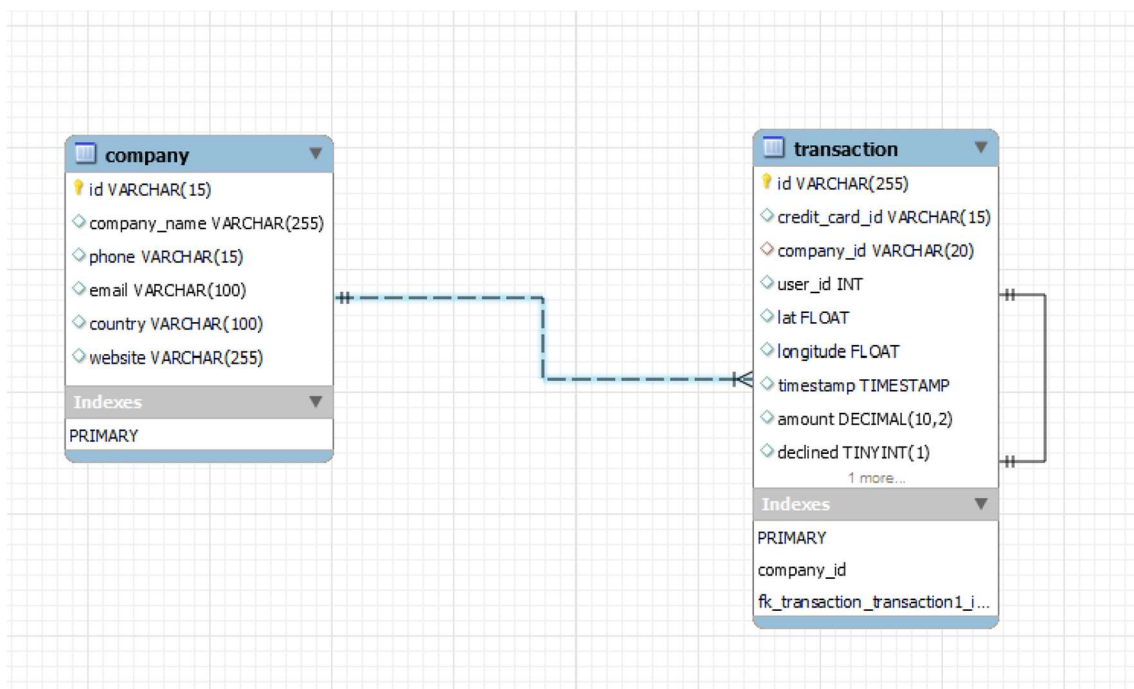


La base de dades Transactions té dues taules: Company i Transaction.

Podem considerar Transaction com la taula de fets on queden registrades les transaccions bancaries que fan els usuaris, on el camp Id és la PK (o registre únic que no admet camps nuls que identifica inequívocament a cada companyia). I per a relacionar-la amb la taula de fets, té una FK, que és la company\_id, que coincideix amb el camp Id de la taula Company, i serveix de connexió entre les dues taules.

La taula Company és la taula de dimensions amb les dades de les companyies a les que pertanyen o treballen els usuaris que fan les transaccions. La PK és el camp id, que sembla ser el registre específic per a cada transacció bancaria.

Esquema:

