ENTREGABLE: sprint 04

ALUMNO: Ignacio Soldevilla Royo

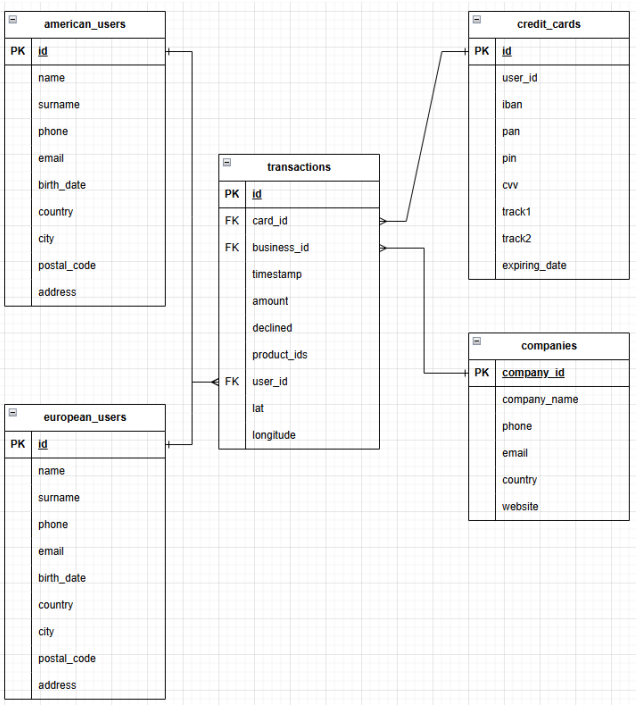
FECHA: 04-11-2025

NIVEL 1

Descarga los archivos CSV, estúdiales y diseña una base de datos con un esquema de estrella que contenga, al menos 4 tablas de las que puedas realizar las siguientes consultas:

La nueva base de datos la voy a llamar “transactions_2”

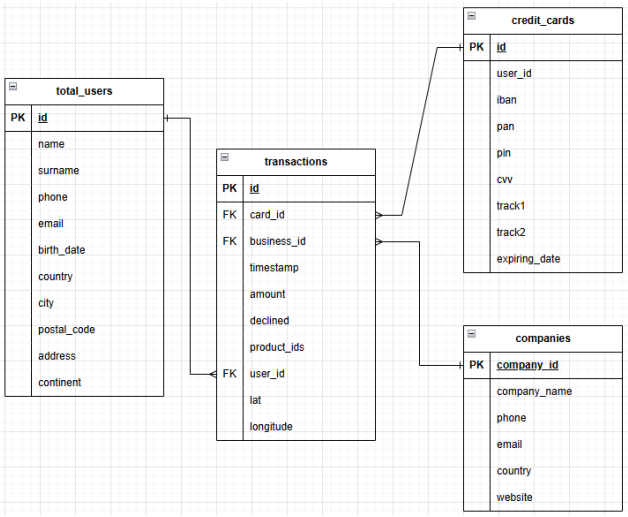
Después de estudiar las tablas haría una configuración en estrella donde la tabla de hechos seria la “”transactions” y las de dimensiones serían las tablas “american_users”, “european_users”, “companies” y “credit_cards”. Las cardinalidades son 1:N desde las tablas de dimensiones a la de hechos. Quedando un diagrama así:



Pero vemos que las tablas “european_users” y “american_users” son exactamente iguales por lo que podría ponerlas en una única tabla pero perdiendo la granularidad del continente, por lo que para no perderla por si en un futuro la necesitase, hare:

1. Añadiré a cada tabla un campo nuevo llamado “continent”
2. Este campo nuevo lo relleno con el valor “european” en la tabla “european_users”
3. Este campo nuevo lo relleno con el valor “american” en la tabla “american _users”
4. Creo una tabla nueva llamada “total_users” con la unión de las 2 anteriores al tener los mismos campos.

Quedándome este diagrama:



DEFINICION:

1. Creo la nueva BD llamada “transactions_2”

```
7     -- Primero creo la nueva base de datos
8 •   CREATE DATABASE IF NOT EXISTS transactions_2;
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
7	13:32:17	SHOW DATABASES	9 row(s) returned	0.078 sec / 0.000 sec
8	13:34:32	CREATE DATABASE IF NOT EXISTS transactions_2	1 row(s) affected	0.047 sec

2. Compruebo que se ha creado

```
10    -- Compruebo que se ha creado correctamente
11 •  SHOW DATABASES;
```

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

Database
information_schema
mysql
new_schema
performance_schema
sakila
sys
tienda_online
transactions
transactions_2
world

3. La seleccionamos para trabajar con ella

```
13    -- la seleccionamos para trabajar con ella
14 •  USE transactions_2;
```

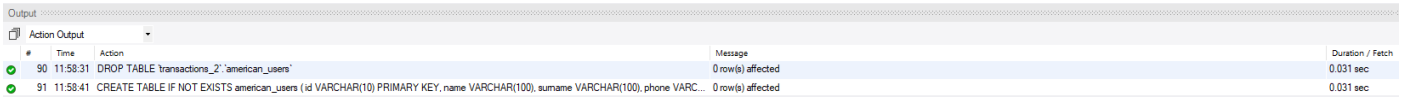
Output

Action Output

#	Time	Action	Message	Duration / Fetch
9	13:35:31	SHOW DATABASES	10 row(s) returned	0.000 sec / 0.000 sec
10	13:38:35	USE transactions_2	0 row(s) affected	0.015 sec

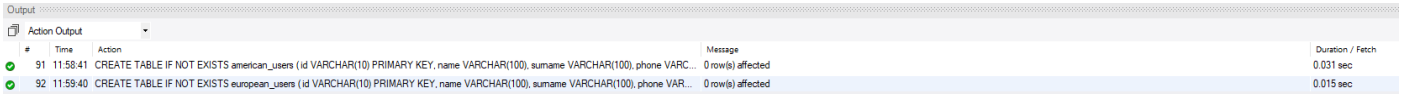
4. Tablas de users:
    a. Creo las tablas “american_users” y “european_users”

```sql
-- Creo la tabla american_users
CREATE TABLE IF NOT EXISTS american_users (
    id VARCHAR(10) PRIMARY KEY,
    name VARCHAR(100),
    surname VARCHAR(100),
    phone VARCHAR(150),
    email VARCHAR(150),
    birth_date VARCHAR(100),
    country VARCHAR(150),
    city VARCHAR(150),
    postal_code VARCHAR(100),
    address VARCHAR(255)
);
```



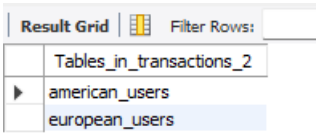
#	Time	Action	Message	Duration / Fetch
90	11:58:31	DROP TABLE `transactions_2`.`american_users`	0 row(s) affected	0.031 sec
91	11:58:41	CREATE TABLE IF NOT EXISTS american_users (id VARCHAR(10) PRIMARY KEY, name VARCHAR(100), surname VARCHAR(100), phone VARC...	0 row(s) affected	0.031 sec

```sql
-- Creo la tabla european_users
CREATE TABLE IF NOT EXISTS european_users (
    id VARCHAR(10) PRIMARY KEY,
    name VARCHAR(100),
    surname VARCHAR(100),
    phone VARCHAR(150),
    email VARCHAR(150),
    birth_date VARCHAR(100),
    country VARCHAR(150),
    city VARCHAR(150),
    postal_code VARCHAR(100),
    address VARCHAR(255)
);
```



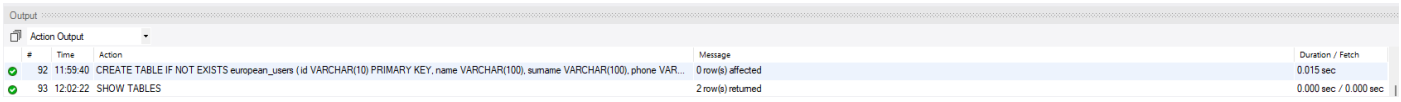
#	Time	Action	Message	Duration / Fetch
91	11:58:41	CREATE TABLE IF NOT EXISTS american_users (id VARCHAR(10) PRIMARY KEY, name VARCHAR(100), surname VARCHAR(100), phone VARC...	0 row(s) affected	0.031 sec
92	11:59:40	CREATE TABLE IF NOT EXISTS european_users (id VARCHAR(10) PRIMARY KEY, name VARCHAR(100), surname VARCHAR(100), phone VAR...	0 row(s) affected	0.015 sec

