

*BOOTCAMP*

*DATA ANALITICS*

*2025-2026*

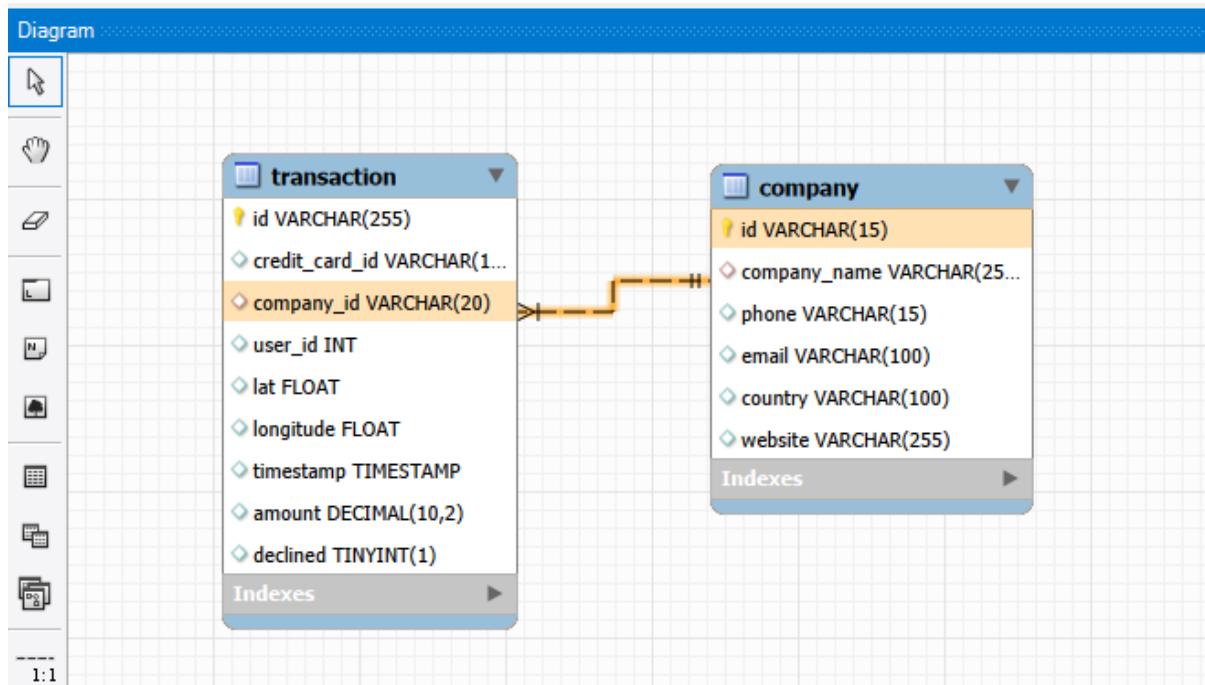
*SPRINT 2:*

*BASES DE DATOS RELACIONADAS E*

*INTRODUCCIÓN A SQL*

## NIVEL 1. EJERCICIO 1

Un diagrama que ilustre la relación entre las distintas tablas y variables



La base de datos contiene dos tablas relacionadas.

La tabla "*company*" contiene 6 columnas (variables):

- Variable "*id*" es el PRIMARY KEY, de tipo VARCHAR para poner los numeros y otros signas;
- Las demás variables son de tipo VARCHAR.

La tabla "*transaction*" contiene 9 columnas (variables):

- La variable "*id*" es el PRIMARY KEY, de tipo VARCHAR para poner los numeros y otros signas;
- La variable *company\_id*" es el FOREIGN KEY y refiere a la variable "*id*" de la tabla "*company*";
- La variable "*user\_id*" es de tipo INT, numerico,

- Las variables "*lat*" y "*longitude*" son de tipo FLOAT, para para valores con decimales;
- La variable "*timestamp*" es de tipo TIMESTAMP, para poner los valores de fecha y hora;
- La variable "*amount*" es de tipo DECIMAL (10,2), para poner los valores con decimales de dos cifras;
- La variable "*declined*" es de tipo TINYINT (1), para poner los valores de una cifra.

El diagrama muestra que variable "*company\_id*" en la tabla "*transaction*" es el FOREIGN KEY y refiere la variable "*id*" de la tabla "*company*".

