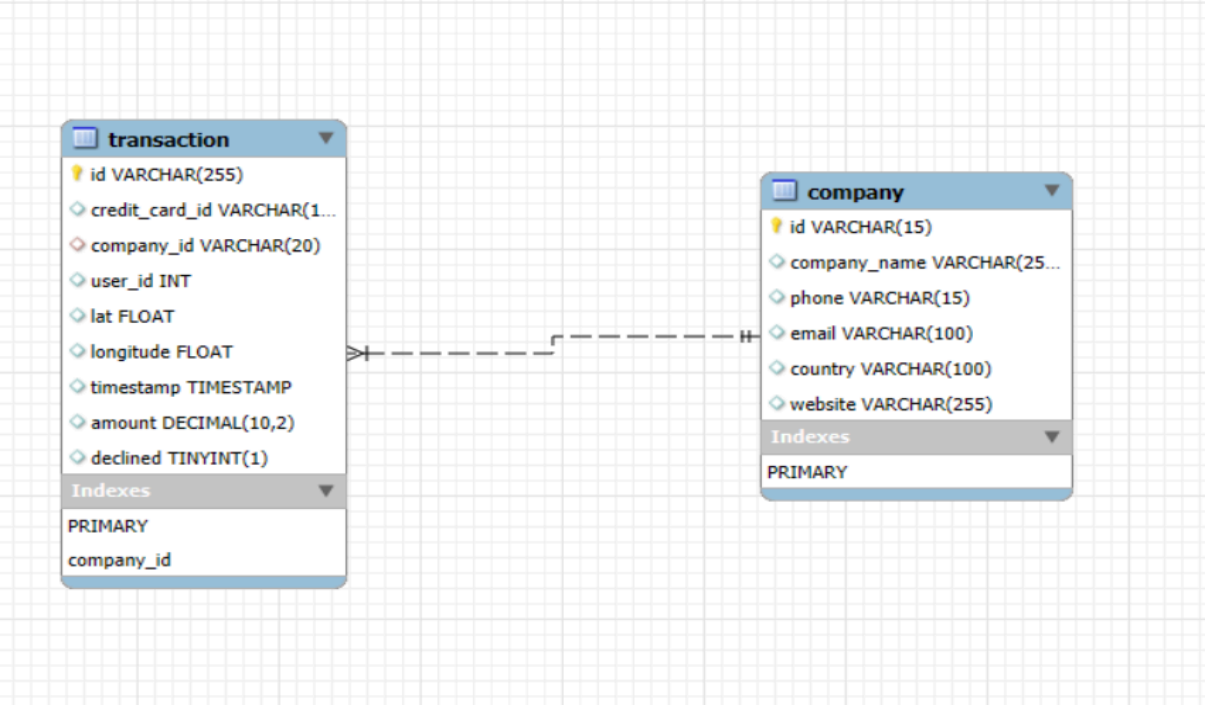
COMMENTARIO:

Tenemos una base de datos que describe transacciones económicas de diferentes empresas:

Tenemos 2 tablas que forman un modelo relacional.

La tabla Company (dimension) tiene la columna ID como Primary,
la tabla Transaction (hechos) tiene la columna ID como Primary
y la columna "company_id" como Foreign key

Las 2 tablas están conectada gracias a la relación 1 a m:
donde 1 es en Company(primary key "ID") y M es en Transaction(foreign key "company_id")



Columnas Tablas:

Company:

id varchar(15)
company_name varchar(255)
phone varchar(15)
email varchar(100)
country varchar(100)
website varchar(255)

Transaction:

id varchar(255)
credit_card_id varchar(15)
company_name varchar(20)
user_id int
lat float
longitude float
timestamp timestamp
amount decimal(10,2)
declined tinytint(1)

COMMENTARIO:

Un detalle importante que quiero comentar es la presencia de la columna DECLINED.
Esta columna especifica las transacciones declinadas, es importante a fin de no equivocar consultas.