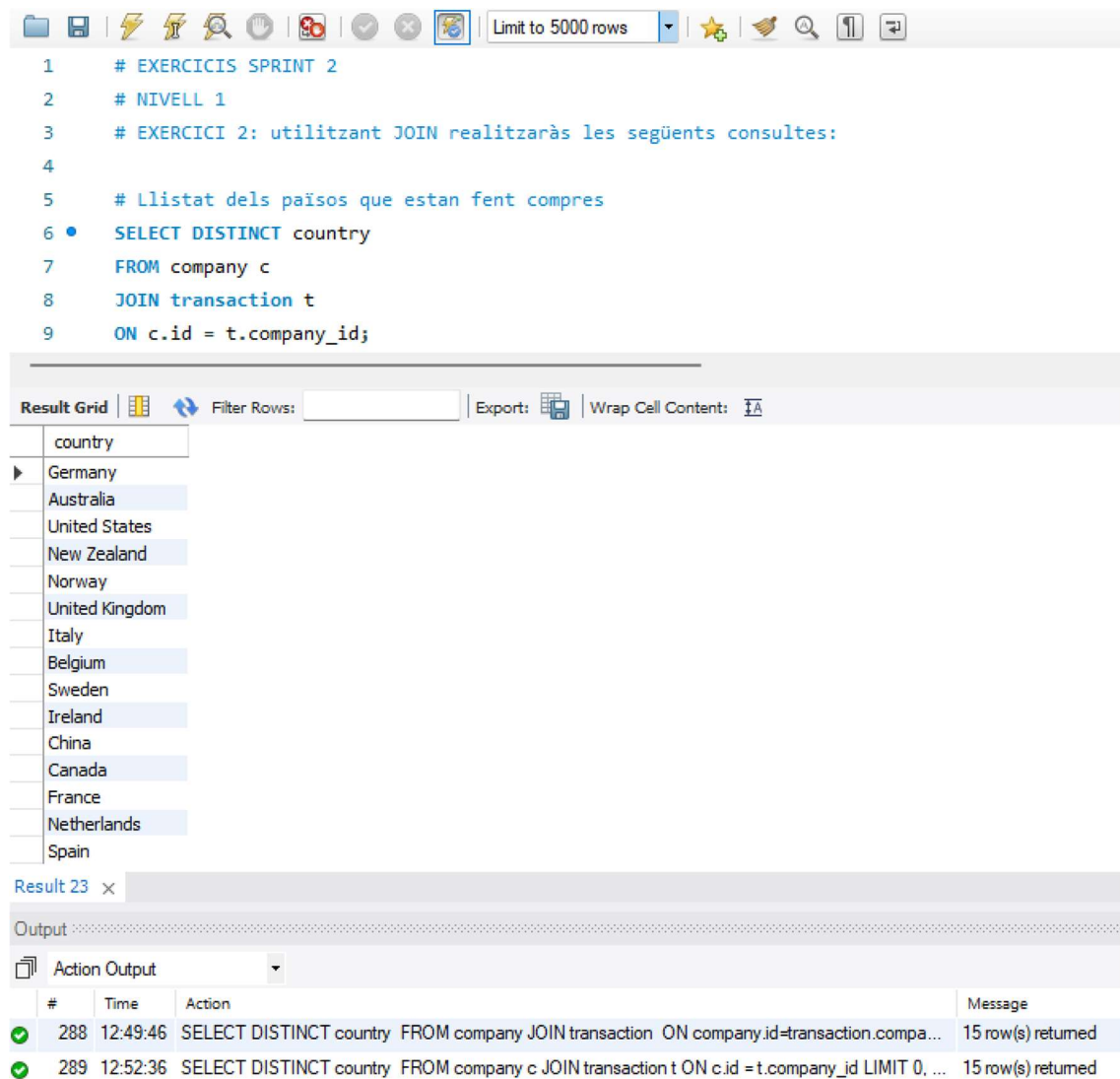


Per tant, la taula de dimensions es relaciona amb la taula de fets pels camps: id (Company) i company\_Id (Transaction) per a poder fer les consultes dels JOINS. Aquesta relació és de 1 a N, que vol dir que per a cada Id de la taula Company podem trobar més de una dada coincident amb el camp company\_id de la taula Transaction, ja que s'entén que poden haver moltes transaccions per a cada companyia.

A més, si fem consultes dintre de la mateixa taula Transaction, trobarem la relació de N a N (de molts a molts) per exemple amb els usuaris (user\_id) i les diferents empreses (company\_id): un usuari pot estar a diferents empreses, i una empresa pot tenir diferents usuaris que facin transaccions.

