

Sprint 4 - Tasca S4.01. Creació de Base de Dades

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Nivell 1

Descàrrega els arxius CSV, estudia'ls i dissenya una base de dades amb un esquema d'estrella que contingui, almenys 4 taules de les quals puguis realitzar les següents consultes:

He dissenyat un esquema d'estrella amb les següents taules:

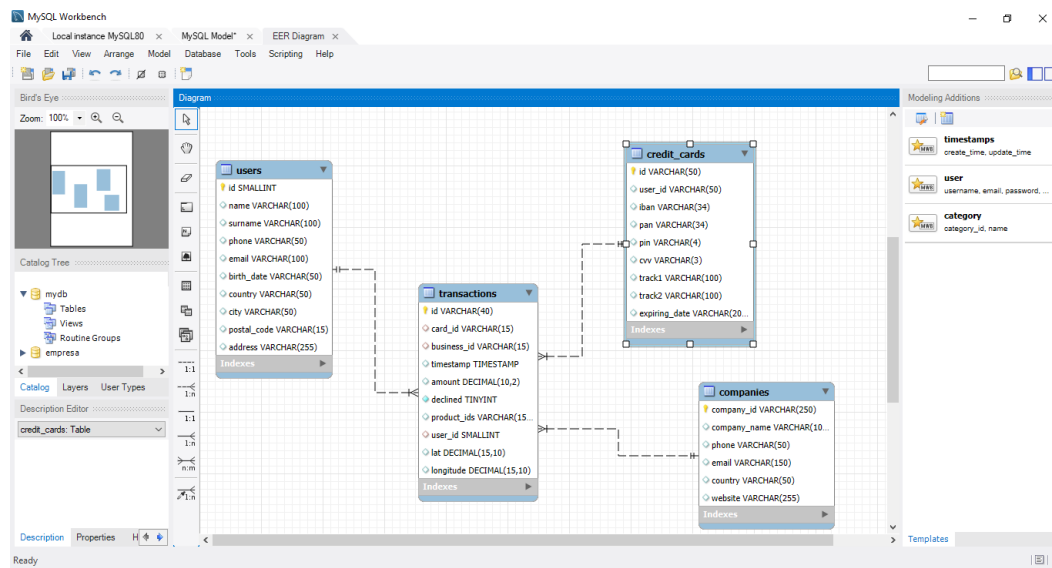
- Taula de fets: **Transactions**
- Taules de dimensions:
 - **Users** (ca, uk, usa)
 - **Companies**
 - **Credit_cards**
- Foreigns keys:

Transactions (user_id) → Users (id)

Transactions (card_id) → Credit_cards (id)

Transactions (business_id) → Companies (company_id)

La relació entre taules es de **1 a N** a partir de la taula de transactions.



He creat una nova base de dades amb el nom d'empresa:

```
MySQL Workbench
Local instance MySQL80 x MySQL Model x EER Diagram x
File Edit View Query Database Server Tools Scripting Help

Navigator
Filter objects
empresas
  Tables
    companies
    credit_cards
    transactions
    users
  Views
  Stored Procedures
  Functions
  sys
  world

Administration Schemas Information
Table: users
Columns:
  id smallint(11) UNSIGNED PRIMARY KEY
  name varchar(100)
  surname varchar(100)
  email varchar(100)
  birth_date varchar(50)
  country varchar(50)
  city varchar(50)
  postal_code varchar(15)
  address varchar(255)
  declined tinyint(1)
  amount decimal(10,2)
  timestamp timestamp
  product_ids varchar(15)
  user_id smallint(11)
  lat decimal(15,10)
  longitude decimal(15,10)

Output
Time Action Message Duration / Fetch
36 11:42:53 CREATE TABLE IF NOT EXISTS users ( id SMALLINT UNSIGNED PRIMARY KEY, ... 0 rows affected 0.078 sec
37 11:43:15 CREATE TABLE IF NOT EXISTS transactions ( id VARCHAR(40) PRIMARY KEY, ... 0 rows affected 0.125 sec
38 11:43:26 SET GLOBAL local_infile=1 0 rows affected 0.000 sec
```