Exercici 2

Utilitzant JOIN realitzaràs les següents consultes:

- **Llistat dels països que estan generant vendes.**

  COMMENTARIO:

  Selecciono los diferentes países gracias a un inner join, que me devuelve solo aquellos que están presentes en la tabla transacciones:

```
30    #01. Llistat dels països que estan generant vendes.
31
32 •  SELECT DISTINCT country
33    FROM company AS c
34    JOIN transaction AS t
35    ON c.id = t.company_id;
36
37    #02. Des de quants països es generen les vendes.
38
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

country
Germany
Australia
United States
New Zealand
Norway
United Kingdom
Italy
Belgium
Sweden
Ireland
China
Canada

Result 1

Output

Action Output

#	Time	Action	Message
1	10:05:26	SELECT DATE(timestamp) AS date,SUM(amount) AS tot_daily_sales FROM transaction ...	3653 row(s) returned
2	10:05:39	SELECT MIN(tab.tot_daily_sales) FROM(SELECT DATE(timestamp) AS date,SUM(amount) A...	1 row(s) returned
3	10:06:12	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	99763 row(s) returned
4	10:07:16	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	219 row(s) returned
5	10:21:43	SELECT DISTINCT country FROM company AS c JOIN transaction AS t ON c.id = t.company_id	15 row(s) returned

- **Des de quants països es generen les vendes.**

COMMENTARIO:

Hago lo mismo del primero ejercicio y pongo count para devolver el número de países

```
37  #02. Des de quants països es generen les vendes.
38
39  SELECT COUNT(DISTINCT country) AS count_countries
40  FROM company AS c
41  JOIN transaction AS t
42  ON c.id = t.company_id;
43
44
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

count_countries
15

Result 2

Output

Action Output

#	Time	Action	Message
1	10:05:26	SELECT DATE(timestamp) AS date,SUM(amount) AS tot_daily_sales FROM transaction ...	3653 row(s) returned
2	10:05:39	SELECT MIN(tab.tot_daily_sales) FROM(SELECT DATE(timestamp) AS date,SUM(amount) A...	1 row(s) returned
3	10:06:12	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	99763 row(s) returned
4	10:07:16	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	219 row(s) returned
5	10:21:43	SELECT DISTINCT country FROM company AS c JOIN transaction AS t ON c.id = t.company_id	15 row(s) returned
6	10:22:18	SELECT COUNT(DISTINCT country) AS count_countries FROM company AS c JOIN transaction AS t ON c.id = t...	1 row(s) returned

- **Identifica la companyia amb la mitjana més gran de vendes.**

COMMENTARIO:

Aquí uso 2 subconsultas, Having y From, para encontrar posibles coincidencias de resultado, calculo el valor mayor en el from y lo pongo en el having para que en la consulta externa me devuelva todo los valores que coincidan.

```
45    #03. Identifica la companyia amb la mitjana més gran de vendes.
46
47    SELECT c.id,c.company_name,ROUND(AVG(t.amount),2) AS avg_sales
48    FROM company AS c
49    JOIN transaction AS t
50    ON c.id = t.company_id
51    GROUP BY c.id,c.company_name
52    HAVING ROUND(AVG(t.amount),2) = (SELECT ROUND(tab.avg_sales,2)
53                                     FROM (
54                                           SELECT company_id,AVG(amount) AS avg_sales
55                                           FROM transaction
56                                           GROUP BY company_id
57                                           ORDER BY avg_sales DESC
58                                           LIMIT 1) AS tab);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	company_name	avg_sales
b-2222	Ac Fermentum Incorporated	284.87

Result 3

Output

Action Output

#	Time	Action	Message
2	10:05:39	SELECT MIN(tab.tot_daily_sales) FROM(SELECT DATE(timestamp) AS date,SUM(amount) ...	1 row(s) returned
3	10:06:12	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	99763 row(s) returned
4	10:07:16	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	219 row(s) returned
5	10:21:43	SELECT DISTINCT country FROM company AS c JOIN transaction AS t ON c.id = t.company_id	15 row(s) returned
6	10:22:18	SELECT COUNT(DISTINCT country) AS count_countries FROM company AS c JOIN transaction AS t ON c.id ...	1 row(s) returned
7	10:23:05	SELECT c.id,c.company_name,ROUND(AVG(t.amount),2) AS avg_sales FROM company AS c JOIN transactio...	1 row(s) returned

Exercici 3

Utilitzant només subconsultes (sense utilitzar JOIN):

- **Mostra totes les transaccions realitzades per empreses d'Alemanya.**

COMMENTARIO:

- **Uso una subconsulta en el where para que me devuelva solo las empresas de Alemania**