ABREVIATURES: FK Foreign Key PK Primary Key

## EXERCICI 2 (3 APARTATS)



The screenshot shows a database management tool interface. At the top, there is a toolbar with various icons and a dropdown menu set to "Limit to 5000 rows". Below the toolbar, a SQL script is displayed with the following content:

```
1 # EXERCICIS SPRINT 2
2 # NIVELL 1
3 # EXERCICI 2: utilitzant JOIN realitzaràs les següents consultes:
4
5 # Llistat dels països que estan fent compres
6 • SELECT DISTINCT country
7 FROM company c
8 JOIN transaction t
9 ON c.id = t.company_id;
```

Below the script, the "Result Grid" is shown with a table containing the following data:

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

Below the result grid, the "Output" section is visible, showing the execution of the SQL script. The output is as follows:

#	Time	Action	Message
288	12:49:46	SELECT DISTINCT country FROM company JOIN transaction ON company.id=transaction.compa...	15 row(s) returned
289	12:52:36	SELECT DISTINCT country FROM company c JOIN transaction t ON c.id = t.company_id LIMIT 0, ...	15 row(s) returned

```
10
11 # Des de quants països es realitzen les compres
12 • SELECT count(DISTINCT country) AS nombre_paisos_compres
13 FROM company c
14 JOIN transaction t
15 ON c.id = t.company_id;
16
17 # Es pot fer sense join, perquè, per la relació de les taules 1 a N, cada transacció
18 # ha de tenir assignada una companyia d'un país, i per tant es pot fer la consulta
19 # a la taula Company sense relacionar-la amb la taula de Transaccions:
20 • SELECT count(DISTINCT country) AS nombre_paisos_compres
21 FROM company;
```

Result 69 x

Output

Action Output

#	Time	Action	Message
350	10:36:36	SELECT COUNT(company_name) AS Empresas_sense_transaccions FROM company WHERE id ...	1 row(s) returned
351	10:44:53	SELECT DISTINCT country FROM company c JOIN transaction t ON c.id = t.company_id LIMIT 0, ...	15 row(s) returned
352	10:45:06	SELECT count(DISTINCT country) AS nombre_paisos_compres FROM company c JOIN transaction...	1 row(s) returned

```
22
23 # Identifica la companyia amb la mitjana més gran de vendes
24 • SELECT company_name, avg(amount)
25 FROM company
26 JOIN transaction
27 ON company.id = transaction.company_id
28 WHERE declined = 0
29 GROUP BY company_name
30 ORDER BY AVG(amount) DESC
31 LIMIT 1;
32 # He considerat que la columna decline quan té valor 1 és una transacció rebutjada,
33 # i no compta a efectes de "amount" per a calcular valors com AVG.
```

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

	company_name	avg(amount)
▶	Eget Ipsum Ltd	481.860000

Result 70 x

Output

Action Output

#	Time	Action	Message
351	10:44:53	SELECT DISTINCT country FROM company c JOIN transaction t ON c.id = t.company_id LIMIT 0, ...	15 row(s) returned
352	10:45:06	SELECT count(DISTINCT country) AS nombre_paisos_compres FROM company c JOIN transaction...	1 row(s) returned
353	10:49:44	SELECT company_name, avg(amount) FROM company JOIN transaction ON company.id = transac...	1 row(s) returned

EXERCICI 3 (3 APARTATS)

Limit to 5000 rows

```
35
36 # EXERCICI 3: utilitzant nomes subconsultes (sense utilitzar JOIN):
37
38 # Mostre totes les transaccions realitzades per empreses d'Alemanya
39 • SELECT *
40 FROM transaction
41 WHERE company_id IN
42     (SELECT id
43      FROM company
44      WHERE country = "Germany");
45
```