```sql
-- me aseguro que se han creado
SHOW TABLES;
```



Result Grid | Filter Rows:

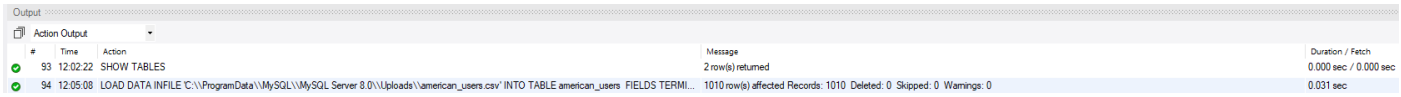
Tables_in_transactions_2
american_users
european_users



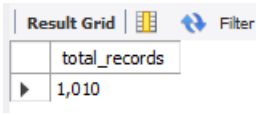
#	Time	Action	Message	Duration / Fetch
92	11:59:40	CREATE TABLE IF NOT EXISTS european_users (id VARCHAR(10) PRIMARY KEY, name VARCHAR(100), surname VARCHAR(100), phone VAR...	0 row(s) affected	0.015 sec
93	12:02:22	SHOW TABLES	2 row(s) returned	0.000 sec / 0.000 sec

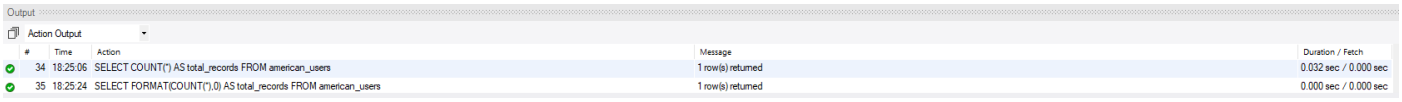
b. Cargo los datos de los ficheros csv en las tablas “european_users” y “american_users”. Pero primero los tengo que poner en el directorio: C:\ProgramData\MySQL\MySQL Server 8.0\Uploads por temas de seguridad es el directorio donde deben estar los ficheros.

```sql
-- Introduzco los datos del fichero american_users.csv que me da el ejercicio
LOAD DATA
    INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\american_users.csv'
    INTO TABLE american_users
    FIELDS TERMINATED BY ','
    ENCLOSED BY '"'
    LINES TERMINATED BY '\n'
    IGNORE 1 ROWS
;
```

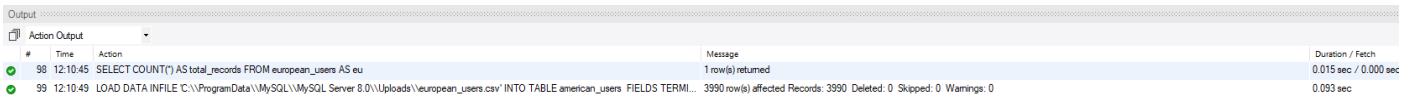



```
59      -- Cuento las filas introducidas para comprobar que tiene las mismas que el csv que son 1010 sin contar la cabecera
60      SELECT FORMAT(COUNT(*),0) AS total_records
61      FROM american_users;
```

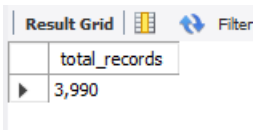


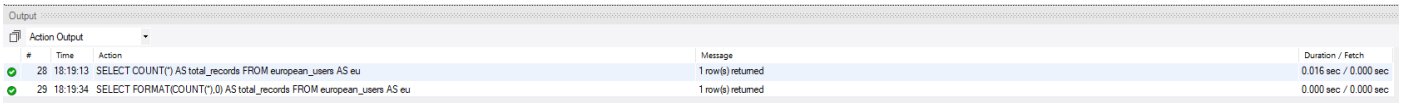



```
63      -- Introduzco los datos del fichero european_users.csv que me da el ejercicio
64      LOAD DATA
65          INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\european_users.csv'
66          INTO TABLE european_users
67          FIELDS TERMINATED BY ','
68          ENCLOSED BY '"'
69          LINES TERMINATED BY '\n'
70          IGNORE 1 ROWS
71      ;
```



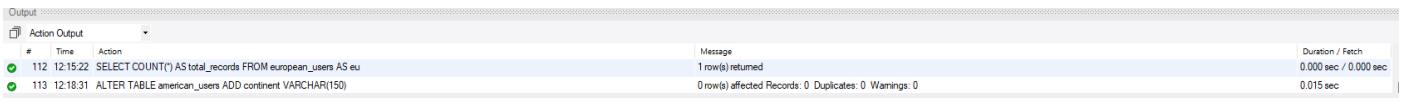

```
72      -- Cuento las filas introducidas para comprobar que tiene las mismas que el csv que son 3990 sin contar la cabecera
73      SELECT FORMAT(COUNT(*),0) AS total_records
74      FROM european_users AS eu;
```





c. Añado el campo llamado “continent”, en ambas tablas y luego lo relleno en todos los registros de la tabla “american_users” con el datos “american” y en la tabla “european_users” con ““european”. Así no pierdo granularidad

```
87      -- añado el campo continent
88      ALTER TABLE american_users ADD continent VARCHAR(150);
```




```
91      -- compruebo que la columna continent esta vacia
92      SELECT au.*
93      FROM american_users AS au;
```

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

id	name	surname	phone	email	birth_date	country	city	postal_code	address	continent
1	Zeus	Gamble	1-282-581-0551	interdum.enim@protonmail.edu	Nov 17, 1985	United States	New York	10001	348-7818 Sagittis St.	NULL
10	Robert	Mccarthy	(324) 746-6771	fermentum@protonmail.com	Apr 30, 1984	United States	San Jose	95101	P.O. Box 773	NULL
100	Melodie	Mclean	1-677-221-7152	risus.varius@google.ca	Sep 15, 1989	United States	San Jose	95101	Ap #644-8492 Sagittis St.	NULL
1006	Rbkocq	Swkmynuj	+38-186-8580	rbkocq.swkmynuj@example.com	Dec 2, 1989	United States	New York	10001	567 Swkmynuj St	NULL
101	Sarah	Beck	(358) 691-4345	vitae.risus@aol.couk	Apr 9, 1983	United States	Philadelphia	19101	665-9047 In	NULL
1011	Vosctr	Cpmnpofu	+74-726-8327	vosctr.cpmnpofu@example.com	Mar 21, 1954	United States	San Jose	95101	775 Cpmnpofu St	NULL
1015	Ydxljl	Yhswlpqn	+84-730-3250	ydxljl.yhswlpqn@example.com	Nov 13, 2000	Canada	Hamilton	L8E 0A1	209 Yhswlpqn St	NULL
1018	Ugddlo	Zpbkcjgo	+78-537-1497	ugddlo.zpbkcjgo@example.com	Aug 7, 1950	United States	Chicago	60601	47 Zpbkcjgo St	NULL
102	Jasper	Landry	1-397-765-1118	consectetuer.euismod@aol.org	Apr 16, 1982	United States	Philadelphia	19101	Ap #374-7325 Sodales Rd.	NULL
103	Upton	Chavez	(227) 785-6484	euismod.est@aol.ca	Mar 15, 1986	United States	Philadelphia	19101	1990 Vel	NULL
1037	Igeldc	Blnegpaz	+64-495-5490	igeldc.blnegpaz@example.com	Oct 26, 2000	Canada	Hamilton	L8E 0A1	634 Blnegpaz St	NULL
104	Martha	Barlow	(732) 326-5448	vulputate@hotmail.net	Oct 29, 1988	United States	Los Angeles	90001	Ap #311-7103 In Avenue	NULL
1042	Gfmdvb	Kivosgmc	+63-719-3839	gfmdvb.kivosgmc@example.com	Nov 26, 1960	United States	Houston	77001	408 Kivosgmc St	NULL

Output

Action Output

#	Time	Action	Message	Duration / Fetch
113	12:18:31	ALTER TABLE american_users ADD continent VARCHAR(150)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.015 sec
114	12:19:18	SELECT * FROM american_users AS au	1010 row(s) returned	0.000 sec / 0.015 sec

Previamente compruebo que el índice “0” no existe