```
60    -- Exercici 3
61    -- Utilitzant només subconsultes (sense utilitzar JOIN):
62
63    #01. Mostra totes les transaccions realitzades per empreses d'Alemanya.
64
65    SELECT *
66    FROM transaction
67    WHERE company_id IN (SELECT id
68                         FROM company
69                         WHERE country = "Germany");
70
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Fetch rows:

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
0074F4DD-32F1-4827-8758-55896314623A	CcS-8081	b-2222	3500	39.7016	-8.50325	2016-12-26 23:06:57	491.90	0
00AAB9CD-39D6-4DCB-8A1D-13BE73DC90A9	CcS-6797	b-2222	2216	55.7652	-3.76245	2021-04-25 03:06:59	167.15	0
00BE09D4-6920-47D8-ABE8-325E2269829D	CcS-4983	b-2222	402	38.708	-9.12993	2019-02-27 15:25:16	141.66	0
00DA0383-E048-4577-8ED1-3C56C258FF2F	CcS-9223	b-2222	4642	51.1742	10.2027	2019-03-21 11:47:34	325.62	0
00DD11DE-ED01-4BBD-93A0-174D183A59DF	CcS-7681	b-2222	3100	45.7565	4.83109	2024-01-28 18:20:49	242.53	0
01449CE0-98E9-4DE5-9810-728C6BA00E6F	CcS-5424	b-2222	843	47.0163	2.26064	2024-02-17 19:37:14	451.71	0
0175E8C7-241E-42DA-A8B9-9F246DBF4D2F	CcS-7510	b-2222	2929	52.0619	4.29464	2021-08-28 16:29:38	9.46	0
01ABDAB8-06E2-4CA0-A131-AEE6FF11B749	CcS-5053	b-2222	472	51.7738	5.17479	2020-01-28 01:15:07	368.41	0
01F1C7ED-0823-442D-AE0E-3134D5004866	CcS-6776	b-2222	2195	59.6697	18.6697	2022-12-17 09:40:14	168.79	0
01FABC61-18C8-441B-987C-459AA3F06097	CcS-5531	b-2222	950	55.3405	-3.3863	2020-04-30 08:57:27	333.45	0