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
108B1D1D-5B23-A76C-55EF-C568E49A05DD	CcU-2938	b-2222	275	83.7839	-178.86	2021-07-07 17:43:16	293.57	0
EA2C3281-C9C1-A387-44F8-729FB4B51C76	CcU-2938	b-2222	275	20.2004	-116.84	2021-05-09 10:25:08	119.36	1
0DD2E608-5C9E-D1B3-4999-B99F43AD735A	CcU-2959	b-2234	275	9.68811	130.282	2021-04-17 05:30:17	252.47	1
AB069F53-965E-A2A8-CE06-CA8C4FD92501	CcU-2959	b-2234	275	1.64819	-158.007	2021-04-15 13:37:18	60.99	0
0466A42E-47CF-8D24-FD01-C0B689713128	CcU-4219	b-2302	170	-43.9695	-117.525	2021-07-26 07:29:18	49.53	0
0A476ED9-0C13-1962-F87B-D3563924B539	CcU-4359	b-2302	221	-56.4901	114.801	2022-02-26 20:33:54	430.49	0
122DC333-E19F-D629-DCD8-9C54CF1EBB9A	CcU-4366	b-2302	221	29.6372	-166.173	2021-06-09 06:04:14	172.01	0
135267BA-2E7D-957C-C42C-6450A2B3ED54	CcU-4520	b-2302	210	20.6724	14.9732	2021-12-29 20:38:23	17.97	0
14CAE5B5-8FB1-3E4A-4C85-0EA4167534F4	CcU-4849	b-2302	189	-53.6202	93.0533	2021-12-31 00:29:42	388.04	0
158A3ACB-541C-DBCC-65BD-6373CC67BF1C	CcU-4849	b-2302	183	42.5424	-170.347	2022-03-08 05:02:19	240.29	0
162C7E78-2B6B-7971-A1E4-D2124E732451	CcU-4527	b-2302	210	-69.1381	58.0017	2021-04-11 05:59:18	231.26	0
1717FD6B-ADAD-7082-A748-9112BE892CCC	CcU-4219	b-2302	172	69.4892	-138.411	2021-12-29 16:18:54	249.91	0
17223288-0C61-5256-5C20-A15FDD7B0D3A	CcU-4219	b-2302	222	57.8423	114.730	2021-08-17 05:22:00	407.84	0

transaction 71 x

Output

Action Output

#	Time	Action	Message
✓ 352	10:45:06	SELECT count(DISTINCT country) AS nombre_paisos_compres FROM company c JOIN transaction...	1 row(s) returned
✓ 353	10:49:44	SELECT company_name, avg(amount) FROM company JOIN transaction ON company.id = transac...	1 row(s) returned
✓ 354	10:51:55	SELECT * FROM transaction WHERE company_id IN (SELECT id FROM company WHERE countr...	118 row(s) returned

Limit to 5000 rows

```

46 # Llista les empreses que han realitzat transaccions per un amount superior a la mitjana de totes les transaccions
47 • SELECT company_name
48 FROM company
49 WHERE id IN (
50     SELECT company_id
51     FROM transaction
52     WHERE amount > (
53         SELECT AVG(amount)
54         FROM transaction
55         WHERE declined = 0)
56     )
57 ORDER BY company_name DESC;
58

```

Result Grid

company_name
Viverra Donec Foundation
Vestibulum Lorem PC
Ut Semper Foundation
Urna Convallis Associates
Turpis Company
Tortor Nunc Commodo Company
Tindidunt Orci Limited
Sed Nunc Ltd
Sed LLC
Sed Id Limited

company 74

Output

Action Output

#	Time	Action	Message
355	10:53:22	SELECT company_name FROM company WHERE id IN ( SELECT company_id FROM transa...	70 row(s) returned
356	10:54:10	SELECT company_name FROM company WHERE id IN ( SELECT company_id FROM transa...	68 row(s) returned
357	10:55:01	SELECT company_name FROM company WHERE id IN ( SELECT company_id FROM transa...	68 row(s) returned

Limit to 5000 rows

```

58
59 # Eliminaran del sistema les empreses que no tenen transaccions registrades, entrega el llistat d'aquestes empreses.
60 • SELECT COUNT(company_name) AS Empreses_sense_transaccions
61 FROM company
62 WHERE id NOT IN
63     ( SELECT company_id
64     FROM transaction );
65 # El resultat és 0, ja que a no hi ha cap empresa de la taula Company que no tingui com a mínim una transacció
66 # feta a la taula Transaction, i per tant no hi ha llistat d'empreses per eliminar
67
68

