IT ACADEMY

DATA ANALYTICS

Sprint	3
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Nivell 1

- Exercici 1

La teva tasca és dissenyar i crear una taula anomenada "credit_card" que emmagatzemi detalls crucials sobre les targetes de crèdit. La nova taula ha de ser capaç d'identificar de manera única cada targeta i establir una relació adequada amb les altres dues taules ("transaction" i "company"). Després de crear la taula serà necessari que ingressis la informació del document denominat "dades_introduir_credit". Recorda mostrar el diagrama i realitzar una breu descripció d'aquest.

Creamos la tabla solicitada.

```
3
4  CREATE TABLE IF NOT EXISTS CREDIT_CARD (
5          id VARCHAR(8) PRIMARY KEY,
6          iban VARCHAR(100),
7          pan VARCHAR(100),
8          pin INT,
9          cvv INT,
10         expiring_date VARCHAR(8)
11     );
12
```

299	11:57:02	CREATE TABLE IF NOT EXISTS CREDIT_CARD (	id VARCHAR(8) PRIM...	0 row(s) affected

Ahora creo una FK en la tabla TRANSACTION para vincularla con la PK de la tabla CREDIT_CARD.

```
15 •  ALTER TABLE transaction
16    ADD FOREIGN KEY (credit_card_id) REFERENCES credit_card(id);
17
18
```

Output

Action Output

#	Time	Action	Message
858	13:08:26	INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (...	1 row(s) affected
859	13:08:26	INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (...	1 row(s) affected
860	13:18:08	ALTER TABLE transaction ADD FOREIGN KEY (credit_card_id) REFERENCE...	587 row(s) affected Records: 587 Duplicates: 0 Warnings: 0

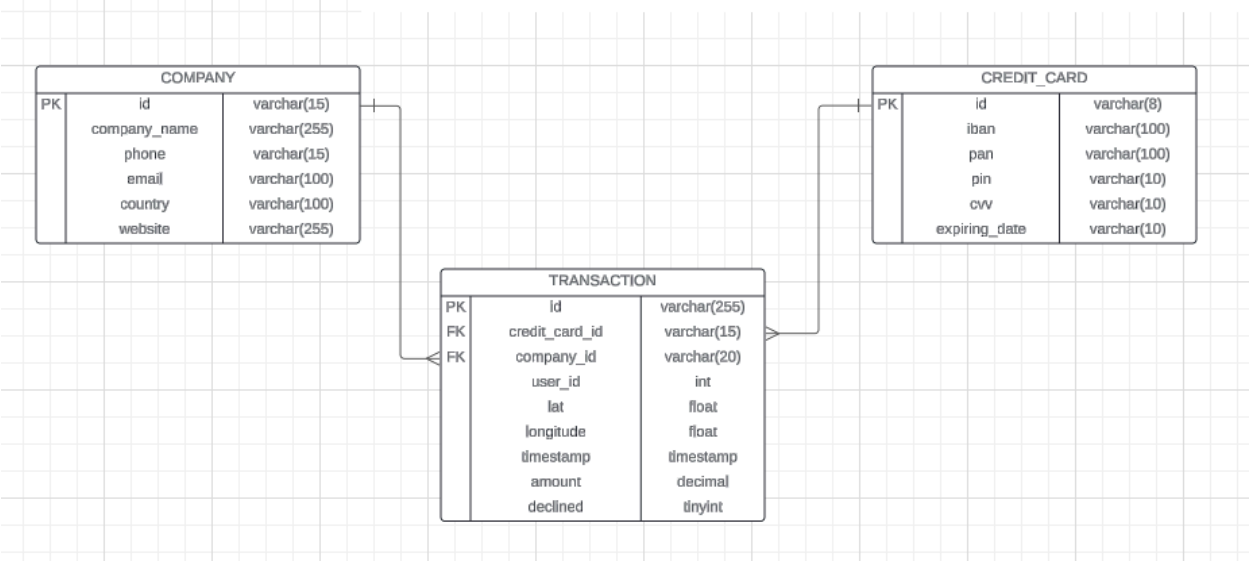
Ahora insertamos los registros:

```
1
2     -- Insertamos datos de credit_card
3  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2938', 'TR3019503122135768176386 61', '5424465566
4  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2945', 'DO2685476374853747521656868 9', '514242382
5  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2952', 'BG45IVQL52710525608255', '4556 453 55 528
6  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2959', 'CR7242477244335841535', '372461377349375'
7  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2966', 'BG72LKTQ15627628377363', '448566 886747 7
8  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2973', 'PT8780622813509242945634 6', '544 58654 54
9  •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2980', 'DE39241881883086277136', '402400 7145845 9
10 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2987', 'GE896814348377487818 13', '3763 747687 766
11 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-2994', 'BH6271442836806676529 4', '344283273252593
12 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3001', 'CY4908742665477458126683211 0', '511722 92
13 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3008', 'LU507216693616119230', '4485744464433884'
14 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3015', 'PS1193982162957159683424568 21', '3784 662
15 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3022', 'GT9169516285055697742312185 7', '5164 1379
16 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3029', 'AZ6231741398244141812373974 6', '3429 2795
17 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3036', 'AZ3933600292584286584394199 4', '3768 4515
18 •  INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (  'CcU-3043', 'TN6488143310514852179535', '455676 643746
```