transaction 4

Output

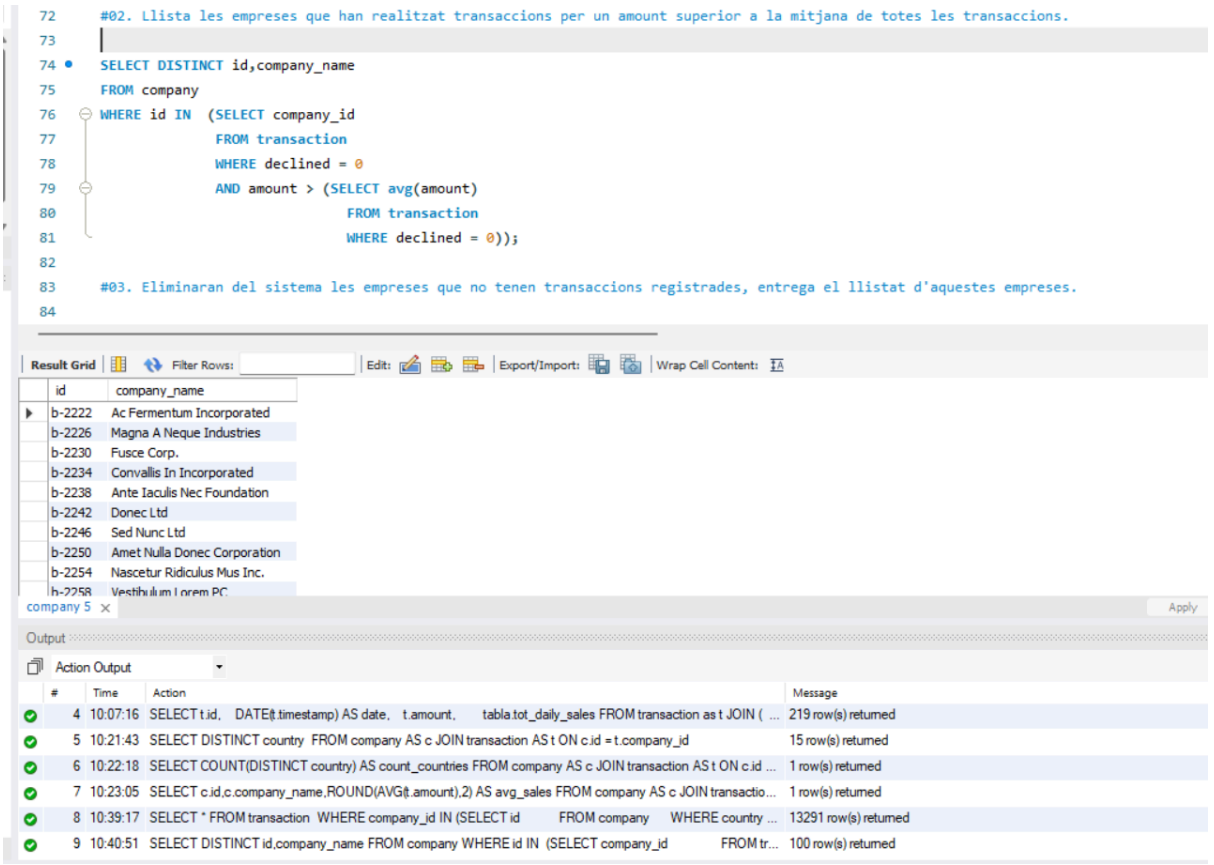
Action Output

#	Time	Action	Message
3	10:06:12	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	99763 row(s) returned
4	10:07:16	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	219 row(s) returned
5	10:21:43	SELECT DISTINCT country FROM company AS c JOIN transaction AS t ON c.id = t.company_id	15 row(s) returned
6	10:22:18	SELECT COUNT(DISTINCT country) AS count_countries FROM company AS c JOIN transaction AS t ON c.id ...	1 row(s) returned
7	10:23:05	SELECT c.id,c.company_name,ROUND(AVG(t.amount),2) AS avg_sales FROM company AS c JOIN transactio...	1 row(s) returned
8	10:39:17	SELECT * FROM transaction WHERE company_id IN (SELECT id FROM company WHERE country ...	13291 row(s) returned

- **Llista les empreses que han realitzat transaccions per un amount superior a la mitjana de totes les transaccions.**

COMMENTARIO:

Aquí utilizo 2 subconsultas, para primero encontrar las empresas que tienen transacciones mayor a la media,después encuentro los id que coincidan para que la consulta externa me devuelva solo las empresa con estas características.

- 

- **Eliminaran del sistema les empreses que no tenen transaccions registrades, entrega el llistat d'aquestes empreses.**

COMMENTARIO:

Aquí uso una subconsulta en el where con el not in, para encontrar las empresas que no están en la tabla de transaction.

```
83  #03. Eliminaran del sistema les empreses que no tenen transaccions registrades, entrega el llistat d'aquestes empreses.
84
85  SELECT id,company_name
86  FROM company
87  WHERE id NOT IN (SELECT company_id
88                   FROM transaction
89                   WHERE declined = 0)
90
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

id	company_name
NULL	NULL

company 6

Output

Action Output

#	Time	Action	Message
8	10:39:17	SELECT * FROM transaction WHERE company_id IN (SELECT id FROM company WHERE country ...	13291 row(s) returned
9	10:40:51	SELECT DISTINCT id,company_name FROM company WHERE id IN (SELECT company_id FROM tr...	100 row(s) returned
10	10:42:03	SELECT id,company_name FROM company WHERE id NOT IN (SELECT company_id FROM transaction ...	0 row(s) returned

Nivell 2

Exercici 1

Identifica els cinc dies que es va generar la quantitat més gran d'ingressos a l'empresa per vendes. Mostra la data de cada transacció juntament amb el total de les vendes.

COMMENTARIO:

Aquí utilizo una subconsulta en join para buscar los 5 días con los mayores ingresos.
Para hacer una consulta dinámica y buscar coincidencias de ingresos iguales tengo que hacer otras 2 subconsultas internas a la del join.
La más interna es con el from para encontrar los 5 días con más ingresos, después en la subconsulta Having encuentro el mínimo ingreso de los 5 días para que la consulta Externa me devuelva todos los días con mínimo ingreso igual o superior a este ingreso.

```sql
-- Exercici 1
#01. Identifica els cinc dies que es va generar la quantitat més gran d'ingressos a l'empresa per vendes. Mostra la data de cada transacció juntament amb el total de les vendes.