```

Result Grid

Empreses_sense_transaccions
0

Result 75

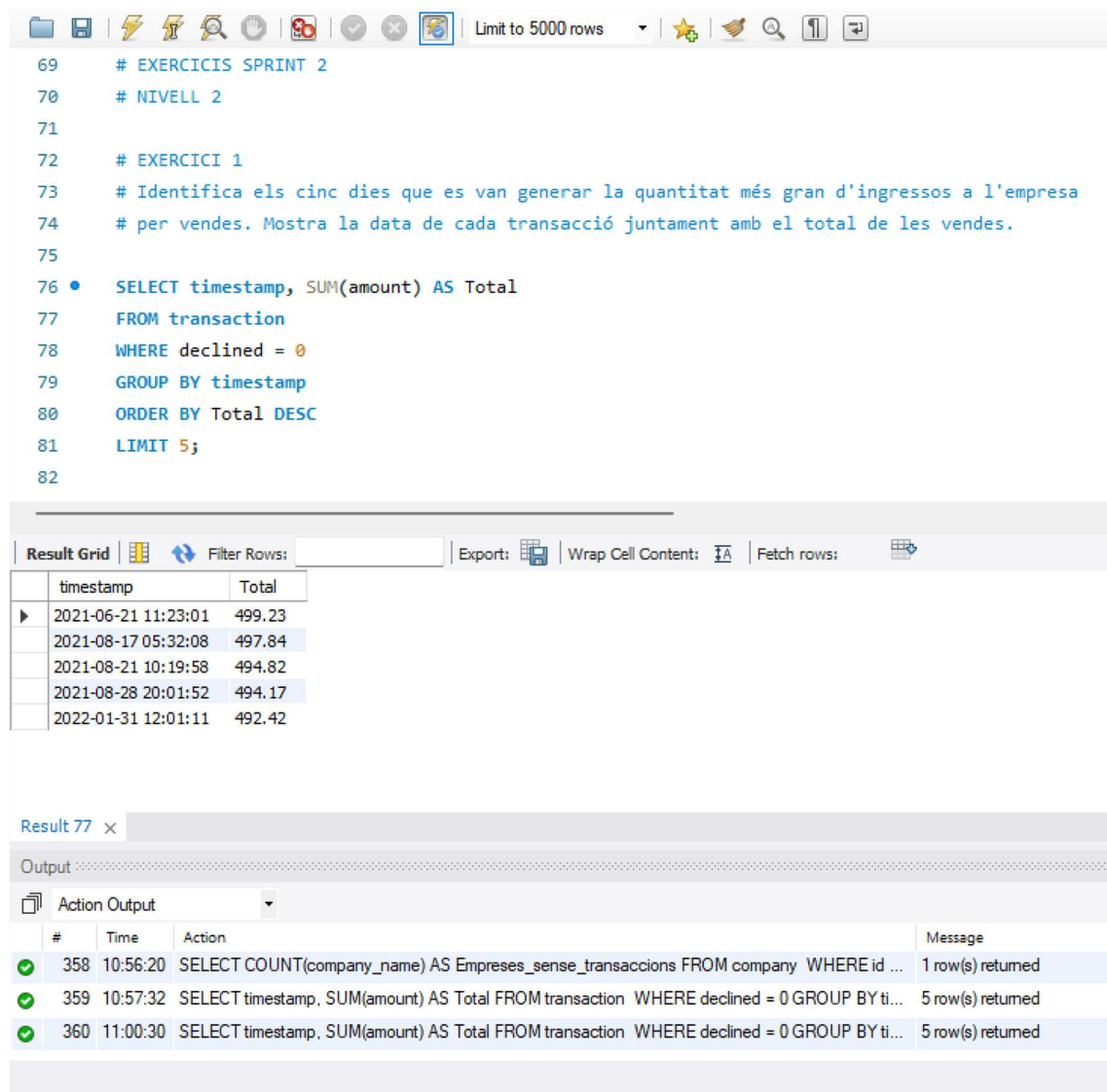
Output

Action Output

#	Time	Action	Message
356	10:54:10	SELECT company_name FROM company WHERE id IN ( SELECT company_id FROM transa...	68 row(s) returned
357	10:55:01	SELECT company_name FROM company WHERE id IN ( SELECT company_id FROM transa...	68 row(s) returned
358	10:56:20	SELECT COUNT(company_name) AS Empreses_sense_transaccions FROM company WHERE id ...	1 row(s) returned