Action Output

#	Time	Action	Message	Duration / Fetch
574	11:59:23	INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (...	1 row(s) affected	0.016 sec
575	11:59:23	INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (...	1 row(s) affected	0.016 sec
576	11:59:23	INSERT INTO credit_card (id, iban, pan, pin, cvv, expiring_date) VALUES (...	1 row(s) affected	0.015 sec

Ahora generamos el diagrama del modelo de la BD hasta este momento:



Al agregar la tabla CREDIT_CARD, se agrega también otra relación de 1 a N. Donde identificamos una tarjeta de crédito única, con N transacciones en tabla TRANSACTION. La regla de FK generada en la tabla TRANSACTION referenciando a la tabla padre, nos permite establecer el vínculo con CREDIT_CARD.

- Exercici 2

El departament de Recursos Humans ha identificat un error en el número de compte de l'usuari amb ID CcU-2938. La informació que ha de mostrar-se per a aquest registre és: R323456312213576817699999. Recorda mostrar que el canvi es va realitzar.

```sql
-- ACTUALIZAR REGISTRO ERRONEO
UPDATE credit_card
SET iban = 'R323456312213576817699999'
WHERE id = 'CcU-2938';
```

Output

Action Output

#	Time	Action	Message
861	13:30:20	SELECT * FROM transactions.credit_car LIMIT 0, 50000	Error Code: 1146. Table 'transactions.credit_car' doesn't exist
862	13:30:37	SELECT * FROM transactions.credit_carD LIMIT 0, 50000	275 row(s) returned
863	13:33:50	UPDATE credit_card SET iban = 'R323456312213576817699999' WHERE id ...	1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0

Comprobamos el cambio.

```sql
SELECT * FROM CREDIT_CARD
WHERE ID = 'CcU-2938';
```

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

id	iban	pin	cvv	expiring_date	fecha_actual
CcU-2938	R323456312213576817699999	3257	984	10/30/22	NULL
NULL	NULL	NULL	NULL	NULL	NULL

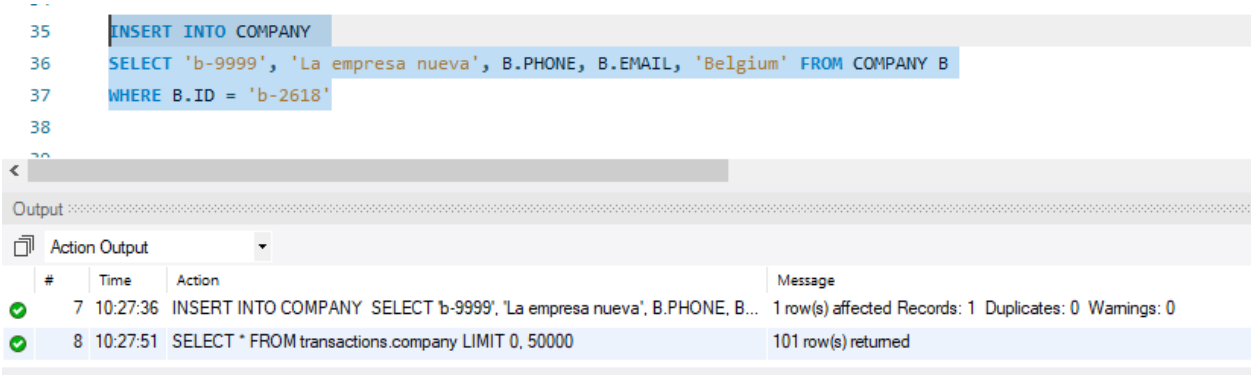
- Exercici 3

En la taula "transaction" ingressa un nou usuari amb la següent informació:

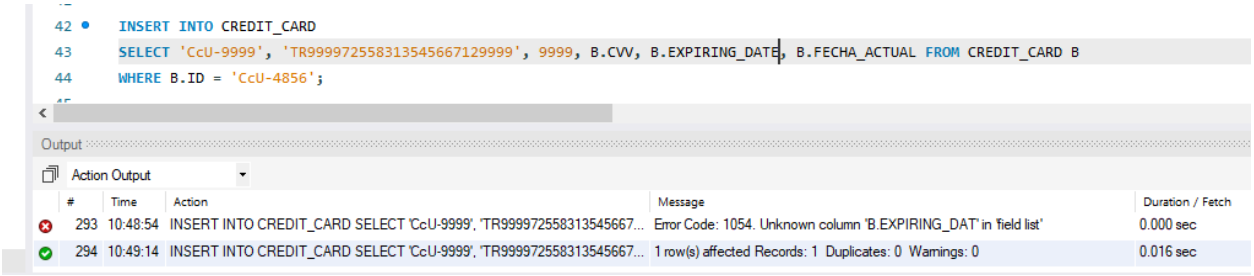
Id	108B1D1D-5B23-A76C-55EF-C568E49A99DD
credit_card_id	CcU-9999
company_id	b-9999
user_id	9999
lat	829.999
longitude	-117.999
amount	111.11
declined	0

