

Tasca S2.01. Nocións bàsiques SQL

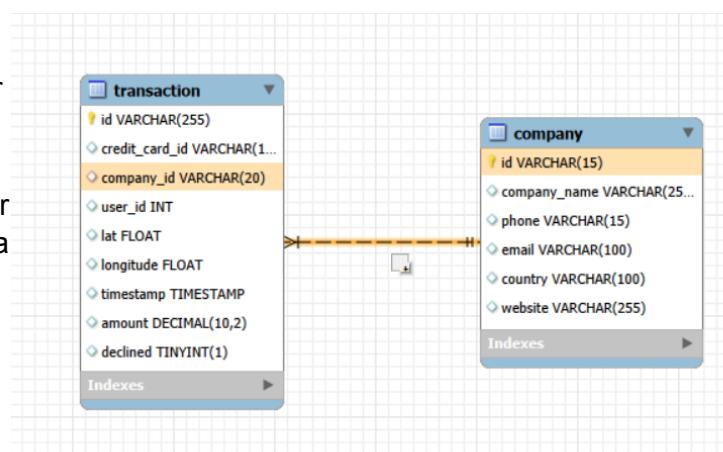
Nivell 1

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(15), con forma “b-####”.
 - company_name: nombre de la compañía (100 diferentes). Tipo VARCHAR(255).
 - phone: Número de teléfono de la compañía. Tipo VARCHAR(15), con forma “## ## ## ## ##”.
 - email: Email de la compañía. Tipo VARCHAR(100), con diferentes valores después de @.
 - country: País donde se encuentra la compañía (15 países diferentes). Tipo VARCHAR(100), con nombre completo del país.
 - website: Dirección de la página web de la compañía. Tipo VARCHAR(255).
- Atributos en la tabla transaction (9 en total, 10^5 observaciones):
 - id: Identificación de la transacción (10⁵ diferentes). Tipo VARCHAR(255), 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(15), con forma “Cc_-####”
 - company_id: Identificación de la compañía (100 diferentes). Tipo VARCHAR(20), 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(10, 2), 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:

```
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
69   ORDER BY países;
```

The result grid below the query shows the following data:

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

On the right side of the interface, there is a sidebar with several tabs: Result Grid (selected), Form Editor, Field Types, Query Stats, and Execution Plan.

At the bottom, there is a "Result 24" section with a "Read Only" status indicator and an "Output" section showing the following log entries:

#	Time	Action	Message	Duration / Fetch
28	11:00:01	SELECT company_name AS compañía, COUNT(...)	100 row(s) returned	0.578 sec / 0.000 sec
29	11:19:45	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 titled "Result Grid" which displays one row of 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 left, there's a "Result 51" tab and an "Output" section. The "Output" section has a "Action Output" tab selected, showing the following log entries:

#	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 includes 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 with a query editor and results grid. The query is:

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

The results grid displays 13,291 rows of transaction data for companies in Germany. The columns include: id, credit_card_id, company_id, user_id, lat, longitude, timestamp, amount, and declined. The execution plan on the right indicates the query took 0.281 seconds to execute.