SELECT t.id,
       DATE(t.timestamp) AS date,
       t.amount,
       tabla.tot_daily_sales
FROM transaction as t
JOIN (
      SELECT DATE(timestamp) AS date,SUM(amount) AS tot_daily_sales
      FROM transaction
      WHERE declined = 0
      GROUP BY DATE(timestamp)
      HAVING SUM(amount) >= ( SELECT MIN(tab.tot_daily_sales)
                              FROM( SELECT DATE(timestamp) AS date,SUM(amount) AS tot_daily_sales
                                    FROM transaction
                                    WHERE declined = 0
                                    GROUP BY DATE(timestamp)
                                    ORDER BY tot_daily_sales DESC
                                    LIMIT 5
                                   ) AS tab
                            )
      ) as tabla
ON DATE(t.timestamp) = tabla.date
WHERE t.declined = 0
ORDER BY DATE(timestamp) ASC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	date	amount	tot_daily_sales
5E22B941-E460-4CFF-8793-E556E85DA6A0	2017-12-20	638.37	13318.43
5FD3AA92-836C-41B3-B66F-B4DD3722742C	2017-12-20	638.37	13318.43
4F2D6B6A-2949-4CE6-AFDF-12CEDB1650BE	2017-12-20	26.51	13318.43
7A15A541-E0A8-4F2D-B3E7-6CF17C377B2C	2017-12-20	132.31	13318.43
524254E1-2DF8-4007-80B9-79DC4EB5118A	2017-12-20	92.65	13318.43

Result 1

Output

Action Output

#	Time	Action	Message
10	10:42:03	SELECT id,company_name FROM company WHERE id NOT IN (SELECT company_id FROM transaction ...	0 row(s) returned
11	10:43:40	SELECT * FROM transaction WHERE company_id IN (SELECT id FROM company WHERE country ...	13291 row(s) returned
12	10:52:34	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	219 row(s) returned

Exercici 2

Quina és la mitjana de vendes per país? Presenta els resultats ordenats de major a menor mitjà.

COMMENTARIO:

Aquí utilizo el join sencillamente para encontrar los ingresos en la tabla transaction.

```
36    -- Exercici 2
37    #02. Quina és la mitjana de vendes per país? Presenta els resultats ordenats de major a menor mitjà.
38
39 •  SELECT c.country,ROUND(AVG(t.amount),2) as tot_sales
40    FROM company AS c
41    JOIN transaction AS t
42    ON c.id = t.company_id
43    WHERE declined = 0
44    GROUP BY c.country
45    ORDER BY tot_sales DESC;
46
47
48    -- Exercici 3
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

country	tot_sales
Australia	265.54
United States	264.42
Belgium	260.97
Germany	260.83
Ireland	260.39

Result 2

Output

Action Output

#	Time	Action	Message
12	10:52:34	SELECT t.id, DATE(t.timestamp) AS date, t.amount, tabla.tot_daily_sales FROM transaction as t JOIN (...	219 row(s) returned
13	10:54:50	SELECT c.country,ROUND(AVG(t.amount),2) as tot_sales FROM company AS c JOIN transaction AS t ON c.id ...	15 row(s) returned

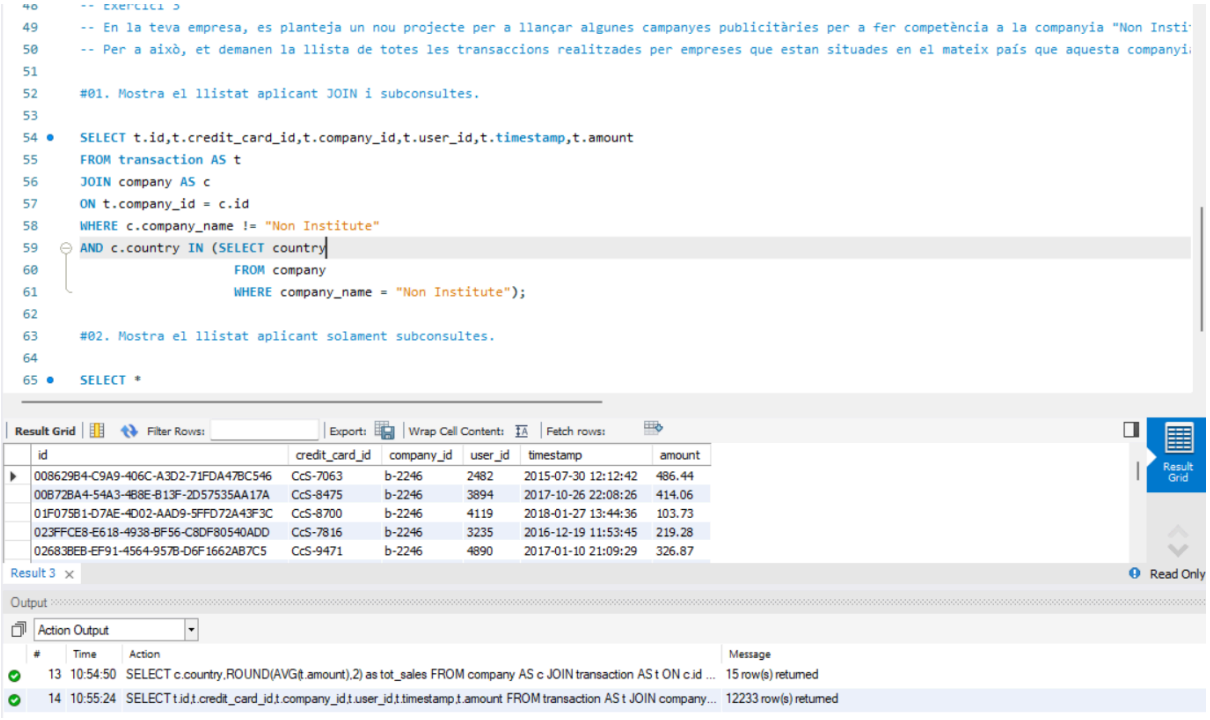
Exercici 3

En la teva empresa, es planteja un nou projecte per a llançar algunes campanyes publicitàries per a fer competència a la companyia "Non Institute". Per a això, et demanen la llista de totes les transaccions realitzades per empreses que estan situades en el mateix país que aquesta companyia.

- **Mostra el llistat aplicant JOIN i subconsultes.**

COMMENTARIO:

En el primer ejercicio utilizo el join y una subconsulta en el and para encontrar las empresas que tienen mismo país que la empresa "Non Institute"