Acá existe un problema de integridad porque existe un CONSTRAINT que por regla de integridad referencial, no deja insertar el registro en la tabla de transacciones, lo cual es correcto porque la empresa no existe, no hay ninguna bajo ese código. de insertarlo crearía una inconsistencia. Se opta por respetar la regla de integridad. Se procederá con ingresar los datos relacionados.

Se crea la empresa b-9999



Se crea la credit_card



INGRESO DEL REGISTRO

Ahora puede ingresar al registro.

En mi opinión, en estos casos lo que debía ocurrir es que el área administrativa ingresara tanto la empresa, como también la tarjeta de crédito, previo a insertar el registro. E incluso más allá en mi opinión, por las mismas buenas prácticas, sería la administración mediante algún sistema quien realizaría ingresos a la BD.

Realizamos el **INSERT**.

```
47 •  INSERT INTO TRANSACTION (ID, CREDIT_CARD_ID, COMPANY_ID, USER_ID, LAT, LONGITUDE, TIMESTAMP, AMOUNT, DECLINED)
48    VALUES ('108B1D1D-5B23-A76C-55EF-C568E49A99DD', 'CcU-9999', 'b-9999', 9999, 829.999, -117.999, '2024-09-19', 111.11, 0);
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
294	10:49:14	INSERT INTO CREDIT_CARD SELECT 'CcU-9999', 'TR999972558313545667...	1 row(s) affected Records: 1 Duplicates: 0 Warnings: 0	0.016 sec
295	10:50:54	INSERT INTO TRANSACTION (ID, CREDIT_CARD_ID, COMPANY_ID, USER...	1 row(s) affected	0.015 sec

Comprobamos el INSERT:

```
64 •  SELECT * FROM TRANSACTION WHERE ID = '108B1D1D-5B23-A76C-55EF-C568E49A99DD'
65
```

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

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
108B1D1D-5B23-A76C-55EF-C568E49A99DD	CcU-9999	b-9999	9999	829.999	-117.999	2024-09-19 00:00:00	111.11	0
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

- Exercici 4

Des de recursos humans et sol·liciten eliminar la columna "pan" de la taula credit_*card. Recorda mostrar el canvi realitzat.

Se elimina la columna PAN

```
40
41 •  ALTER TABLE CREDIT_CARD DROP COLUMN PAN;
42
43
```

Output

Action Output

#	Time	Action	Message	Duration
23	12:11:38	ALTER TABLE TRANSACTION DROP constraint TRANSACTION_IBFK_2	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.063 se
24	12:12:43	INSERT INTO TRANSACTION (ID, CREDIT_CARD_ID, COMPANY_ID, USER...	1 row(s) affected	0.016 se
25	19:34:35	ALTER TABLE CREDIT_CARD DROP COLUMN PAN	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.063 se

Se comprueba la eliminación de la columna pan.

```
70 •    SELECT * FROM CREDIT_CARD;
71
```

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

id	iban	pin	cvv	expiring_date
CcU-2938	R323456312213576817699999	3257	984	10/30/22
CcU-2945	DO268547637485374752165686 89	9080	887	08/24/23
CcU-2952	BG45IVQL52710525608255	4598	438	06/29/21
CcU-2959	CR7242477244335841535	3583	667	02/24/23
CcU-2966	BG72LKTQ15627628377363	4900	130	10/29/24

CREDIT_CARD 8

Nivell 2

Exercici 1

Elimina de la taula transaction el registre amb ID 02C6201E-D90A-1859-B4EE-88D2986D3B02 de la base de dades.

```
70 •    DELETE FROM TRANSACTION
71      WHERE ID = "02C6201E-D90A-1859-B4EE-88D2986D3B02";
```

Se elimina el registro.