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
00138D3B-206D-4...	CcS-4899	b-2222	318	41.3781	12.447	2020-03-25 10:43:43	426.36	0
0013C1B6-3B84-4...	CcS-5070	b-2222	489	41.3814	2.18176	2020-12-17 18:15:37	316.90	0
00201A11-2E62-4...	CcU-3512	b-2222	193	55.5704	-3.65129	2021-01-22 23:44:27	453.04	0
00235618-0A5C-4...	CcS-8137	b-2222	3556	59.8421	18.729	2020-09-09 15:43:19	263.14	0
005A5A7B-1F1A-4...	CcS-8998	b-2222	4417	41.1591	-8.63905	2024-05-15 09:10:11	442.01	0
00687139-48B2-4...	CcS-4870	b-2222	289	51.1966	10.4669	2019-03-09 19:37:49	524.84	0
0074F4DD-32F1-4...	CcS-8081	b-2222	3500	39.7016	-8.50325	2016-12-26 23:06:57	491.90	0
00AAB9CD-39D6-4...	CcS-6797	b-2222	2216	55.7652	-3.76245	2021-04-25 03:06:59	167.15	0
00BE09D4-6920-4...	CcS-4983	b-2222	402	38.708	-9.12993	2019-02-27 15:25:16	141.66	0
00DA0383-E048-4...	CcS-9223	b-2222	4642	51.1742	10.2027	2019-03-21 11:47:34	325.62	0
00DD11DE-ED01-4...	CcS-7681	b-2222	3100	45.7565	4.83109	2024-01-28 18:20:49	242.53	0
01449CE0-98E9-4...	CcS-5424	b-2222	843	47.0163	2.26064	2024-02-17 19:37:14	451.71	0
0175E8C7-241E-4...	CcS-7510	b-2222	2929	52.0619	4.29464	2021-08-28 16:29:38	9.46	0
01ABDAB8-06E2-4...	CcS-5053	b-2222	472	51.7738	5.17479	2020-01-28 01:15:07	368.41	0
01F1C7ED-0823-4...	CcS-6776	b-2222	2195	59.6697	18.6697	2022-12-17 09:40:14	168.79	0
01FABC61-18C8-4...	CcS-5531	b-2222	950	55.3405	-3.3863	2020-04-30 08:57:27	333.45	0
023B714C-DCC1-4...	CcS-5103	b-2222	522	55.3362	-2.99198	2018-04-14 18:52:13	155.29	0

transaction 44 ×

Output:

#	Time	Action	Message	Duration / Fetch
53	11:23:27	SELECT company_name AS compañía, COUNT(...)	100 row(s) returned	0.281 sec / 0.000 sec
54	11:24:18	SELECT * FROM transaction WHERE company_...	13291 row(s) returned	0.000 sec / 0.063 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 panel 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 a MySQL Workbench interface. At the top, there's a toolbar with various icons. Below it is a code editor window containing the following SQL 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 code editor is a result grid window titled "Result Grid". It 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 of the interface, there's a "Result 47" tab and an "Output" section which shows the execution log:

Action Output		
# 57 10:52:32 SELECT DATE(timestamp) AS fecha, SUM(amount) AS total_ventas	Message 1000 row(s) returned	Duration / Fetch 0.078 sec / 0.000 sec
# 58 10:52:59 SELECT DATE(timestamp) AS fecha, SUM(amount) AS total_ventas	Message 5 row(s) returned	Duration / Fetch 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 window containing the following query:

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

Below the SQL editor is the Result Grid, which displays the results of the query. The columns are: id, credit_card_id, company_id, user_id, lat, longitude, timestamp, amount, and ded. The data grid contains approximately 13,776 rows of transaction data. To the right of the result grid is a sidebar with several tabs: Result Grid (selected), Form Editor, Field Types, and Query Stats.

At the bottom of the interface is the Output pane, which shows the execution log. It includes a table titled "Action Output" with columns: #, Time, Action, Message, and Duration / Fetch. The log shows two entries:

#	Time	Action	Message	Duration / Fetch
55	11:26:53	SELECT * FROM transaction AS t LEFT JOIN co...	13776 row(s) returned	0.000 sec / 0.047 sec
56	11:26:59	SELECT * FROM transaction AS t LEFT JOIN co...	13776 row(s) returned	0.000 sec / 0.063 sec

The Output pane 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 pane containing the following query:

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

Below the SQL editor is the Result Grid pane, which displays the results of the query. The results show 13776 rows with columns: id, credit_card_id, company_id, user_id, lat, longitude, timestamp, amount, and declined. A vertical sidebar on the right contains icons for different features: Result Grid (selected), Form Editor, Field Types, and Query Stats.