```
95      -- Cargo el valor american en la campo continent para todos los registros
96 •    UPDATE american_users
97      SET continent = "american"
98      WHERE id <> "0";
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
115	12:21:20	SELECT au.* FROM american_users AS au	1010 row(s) returned	0.000 sec / 0.000 sec
116	12:22:55	UPDATE american_users SET continent = "american" WHERE id <> "0"	1010 row(s) affected Rows matched: 1010 Changed: 1010 Warnings: 0	0.047 sec

```
89      -- compruebo que la columna continent ya tiene el valor american y esta en todos los registros (1010)
90 •    SELECT FORMAT(COUNT(au.continent),0) AS total_records_with_american
91      FROM american_users AS au;
```

Result Grid | Filter Rows:

total_records_with_american
1,010

Output

Action Output

#	Time	Action	Message	Duration / Fetch
25	18:16:52	SELECT COUNT(au.continent) AS total_records_with_american FROM american_users AS au	1 row(s) returned	0.000 sec / 0.000 sec

```
94      -- añado el campo continent a la tabla european_users
95 •    ALTER TABLE european_users ADD continent VARCHAR(150);
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
118	12:27:05	SELECT COUNT(au.continent) AS total_records_with_american FROM american_users AS au	1 row(s) returned	0.000 sec / 0.000 sec
119	12:32:07	ALTER TABLE european_users ADD continent VARCHAR(150)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec

```
97      -- compruebo que la columna continent esta vacia
98 •    SELECT eu.*
99      FROM european_users AS eu;
```

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

id	name	surname	phone	email	birth_date	country	city	postal_code	address	continent
1000	Amkjrv	Qbulrxbp	+48-258-9936	amkjrv.qbulrxbp@example.com	May 17, 1970	Germany	Stuttgart	70173	215 Qbulrxbp St	NULL
1001	Nfvrlb	Oydaiwbg	+94-121-2522	nfvrlb.oydaiwbg@example.com	Mar 4, 1994	Germany	Cologne	50667	121 Oydaiwbg St	NULL
1002	Ijbfmd	Jbddzhvp	+70-120-3668	ijbfmd.jbddzhvp@example.com	Sep 27, 2001	Germany	Munich	80331	412 Jbddzhvp St	NULL
1003	Uyciig	Sfbdymzj	+58-123-6968	uyciig.sfbdymzj@example.com	Jan 20, 1981	Germany	Stuttgart	70173	735 Sfbdymzj St	NULL
1004	Yjqurq	Ojizvgqi	+77-944-2340	yjqurq.ojizvgqi@example.com	Jul 27, 1954	Germany	Munich	80331	685 Ojizvgqi St	NULL
1005	Mnlqtu	Glofegwk	+54-801-2627	mnlqtu.glofegwk@example.com	Nov 15, 1962	Portugal	Funchal	9000-001	8 Glofegwk St	NULL
1007	Ehcrlp	Xahkzrlm	+71-862-6101	ehcrlp.xahkzrlm@example.com	Nov 8, 1971	Spain	Sevilla	41001	205 Xahkzrlm St	NULL
1008	Securp	Faofvqfy	+76-822-2041	securp.faofvqfy@example.com	Nov 13, 1957	Sweden	Stockholm	111 20	535 Faofvqfy St	NULL
1009	Rsznah	Vfqffaqt	+67-294-3155	rsznah.vfqffaqt@example.com	Nov 10, 1952	Spain	Valencia	46001	507 Vfqffaqt St	NULL
1010	Dvugzj	Aaesjmca	+78-476-4768	dvugzj.aaesjmca@example.com	Dec 23, 1974	United Kingdom	Birmingham	B1 1AA	822 Aaesjmca St	NULL
1012	Dwufbr	Gsryolyv	+57-569-7693	dwufbr.gsryolyv@example.com	Aug 10, 1981	Netherlands	Amsterdam	1011	816 Gsryolyv St	NULL
1013	Kaahoi	Gktlopru	+56-147-5969	kaahoi.gktlopru@example.com	Nov 24, 1993	Poland	Wroclaw	50-001	555 Gktlopru St	NULL
1014	Fcxdix	Ogshifev	+69-709-4077	fcxdix.ogshifev@example.com	Mar 6, 1984	France	Nantes	44000	980 Ogshifev St	NULL

Output

Action Output

#	Time	Action	Message	Duration / Fetch
119	12:32:07	ALTER TABLE european_users ADD continent VARCHAR(150)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
120	12:32:45	SELECT eu.* FROM european_users AS eu	3990 row(s) returned	0.000 sec / 0.016 sec

```sql
-- Cargo el valor european en la campo continent para todos los registros
UPDATE european_users
SET continent = "european"
WHERE id <> "0";
```

Output

Action Output

	#	Time	Action	Message	Duration / Fetch
✔	120	12:32:45	SELECT eu.* FROM european_users AS eu	3990 row(s) returned	0.000 sec / 0.016 sec
✔	121	12:34:42	UPDATE european_users SET continent = "european" WHERE id <> "0"	3990 row(s) affected Rows matched: 3990 Changed: 3990 Warnings: 0	0.141 sec

```sql
-- compruebo que la columna continent ya tiene el valor european y esta en todos los registros (3990)
SELECT FORMAT(COUNT(eu.continent),0) AS total_records_with_european
FROM european_users AS eu;
```

Result Grid | Filter Rows:

total_records_with_european
3,990

Output

Action Output

	#	Time	Action	Message	Duration / Fetch
✔	29	18:19:34	SELECT FORMAT(COUNT(*),0) AS total_records FROM european_users AS eu	1 row(s) returned	0.000 sec / 0.000 sec
✔	30	18:21:47	SELECT FORMAT(COUNT(eu.continent),0) AS total_records_with_european FROM european_users AS eu	1 row(s) returned	0.015 sec / 0.000 sec

d. Creo una tabla nueva llamada “total_users” donde uniré todos los datos de las tablas “european_users” y “american_users”. La estructura es igual que la de las 2 anteriores.

```sql
-- Creo la tabla total_users de igual estructura que las anteriores
CREATE TABLE IF NOT EXISTS total_users (
    id VARCHAR(10) PRIMARY KEY,
    name VARCHAR(100),
    surname VARCHAR(100),
    phone VARCHAR(150),
    email VARCHAR(150),
    birth_date VARCHAR(100),
    country VARCHAR(150),
    city VARCHAR(150),
    postal_code VARCHAR(100),
    address VARCHAR(255),
    continent VARCHAR(150)
);
```

Output

Action Output

	#	Time	Action	Message	Duration / Fetch
✔	124	12:38:28	SELECT eu.* FROM european_users AS eu	3990 row(s) returned	0.000 sec / 0.000 sec
✔	125	12:40:20	CREATE TABLE IF NOT EXISTS total_users (id VARCHAR(10) PRIMARY KEY, name VARCHAR(100), surname VARCHAR(100), phone VARCHAR...	0 row(s) affected	0.016 sec

e. Voy a copiar todos los registros desde las tablas “european_users” y “american_users” a la tabla “total_users”. Si coincidiese algún índice entre las 2 tablas, me daría un error al copiar la segunda tabla. He revisado los csv y no hay índices coincidentes. El total de registros debe ser 1010 + 3990 = 5000.