```
78
79 •    DELETE FROM TRANSACTION WHERE ID = "02C6201E-D90A-1859-B4EE-88D2986D3B02";
80
81
```

Output

Action Output

#	Time	Action	Message
21	13:17:24	ALTER TABLE data_user DROP FOREIGN KEY data_user_ibfk_1	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0
22	13:19:55	DELETE FROM TRANSACTION WHERE ID = "02C6201E-D90A-1859-B4EE-8...	1 row(s) affected

Exercici 2

La secció de màrqueting desitja tenir accés a informació específica per a realitzar anàlisi i estratègies efectives. S'ha sol·licitat crear una vista que proporcioni detalls clau sobre les companyies i les seves transaccions. Serà necessària que creïs una vista anomenada VistaMarketing que contingui la següent informació: Nom de la companyia. Telèfon de contacte. País de residència. Mitjana de compra realitzat per cada companyia. Presenta la vista creada, ordenant les dades de major a menor mitjana de compra.

CREATE VIEW VISTAMARKETING

```
88  CREATE VIEW VistaMarketing
89      AS
90          SELECT C.COMPANY_NAME NOMBRE_EMPRESA, C.PHONE TELEFONO, C.COUNTRY PAIS, AVG(T.AMOUNT) MEDIA_COMPRA
91          FROM COMPANY C
92          JOIN TRANSACTION T
93              ON C.ID = T.COMPANY_ID
94          GROUP BY 1, 2, 3
95          ORDER BY MEDIA_COMPRA DESC;
```

Output

Action Output

#	Time	Action	Message
13	12:07:51	SELECT * FROM CREDIT_CARD LIMIT 0, 50000	276 row(s) returned
14	12:12:20	DROP VIEW vistamarketing	0 row(s) affected
15	12:15:32	SELECT C.COMPANY_NAME NOMBRE_EMPRESA, C.PHONE TELEFONO, ...	101 row(s) returned
16	12:16:50	CREATE VIEW VistaMarketing AS SELECT C.COMPANY_NAME NOMBRE_E...	0 row(s) affected

Ahora consulto la vista creada VistaMarketing

```
97 •   SELECT * FROM VISTAMARKETING;
```

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

NOMBRE_EMPRESA	TELEFONO	PAIS	MEDIA_COMPRA
Eget Ipsum Ltd	03 67 44 56 72	United States	473.075000
Non Magna LLC	06 71 73 13 17	United Kingdom	468.345000
Sed Id Limited	07 28 18 18 13	United States	461.210000
Justo Eu Arcu Ltd	08 42 56 71 52	Italy	443.635000
Eget Tincidunt Dui Institute	05 35 93 32 44	Netherlands	442.520000

VISTAMARKETING 10

Output

Action Output

#	Time	Action	Message
15	12:15:32	SELECT C.COMPANY_NAME NOMBRE_EMPRESA, C.PHONE TELEFONO, ...	101 row(s) returned
16	12:16:50	CREATE VIEW VistaMarketing AS SELECT C.COMPANY_NAME NOMBRE_E...	0 row(s) affected
17	12:18:53	SELECT * FROM VISTAMARKETING LIMIT 0, 50000	101 row(s) returned

Exercici 3

Filtra la vista VistaMarketing per a mostrar només les companyies que tenen el seu país de residència en "Germany"

Registros de la vista que pertenecen a Alemania. Notar que el nombre de la columna cambia de COUNTRY a **PAIS**.

```
102 •   SELECT * FROM VISTAMARKETING
103     WHERE PAIS = 'Germany';
104
```

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

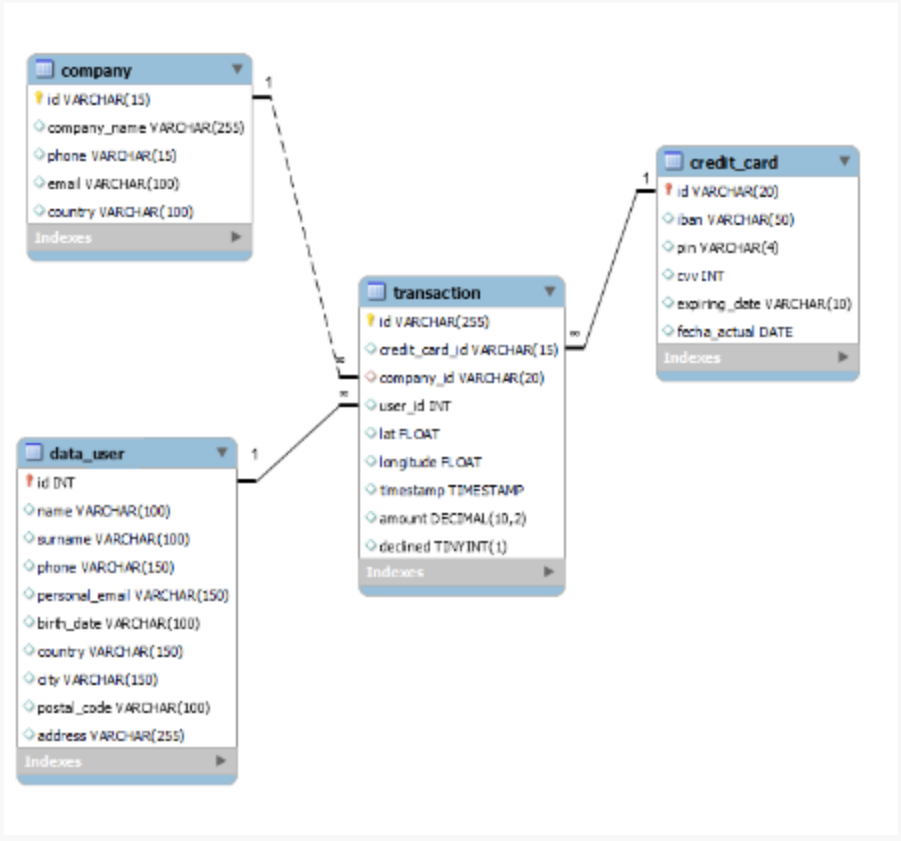
NOMBRE_EMPRESA	TELEFONO	PAIS	MEDIA_COMPRA
Aliquam PC	01 45 73 52 16	Germany	385.265000
Ac Industries	09 34 65 40 60	Germany	289.645000
Rutrum Non Inc.	02 66 31 61 09	Germany	266.900000
Nunc Interdum Incorporated	05 18 15 48 13	Germany	244.025238
Augue Foundation	06 88 43 15 63	Germany	240.800000

VISTAMARKETING 11

Nivell 3

Exercici 1

La setmana vinent tindràs una nova reunió amb els gerents de màrqueting. Un company del teu equip va realitzar modificacions en la base de dades, però no recorda com les va realitzar. Et demana que l'ajudis a deixar els comandos executats per a obtenir el següent diagrama:



Comparamos BD actual vs la BD que se quiere dejar funcionando.se identifican cambios a realizar en tablas :

- COMPANY → ya no está la comuna **website**
- CREDIT_CARD → se agrega la columna **fecha_actual**

Creamos la tabla USER