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
008629B4-C9A9-4...	Ccs-7063	b-2246	2482	45.7666	4.83048	2015-07-30 12:12:42	486.44	0
00B72BA4-54A3-4...	Ccs-8475	b-2246	3894	55.6212	-3.7546	2017-10-26 22:08:26	414.06	0
01F075B1-D7AE-4...	Ccs-8700	b-2246	4119	55.856	-3.15783	2018-01-27 13:44:36	103.73	0
023FFCE8-E618-4...	Ccs-7816	b-2246	3235	46.3568	1.82755	2016-12-19 11:53:45	219.28	0
02683BEB-EF91-4...	Ccs-9471	b-2246	4890	42.1332	12.396	2017-01-10 21:09:29	326.87	0
02C2F29E-CEF2-4...	Ccs-9082	b-2246	4501	39.4662	-0.373246	2020-05-24 01:17:29	155.72	0
02F468DC-426C-4...	Ccs-6913	b-2246	2332	52.175	19.3508	2023-03-17 16:36:27	305.35	0
0306BE3B-817B-4...	Ccs-5302	b-2246	721	51.9233	18.926	2021-12-02 23:06:02	339.58	0
0347BFE6-8EB5-4...	Ccs-7674	b-2246	3093	45.768	4.84271	2021-12-30 08:40:24	172.93	0
03AEBD0E-DC97-4...	Ccs-6121	b-2246	1540	50.8113	10.3145	2018-11-11 11:28:49	114.77	0
03CA36D3-88FF-4...	Ccs-8036	b-2246	3455	52.5178	13.4131	2017-02-25 15:38:21	440.27	0
04494182-96DD-4...	Ccs-6791	b-2246	2210	41.9542	12.4607	2018-05-17 17:53:53	241.59	0
045AACF6-FF85-4...	Ccs-5363	b-2246	782	39.2464	-7.90454	2018-08-09 22:12:54	188.58	0
0489FDAC-86A4-4...	Ccs-7296	b-2246	2715	51.1647	10.7348	2021-03-30 04:29:22	205.45	0
0490C36A-4B02-4...	Ccs-7539	b-2246	2958	46.4281	1.64603	2023-05-20 19:28:00	424.64	0
04A0ABDE-FB25-4...	Ccs-4871	b-2246	290	52.0589	5.55327	2022-11-04 05:35:28	461.34	0
0512193F-B639-4...	Ccs-6651	h-2246	2070	39.684	-8.57102	2024-07-08 02:51:38	87.15	0

transaction 47 ×

Output

#	Time	Action	Message	Duration / Fetch
56	11:26:59	SELECT * FROM transaction AS t LEFT JOIN co...	13776 row(s) returned	0.000 sec / 0.063 sec
57	11:28:30	SELECT * FROM transaction WHERE company_...	13776 row(s) returned	0.000 sec / 0.062 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' section also includes a 'Read Only' status indicator.

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 the SQL editor with the following query:

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

The results grid below displays the data:

compañía	cantidad_transacciones	más_de_400_transacciones
Nec Luctus LLC	399	no
Dui Quis Institute	400	no
Lorem Eu Incorporated	378	no
Fringilla LLC	396	no
Mus Aenean Eget Foundation	1563	sí
Aliquam Iaculis Lacus Corp.	422	sí
Lorem 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 I limited	1541	sí

The action output panel at the bottom shows the following log entries:

#	Time	Action	Message	Duration / Fetch
59	11:30:06	SELECT company_name AS compañía, COUNT(...)	100 row(s) returned	0.219 sec / 0.000 sec
60	11:30:22	SELECT company_name AS compañía, COUNT(...)	100 row(s) returned	0.203 sec / 0.000 sec

Revisión peer-to-peer

Revisado por Patricia Proniewska

- Se comentó que era recomendable indicar el tamaño de tipos de datos como VARCHAR y DECIMAL, para ir teniéndolo en cuenta para el próximo sprint.
- Se comentó que podría ser una buena idea priorizar los apartados con una imagen y luego seguir con la descripción, no al revés.
- También se recomendó ordenar los resultados, aunque no lo indique el enunciado, para facilitar las revisiones posteriores.
- Se indicó que no se debe usar el LIMIT automático de Workbench, porque para algunos ejercicios es necesario saber el número total de rows.