

Tasca S2.01. Nocións bàsiques SQL

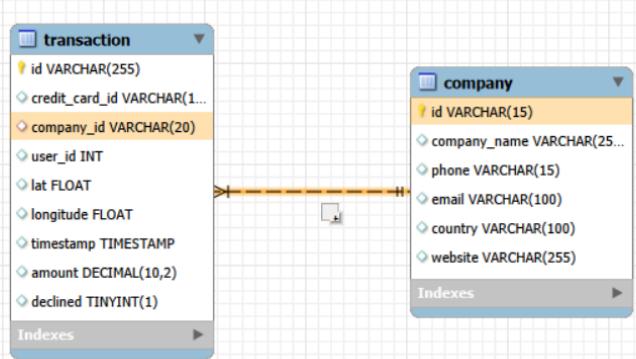
Nivell 1

Exercici 1

En esta tarea, se utilizaron las tablas company y transaction. La tabla company describe diferentes propiedades de distintas compañías, mientras que la tabla transaction muestra propiedades para diversas transacciones. A continuación definiremos las columnas de cada tabla:

- Atributos en la tabla company (6 en total, 100 observaciones):
 - id: Identificación de la compañía (100 diferentes). Tipo VARCHAR, con forma “b-####”.
 - company_name: nombre de la compañía (100 diferentes). Tipo VARCHAR.
 - phone: Número de teléfono de la compañía. Tipo VARCHAR, con forma “## ## ## ##”.
 - email: Email de la compañía. Tipo VARCHAR, con diferentes valores después de @.
 - country: País donde se encuentra la compañía (15 países diferentes). Tipo VARCHAR, con nombre completo del país.
 - website: Dirección de la página web de la compañía. Tipo VARCHAR.
- Atributos en la tabla transaction (9 en total, 10^5 observaciones):
 - id: Identificación de la transacción (10⁵ diferentes). Tipo VARCHAR, combinación de números y letras mayúsculas con forma “xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx”.
 - credit_card_id: Identificación de la tarjeta de crédito usada en la transacción (5000 diferentes). Tipo VARCHAR, con forma “Cc_####”
 - company_id: Identificación de la compañía (100 diferentes). Tipo VARCHAR, con forma “b-####”. Relacionada con company.id.
 - user_id: Identificación del usuario (5000 diferentes). Tipo INT, empezando por 1 y con un valor máximo de 5000.
 - lat: Latitud de la transacción (94272 diferentes). Tipo FLOAT, con precisión de 4 decimales.
 - longitude: Longitud de la transacción (95285 diferentes). Tipo FLOAT, con precisión de 4 decimales.
 - timestamp: Momento cuando se realizó la transacción (99986 diferentes). Tipo TIMESTAMP (YYYY-MM-DD HH:MM:SS)
 - amount: Cantidad de dinero que se movió en la transacción. Tipo DECIMAL, con precisión de 2 decimales.
 - declined: Indica si la transacción se realizó con éxito (0) (99763 en total) o no (1) (237 en total). Tipo TINYINT, con valores 0 y 1.

En la siguiente figura se muestra el tipo de relación entre las dos tablas. Podemos observar una relación n-to-1, unidos por transaction.company_id y company.id. Esto se explica a que una misma compañía puede haber realizado diversas transacciones con la empresa dedicada a la venta de productos en línea.



Exercici 2

Se nos indicó la necesidad de conseguir una lista de países que están generando ventas (declined = 0).

The screenshot shows the MySQL Workbench interface. At the top, there is a toolbar with various icons. Below the toolbar, a code editor window displays the following SQL query:

```
63  # Exercici 2
64 •  SELECT DISTINCT(country) as países
65    FROM company AS c
66    RIGHT JOIN transaction AS t
67      ON c.id=t.company_id
68    WHERE declined=0;
```

The main area shows the results of the query in a grid. The column is labeled "países" and contains the following data:

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

To the right of the results grid is a vertical toolbar with icons for different modes: Result Grid (selected), Form Editor, Field Types, Query Stats, and Execution Plan.