A continuació he creat les diferents taules que componen la base de dades empresa:

```
17 • CREATE TABLE Companies (
18     company_id VARCHAR(250) PRIMARY KEY,
19     company_name VARCHAR(100),
20     phone VARCHAR(50),
21     email VARCHAR(150),
22     country VARCHAR(50),
23     website VARCHAR(255)
24 );

18
19 • CREATE TABLE Credit_cards (
20     id VARCHAR(50) PRIMARY KEY,
21     user_id VARCHAR(50),
22     iban VARCHAR(34),
23     pan VARCHAR(34),
24     pin VARCHAR(4),
25     cvv VARCHAR(3),
26     track1 VARCHAR(100),
27     track2 VARCHAR(100),
28     expiring_date DATE,
29     FOREIGN KEY (user_id) REFERENCES Users(id)
30 );
31
32 • ALTER TABLE Credit_cards
33     MODIFY COLUMN expiring_date VARCHAR(200);
34
```

Durant la creació de les taules he vist que havia duplicat una foreing key en la taula de crèdit_cards y l'eliminat amb alter table y drop foregin key:

```
63 -- Borro la foreing key duplicada de la taula credit_cards:
64
65 • SELECT CONSTRAINT_NAME, TABLE_NAME, COLUMN_NAME, REFERENCED_TABLE_NAME, REFERENCED_COLUMN_NAME
66     FROM information_schema.KEY_COLUMN_USAGE
67     WHERE TABLE_NAME = 'credit_cards' AND TABLE_SCHEMA = DATABASE();
68
69 • ALTER TABLE credit_cards DROP FOREIGN KEY credit_cards_ibfk_1;
70
```

```
35 • CREATE TABLE IF NOT EXISTS users (
36     id SMALLINT UNSIGNED PRIMARY KEY,
37     name VARCHAR (100 ),
38     surname VARCHAR(100),
39     phone VARCHAR(50),
40     email VARCHAR (100),
41     birth_date VARCHAR (50),
42     country VARCHAR(50),
43     city VARCHAR(50),
44     postal_code VARCHAR (15),
45     address VARCHAR (255)
46 );
```

Creo la taula de transactions, al ser la taula de fets, creo també les relacions amb la resta de taules de dimensions:

```
47 • CREATE TABLE IF NOT EXISTS transactions (
48     id VARCHAR(40) PRIMARY KEY,
49     card_id VARCHAR(15),
50     business_id VARCHAR(15),
51     timestamp TIMESTAMP,
52     amount DECIMAL(10, 2),
53     declined TINYINT NOT NULL DEFAULT 0,
54     product_ids VARCHAR(150),
55     user_id SMALLINT UNSIGNED,
56     lat DECIMAL(15,10),
57     longitude DECIMAL(15,10),
58     FOREIGN KEY (business_id) REFERENCES companies(company_id),
59     FOREIGN KEY (card_id) REFERENCES credit_cards(id),
60     FOREIGN KEY (user_id) REFERENCES users(id)
61 );
62
```

Abans d'importar els arxius .csv he de comprovar que no hi hagi cap restricció de seguretat: Local in file està ON

The screenshot shows the MySQL Workbench interface. The 'Schemas' pane on the left lists the 'empresa' database and its tables. The main editor window shows an SQL script with the following queries:

```
-- Comprobació de que local_infile està ON:
SHOW VARIABLES LIKE 'local_infile';
LOAD DATA LOCAL INFILE 'C:/Users/lorenzo/Downloads/transactions.csv' INTO TABLE transactions;
```

The 'Result Grid' shows the output of the first query:

Variable_name	Value
local_infile	ON

The 'Output' pane shows the execution log, including the successful execution of the 'LOAD DATA LOCAL INFILE' statement.

Els arxius .csv han d'importar-se en la carpeta que marca MySQL que es pot comprovar a través de "show variable like 'Secure_file_priv'". Els arxius han d'estar guardats a la carpeta de Uploads.