## NIVEL 1. EJERCICIO 1

MUESTRA LAS PRINCIPALES CARACTERÍSTICAS DEL ESQUEMA CREADO Y EXPLICA LAS DIFERENTES TABLAS Y VARIABLES QUE EXISTEN

- LA DESCRIPCIÓN DE LA TABLA "TRANSACTION"

The screenshot shows the MySQL Workbench interface with two tabs: 'Query 1' and 'Result 1'. In 'Query 1', the following SQL code is run:

```
1 -- Mostrar las características principales del esquema y explicar las diferentes tables y variables que existen
2 • USE transactions;
3 • DESCRIBE transaction;
4
```

In 'Result 1', the output shows the description of the 'transaction' table:

Field	Type	Null	Key	Default	Extra
id	varchar(255)	NO	PRI	NULL	
credit_card_id	varchar(15)	YES		NULL	
company_id	varchar(20)	YES	MUL	NULL	
user_id	int	YES		NULL	
lat	float	YES		NULL	
longitude	float	YES		NULL	
timestamp	timestamp	YES		NULL	
amount	decimal(10,2)	YES		NULL	
declined	tinyint(1)	YES		NULL	

The 'Output' section shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	10:42:56	USE transactions	0 row(s) affected	0.000 sec
2	10:42:56	DESCRIBE transaction	9 row(s) returned	0.000 sec / 0.000 sec

## NIVEL 1. EJERCICIO 1

*MOSTRAR LAS CARACTERÍSTICAS PRINCIPALES DEL ESQUEMA Y EXPLICAR LAS DIFERENTES TABLES Y VARIABLES QUE EXISTEN*

- *LA DESCRIPCIÓN DE LA TABLA "COMPANY"*

The screenshot shows the MySQL Workbench interface with two main panes: 'Query 1' and 'Result 2'.

**Query 1:** Contains the following SQL code:

```
1 -- Mostrar las características principales del esquema y explicar las diferentes tables y variables que existen
2 • USE transactions;
3 • DESCRIBE company;
```

**Result 2:** Contains the output of the DESCRIBE command for the 'company' table, displayed in a grid format:

Field	Type	Null	Key	Default	Extra
id	varchar(15)	NO	PRI	NULL	
company_name	varchar(255)	YES		NULL	
phone	varchar(15)	YES		NULL	
email	varchar(100)	YES		NULL	
country	varchar(100)	YES		NULL	
website	varchar(255)	YES		NULL	

Below the grid, the 'Action Output' section shows the log of actions:

#	Time	Action	Message	Duration / Fetch
1	10:42:56	USE transactions	0 row(s) affected	0.000 sec
2	10:42:56	DESCRIBE transaction	9 row(s) returned	0.000 sec / 0.000 sec
3	10:59:29	DESCRIBE company	6 row(s) returned	0.016 sec / 0.000 sec

## NIVEL 1. EJERCICIO 2

UTILIZANDO JOIN REALIZARÁS LAS SIGUIENTES CONSULTAS:

- LISTADO DE LOS PAÍSES QUE ESTÁN GENERANDO VENTAS.

```
1 -- La lista de los países que están generando ventas
2 • SELECT DISTINCT c.country
3 FROM transaction AS t
4 LEFT JOIN company AS c
5 ON c.id=t.company_id;
```

The screenshot shows a database query results interface. At the top, there is a code editor with the following SQL query:

```
1 -- La lista de los países que están generando ventas
2 • SELECT DISTINCT c.country
3 FROM transaction AS t
4 LEFT JOIN company AS c
5 ON c.id=t.company_id;
```

The main area displays a "Result Grid" with a single column labeled "country". The data listed is:

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

On the right side of the interface, there is a vertical toolbar with icons for "Result Grid", "Form Editor", "Field Types", and "Query Stats". Below the result grid, there is a section titled "Output" which shows the log of the executed query:

Action Output
# Time Action Message Duration / Fetch
1 11:59:26 SELECT DISTINCT c.country FROM transaction AS t LEFT JOIN... 15 row(s) returned 0.125 sec / 0.000 sec

## NIVEL 1. EJERCICIO 2

UTILIZANDO JOIN REALIZARÁS LAS SIGUIENTES CONSULTAS:

- DESDE CUÁNTOS PAÍSES SE GENERAN LAS VENTAS.

```
1      -- Desde cuántos países se generan ventas
2 •  SELECT COUNT(DISTINCT c.country) AS number_of_countries
3     FROM transaction AS t
4     LEFT JOIN company AS c
5       ON c.id=t.company_id;
```

The screenshot shows a database interface with a results grid and an output log.