```
4
5  CREATE TABLE IF NOT EXISTS user (
6          id INT PRIMARY KEY,
7          name VARCHAR(100),
8          surname VARCHAR(100),
9          phone VARCHAR(150),
10         email VARCHAR(150),
11         birth_date VARCHAR(100),
12         country VARCHAR(150),
13         city VARCHAR(150),
14         postal_code VARCHAR(100),
15         address VARCHAR(255),
16         FOREIGN KEY(id) REFERENCES transaction(user_id)
17     );
18
```

Output

Action Output

#	Time	Action	Message
6	10:54:43	CREATE INDEX idx_user_id ON transaction(user_id)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0
7	10:55:05	CREATE TABLE IF NOT EXISTS user (id INT PRIMARY KEY, name...	0 row(s) affected

Insertamos los registros

Limit to 50000 rows

```
1  SET foreign_key_checks = 0;
2
3  -- Insertamos datos de user
4  INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "1", "Zeus", "Gamb
5  INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "2", "Garrett", "Mc
6  INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "3", "Ciaran", "Ha
7  INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "4", "Howard", "Sta
8  INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "5", "Hayfa", "Pier
9  INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "6", "Joel", "Tyson
10 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "7", "Rafael", "Jim
11 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "8", "Nissim", "Fra
12 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "9", "Mannix", "Mcc