The screenshot shows the MySQL Workbench interface. The 'Schemas' pane on the left lists the 'empresa' database and its tables. The main editor window shows an SQL script with the following queries:

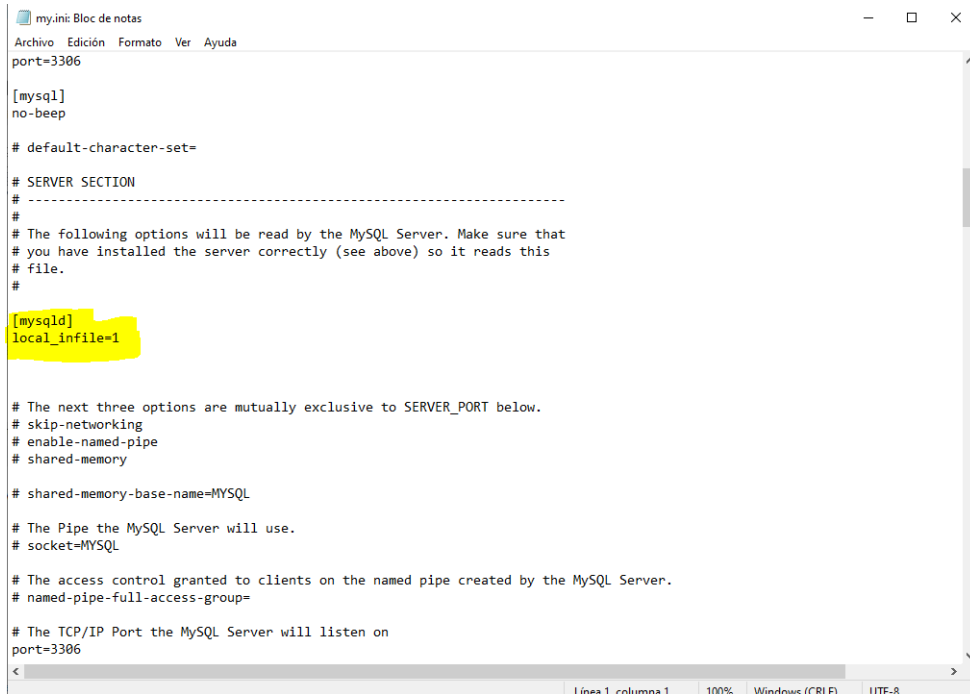
```
SET GLOBAL local_infile =1;
-- Comprobacions per saber a quina carpeta he de guardar els arxius per tal de fer la importació:
SHOW GLOBAL VARIABLES LIKE 'secure_file_priv';
SHOW VARIABLES LIKE 'secure_file_priv';
```

The 'Result Grid' shows the output of the third query:

Variable_name	Value
secure_file_priv	C:\ProgramData\MySQL\MySQL Server 8.0\Uploads\

The 'Output' pane shows the execution log, including the successful execution of the 'SHOW VARIABLES LIKE' query.

Abans d'importar els arxius he de modificar el document my.ini per habilitar la opció de local_infile que permet carregar arxius locals en la base de dades load data local infile.



```
my.ini: Bloc de notes
Archivo Edición Formato Ver Ayuda
port=3306

[mysql]
no-beep

# default-character-set=

# SERVER SECTION
# -----
#
# The following options will be read by the MySQL Server. Make sure that
# you have installed the server correctly (see above) so it reads this
# file.
#
[mysqld]
local_infile=1

# The next three options are mutually exclusive to SERVER_PORT below.
# skip-networking
# enable-named-pipe
# shared-memory

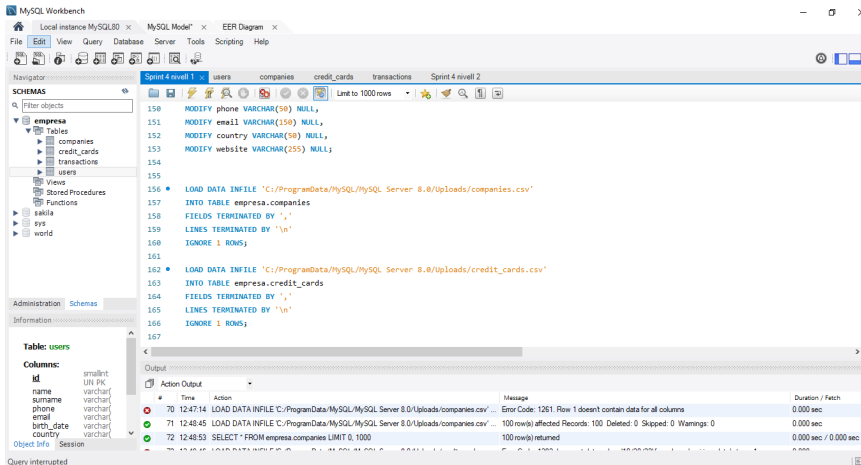
# shared-memory-base-name=MYSQL

# The Pipe the MySQL Server will use.
# socket=MYSQL

# The access control granted to clients on the named pipe created by the MySQL Server.
# named-pipe-full-access-group=

# The TCP/IP Port the MySQL Server will listen on
port=3306
```