At the bottom, there is a "Result 37" tab and an "Output" section containing an "Action Output" table. The table has columns: #, Time, Action, Message, and Duration / Fetch. It shows two entries:

#	Time	Action	Message	Duration / Fetch
47	10:23:42	SELECT COUNT(DISTINCT(company_id)) FROM...	1 row(s) returned	0.172 sec / 0.000 sec
48	10:39:23	SELECT DISTINCT(country) as países FROM co...	15 row(s) returned	0.375 sec / 0.000 sec

Se nos indicó saber el número de países donde se generan las ventas.

The screenshot shows the MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is a code editor window displaying a SQL query:

```
69
70 •  SELECT COUNT(DISTINCT(country)) AS número_paises
71   FROM company AS c
72   RIGHT JOIN transaction AS t
73     ON c.id=t.company_id
74   WHERE declined=0;
```

The result grid shows one row with the value 15 for the column 'número_paises'. On the right side, there's a vertical panel with tabs for different tools: Result Grid (selected), Form Editor, Field Types, Query Stats, and Execution Plan. Below the result grid, there's a 'Result 38' tab and an 'Output' section containing the execution log:

#	Time	Action	Message	Duration / Fetch
48	10:39:23	SELECT DISTINCT(country) as países FROM co...	15 row(s) returned	0.375 sec / 0.000 sec
49	10:42:29	SELECT COUNT(DISTINCT(country)) AS número...	1 row(s) returned	0.328 sec / 0.016 sec

También tenemos que saber la compañía con el promedio de ventas más grande.

The screenshot shows the MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is a query editor window containing the following SQL code:

```
76 •  SELECT company_name AS compañía, ROUND(AVG(amount),2) AS media_ventas
77   FROM company AS c
78   RIGHT JOIN transaction AS t
79     ON c.id=t.company_id
80   WHERE declined=0
81   GROUP BY company_name
82   ORDER BY media_ventas DESC
83   LIMIT 1;
```

Below the code is a "Result Grid" section with the following data:

compañía	media_ventas
Ac Fermentum Incorporated	284.91

To the right of the result grid is a vertical toolbar with icons for "Result Grid", "Form Editor", "Field Types", and "Query Stats".

At the bottom, there's a "Result 51" tab and an "Output" section titled "Action Output". The "Action Output" table contains the following logs:

#	Time	Action	Message	Duration / Fetch
61	11:00:41	SELECT country AS pais, ROUND(AVG(amount),...)	15 row(s) returned	0.250 sec / 0.000 sec
62	11:01:54	SELECT company_name AS compañía, ROUND(...)	1 row(s) returned	0.250 sec / 0.000 sec

The "Output" section also has a "Read Only" status indicator.

Exercici 3

Mostramos todas las transacciones realizadas por empresas de Alemania. No importa si se realizaron con éxito o no.

The screenshot shows the MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is a SQL editor window containing the following code:

```
84
85  # Exercici 3
86 •  SELECT *
87  FROM transaction
88  WHERE company_id IN (SELECT id
89          FROM company
90          WHERE country='Germany');
91
```

Below the SQL editor is a Result Grid displaying the query results. The columns are: id, credit_card_id, company_id, user_id, lat, longitude, timestamp, amount, and declined. The data grid contains approximately 20 rows of transaction data. To the right of the result grid, there are several tabs: Result Grid (selected), Form Editor, Field Types, and Query Stats. At the bottom of the interface, there's an Output window showing the execution log with two entries:

#	Time	Action	Message	Duration / Fetch
50	10:43:25	SELECT company_name AS compañía, AVG(amount) AS promedio FROM transaction WHERE company_id IN (SELECT id FROM company WHERE country='Germany');	1 row(s) returned	0.234 sec / 0.000 sec
51	10:44:09	SELECT * FROM transaction WHERE company_id IN (SELECT id FROM company WHERE country='Germany');	1000 row(s) returned	0.000 sec / 0.016 sec

Lista de empresas que han realizado transacciones por una cantidad superior al promedio de todas las transacciones (que no hayan sido declinadas).