13 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "10", "Robert", "Mc
14 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "11", "Joan", "Bair
15 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "12", "Benedict",
16 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "13", "Allegra", "S
17 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "14", "Sara", "Flyn
18 INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, postal_code, address) VALUES (  "15", "Noelani", "H
```

Output

Action Output

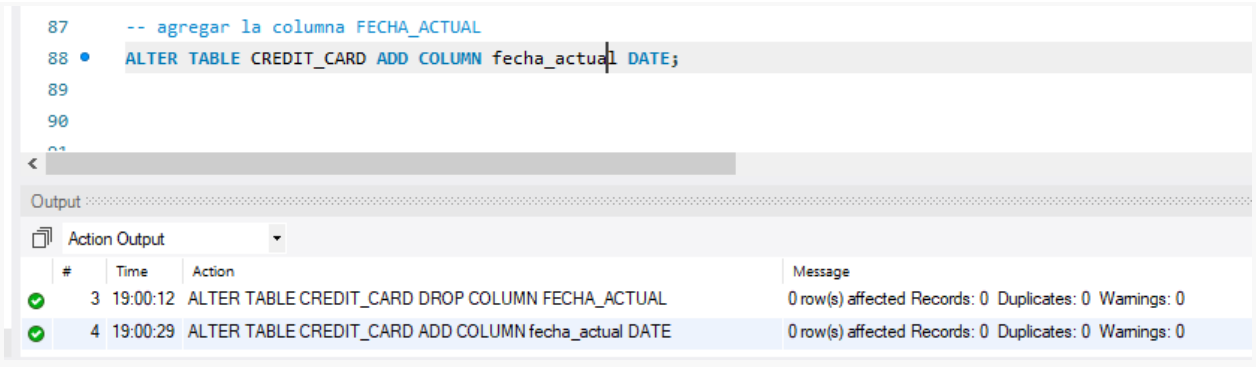
#	Time	Action	Message	Duration / Fetch
283	11:02:33	INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, p...	1 row(s) affected	0.000 sec
284	11:02:33	INSERT INTO user (id, name, surname, phone, email, birth_date, country, city, p...	1 row(s) affected	0.015 sec
285	11:02:33	SET foreign_key_checks = 1	0 row(s) affected	0.000 sec

La renombro para dejar como en el esquema.

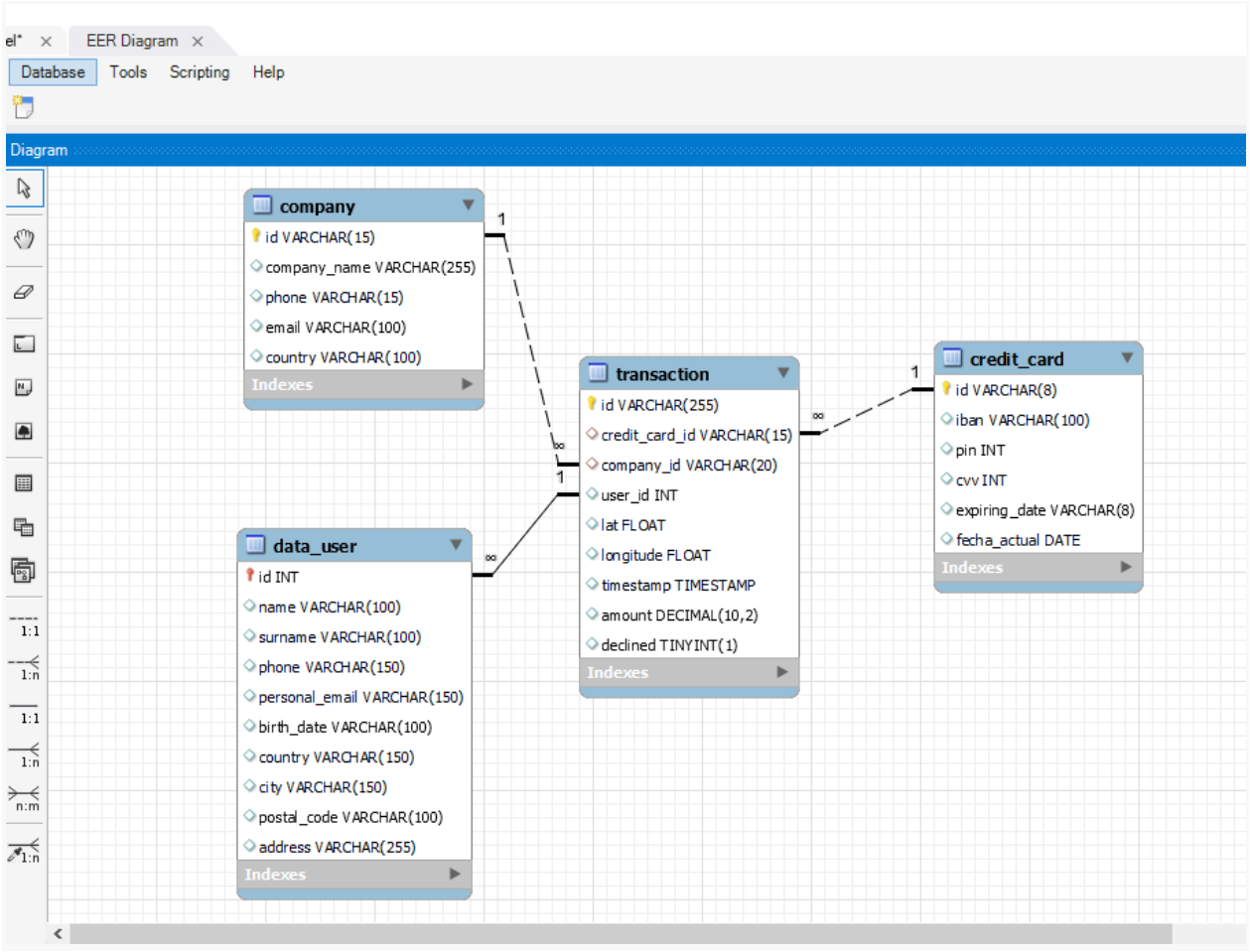
```
162
163 •   RENAME TABLE USER to DATA_USER
164
```

Eliminar columna website en tabla company

Agregar columna fecha actual a tabla credit_card



Ingeniería Inversa Para Ver El Resultado Del Modelo



No coincide con lo solicitado solo en una cosa. La relación entre DATA_USER y TRANSACTION quedó de N a 1 y no de 1 a N como debería ser.

Esto se produce por la instrucción errónea en el CREATE TABLE de DATA_USER

Lo corregimos de la siguiente forma:

Primero eliminamos el FK erróneo.