## NIVELL 2 EXERCICI 1



The screenshot displays a SQL IDE interface. The top toolbar includes icons for file operations, execution, and search, along with a 'Limit to 5000 rows' dropdown. The SQL editor contains the following code:

```
69 # EXERCICIS SPRINT 2
70 # NIVELL 2
71
72 # EXERCICI 1
73 # Identifica els cinc dies que es van generar la quantitat més gran d'ingressos a l'empresa
74 # per vendes. Mostra la data de cada transacció juntament amb el total de les vendes.
75
76 • SELECT timestamp, SUM(amount) AS Total
77 FROM transaction
78 WHERE declined = 0
79 GROUP BY timestamp
80 ORDER BY Total DESC
81 LIMIT 5;
82
```

Below the editor, the 'Result Grid' shows the query results:

timestamp	Total
2021-06-21 11:23:01	499.23
2021-08-17 05:32:08	497.84
2021-08-21 10:19:58	494.82
2021-08-28 20:01:52	494.17
2022-01-31 12:01:11	492.42

The bottom section, 'Result 77', shows the 'Action Output' log:

#	Time	Action	Message
✓ 358	10:56:20	SELECT COUNT(company_name) AS Empreses_sense_transaccions FROM company WHERE id ...	1 row(s) returned
✓ 359	10:57:32	SELECT timestamp, SUM(amount) AS Total FROM transaction WHERE declined = 0 GROUP BY ti...	5 row(s) returned
✓ 360	11:00:30	SELECT timestamp, SUM(amount) AS Total FROM transaction WHERE declined = 0 GROUP BY ti...	5 row(s) returned

## EXERCICI 2

83 # Exercici 2: Quina és la mitjana de Vendes per país? Presenta els resultats ordenats de major a menor mitjà.

84

85 • `SELECT country, ROUND(AVG(amount),2) AS mitjana`

86 `FROM company c`

87 `JOIN transaction t`

88 `ON c.id = t.company_id`

89 `WHERE declined = 0`

90 `GROUP BY country`

91 `ORDER BY mitjana DESC;`

country	mitjana
United States	287.53
Ireland	285.83
Sweden	276.67
United Kingdom	271.77
Canada	261.94
Belgium	255.22
Norway	251.11
Italy	243.34
Germany	242.24
Netherlands	240.94
China	222.24
Australia	177.33
France	169.41
New Zealand	167.06
Spain	26.22

Result 1 x

Output

Action Output

#	Time	Action	Message
417	13:34:58	SELECT company_name, COUNT(t.id) AS num_trans, CASE WHEN COUNT(t.id) > 4 THEN "Si"	100 row(s) returned
418	17:57:39	SELECT country, ROUND(AVG(amount),2) AS mitjana FROM company c JOIN transaction t ON c.id...	15 row(s) returned

## EXERCICI 3 (2 APARTATS)

93 # Exercici 3: En la teva empresa, es planteja un nou projecte per a llançar algunes campanyes publicitàries

94 # per a fer competència a la companyia "Non Institute". Per a això, et demanen la llista de totes

95 # les transaccions realitzades per empreses que estan situades en el mateix país que aquesta companyia.

96 # Mostra el llistat aplicant JOIN i subconsultes.

97 # Mostra el llistat aplicant solament subconsultes.