**Result Grid:**

number_of_countries
15

**Action Output:**

#	Time	Action	Message	Duration / Fetch
1	12:05:19	SELECT COUNT(DISTINCT c.country) AS number_of_countries ...	1 row(s) returned	0.109 sec / 0.000 sec

## NIVEL 1. EJERCICIO 2

UTILIZANDO JOIN REALIZARÁS LAS SIGUIENTES CONSULTAS:

- IDENTIFICA A LA COMPAÑÍA CON LA MAYOR MEDIA DE VENTAS.

```
1 -- La compañía con la mayor media de ventas
2 • SELECT c.id, c.company_name
3 FROM company AS c
4 LEFT JOIN transaction AS t
5 ON c.id=t.company_id
6 GROUP BY c.id
7 ORDER BY AVG(t.amount) DESC
8 LIMIT 1;
```

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

	id	company_name
▶	b-2222	Ac Fermentum Incorporated

Result 3 × Read Only

Output :

Action Output			Message	Duration / Fetch
#	Time	Action		
1	12:33:21	SELECT c.id, c.company_name FROM company AS c LEFT JOI...	1 row(s) returned	0.344 sec / 0.000 sec

## NIVEL 1. EJERCICIO 3

UTILIZANDO SÓLO SUBCONSULTAS (SIN UTILIZAR JOIN):

- MUESTRA TODAS LAS TRANSACCIONES REALIZADAS POR EMPRESAS DE ALEMANIA.

```
1      -- Todas las transacciones realizadas por empresas de Alemania
2 •  SELECT t.id, t.company_id, t.user_id, t.amount, t.declined  -- Las características principales de transacción
3      FROM transaction AS t
4      WHERE EXISTS (SELECT *
5          FROM company AS c
6          WHERE t.company_id=c.id AND c.country='Germany');
```

The screenshot shows a database management interface with a results grid and an output pane. The results grid displays a table with columns: id, company\_id, user\_id, amount, and declined. The output pane shows the execution message: "1 12:48:17 SELECT t.id, t.company\_id, t.user\_id, t.amount, t.declined-- Las c... 13291 row(s) returned".

	id	company_id	user_id	amount	declined
▶	00138D3B-206D-4C03-94B7-63A2676EB9B4	b-2222	318	426.36	0
	0013C1B6-3B84-4D6C-8154-E2B3FEBCA8E9	b-2222	489	316.90	0
	00201A11-2E62-44C4-941D-198FC8DB77F0	b-2222	193	453.04	0
	00235618-0A5C-4D49-9DCB-B3A9405D8923	b-2222	3556	263.14	0
	005A5A7B-1F1A-4B6C-9B15-1625A78C9C38	b-2222	4417	442.01	0
	00687139-48B2-4FFA-8E73-B20376F04AB4	b-2222	289	524.84	0
	0074F4DD-32F1-4827-8758-55896314623A	b-2222	3500	491.90	0
	00AAB9CD-39D6-4DCB-8A1D-13BE73DC90A9	b-2222	2216	167.15	0

transaction 5 ×

Output:

#	Time	Action	Message	Duration / Fetch
1	12:48:17	SELECT t.id, t.company_id, t.user_id, t.amount, t.declined-- Las c...	13291 row(s) returned	0.000 sec / 0.046 sec

## NIVEL 1. EJERCICIO 3

UTILIZANDO SÓLO SUBCONSULTAS (SIN UTILIZAR JOIN):

- LISTA LAS EMPRESAS QUE HAN REALIZADO TRANSACCIONES POR UN AMOUNT SUPERIOR A LA MEDIA DE TODAS LAS TRANSACCIONES.

```
1 /* La Lista de las empresas que han realizado transacciones
2    por un amount superior a la media de todas las transacciones */
3 • SELECT c.id, c.company_name
4   FROM company AS c
5 WHERE EXISTS (SELECT *
6               FROM transaction AS t
7              WHERE t.company_id=c.id AND t.amount > (SELECT AVG(t.amount)
8                                FROM transaction AS t));
```

The screenshot shows a database interface with a code editor at the top containing the SQL query. Below it is a result grid displaying the output of the query. The result grid has columns for 'id' and 'company\_name'. The data returned is:

	id	company_name
b-2222		Ac Fermentum Incorporated
b-2226		Magna A Neque Industries
b-2230		Fusce Corp.
b-2234		Convallis In Incorporated
b-2238		Ante Iaculis Nec Foundation
b-2242		Donec Ltd

Below the result grid is an 'Output' section showing the execution details:

#	Time	Action	Message	Duration / Fetch
1	12:54:49	SELECT c.id, c.company_name FROM company AS c WHERE ...	100 row(s) returned	0.125 sec / 0.000 sec

## NIVEL 1. EJERCICIO 3

UTILIZANDO SÓLO SUBCONSULTAS (SIN UTILIZAR JOIN):

- ELIMINARÁN DEL SISTEMA LAS EMPRESAS QUE CARECEN DE TRANSACCIONES REGISTRADAS, ENTREGA EL LISTADO DE ESTAS EMPRESAS.

```
1 -- La Lista de la empresas que no tienen transacciones registradas
2 • SELECT c.id, c.company_name
3   FROM company AS c
4   WHERE NOT EXISTS (SELECT *
5       FROM transaction AS t
6       WHERE t.company_id=c.id);
```

The screenshot shows a database query interface. At the top, there's a code editor window displaying the SQL query. Below it is a results grid showing a single row with columns 'id' and 'company\_name', both containing 'NULL'. To the right of the results grid is a sidebar with tabs for 'Result Grid' (selected), 'Form Editor', and other options. At the bottom, there's an output log titled 'Action Output' showing one entry: a green checkmark followed by '1 12:57:22 SELECT c.id, c.company\_name FROM company AS c WHERE ... 0 row(s) returned 0.000 sec / 0.000 sec'.

## NIVEL 2. EJERCICIO 1

IDENTIFICA LOS CINCO DÍAS QUE SE GENERÓ LA MAYOR CANTIDAD DE INGRESOS EN LA EMPRESA POR VENTAS. MUESTRA LA FECHA DE CADA TRANSACCIÓN JUNTO CON EL TOTAL DE LAS VENTAS.

```
1  /* Los cinco días que se generó la mayor cantidad de ingresos
2   (la fecha de cada transacción junto con el total de las ventas) */
3 •  SELECT DATE_FORMAT(t.timestamp, '%d.%m.%Y') AS date, SUM(t.amount) AS total_amount
4   FROM transaction AS t
5   GROUP BY date
6   ORDER BY total_amount DESC
7   LIMIT 5;
```

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

	date	total_amount
▶	13.12.2022	14337.44
	18.11.2019	13591.32
	20.02.2023	13332.59
	20.12.2017	13318.43
	18.03.2019	12680.95

Result 8 x Read Only

Output

Action Output
# Time Action Message Duration / Fetch
1 13:06:37 SELECT DATE_FORMAT(t.timestamp, "%d.%m.%Y")AS date, SU... 5 row(s) returned 0.188 sec / 0.000 sec

## NIVEL 2. EJERCICIO 2

¿CUÁL ES LA MEDIA DE VENTAS POR PAÍS? PRESENTA LOS RESULTADOS ORDENADOS DE MAYOR A MENOR MEDIO.

```
1 /* La media de ventas por país
2   (los resultados ordenados de mayor a menor medio) */
3 SELECT c.country, ROUND(AVG(t.amount),2) AS average_amount
4 FROM transaction AS t
5 LEFT JOIN company AS c
6 ON c.id=t.company_id
7 GROUP BY c.country
8 ORDER BY average_amount DESC;
```

The screenshot shows a database interface with a query editor and a results grid. The query editor contains the provided SQL code. The results grid displays the output of the query, which is a list of countries and their average transaction amounts, ordered from highest to lowest. The results are as follows:

country	average_amount
Australia	265.19
United States	264.98
Belgium	261.15
Germany	260.84
Ireland	260.64
Spain	260.47
France	259.98
New Zealand	259.59
Norway	259.38
Netherlands	258.44
Italy	258.27
Sweden	257.44
Canada	257.43
United Kingdom	256.76
China	252.42

The interface includes a toolbar with various icons for filtering, exporting, and wrapping cell content. On the right side, there is a sidebar with icons for Result Grid, Form Editor, Field Types, Query Stats, and a downward arrow. At the bottom, there is a log section showing the execution details: Action Output, # 1, Time 10:50:39, Action SELECT c.country, ROUND(AVG(t.amount),2) AS average\_amount..., Message 15 row(s) returned, Duration / Fetch 0.547 sec / 0.000 sec, and a Read Only status indicator.

## NIVEL 2. EJERCICIO 3

EN TU EMPRESA, SE PLANTEA UN NUEVO PROYECTO PARA LANZAR ALGUNAS CAMPAÑAS PUBLICITARIAS PARA HACER COMPETENCIA A LA COMPAÑÍA “NON INSTITUTE”. PARA ELLA, TE PIDEN LA LISTA DE TODAS LAS TRANSACCIONES REALIZADAS POR EMPRESAS QUE ESTÁN UBICADAS EN EL MISMO PAÍS QUE ESTA COMPAÑÍA.