```sql
-- Copio todos los registros de las tablas european_users y american_users una vez comprobados que no se repiten los indices entre las 2 tablas (si se repitiese alguno daria error)
INSERT INTO total_users SELECT * FROM european_users;
INSERT INTO total_users SELECT * FROM american_users;
```

Output

Action Output

	#	Time	Action	Message	Duration / Fetch
✔	126	12:45:05	INSERT INTO total_users SELECT * FROM european_users	3990 row(s) affected Records: 3990 Duplicates: 0 Warnings: 0	0.094 sec
✔	127	12:45:11	INSERT INTO total_users SELECT * FROM american_users	1010 row(s) affected Records: 1010 Duplicates: 0 Warnings: 0	0.031 sec

```sql
-- Verifico que se han introducido el total de registros 1010 + 3990 = 5000
SELECT tu.continent AS continent, FORMAT(COUNT(*),0) AS users
FROM total_users AS tu
GROUP BY tu.continent;
```

Result Grid | Filter F

	continent	users
▶	american	1,010
	european	3,990

Output

Action Output

#	Time	Action	Message	Duration / Fetch
32	18:23:42	SELECT FORMAT(COUNT(eu.continent),0) AS total_records_with_european FROM european_users AS eu	1 row(s) returned	0.000 sec / 0.000 sec
33	18:24:11	SELECT tu.continent AS continent, FORMAT(COUNT(*),0) AS users FROM total_users AS tu GROUP BY tu.continent	2 row(s) returned	0.015 sec / 0.000 sec

f. Creo la tabla “companies” e introduzco los datos del fichero companies.csv que me da el ejercicio

```
142     -- Creo la tabla companies
143 •   CREATE TABLE IF NOT EXISTS companies (
144         company_id VARCHAR(15) PRIMARY KEY,
145         company_name VARCHAR(255),
146         phone VARCHAR(15),
147         email VARCHAR(100),
148         country VARCHAR(100),
149         website VARCHAR(255)
150     );
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
130	12:48:52	SELECT tu.continent AS continent, COUNT(*) AS users FROM total_users AS tu GROUP BY tu.continent	2 row(s) returned	0.000 sec / 0.000 sec
131	12:58:08	CREATE TABLE IF NOT EXISTS companies (company_id VARCHAR(15) PRIMARY KEY, company_name VARCHAR(255), phone VARCHAR(15), ...	0 row(s) affected	0.063 sec

```
152     -- Introduzco los datos del fichero companies.csv que me da el ejercicio
153 •   LOAD DATA
154         INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\companies.csv'
155         INTO TABLE companies
156         FIELDS TERMINATED BY ','
157         ENCLOSED BY '"'
158         LINES TERMINATED BY '\n'
159         IGNORE 1 ROWS
160     ;
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
133	12:59:57	LOAD DATA LOCAL INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\companies.csv' INTO TABLE companies FIELDS TERMIN...	Error Code: 3948. Loading local data is disabled; this must be enabled on both the client and server sides	0.000 sec
134	13:00:55	LOAD DATA INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\companies.csv' INTO TABLE companies FIELDS TERMINATED B...	100 row(s) affected Records: 100 Deleted: 0 Skipped: 0 Warnings: 0	0.047 sec

```
162     -- Cuento las filas introducidas para comprobar que tiene las mismas que el csv que son 100 sin contar la cabecera
163 •   SELECT COUNT(*) AS total_records
164     FROM companies;
```

Result Grid

	total_records
▶	100

Output

Action Output

#	Time	Action	Message	Duration / Fetch
134	13:00:55	LOAD DATA INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\companies.csv' INTO TABLE companies FIELDS TERMINATED B...	100 row(s) affected Records: 100 Deleted: 0 Skipped: 0 Warnings: 0	0.047 sec
135	13:04:15	SELECT COUNT(*) AS total_records FROM companies	1 row(s) returned	0.016 sec / 0.000 sec

g. Creo la tabla “credit_cards” e introduzco los datos del fichero credit_cards.csv que me da el ejercicio

```sql
-- Creamos la tabla credit_cards
    CREATE TABLE IF NOT EXISTS credit_cards (
        id VARCHAR(20) PRIMARY KEY,
        user_id  VARCHAR(15),
        iban VARCHAR(50),
        pan VARCHAR(50),
        pin VARCHAR(4),
        cvv VARCHAR(4),
        track1 VARCHAR(100),
        track2 VARCHAR(100),
        expiring_date VARCHAR(20)
    );
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
135	13:04:15	SELECT COUNT(*) AS total_records FROM companies	1 row(s) returned	0.016 sec / 0.000 sec
136	13:05:54	CREATE TABLE IF NOT EXISTS credit_cards (id VARCHAR(20) PRIMARY KEY, user_id VARCHAR(15), iban VARCHAR(50), ...	0 row(s) affected	0.031 sec

```sql
-- Introduzco los datos del fichero credit_cards.csv que me da el ejercicio
LOAD DATA
    INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\credit_cards.csv'
    INTO TABLE credit_cards
    FIELDS TERMINATED BY ','
    ENCLOSED BY '"'
    LINES TERMINATED BY '\n'
    IGNORE 1 ROWS
;
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
136	13:05:54	CREATE TABLE IF NOT EXISTS credit_cards (id VARCHAR(20) PRIMARY KEY, user_id VARCHAR(15), iban VARCHAR(50), ...	0 row(s) affected	0.031 sec
137	13:06:43	LOAD DATA INFILE C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\credit_cards.csv' INTO TABLE credit_cards FIELDS TERMINATE...	5000 row(s) affected Records: 5000 Deleted: 0 Skipped: 0 Warnings: 0	0.125 sec

```sql
-- Cuento las filas introducidas para comprobar que tiene las mismas que el csv que son 5000 sin contar la cabecera
SELECT FORMAT(COUNT(*),0) AS total_records
FROM credit_cards;
```

Result Grid

total_records
5,000

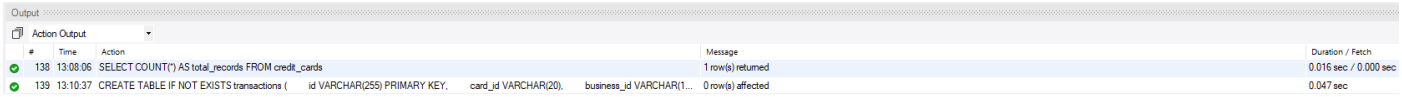
Output

Action Output

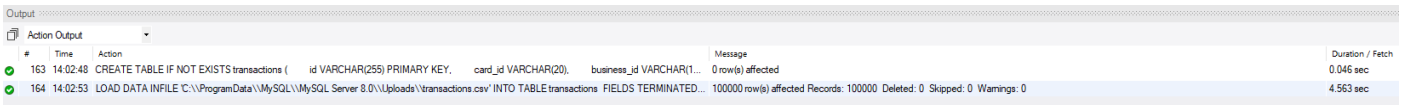
#	Time	Action	Message	Duration / Fetch
18	18:09:59	SELECT COUNT(*) AS total_records FROM credit_cards	1 row(s) returned	0.016 sec / 0.000 sec

h. Creo la tabla “transactions” e introduzco los datos del fichero transactions.csv que me da el ejercicio

```sql
-- Creamos la tabla transactions
    CREATE TABLE IF NOT EXISTS transactions (
        id VARCHAR(255) PRIMARY KEY,
        card_id VARCHAR(20),
        business_id VARCHAR(15),
        timestamp TIMESTAMP,
        amount DECIMAL(10, 2),
        declined BOOLEAN,
        product_ids VARCHAR(50),
        user_id VARCHAR(10),
        lat VARCHAR(30),
        longitude VARCHAR(30),
        FOREIGN KEY (card_id) REFERENCES credit_cards(id),
        FOREIGN KEY (business_id) REFERENCES companies(company_id),
        FOREIGN KEY (user_id) REFERENCES total_users(id)
    );
```



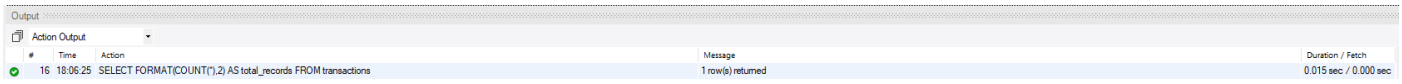