98

99 #JOIN I SUBQUERY

100 • `SELECT t.id, company_name, country, user_id, timestamp, amount`

101 `FROM transaction t`

102 `JOIN company c`

103 `ON t.company_id = c.id`

104 `WHERE country = (`

105 `SELECT country`

106 `FROM company`

107 `WHERE company_name like "Non Institute"`

108 `);`

id	company_name	country	user_id	timestamp	amount
ZB928E1C-EC14-A760-0A75-871477649D6A	Sed Nunc Ltd	United Kingdom	275	2021-08-10 08:14:49	383.73
ACD2011A-A2B1-C365-41E1-2AB00C65147A	Sed Nunc Ltd	United Kingdom	275	2022-03-05 20:41:20	60.07
4334349E-CEB0-3D68-A4D4-FEB7718A1ACE	Non Magna LLC	United Kingdom	275	2021-05-03 22:37:23	458.74
BC2B9A38-77B4-28CD-1FE8-14DED863E773	Non Magna LLC	United Kingdom	275	2021-10-18 07:27:35	477.95
147983D2-B7BA-C7BB-4CE3-8D7C2DE85A8B	Enim Condimentum Ltd	United Kingdom	133	2021-08-09 00:58:07	309.45
152598C2-029D-D684-4B66-91EDF393EBFF	Enim Condimentum Ltd	United Kingdom	126	2021-07-05 03:10:00	395.43
1B636B58-A2E8-7C69-D9C9-C54535DAFD3B	Enim Condimentum Ltd	United Kingdom	131	2021-07-06 08:48:46	195.06

Result 3 x

Output

Action Output

#	Time	Action	Message
419	18:03:10	SELECT t.id, company_name, country, user_id, timestamp, amount FROM transaction t JOIN compa...	100 row(s) returned
420	18:03:46	SELECT t.id, company_name, country, user_id, timestamp, amount FROM transaction t JOIN compa...	100 row(s) returned



Limit to 5000 rows

```

109
110 #SUBQUERY
111 • SELECT *
112 FROM transaction
113 WHERE company_id IN (
114     SELECT id
115     FROM company
116     WHERE country = (
117         SELECT country
118         FROM company
119         WHERE company_name like "Non Institute")
120 );

```

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
2B928E1C-EC14-A760-0A75-871477649D6A	CcU-2980	b-2246	275	-41.0496	161.685	2021-08-10 08:14:49	383.73	0
ACD2011A-A2B1-C365-41E1-2AB00C65147A	CcU-2980	b-2246	275	-54.4792	-82.7974	2022-03-05 20:41:20	60.07	1
4334349E-CEB0-3D68-A4D4-FEB7718A1ACE	CcU-3092	b-2310	275	-20.4859	150.87	2021-05-03 22:37:23	458.74	0
BC2B9A38-77B4-28CD-1FE8-14DED863E773	CcU-3092	b-2310	275	-78.0295	18.5295	2021-10-18 07:27:35	477.95	1
1479B3D2-B7BA-C7BB-4CE3-8D7C2DE85ABB	CcU-2994	b-2326	133	66.2672	172.399	2021-08-09 00:58:07	309.45	0
152598C2-029D-D684-4B66-91EDF393EBFF	CcU-2994	b-2326	126	-67.0189	-141.672	2021-07-05 03:10:00	395.43	0
1B636B58-A2E8-7C69-D9C9-C54535DAFD3B	CcU-2994	b-2326	131	70.2543	-13.1336	2021-07-06 08:48:46	195.06	0
20418DE5-B804-BE9B-BD7A-A95C1BFD8F5C	CcU-2994	b-2326	126	-79.1145	1.51481	2022-01-03 15:59:29	479.52	0
239B8576-6C0E-137A-C2F6-3180A188A2D3	CcU-2994	b-2326	126	23.6174	137.222	2021-08-26 06:04:05	43.90	0
267C4A86-7BA7-1C5E-0718-2824983C87DD	CcU-2994	b-2326	126	-17.5259	104.915	2021-10-01 21:08:53	122.63	0
3142C93E-B3B7-49E4-EE2D-29CA834B198D	CcU-2994	b-2326	126	-67.8476	-119.978	2021-04-06 17:24:44	91.59	0
3578688E-7B1D-B887-3BC7-20B8673AA31E	CcU-2994	b-2326	126	87.0665	-22.7339	2021-07-26 22:59:24	303.60	0

transaction 4 x

Output

Action Output

#	Time	Action	Message
420	18:03:46	SELECT t.id, company_name, country, user_id, timestamp, amount FROM transaction t JOIN compa...	100 row(s) returned
421	18:05:45	SELECT * FROM transaction WHERE company_id IN ( SELECT id FROM company	100 row(s) returned