```
-- Exercici 3
-- En la teva empresa, es planteja un nou projecte per a llançar algunes campanyes publicitàries per a fer competència a la companyia "Non Insti
-- Per a això, et demanen la llista de totes les transaccions realitzades per empreses que estan situades en el mateix país que aquesta companyi

#01. Mostra el llistat aplicant JOIN i subconsultes.

SELECT t.id,t.credit_card_id,t.company_id,t.user_id,t.timestamp,t.amount
FROM transaction AS t
JOIN company AS c
ON t.company_id = c.id
WHERE c.company_name != "Non Institute"
AND c.country IN (SELECT country
                  FROM company
                  WHERE company_name = "Non Institute");

#02. Mostra el llistat aplicant solament subconsultes.

SELECT *
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

id	credit_card_id	company_id	user_id	timestamp	amount
008629B4-C9A9-406C-A3D2-71FDA47BC546	CcS-7063	b-2246	2482	2015-07-30 12:12:42	486.44
00B72BA4-54A3-4B8E-B13F-2D57535AA17A	CcS-8475	b-2246	3894	2017-10-26 22:08:26	414.06
01F075B1-D7AE-4D02-AAD9-5FFD72A43F3C	CcS-8700	b-2246	4119	2018-01-27 13:44:36	103.73
023FFCE8-E618-4938-BF56-C8DF80540ADD	CcS-7816	b-2246	3235	2016-12-19 11:53:45	219.28
02683BEB-EF91-4564-957B-D6F1662AB7C5	CcS-9471	b-2246	4890	2017-01-10 21:09:29	326.87