- MUESTRA EL LISTADO APLICANDO JOIN Y SUBCONSULTAS.

```
1  /* La lista de todas las transacciones realizadas por empresas
2   que están ubicadas en el mismo país que "Non Institute"
3   (utilizando JOIN y subconsultas) */
4 • SELECT t.id, t.company_id, t.user_id, t.amount, t.declined -- Las características principales de transacción
5   FROM transaction AS t
6   LEFT JOIN company AS c
7   ON c.id=t.company_id
8   WHERE c.country=(SELECT c.country
9           FROM company AS c
10          WHERE c.company_name='Non Institute')
11         AND c.company_name<>'Non Institute'; -- Eliminar las transacciones de "Non Institute"
```

The screenshot shows a database query editor interface. At the top, there is a code editor window containing the SQL query. Below it is a result grid showing the output of the query. The result grid has columns: id, company\_id, user\_id, amount, and declined. There are 12 rows of data. At the bottom, there is an output pane showing the execution details, including the time (13:38:23), action (SELECT t.id, t.company\_id, t.user\_id, t.amount, t.declined - Las c...), message (12233 row(s) returned), and duration (0.000 sec / 0.047 sec).

	id	company_id	user_id	amount	declined
▶	008629B4-C9A9-406C-A3D2-71FDA47BC546	b-2246	2482	486.44	0
	00B72BA4-54A3-4B8E-B13F-2D57535AA17A	b-2246	3894	414.06	0
	01F075B1-D7AE-4D02-AAD9-5FFD72A43F3C	b-2246	4119	103.73	0
	023FFCE8-E618-4938-BF56-C8DF80540ADD	b-2246	3235	219.28	0
	02683BEB-EF91-4564-957B-D6F1662AB7C5	b-2246	4890	326.87	0
	02C2F29E-CEF2-4C1E-A594-F476E8F279C0	b-2246	4501	155.72	0
	02F468DC-426C-47C2-8B0A-D8B25B7A81AF	b-2246	2332	305.35	0

Result 5 ×

Output:

#	Time	Action	Message	Duration / Fetch
✓	1 13:38:23	SELECT t.id, t.company_id, t.user_id, t.amount, t.declined - Las c...	12233 row(s) returned	0.000 sec / 0.047 sec

## NIVEL 2. EJERCICIO 3

EN TU EMPRESA, SE PLANTEA UN NUEVO PROYECTO PARA LANZAR ALGUNAS CAMPAÑAS PUBLICITARIAS PARA HACER COMPETENCIA A LA COMPAÑÍA “NON INSTITUTE”. PARA ELLA, TE PIDEN LA LISTA DE TODAS LAS TRANSACCIONES REALIZADAS POR EMPRESAS QUE ESTÁN UBICADAS EN EL MISMO PAÍS QUE ESTA COMPAÑÍA.

- MUESTRA EL LISTADO APlicando SOLO SUBCONSULTAS.

```
1  /* La lista de todas las transacciones realizadas por empresas
2   que están ubicadas en el mismo país que "Non Institute"
3   (utilizando sólo subconsultas) */
4 • SELECT t.id, t.company_id, t.user_id, t.amount, t.declined -- Las características principales de transacción
5   FROM transaction AS t
6 WHERE EXISTS (SELECT *
7   FROM company AS c
8   WHERE c.id=t.company_id
9   AND c.country=(SELECT c.country
10    FROM company AS c
11    WHERE c.company_name='Non Institute')
12   AND c.company_name<>'Non Institute'); -- Eliminar las transacciones de "Non Institute"
```

transaction 14 ×

Output :-----

Action Output

#	Time	Action	Message	Duration / Fetch
1	13:40:44	SELECT t.id, t.company_id, t.user_id, t.amount, t.declined-- Las c...	12233 row(s) returned	0.000 sec / 0.047 sec