The screenshot shows a database management interface with the following components:

- Query Editor:** Displays the following SQL code:

```
93 •  SELECT company_name AS compañía
94   FROM company
95   WHERE id IN (SELECT DISTINCT(company_id)
96     FROM transaction
97     WHERE amount > (SELECT AVG(amount)
98       FROM transaction
99       WHERE declined=0));
100
```
- Result Grid:** Shows the results of the query, listing 41 companies. The first few entries are:
 - compañía
 - Ac Fermentum Incorporated
 - Magna A Neque Industries
 - Fusce Corp.
 - Convallis In Incorporated
 - Ante Iaculis Nec Foundation
 - Donec Ltd
 - Sed Nunc Ltd
 - Amet Nulla Donec Corporation
 - Nascetur Ridiculus Mus Inc.
 - Vestibulum Lorem PC
 - Gravida Sagittis LLP
 - Mus Aenean Eget Foundation
 - Dis Parturient Institute
 - Sed LLC
 - Arcu LLP
 - Pretium Neque Corp.
- Action Output:** Shows the history of actions taken:

#	Time	Action	Message	Duration / Fetch
51	10:44:09	SELECT * FROM transaction WHERE company_...	1000 row(s) returned	0.000 sec / 0.016 sec
52	10:45:35	SELECT company_name AS compañía FROM co...	100 row(s) returned	0.094 sec / 0.000 sec
- Right Sidebar:** Contains icons for Result Grid, Form Editor, Field Types, and Query Stats.

Lista de empresas que no tienen transacciones registradas. También consideramos a las empresas que no han realizado transacciones con éxito.

The screenshot shows a database interface with a query editor and a results grid. The query is:

```
100
101 •  SELECT company_name AS compañía
102   FROM company
103   WHERE id NOT IN (SELECT DISTINCT(company_id)
104     FROM transaction
105       WHERE declined=0);
106
```

The results grid shows one row with the column 'compañía' containing the value 'compañía'. The sidebar on the right lists various tools: Result Grid (selected), Form Editor, Field Types, and Query Stats. The output pane at the bottom shows two actions: a successful query execution and a failed attempt to execute the same query again.

company 42 Read Only

Output ::::::::::::

Action Output
Time Action Message Duration / Fetch
52 10:45:35 SELECT company_name AS compañía FROM co... 100 row(s) returned 0.094 sec / 0.000 sec
53 10:47:42 SELECT company_name AS compañía FROM co... 0 row(s) returned 0.063 sec / 0.000 sec

Nivell 2

Exercici 1

Identificamos las cinco fechas con la mayor cantidad de ingresos. Solo consideramos transacciones no declinadas.

The screenshot shows the MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is the SQL editor window containing the following query:

```
112  # Exercici 1
113 •  SELECT DATE(timestamp) AS fecha, SUM(amount) AS total_ventas
114  FROM transaction
115  WHERE declined = 0
116  GROUP BY fecha
117  ORDER BY total_ventas DESC
118  LIMIT 5;
```

Below the SQL editor is the Result Grid window, which displays the following data:

fecha	total_ventas
2022-12-13	14337.44
2019-11-18	13591.32
2023-02-20	13332.59
2017-12-20	13318.43
2019-03-18	12680.95

To the right of the Result Grid is a vertical sidebar with icons for different tools: Result Grid (selected), Form Editor, Field Types, and Query Stats. At the bottom left, there's a "Result 47" tab and an "Output" section. The Output section contains an "Action Output" table with the following data:| # | Time | Action | Message | Duration / Fetch |
| --- | --- | --- | --- | --- |
| 57 | 10:52:32 | SELECT DATE(timestamp) AS fecha, SUM(amount) AS total_ventas FROM transaction WHERE declined = 0 GROUP BY fecha ORDER BY total_ventas DESC LIMIT 5; | 1000 row(s) returned | 0.078 sec / 0.000 sec |
| 58 | 10:52:59 | SELECT DATE(timestamp) AS fecha, SUM(amount) AS total_ventas FROM transaction WHERE declined = 0 GROUP BY fecha ORDER BY total_ventas DESC LIMIT 5; | 5 row(s) returned | 0.094 sec / 0.000 sec |

Exercici 2

Calculamos el promedio de ventas por país. Solo ventas con declined=0.