Result 3 | Read Only

Output

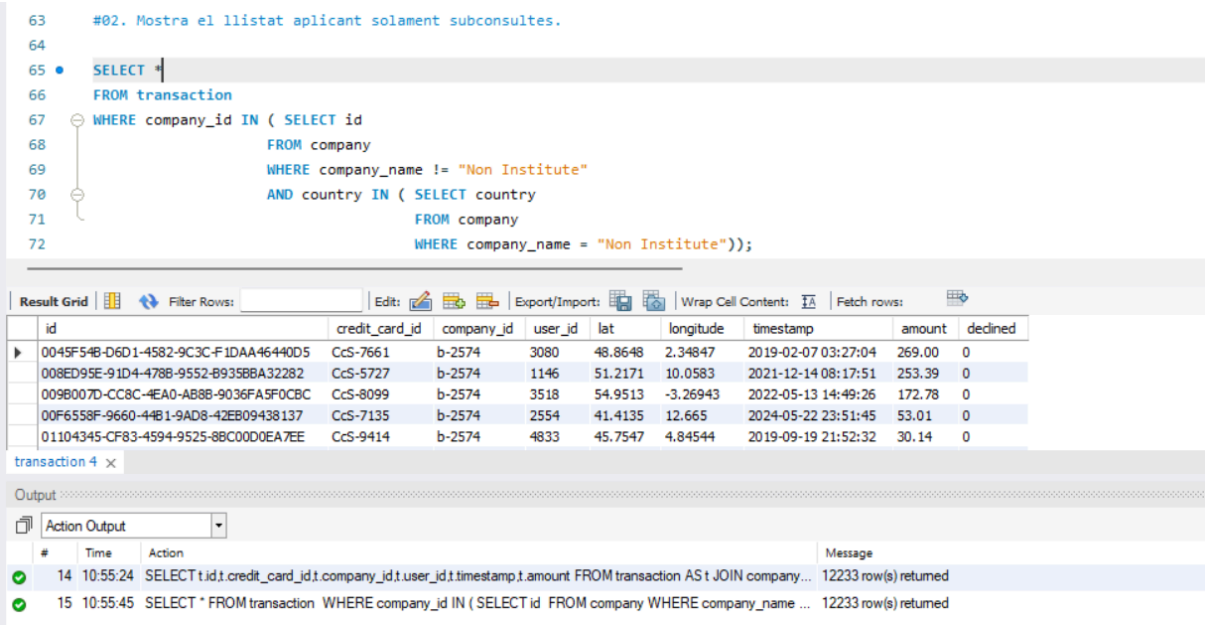
Action Output

#	Time	Action	Message
13	10:54:50	SELECT c.country,ROUND(AVG(t.amount),2) as tot_sales FROM company AS c JOIN transaction AS t ON c.id ...	15 row(s) returned
14	10:55:24	SELECT t.id,t.credit_card_id,t.company_id,t.user_id,t.timestamp,t.amount FROM transaction AS t JOIN company...	12233 row(s) returned

- **Mostra el llistat aplicant solament subconsultes.**

COMMENTARIO:

Aquí utilizo (como pide el enunciado) solo subconsultas para encontrar las empresas que sean del mismo país de "Non Institute", uso dos subconsulta con where mas in.



```
63    #02. Mostra el llistat aplicant solament subconsultes.
64
65    SELECT *
66    FROM transaction
67    WHERE company_id IN ( SELECT id
68                          FROM company
69                          WHERE company_name != "Non Institute"
70                          AND country IN ( SELECT country
71                                           FROM company
72                                           WHERE company_name = "Non Institute"));
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Fetch rows:

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
0045F54B-D6D1-4582-9C3C-F1DAA46440D5	CcS-7661	b-2574	3080	48.8648	2.34847	2019-02-07 03:27:04	269.00	0
008ED95E-91D4-478B-9552-B935BBA32282	CcS-5727	b-2574	1146	51.2171	10.0583	2021-12-14 08:17:51	253.39	0
009B007D-CC8C-4EA0-AB8B-9036FA5F0CBC	CcS-8099	b-2574	3518	54.9513	-3.26943	2022-05-13 14:49:26	172.78	0
00F6558F-9660-44B1-9AD8-42EB09438137	CcS-7135	b-2574	2554	41.4135	12.665	2024-05-22 23:51:45	53.01	0
01104345-CF83-4594-9525-8BC00D0EA7EE	CcS-9414	b-2574	4833	45.7547	4.84544	2019-09-19 21:52:32	30.14	0

transaction 4

Output

Action Output

#	Time	Action	Message
14	10:55:24	SELECT t.id,t.credit_card_id,t.company_id,t.user_id,t.timestamp,t.amount FROM transaction AS t JOIN company...	12233 row(s) returned
15	10:55:45	SELECT * FROM transaction WHERE company_id IN (SELECT id FROM company WHERE company_name ...	12233 row(s) returned

Nivell 3

Exercici 1

Presenta el nom, telèfon, país, data i amount, d'aquelles empreses que van realitzar transaccions amb un valor comprès entre 350 i 400 euros i en alguna d'aquestes dates: 29 d'abril del 2015, 20 de juliol del 2018 i 13 de març del 2024. Ordena els resultats de major a menor quantitat.

COMMENTARIO:

En este ejercicio utilizo date para extraer solo la fecha sin la hora, para encontrar los días exactos para filtrar el resultado como pide la consulta, más Between para poner el rango de el "amount".