## NIVELL 3 EXERCICI 1

Limit to 5000 rows

```

124 #NIVELL 3
125
126 #EXERCICI 1
127 # Presenta el nom, telèfon, país, data i amount, d'aquelles empreses que van realitzar transaccions amb un valor
128 # comprès entre 100 i 200 euros i en alguna d'aquestes dates: 29 d'abril del 2021,
129 # 20 de juliol del 2021 i 13 de març del 2022. Ordena els resultats de major a menor quantitat.
130
131 • SELECT company_name, phone, country, timestamp, amount
132 FROM company c
133 JOIN transaction t
134 ON c.id = t.company_id
135 WHERE (DATE(timestamp) = "2021-04-29"
136 OR DATE(timestamp) = "2021-07-20"
137 OR DATE(timestamp) = "2022-03-13")
138 AND (amount BETWEEN 100 AND 200)
139 AND declined = 0
140 ORDER BY amount DESC;

```

company_name	phone	country	timestamp	amount
Interdum Feugiat Sed Associates	04 88 40 32 52	United Kingdom	2021-07-20 10:12:15	164.86
Nunc Interdum Incorporated	05 18 15 48 13	Germany	2022-03-13 13:37:34	164.32
Enim Conditum Ltd	09 55 51 66 25	United Kingdom	2021-04-29 06:17:02	149.89
Lorem Eu Incorporated	0183 66 62 07	Canada	2021-07-20 08:47:44	133.39
Nunc Interdum Incorporated	05 18 15 48 13	Germany	2021-04-29 02:25:49	111.51

Result 5 x

Output

Action Output

#	Time	Action	Message
421	18:05:45	SELECT * FROM transaction WHERE company_id IN ( SELECT id FROM company	100 row(s) returned
422	18:08:34	SELECT company_name, phone, country, timestamp, amount FROM company c JOIN transaction t ...	5 row(s) returned

També es pot fer la selecció de les dades considerant-les com a strings, amb l'operador LIKE i el % al final de cada data.

Exemple: timestamp LIKE "2021-04-29%"

## EXERCICI 2

The screenshot shows a SQL IDE interface. The top toolbar includes icons for file operations, a search icon, and a 'Limit to 5000 rows' dropdown. The SQL editor contains the following code:

```
142 #EXERCICI 2
143 #Necessitem optimitzar l'assignació dels recursos i dependrà de la capacitat operativa que es requereixi,
144 #per la qual cosa et demanen la informació sobre la quantitat de transaccions que realitzen les empreses,
145 #però el departament de recursos humans és exigent i vol un llistat de les empreses on especifiquis si tenen
146 #més de 4 transaccions o menys.
147
148 • SELECT company_name, COUNT(t.id) AS num_trans,
149 CASE
150     WHEN COUNT(t.id) > 4 THEN "Si"
151     WHEN COUNT(t.id) < 4 THEN "No"
152 END AS mas_4_trans
153 FROM transaction t
154 JOIN company c
155 ON t.company_id = c.id
156 GROUP BY company_id
157 ORDER BY num_trans DESC;
```

Below the editor is the 'Result Grid' tab, which displays the following data:

	company_name	num_trans	mas_4_trans
▶	Nunc Interdum Incorporated	105	Si
	Ut Sempet Foundation	59	Si
	Enim Condimentum Ltd	57	Si
	Arcu LLP	56	Si
	Lorem Eu Incorporated	54	Si
	Malesuada PC	52	Si
	Non Institute	30	Si
	Fusce Corp.	2	No

At the bottom, the 'Output' tab shows the 'Action Output' for two queries:

#	Time	Action	Message
✓ 422	18:08:34	SELECT company_name, phone, country, timestamp, amount FROM company c JOIN transaction t ...	5 row(s) returned
✓ 423	18:29:29	SELECT company_name, COUNT(t.id) AS num_trans, CASE WHEN COUNT(t.id) > 4 THEN "Si" ...	100 row(s) returned