```
213     -- Introduzco los datos del fichero transactions.csv que me da el ejercicio. OJO que los datos estan separados por ; en vez de por ,
214 •   LOAD DATA
215         INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\transactions.csv'
216         INTO TABLE transactions
217         FIELDS TERMINATED BY ';'
218         ENCLOSED BY '"'
219         LINES TERMINATED BY '\n'
220         IGNORE 1 ROWS
221     ;
```



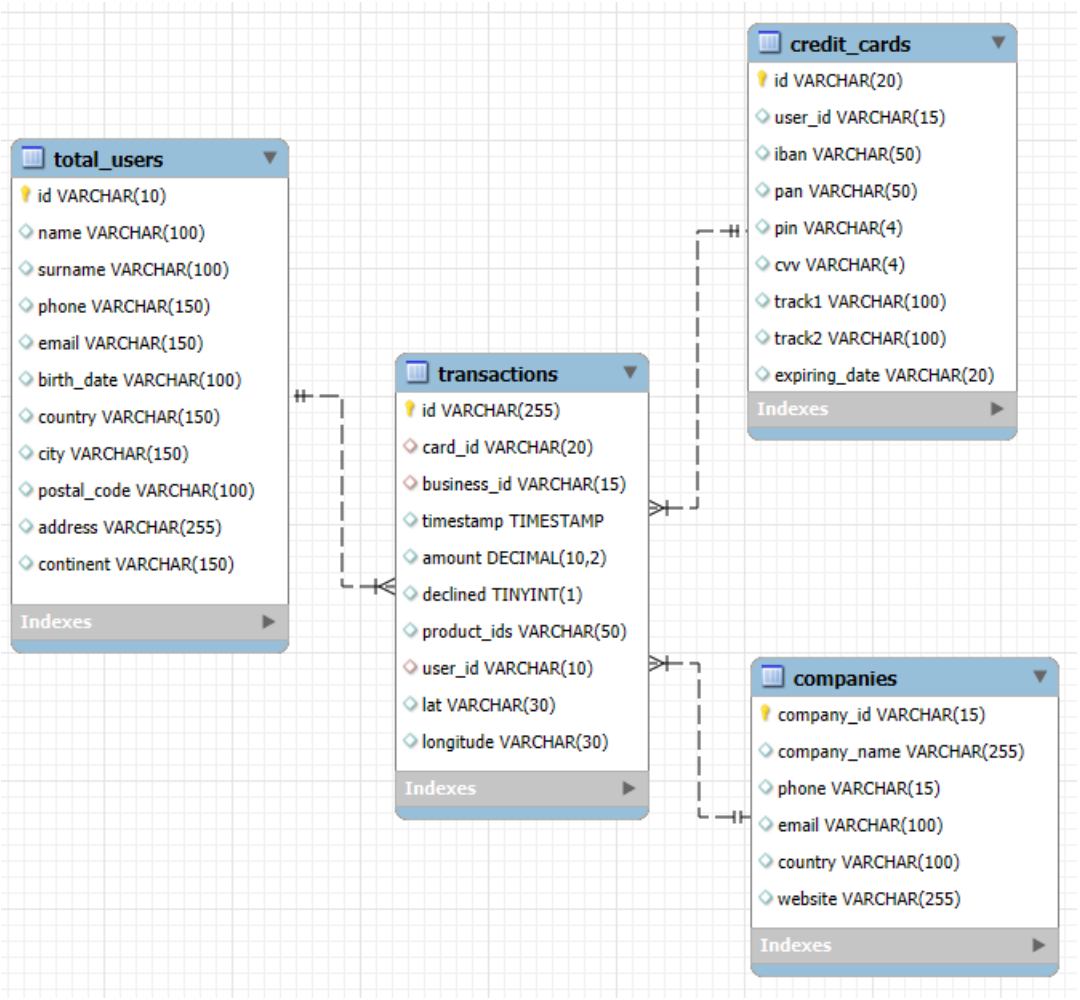

```
223     -- Cuento las filas introducidas para comprobar que tiene las mismas que el csv que son 100,000 sin contar la cabecera
224 •   SELECT FORMAT(COUNT(*),0) AS total_records
225     FROM transactions;
```

Result Grid

total_records
100,000



Las tablas “american_users” y “european_users” no las muestro porque no están relacionadas o conectadas con el resto del modelo que estamos trabajando, e incluso se podrían borrar con DROP TABLE nombre_tabla;, pero no las elimino porque podría ser que en este modelo ETL estas tablas podrían estar conectadas a otra base de datos mayor, se actualizasen y tendría que volver a actualizar la tabla “total_users” a partir de ellas si fuese necesario. Y llegado a este punto, tengo este modelo de BD:



Ejercicio 1

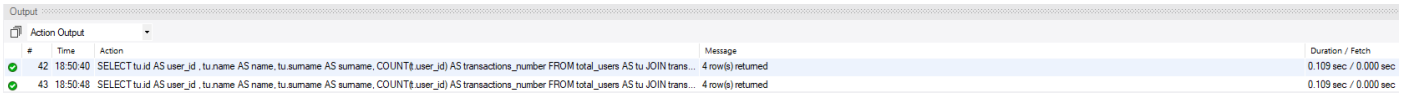
Realiza una subconsulta que muestre a todos los usuarios con más de 80 transacciones utilizando al menos 2 tablas.

En la tabla “transaction” voy a contar las transacciones de cada id de usuario, pero como dice utilizar 2 tablas, hago un JOIN con la tabla “total_users” y de ahí obtengo el id, el nombre y el apellido. Los visualizo en orden descendente de número de transacciones.

```
243 •   SELECT tu.id AS user_id , tu.name AS name, tu.surname AS surname, COUNT(t.user_id) AS transactions_number
244     FROM total_users AS tu
245     JOIN transactions AS t
246     ON tu.id = t.user_id
247     GROUP BY user_id
248     HAVING transactions_number > 80
249     ORDER BY transactions_number DESC
250     ;
```

Result Grid | Filter Rows: | Export

user_id	name	surname	transactions_number
185	Molly	Gilliam	110
289	Dxwgi	Hwcru	94
318	Bnyr	Astuw	91
454	Sfzzoh	Xgvfridxs	81



Ejercicio 2

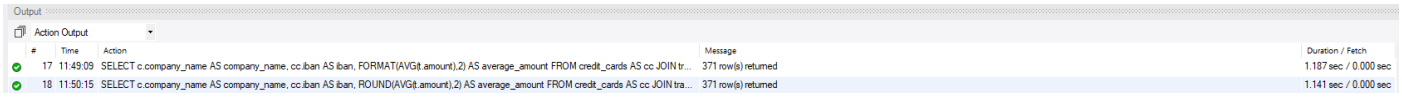
Muestra la media de amount por IBAN de las tarjetas de crédito en la compañía Donec Ltd., utiliza por lo menos 2 tablas.

Calculo el average del amount que esta en la tabla “transactions” agrupado por el iban que esta en la tabla “credit_cards” y por los nombres de compañía que están en la tabla “companies”, por eso uso las uniones de tablas. Importante ver que las medias las realiza bien a pesar de que el “amount” es del tipo VARCHAR, pero a la hora de ordenar los resultados, como son VARCHAR pues los ordena como si fuese string, por lo que tengo que usar la función CAST para cambiar de string a decimal y así ya me hace correctamente el ordenamiento, que en este caso lo pongo descendente para ver primero los iban que mas han gastado.

```
256 •   SELECT c.company_name AS company_name, cc.iban AS iban, ROUND(AVG(t.amount),2) AS average_amount
257     FROM credit_cards AS cc
258     JOIN transactions AS t
259     ON cc.id = t.card_id
260     JOIN companies AS c
261     ON t.business_id = c.company_id
262     GROUP BY company_name, iban
263     HAVING company_name = "Donec Ltd"
264     ORDER BY average_amount DESC
265     ;
```

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

company_name	iban	average_amount
Donec Ltd	XX3830178139196201993663 52	680.69
Donec Ltd	XX6377063573975703949739 13	680.01
Donec Ltd	XX9713939714652922023122 59	645.46
Donec Ltd	XX1718471169288923759693 07	628.89
Donec Ltd	XX2254246388185424062235 75	608.68
Donec Ltd	XX7488907290571957117660 71	607.29
Donec Ltd	TN9614563570667381893122	605.41
Donec Ltd	XX4819080340373642425911 85	605.36
Donec Ltd	XX1946755197392563357535 08	597.19
Donec Ltd	XX2159627660619671954934 37	594.26
Donec Ltd	XX4493223208268907210014 43	591.61
Donec Ltd	XX5351854927357042294742 37	570.09
Donec Ltd	CH9552373968796160224	566.38
Donec Ltd	XX3476053771256378803031 31	561.80
Donec Ltd	XX6884714466979219128603 04	543.42
Donec Ltd	XX6055339645824587041059 56	542.00
Donec Ltd	PL7624928356685267634340 4576	541.56
Donec Ltd	XX2588625857060631543811 30	539.81
Donec Ltd	XX6512705260108931791194 77	535.59
Donec Ltd	CR2918135947128138635	535.11



NIVEL 2

Crea una nueva tabla que refleje el estado de las tarjetas de crédito basado en *si las tres últimas transacciones han sido declinadas entonces es inactivo, si al menos una no es rechazada entonces es activo* . Partiendo de esta tabla responde:

1. Primero voy a hacer la consulta paso a paso utilizando los filtros de ventana hasta llegar a una visualización que me de 2 columnas, una con la id de la tarjeta y la otra con su estado. En el fichero sql están todos los pasos hasta llegar a el query final, aquí solo pongo los printados del query final, que es:

```
323     -- SOLUCION FINAL del QUERY ---
324     SELECT sbn.card_id,
325     CASE
326             WHEN sbn.sum_3_last = 3 THEN "inactive"
327             ELSE "active"
328     END AS state
329     FROM (
330         SELECT rnk.card_id, SUM(rnk.declined) AS sum_3_last
331         FROM (SELECT
332                 t.card_id,
333                 t.timestamp,
334                 t.declined,
335                 ROW_NUMBER() OVER (PARTITION BY card_id ORDER BY timestamp DESC) AS rn
336             FROM transactions AS t
337             ) AS rnk
338         WHERE rnk.rn <= 3
339         GROUP BY rnk.card_id
340         ORDER BY rnk.card_id DESC
341     ) AS sbn
342     ;
```

Result Grid | Filter Rows:

card_id	state
CcU-4856	active
CcU-4849	active
CcU-4842	active
CcU-4835	active
CcU-4828	active
CcU-4821	active
CcU-4814	active
CcU-4807	active
CcU-4800	active
CcU-4793	active
CcU-4786	active
CcU-4779	active
CcU-4772	active

Output

Action Output

#	Time	Action	Message	Duration / Fetch
95	12:59:45	DROP TABLE `transactions_2`.`credit_state`	0 row(s) affected	0.032 sec
96	13:02:48	SELECT sbn.card_id, CASE WHEN sbn.sum_3_last = 3 THEN "inactive" ELSE "active" END AS state FROM (SELECT rnk.card_id, SUM(rnk.declin...	5000 row(s) returned	0.297 sec / 0.000 sec

2. Creo la estructura de la tabla con sus 2 columnas o campos. No la relaciono con ninguna otra tabla de la BD porque el ejercicio no me lo pide.

```sql
-- Creo la estructura de la tabla
CREATE TABLE IF NOT EXISTS credit_state(
    card_id VARCHAR(20) PRIMARY KEY,
    card_state VARCHAR(10)
);
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
96	13:02:48	SELECT sbn.card_id, CASE WHEN sbn.sum_3_last = 3 THEN "inactive" ELSE "active" END AS state FROM (SELECT rnk.card_id, SUM(rnk.declin...	5000 row(s) returned	0.297 sec / 0.000 sec
97	13:05:56	CREATE TABLE IF NOT EXISTS credit_state(card_id VARCHAR(20) PRIMARY KEY, card_state VARCHAR(10))	0 row(s) affected	0.032 sec

3. Compruebo que se ha creado correctamente y esta vacía

```sql
-- compruebo que se ha creado correctamente y esta vacia
SELECT *
FROM credit_state AS CS;
```

Result Grid | Filter Rows:

card_id	card_state
NULL	NULL

Output

Action Output

#	Time	Action	Message	Duration / Fetch
97	13:05:56	CREATE TABLE IF NOT EXISTS credit_state(card_id VARCHAR(20) PRIMARY KEY, card_state VARCHAR(10))	0 row(s) affected	0.032 sec
98	13:07:31	SELECT * FROM credit_state AS CS	0 row(s) returned	0.000 sec / 0.000 sec

4. Cargo los datos en la tabla, usando la consulta final creada en el punto 1 anterior:

```sql
INSERT INTO credit_state (
                        SELECT sbn.card_id,
                        CASE
                                WHEN sbn.sum_3_last = 3 THEN "inactive"
                                ELSE "active"
                        END AS state
                        FROM (
                            SELECT rnk.card_id, SUM(rnk.declined) AS sum_3_last
                            FROM (SELECT
                                    t.card_id,
                                    t.timestamp,
                                    t.declined,
                                    ROW_NUMBER() OVER (PARTITION BY card_id ORDER BY timestamp DESC) AS rn
                                FROM transactions AS t
                                ) AS rnk
                            WHERE rnk.rn <= 3
                            GROUP BY rnk.card_id
                            ORDER BY rnk.card_id DESC
                        ) AS sbn
)
;
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
98	13:07:31	SELECT * FROM credit_state AS CS	0 row(s) returned	0.000 sec / 0.000 sec
99	13:11:02	INSERT INTO credit_state (SELECT sbn.card_id, CASE WHEN sbn.sum_3_last = 3 THEN "inactive" ELSE "active" END AS state FROM (SELEC...	5000 row(s) affected Records: 5000 Duplicates: 0 Warnings: 0	0.422 sec

5. Por último, compruebo que se han cargado los datos y hay 5.000 registros

```sql
-- compruebo que se han cargado los datos. Debe haber 5.000 filas
SELECT *
FROM credit_state AS CS;
```

Result Grid | Filter Rows:

card_id	card_state
CcS-4857	active
CcS-4858	active
CcS-4859	active
CcS-4860	active
CcS-4861	active
CcS-4862	active
CcS-4863	active
CcS-4864	active
CcS-4865	active
CcS-4866	active
CcS-4867	active
CcS-4868	active
CcS-4869	active

Output

Action Output

#	Time	Action	Message	Duration / Fetch
99	13:11:02	INSERT INTO credit_state (SELECT sbn.card_id, CASE WHEN sbn.sum_3_last = 3 THEN "inactive" ELSE "active" END AS state FROM (SEL...	5000 row... affected Records: 5000 Duplicates: 0 Warnings: 0	0.422 sec
100	13:12:47	SELECT * FROM credit_state AS CS	5000 row(s) returned	0.000 sec / 0.016 sec

Ejercicio 1

¿Cuántas tarjetas están activas?

```sql
SELECT cs.card_state, COUNT(cs.card_state) AS quantity
FROM credit_state AS cs
GROUP BY cs.card_state
HAVING cs.card_state = "active"
;
```

Result Grid | Filter Row

card_state	quantity
active	4995

Output

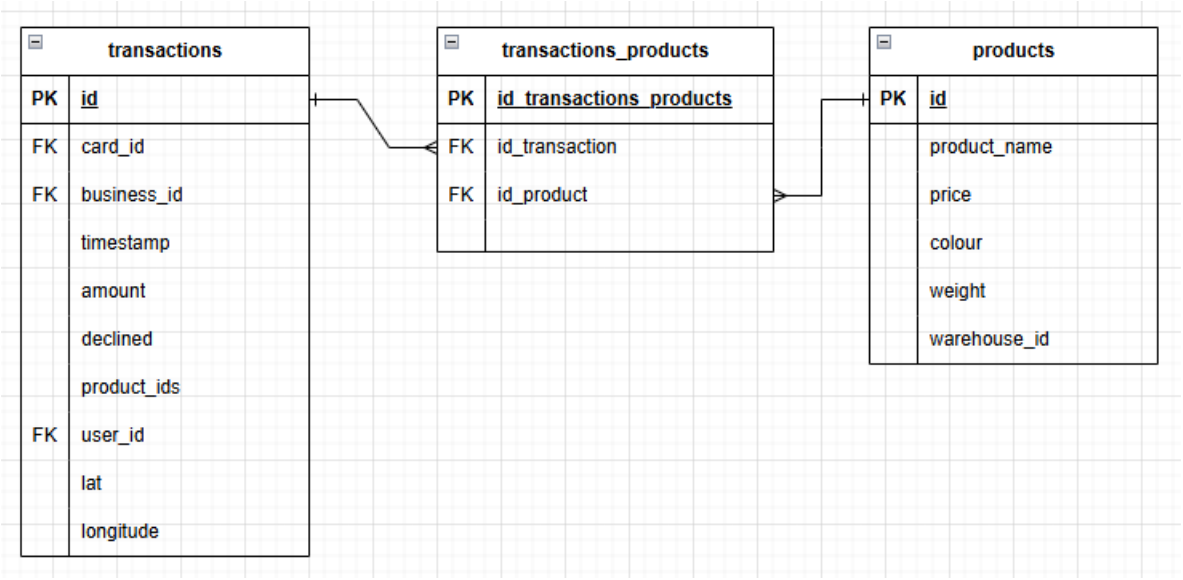
Action Output

#	Time	Action	Message	Duration / Fetch
100	13:12:47	SELECT * FROM credit_state AS CS	5000 row(s) returned	0.000 sec / 0.016 sec
101	13:16:11	SELECT cs.card_state, COUNT(cs.card_state) AS quantity FROM credit_state AS cs GROUP BY cs.card_state HAVING cs.card_state = "active"	1 row(s) returned	0.016 sec / 0.000 sec

NIVEL 3

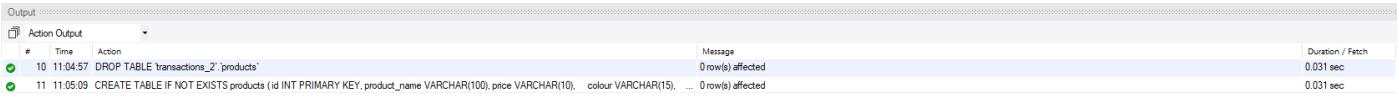
Crea una tabla con la que podamos unir los datos del nuevo archivo products.csv con la base de datos creada, teniendo en cuenta que desde transaction tienes product_ids. Genera la siguiente consulta:

La idea es crear una tabla intermedia al tener una relación de N:M entre transactios y productos, así que voy a crear la siguiente estructura con una taba intermedia llamada “transactions_products”:



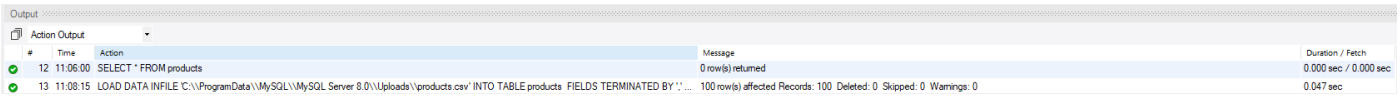
1. Creo la estructura de la tabla “products”