The screenshot shows the MySQL Workbench interface. At the top, there is a toolbar with various icons. Below the toolbar, a SQL editor window displays the following query:

```
121 •  SELECT country AS país, ROUND(AVG(amount),2) AS promedio_ventas
122   FROM company AS c
123   INNER JOIN transaction AS t
124     ON c.id=t.company_id
125   WHERE declined = 0
126   GROUP BY país
127   ORDER BY promedio_ventas DESC;
```

The result grid below the query shows the following data:

país	promedio_ventas
Australia	265.54
United States	264.42
Belgium	260.97
Germany	260.83
Ireland	260.39
Spain	260.28
France	259.91
New Zealand	259.59
Norway	259.14
Netherlands	258.34
Italy	258.12
Canada	257.41
Sweden	257.39
United Kingdom	256.68
China	252.60

On the right side of the interface, there is a vertical sidebar titled "Result Grid" which also includes links to "Form Editor", "Field Types", and "Query Stats".

At the bottom, there is an "Output" section titled "Action Output" with a log table:

#	Time	Action	Message	Duration / Fetch
60	11:00:19	SELECT country AS país, ROUND(AVG(amount),....	15 row(s) returned	0.562 sec / 0.000 sec
61	11:00:41	SELECT country AS país, ROUND(AVG(amount),....	15 row(s) returned	0.250 sec / 0.000 sec

The "Output" section also has a "Read Only" status indicator.

Exercici 3

Lista de todas las transacciones realizadas por las empresas en el mismo país que “Non Institute”.

Usando JOIN y subconsultas:

The screenshot shows the MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is the SQL editor pane containing the following query:

```
130 •  SELECT *
131   FROM transaction AS t
132   LEFT JOIN company AS c
133     ON t.company_id=c.id
134   WHERE country = (SELECT country
135     FROM company
136       WHERE company_name='Non Institute');
137
```

Below the SQL editor is the Result Grid pane, which displays the results of the query. The results show 1000 rows of transaction data, each including fields like id, credit_card_id, company_id, user_id, lat, longitude, timestamp, amount, and decd. The results grid has a header row with column names and includes a toolbar with export options and a "Fetch rows" button. To the right of the results grid is a sidebar with tabs for "Result Grid", "Form Editor", "Field Types", and "Query Stats".

At the bottom left, there's an "Output" section with an "Action Output" tab showing two log entries:

#	Time	Action	Message	Duration / Fetch
64	11:04:01	SELECT country FROM company WHERE comp...	1 row(s) returned	0.000 sec / 0.000 sec
65	11:12:04	SELECT * FROM transaction AS t LEFT JOIN co...	1000 row(s) returned	0.015 sec / 0.031 sec

The "Output" section also has a "Read Only" status indicator.

Usando solo subconsultas:

The screenshot shows the MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is the SQL editor window containing the following query:

```
138 •  SELECT *
139   FROM transaction
140   WHERE company_id IN (SELECT id
141     FROM company
142     WHERE country = (SELECT country
143       FROM company
144       WHERE company_name='Non Institute'));
```

The result grid below the query shows 1000 rows of transaction data. The columns include: id, credit_card_id, company_id, user_id, lat, longitude, timestamp, amount, and declined. One row is highlighted in blue, corresponding to the row number 55 in the output log.

On the right side of the interface, there's a vertical sidebar with several tabs: Result Grid (which is currently selected), Form Editor, Field Types, Query Stats, and a dropdown menu.

At the bottom, the output log shows two entries:

#	Time	Action	Message	Duration / Fetch
65	11:12:04	SELECT * FROM transaction AS t LEFT JOIN co...	1000 row(s) returned	0.015 sec / 0.031 sec
66	11:15:03	SELECT * FROM transaction WHERE company_...	1000 row(s) returned	0.016 sec / 0.000 sec

Nivell 3

Exercici 1

Empresas con transacciones entre 350 y 400 euros y en las fechas: 2015-04-29, 2018-07-20 y 2024-03-13.