```
131     -- elimino un FK
132 •   ALTER TABLE data_user DROP FOREIGN KEY data_user_ibfk_1;
133
```

Output

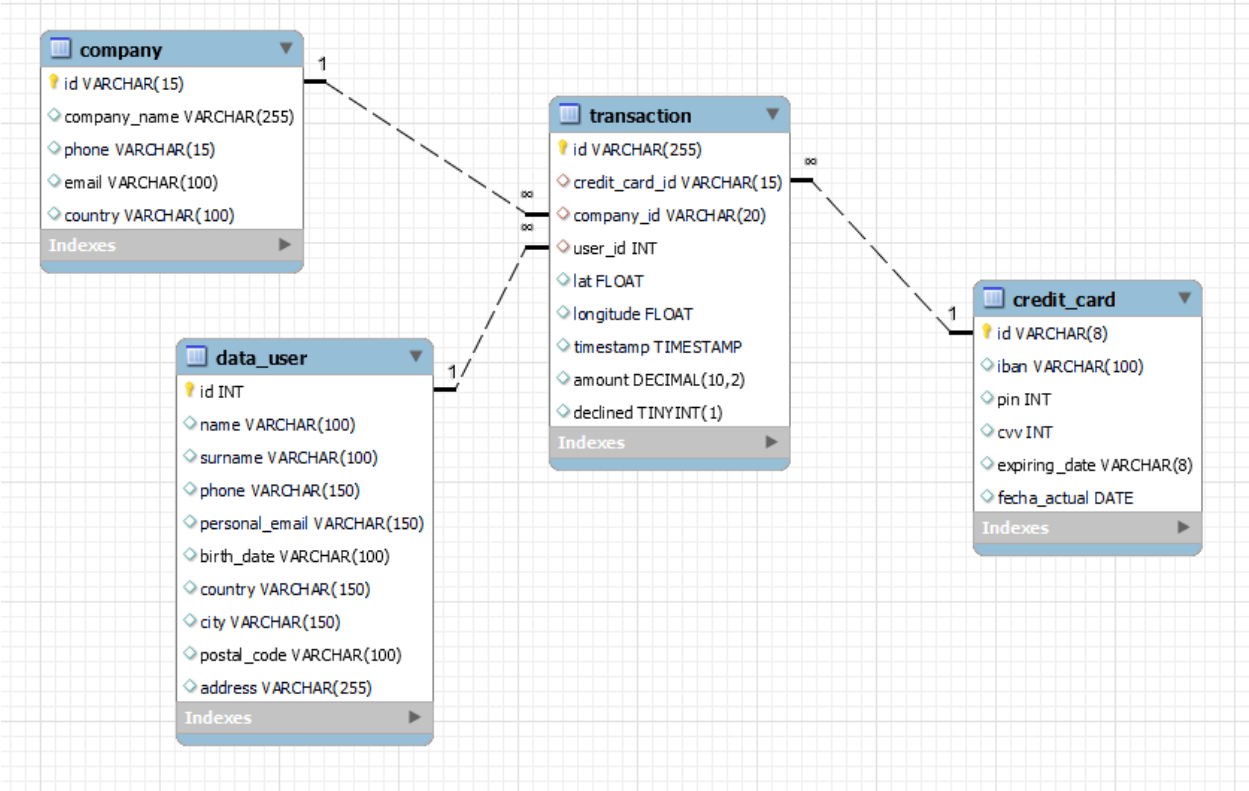
Action Output

#	Time	Action	Message
20	13:16:02	desc data_user	10 row(s) returned
21	13:17:24	ALTER TABLE data_user DROP FOREIGN KEY data_user_ibfk_1	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0

y vuelvo a asignar la clave foránea.