```sql
-- Exercici 1
# Presenta el nom, telèfon, país, data i amount, d'aquelles empreses que van realitzar transaccions
# amb un valor comprès entre 350 i 400 euros i en alguna d'aquestes dates: 29 d'abril del 2015,
# 20 de juliol del 2018 i 13 de març del 2024. Ordena els resultats de major a menor quantitat.

SELECT c.id,c.company_name,c.country,phone,DATE(t.timestamp) as date,t.amount
FROM company AS c
JOIN transaction AS t
ON c.id = t.company_id
WHERE t.amount BETWEEN 350 AND 400
AND t.declined = 0
AND DATE(t.timestamp) IN("2015-04-29","2018-07-20","2024-03-13")
ORDER BY t.amount DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	company_name	country	phone	date	amount
b-2566	Aliquam PC	Germany	01 45 73 52 16	2024-03-13	399.84
b-2294	Auctor Mauris Vel LLP	United States	08 09 28 74 14	2018-07-20	399.51
b-2402	At Pede Corp.	Italy	06 14 48 33 15	2015-04-29	390.69
b-2566	Aliquam PC	Germany	01 45 73 52 16	2024-03-13	388.29
b-2574	Orci Adipiscing Limited	United Kingdom	03 18 00 77 81	2018-07-20	373.71
b-2286	Fringilla LLC	New Zealand	08 29 15 93 57	2015-04-29	367.62

Result 1

Output

Action Output

#	Time	Action	Message
1	12:06:12	SELECT c.id,c.company_name,c.country,phone,DATE(t.timestamp) as date,t.amount FROM company AS c JOIN ...	8 row(s) returned

Exercici 2

Necessitem optimitzar l'assignació dels recursos i dependrà de la capacitat operativa que es requereixi, per la qual cosa et demanen la informació sobre la quantitat de transaccions que realitzen les empreses, però el departament de recursos humans és exigent i vol un llistat de les empreses on especifiquis si tenen més de 400 transaccions o menys.

COMMENTARIO:

En este ejercicio he tenido que utilizar IF en el select para poder devolver una columna donde específico si la empresa cumple o menos con el requisito de superar las 400 transacciones.

```sql
-- Exercici 2
# Necessitem optimitzar l'assignació dels recursos i dependrà de la capacitat operativa que es requereixi,
# per la qual cosa et demanen la informació sobre la quantitat de transaccions que realitzen les empreses,
# però el departament de recursos humans és exigent i vol un llistat de les empreses on especifiquis si tenen més de 400 transaccions o menys.

SELECT c.id,
       c.company_name,
       count(t.id) AS count_transactions,
       IF (count(t.id) > 400,"Qualified","NO") AS more_than_400_transactions
FROM company AS c
JOIN transaction AS t
ON c.id = t.company_id
WHERE declined = 0
GROUP BY c.id,c.company_name
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

id	company_name	count_transactions	more_than_400_transactions
b-2458	Eget Tincidunt Dui Institute	1522	Qualified
b-2370	Non Justo Corp.	1476	Qualified
b-2390	Neque Tellus Imperdiet Corp.	422	Qualified
b-2230	Fusce Corp.	445	Qualified
b-2266	Mus Aenean Eget Foundation	1563	Qualified
b-2598	Aliquam Iaculis Lacus Corp.	422	Qualified

Result 2

Output

Action Output

#	Time	Action	Message
1	12:06:12	SELECT c.id,c.company_name,c.country,phone,DATE(t.timestamp) as date,t.amount FROM company AS c JOIN ...	8 row(s) returned
2	12:06:44	SELECT c.id, c.company_name, count(t.id) AS count_transactions, IF (count(t.id) > 400,"Qualified","N...	100 row(s) returned