The screenshot shows a MySQL Workbench environment. At the top, there's a toolbar with various icons. Below it is the SQL query editor window containing the following code:

```
147  #Exercici 1
148 •  SELECT company_name AS nombre, phone AS teléfono, country AS país,
149      DATE(timestamp) AS fecha, amount AS cantidad
150  FROM transaction AS t
151  LEFT JOIN company AS c
152  ON t.company_id=c.id
153  WHERE (amount BETWEEN 350 AND 400) AND
154      (DATE(timestamp) IN ('2015-04-29','2018-07-20','2024-03-13'))
155  ORDER BY cantidad DESC;
```

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

	nombre	teléfono	país	fecha	cantidad
▶	Aliquam PC	01 45 73 52 16	Germany	2024-03-13	399.84
	Auctor Mauris Vel LLP	08 09 28 74 14	United States	2018-07-20	399.51
	At Pede Corp.	06 14 48 33 15	Italy	2015-04-29	390.69
	Aliquam PC	01 45 73 52 16	Germany	2024-03-13	388.29
	Orci Adipiscing Limited	03 18 00 77 81	United Kingdom	2018-07-20	373.71
	Fringilla LLC	08 29 15 93 57	New Zealand	2015-04-29	367.62
	Pede Cum Ltd	07 62 26 48 38	Norway	2018-07-20	356.87
	Auctor Mauris Vel LLP	08 09 28 74 14	United States	2024-03-13	353.75

To the right of the result grid, there are four buttons: 'Result Grid' (selected), 'Form Editor', 'Field Types', and 'Query Stats'. Below the result grid is the Output panel, which shows the following log entries:

#	Time	Action	Message	Duration / Fetch
69	11:22:43	SELECT DATE(timestamp) AS fecha, amount AS ...	8 row(s) returned	0.032 sec / 0.000 sec
70	11:25:18	SELECT company_name AS nombre, phone AS t...	8 row(s) returned	0.032 sec / 0.000 sec

The 'Output' dropdown menu is set to 'Action Output'. There is also a 'Read Only' status indicator at the bottom of the output panel.

Exercici 2

Cantidad de transacciones que realizan las empresas, además de una columna donde se especifique si tienen más de 400 transacciones o menos. Solo se consideraron transacciones exitosas.

The screenshot shows the MySQL Workbench interface. At the top is a toolbar with various icons. Below it is a query editor window containing the following SQL code:

```
157  #Exercici 2
158 •  SELECT company_name AS compañía, COUNT(amount) AS cantidad_transacciones,
159      IF(COUNT(amount)>400, "sí", "no") AS más_de_400_transacciones
160  FROM company AS c
161  RIGHT JOIN transaction AS t
162  ON c.id=t.company_id
163  WHERE declined=0
164  GROUP BY compañía;
```

Below the query editor is a Result Grid pane displaying the results of the query. The results are as follows:

compañía	cantidad_transacciones	más_de_400_transacciones
Eget Tincidunt Duis Institute	1522	sí
Non Justo Corp.	1476	sí
Neque Tellus Imperdiet Corp.	422	sí
Fusce Corp.	445	sí
Mus Aenean Eget Foundation	1563	sí
Aliquam Iaculis Lacus Corp.	422	sí
Ipsum Dolor Corp.	1465	sí
Amet Luctus Vulpitate Foundation	410	sí
Nulla Integer Vulpitate Corp.	1447	sí
Auctor Mauris Corp.	1561	sí
Euismod Mauris Institute	417	sí
Pede Cum Ltd	445	sí
Donec Fringilla PC	1590	sí
Justo Eu Arcu Ltd	1545	sí
Lacus Quisque Associates	441	sí
Dolor Vitae Limited	1541	sí

At the bottom of the Result Grid pane, it says "Result 61". To the right of the Result Grid pane is a sidebar with icons for "Result Grid", "Form Editor", "Field Types", and "Query Stats". Below the Result Grid pane is an "Output" section titled "Action Output" which lists two log entries:

#	Time	Action	Message	Duration / Fetch
73	11:35:06	SELECT company_name AS compañía, COUNT(...)	100 row(s) returned	0.219 sec / 0.000 sec
74	11:35:46	SELECT company_name AS compañía, COUNT(...)	100 row(s) returned	0.219 sec / 0.000 sec

The "Duration / Fetch" column shows "0.219 sec / 0.000 sec" for both entries.