```
-- Creo la tabla products
CREATE TABLE IF NOT EXISTS products (
    id INT PRIMARY KEY,
    product_name VARCHAR(100),
    price VARCHAR(10),
    colour VARCHAR(15),
    weight VARCHAR(10),
    warehouse_id VARCHAR(10)
);
```



2. Cargo los datos de los productos del fichero products.csv en la estructura creada anteriormente

```
-- Introduzco los datos del fichero products.csv que me da el ejercicio
LOAD DATA
    INFILE 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\products.csv'
    INTO TABLE products
    FIELDS TERMINATED BY ','
    ENCLOSED BY '"'
    LINES TERMINATED BY '\n'
    IGNORE 1 ROWS
;
```



3. Compruebo que se han cargado correctamente

```sql
SELECT *
FROM products;
```

Result Grid | Filter Rows: | Edit: | Export/Impc

id	product_name	price	colour	weight	warehouse_id
1	Direwolf Stannis	$161.11	#7c7c7c	1	WH-4
2	Tarly Stark	$9.24	#919191	2	WH-3
3	duel tourney Lannister	$171.13	#d8d8d8	1.5	WH-2
4	warden south duel	$71.89	#111111	3	WH-1
5	skywalker ewok	$171.22	#dbdbdb	3.2	WH-0
6	dooku solo	$136.60	#c4c4c4	0.8	WH--1
7	north of Casterly	$63.33	#b7b7b7	0.6	WH--2
8	Winterfell	$32.37	#383838	1.4	WH--3
9	Winterfell	$76.40	#b5b5b5	1.2	WH--4
10	Karstark Dorne	$119.52	#f4f4f4	2.4	WH--5
11	Karstark Dorne	$49.70	#141414	2.7	WH--6
12	duel Direwolf	$181.60	#a8a8a8	2.1	WH--7
13	palpatine chewbacca	$139.59	#2b2b2b	1	WH--8
14	Direwolf	$147.53	#c4c4c4	2	WH--9

Output

Action Output

#	Time	Action	Message	Duration / Fetch
14	11:09:22	SELECT * FROM transactions_products	Error Code: 1146. Table 'transactions_2.transactions_products' doesn't exist	0.016 sec
15	11:09:35	SELECT * FROM products	100 row(s) returned	0.000 sec / 0.000 sec

4. Creo la tabla intermedia ente “transactions” y “products” que llamo “transactions_products”

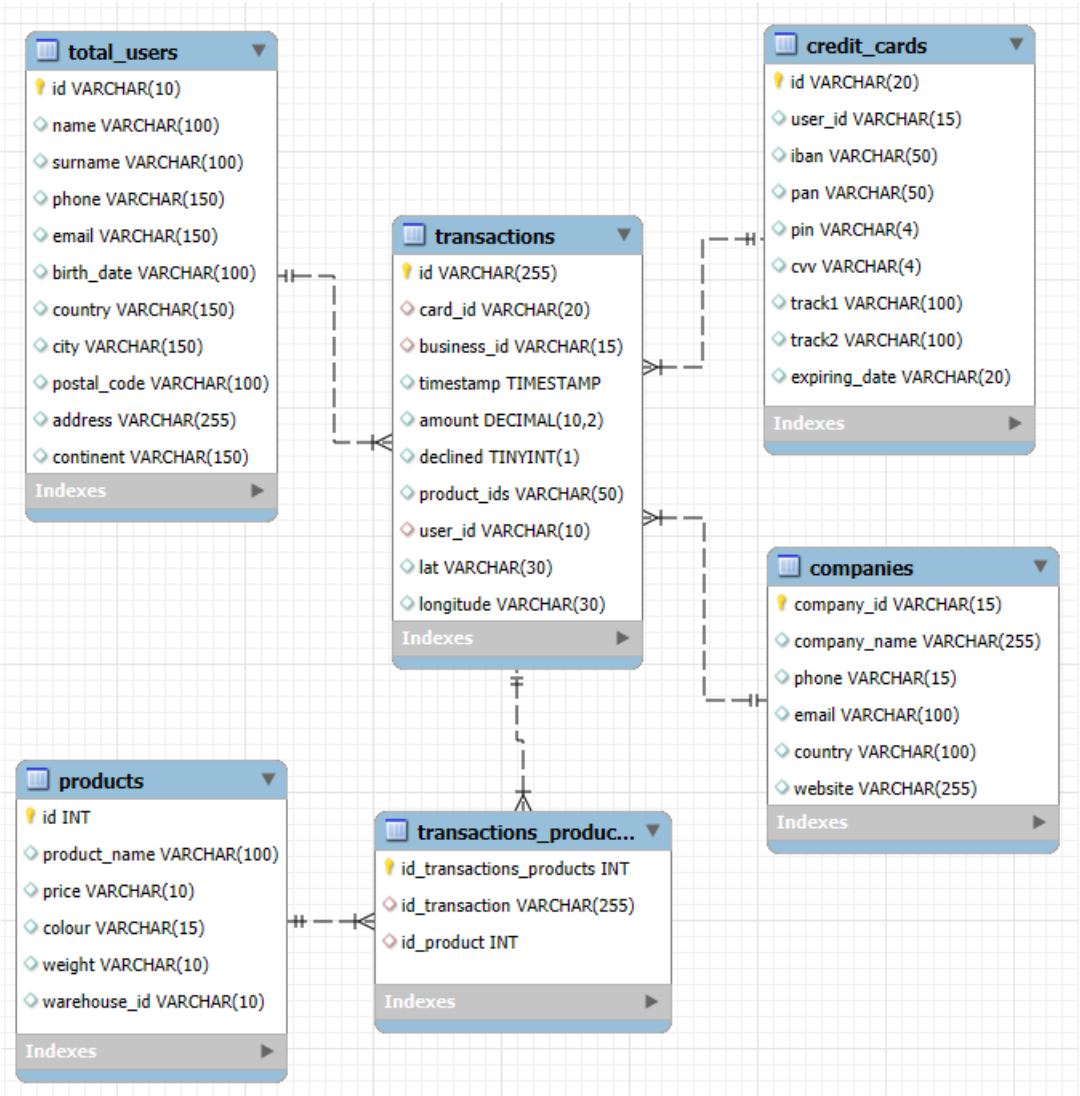
```sql
-- Creo la tabla intermedia para la relacion N:M llamada transactions_products
CREATE TABLE IF NOT EXISTS transactions_products (
    id_transactions_products INT AUTO_INCREMENT PRIMARY KEY,
    id_transaction VARCHAR(255),
    id_product INT,
    FOREIGN KEY(id_product) REFERENCES products(id),
    FOREIGN KEY(id_transaction) REFERENCES transactions(id)
);
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
15	11:09:35	SELECT * FROM products	100 row(s) returned	0.000 sec / 0.000 sec
16	11:11:05	CREATE TABLE IF NOT EXISTS transactions_products (id_transactions_products INT AUTO_INCREMENT PRIMARY KEY, id_transaction VARCH...	0 row(s) affected	0.047 sec