```
-- creo un FK fuera de
ALTER TABLE TRANSACTION
ADD CONSTRAINT transac_fkuser_const FOREIGN KEY (USER_ID) REFERENCES DATA_USER(ID);
```

Volvemos a ejecutar Reverse Engineer en MySQL workbench y ahora **SÍ coincide**



Exercici 2

L'empresa també et sol·licita crear una vista anomenada "InformeTecnico" que contingui la següent informació:

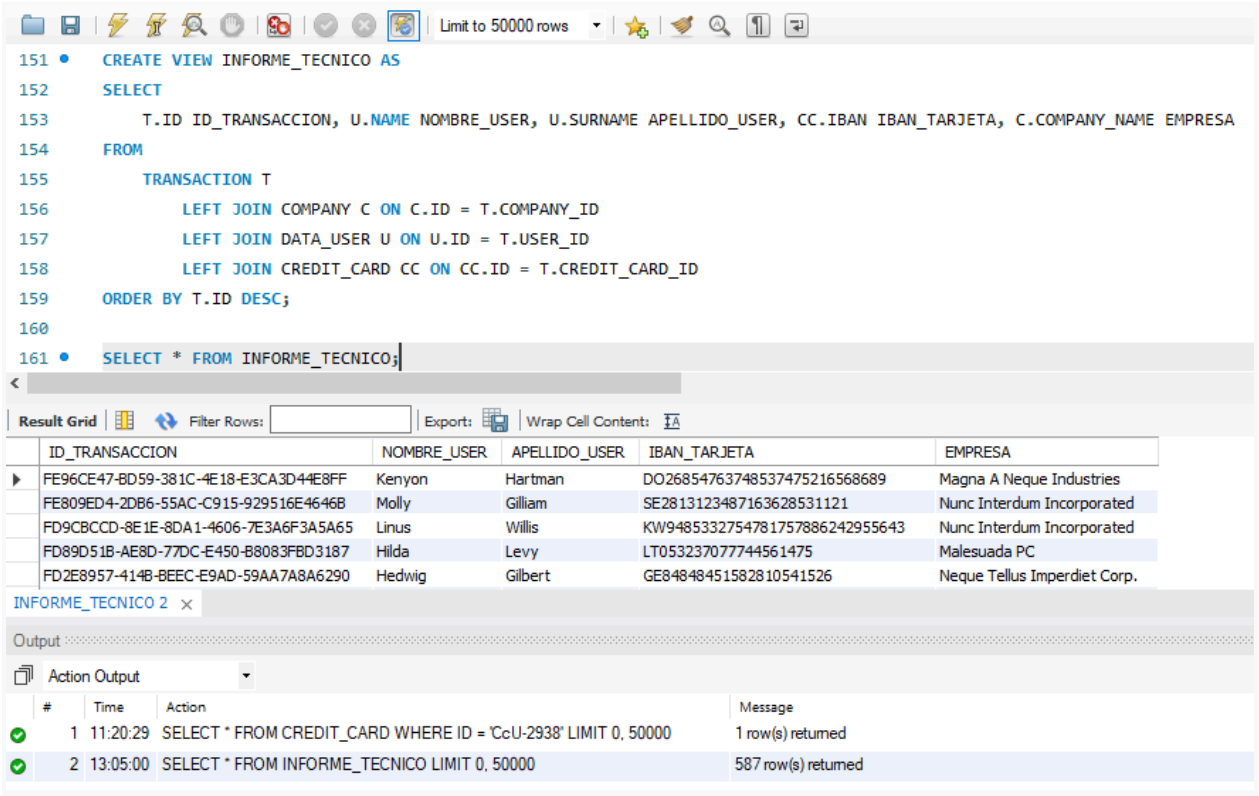
- **ID de la transacció**
- **Nom de l'usuari/ària**
- **Cognom de l'usuari/ària**
- **IBAN de la targeta de crèdit usada.**
- **Nom de la companyia de la transacció realitzada.**

- **Assegura't d'incloure informació rellevant de totes dues taules i utilitza àlies per a canviar de nom columnes segons sigui necessari.**

Mostra els resultats de la vista, ordena els resultats de manera descendent en funció de la variable ID de transaction.

Creamos la vista. Incluimos todas las tablas con LEFT JOIN para asegurarnos de ver todo.

En el JOIN, agregamos LEFT para asegurarnos entregar todos los registros de TRANSACTION.



```
151 • CREATE VIEW INFORME_TECNICO AS
152   SELECT
153       T.ID ID_TRANSACCION, U.NAME NOMBRE_USER, U.SURNAME APELLIDO_USER, CC.IBAN IBAN_TARJETA, C.COMPANY_NAME EMPRESA
154   FROM
155       TRANSACTION T
156           LEFT JOIN COMPANY C ON C.ID = T.COMPANY_ID
157           LEFT JOIN DATA_USER U ON U.ID = T.USER_ID
158           LEFT JOIN CREDIT_CARD CC ON CC.ID = T.CREDIT_CARD_ID
159   ORDER BY T.ID DESC;
160
161 • SELECT * FROM INFORME_TECNICO;
```

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

ID_TRANSACCION	NOMBRE_USER	APELLIDO_USER	IBAN_TARJETA	EMPRESA
FE96CE47-BD59-381C-4E18-E3CA3D44E8FF	Kenyon	Hartman	DO26854763748537475216568689	Magna A Neque Industries
FE809ED4-2DB6-55AC-C915-929516E4646B	Molly	Gilliam	SE2813123487163628531121	Nunc Interdum Incorporated
FD9CBCCD-8E1E-8DA1-4606-7E3A6F3A5A65	Linus	Willis	KW9485332754781757886242955643	Nunc Interdum Incorporated
FD89D51B-AE8D-77DC-E450-B8083FBD3187	Hilda	Levy	LT053237077744561475	Malesuada PC
FD2E8957-414B-BEEC-E9AD-59AA7A8A6290	Hedwig	Gilbert	GE84848451582810541526	Neque Tellus Imperdiet Corp.

INFORME_TECNICO 2

Output

Action Output

#	Time	Action	Message
1	11:20:29	SELECT * FROM CREDIT_CARD WHERE ID = 'CcU-2938' LIMIT 0, 50000	1 row(s) returned
2	13:05:00	SELECT * FROM INFORME_TECNICO LIMIT 0, 50000	587 row(s) returned