### NIVEL 3. EJERCICIO 1

*PRESENTA EL NOMBRE, TELÉFONO, PAÍS, FECHA Y AMOUNT, DE AQUELLAS EMPRESAS QUE REALIZARON TRANSACCIONES CON UN VALOR COMPRENDIDO ENTRE 350 Y 400 EUROS Y EN ALGUNA DE ESTAS FECHAS: 29 DE ABRIL DE 2015, 20 DE JULIO DE 2018 Y 13 DE MARZO DE 2024. ORDENA LOS RESULTADOS DE MAYOR A MENOR CANTIDAD.*

```
1 -- El nombre, teléfono, país, fecha y amount, de aquellas empresas que realizaron transacciones con los condiciones
2 • SELECT c.company_name, c.phone, c.country, DATE_FORMAT(t.timestamp, '%d.%m.%Y') AS date, t.amount
3   FROM transaction AS t
4   LEFT JOIN company AS c
5     ON c.id=t.company_id
6   WHERE (t.amount BETWEEN 350 AND 400)
7       AND DATE(t.timestamp) IN ('2015-04-29', '2018-07-20', '2024-03-13')
8   ORDER BY t.amount DESC;
```

The screenshot shows a database query results interface. At the top, there is a code editor window containing the SQL query. Below it is a results grid table with columns: company\_name, phone, country, date, and amount. The results show eight rows of data. To the right of the results grid is a sidebar with icons for Result Grid, Form Editor, and other tools. Below the results grid is an 'Output' section with an 'Action Output' table. The table has columns: #, Time, Action, Message, and Duration / Fetch. It shows one entry: # 1, Time 13:49:42, Action SELECT c.company\_name, c.phone, c.country, DATE\_FORMAT..., Message 8 row(s) returned, and Duration / Fetch 0.062 sec / 0.000 sec. There is also a 'Read Only' status indicator.

company_name	phone	country	date	amount
Aliquam PC	01 45 73 52 16	Germany	13.03.2024	399.84
Auctor Mauris Vel LLP	08 09 28 74 14	United States	20.07.2018	399.51
At Pede Corp.	06 14 48 33 15	Italy	29.04.2015	390.69
Aliquam PC	01 45 73 52 16	Germany	13.03.2024	388.29
Orci Adipiscing Limited	03 18 00 77 81	United Kingdom	20.07.2018	373.71
Fringilla LLC	08 29 15 93 57	New Zealand	29.04.2015	367.62
Pede Cum Ltd	07 62 26 48 38	Norway	20.07.2018	356.87
Auctor Mauris Vel LLP	08 09 28 74 14	United States	13.03.2024	353.75

Result 16 x Read Only

Output :

#	Time	Action	Message	Duration / Fetch
1	13:49:42	SELECT c.company_name, c.phone, c.country, DATE_FORMAT...	8 row(s) returned	0.062 sec / 0.000 sec

### NIVEL 3. EJERCICIO 2

NECESITAMOS OPTIMIZAR LA ASIGNACIÓN DE LOS RECURSOS Y DEPENDERÁ DE LA CAPACIDAD OPERATIVA QUE SE REQUIERA, POR LO QUE TE PIDEN LA INFORMACIÓN SOBRE LA CANTIDAD DE TRANSACCIONES QUE REALIZAN LAS EMPRESAS, PERO EL DEPARTAMENTO DE RECURSOS HUMANOS ES EXIGENTE Y QUIERE UN LISTADO DE LAS EMPRESAS EN LAS QUE ESPECIFIQUES SI TIENEN MÁS DE 400 TRANSACCIONES O MENOS.

```
1      -- La cantidad de transacciones que realizan las empresas (más de 400 transacciones o menos)
2 •  SELECT c.company_name, COUNT(t.amount) AS number_of_transactions,
3           IF(COUNT(t.amount) > 400, 'more than 400', 'less than 400') AS result
4     FROM transaction AS t
5   LEFT JOIN company AS c
6     ON c.id=t.company_id
7   GROUP BY c.company_name;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Result Grid | Form Editor | Field Types | Read Only

company_name	number_of_transactions	result
Eget Tincidunt Dui Institute	1527	more than 400
Non Justo Corp.	1479	more than 400
Neque Tellus Imperdiet Corp.	424	more than 400
Fusce Corp.	447	more than 400
Mus Aenean Eget Foundation	1563	more than 400
Aliquam Iaculis Lacus Corp.	426	more than 400
Lorem Ipsum Dolor Corp.	1466	more than 400
Amet Luctus Vulputate Foundation	411	more than 400
Nulla Integer Vulputate Corp.	1449	more than 400
Auctor Mauris Corp.	1564	more than 400

Result 18 | Output | Action Output | Duration / Fetch

#	Time	Action	Message	Duration / Fetch
1	13:59:27	SELECT c.company_name, COUNT(t.amount) AS numb...	100 row(s) returned	0.359 sec / 0.000 sec