5. El modelo que tengo ahora sería este:



6. Ahora tengo que cargar los datos en la tabla “transactions_products” pero para eso tengo que resolver el problema de que en el campo product_ids de la tabla “transactions” tengo varios productos, es decir:

Tengo los id de productos almacenados así en la tabla “transactions”:

id (transaction_id)	**product_ids**
T1	75, 73, 98
T2	3

Y el objetivo es almacenarlos así en la tabla intermedia llamada “transactions_products”:

Id_transaction	**Id_product**
T1	75
T1	73

Id_transaction	Id_product
T1	98
T2	3

Voy a utilizar la función de mesa JSON. Para ello voy a tomar el texto product_ids de cada transacción, conviértelo en un array JSON, y generar una tabla temporal (j) con una columna product_id que contiene cada valor del array como una fila. Los pasos del ejemplo anterior serán:

(inicio) 75, 73, 98 -> (json) ["75","73","98"] -> (filas):

75

73

98

(inicio) 3 -> (json) ["3"] -> (filas):

3

1. Compruebo que la tabla “transactions_products” no tiene ningún registro

```
468 •   SELECT *
469     FROM transactions_products;
```

Result Grid | Filter Rows: | Edit:

id_transactions_products	id_transaction	id_product
NULL	NULL	NULL

Output

Action Output

#	Time	Action	Message	Duration / Fetch
8	20:22:13	SELECT * FROM transactions_products	0 row(s) returned	0.000 sec / 0.000 sec
9	20:23:07	SELECT * FROM transactions_products	0 row(s) returned	0.000 sec / 0.000 sec

2. Ejecuto la transformación a JSON y el llenado de la tabla “transactions_products”

```
473     -- pasar el campo product_ids de la tabla transactions a alamcenado como JSON
474 •   INSERT INTO transactions_products (id_transaction, id_product)   -- inserta los 2 campos en la tabla `transactions_products`
475     SELECT
476       t.id AS id_transaction,  -- el indice de la tabla transactions sera el mismo que pondre en la tabla `transactions_products` en el campo id_transaction
477       CAST(j.id_product AS UNSIGNED) AS id_product    -- convierte el valor formato texto en formato INT sin signo, eliminando los espacios y asiga alias id_product
478     FROM transactions AS t
479     JOIN JSON_TABLE(            -- genera una fila por cada valor
480       CONCAT(
481         '["', REPLACE(t.product_ids, ',', '","'), '"]'   -- pongo cada valor de product_ids en formato de 75,73, 98 a  '["75"," 73","78"]'
482       ),
483       '$[*]' COLUMNS (id_product VARCHAR(10) PATH '$')    -- Recorre todos los elementos JSON y crea una fila por cada uno
484     ) AS j;
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
9	20:23:07	SELECT * FROM transactions_products	0 row(s) returned	0.000 sec / 0.000 sec
10	20:25:25	INSERT INTO transactions_products (id_transaction, id_product) -- inserta los 2 campos en la tabla `transactions_products` SELECT t.id AS id_tran...	253391 row(s) affected Records: 253391 Duplicates: 0 Warnings: 0	6.188 sec

3. Compruebo que la tabla “transactions_products” Ahora ya tiene registros

```
489 •  SELECT *
490    FROM transactions_products;
```

Result Grid | Filter Rows: | Edit: | Export/Import:

id_transactions_products	id_transaction	id_product
1	00043A49-2949-494B-A5DD-A5BAE3BB19DD	16
2	00043A49-2949-494B-A5DD-A5BAE3BB19DD	26
3	00043A49-2949-494B-A5DD-A5BAE3BB19DD	97
4	00043A49-2949-494B-A5DD-A5BAE3BB19DD	87
5	000447FE-B650-4DCF-85DE-C7ED0EE1CAAD	66
6	000447FE-B650-4DCF-85DE-C7ED0EE1CAAD	69
7	000447FE-B650-4DCF-85DE-C7ED0EE1CAAD	87
8	00045D6B-FD2F-4F2F-8186-CFF074D875D0	30

Output

Action Output

#	Time	Action	Message	Duration / Fetch
10	20:25:25	INSERT INTO transactions_products (id_transaction, id_product) -- inserta los 2 campos en la tabla 'transactions_products' SELECT t.id AS id_tran...	253391 row(s) affected Records: 253391 Duplicates: 0 Warnings: 0	6.188 sec
11	20:27:27	SELECT * FROM transactions_products	253391 row(s) returned	0.015 sec / 0.110 sec

4. Voy a comprobar un índice en la tabla “transactions” se ha trasformado bien en una fila por valor en la tabla “transactions_products”

```
493    -- Compruebo que se ha trasformado bien un indice concreto de la tabla "transactions"
494 •  SELECT *
495    FROM transactions
496    WHERE id = "29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD";
```

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

id	card_id	business_id	timestamp	amount	declined	product_ids	user_id	lat	longitude
29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD	CcS-5036	b-2222	2022-05-19 04:50:50	678.61	0	6, 12, 100, 22, 23	455	51.609077736775525	19.160038756363225
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Output

Action Output

#	Time	Action	Message	Duration / Fetch
15	20:30:12	SELECT * FROM transactions_products WHERE id_transaction = "29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD"	5 row(s) returned	0.000 sec / 0.000 sec
16	20:34:24	SELECT * FROM transactions WHERE id = "29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD"	1 row(s) returned	0.000 sec / 0.000 sec

```
498    -- Compruebo que se ha trasformado bien un indice concreto de la tabla "transactions" en la "transactions_products
499 •  SELECT *
500    FROM transactions_products
501    WHERE id_transaction = "29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD";
```

Result Grid | Filter Rows: | Edit: | Export/Import:

id_transactions_products	id_transaction	id_product
41105	29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD	6
41106	29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD	12
41107	29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD	100
41108	29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD	22
41109	29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD	23
NULL	NULL	NULL

Output

Action Output

#	Time	Action	Message	Duration / Fetch
16	20:34:24	SELECT * FROM transactions WHERE id = "29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD"	1 row(s) returned	0.000 sec / 0.000 sec
17	20:36:06	SELECT * FROM transactions_products WHERE id_transaction = "29322BF7-84F4-4A6C-9FFC-C60B6BBD8DCD"	5 row(s) returned	0.000 sec / 0.000 sec

Ejercicio 1

Necesitamos conocer el número de veces que se ha vendido cada producto.

Cuento las unidades vendidas de cada producto que hay en la tabla intermedia “transactions_products” y las ordeno en orden descendente de los productos más vendidos.

Uso FORMAT para poner el delimitador de miles

```
509     -- Contar las unidades vendidas de cada producto
510 •   SELECT p.product_name AS product_name, tp.id_product AS product_id, FORMAT(COUNT(tp.id_product),0) AS units_sold
511     FROM transactions_products AS tp
512     JOIN products AS p
513     ON tp.id_product = p.id
514     GROUP BY product_name, product_id
515     ORDER BY units_sold DESC
516     ;
```

Result Grid | Filter Rows:

product_name	product_id	units_sold
riverlands the duel	52	2,654
Tully maester Tarly	29	2,635
duel Direwolf	21	2,609
the duel warden	16	2,608
mustafar jinn	66	2,601
sith Jade	87	2,598
duel warden	33	2,597
rock Reply in	48	2,597

Output

Action Output

#	Time	Action	Message	Duration / Fetch
30	20:51:31	SELECT p.product_name AS product_name, tp.id_product AS product_id, FORMAT(COUNT(tp.id_product),0) AS units_sold FROM transactions_prod...	100 row(s) returned	0.531 sec / 0.000 sec
31	20:52:57	SELECT p.product_name AS product_name, tp.id_product AS product_id, FORMAT(COUNT(tp.id_product),0) AS units_sold FROM transactions_prod...	100 row(s) returned	0.453 sec / 0.000 sec