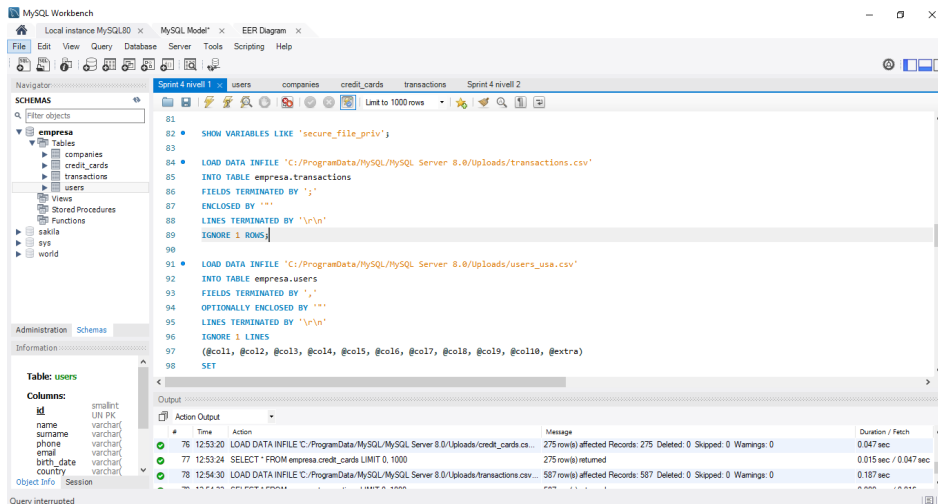
Importo les taules a partir dels arxius .csv:



```

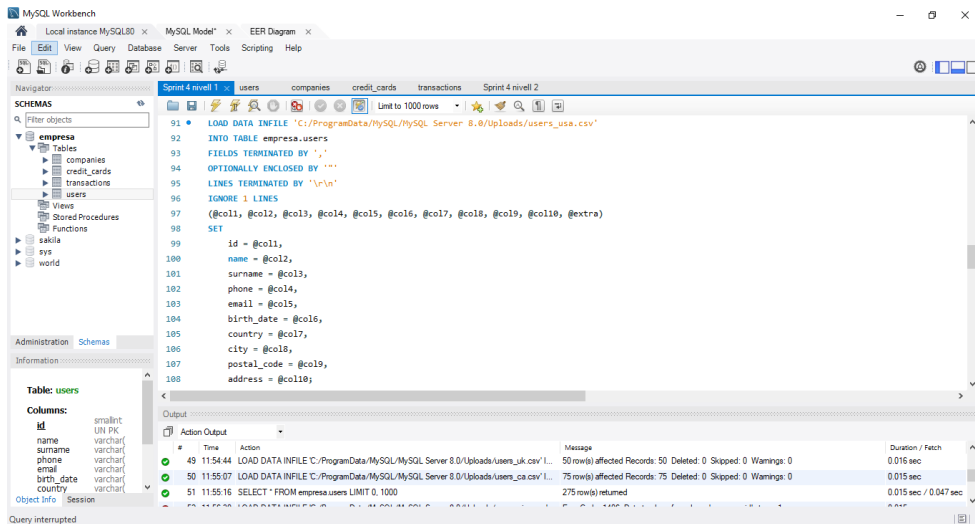
150 MODIFY phone VARCHAR(50) NULL,
151 MODIFY email VARCHAR(150) NULL,
152 MODIFY country VARCHAR(50) NULL,
153 MODIFY website VARCHAR(255) NULL,
154
155
156 • LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/uploads/companies.csv'
157 INTO TABLE empresa.companies
158 FIELDS TERMINATED BY ','
159 LINES TERMINATED BY '\n'
160 IGNORE 1 ROWS;
161
162 • LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/uploads/credit_cards.csv'
163 INTO TABLE empresa.credit_cards
164 FIELDS TERMINATED BY ','
165 LINES TERMINATED BY '\n'
166 IGNORE 1 ROWS;
167

Output
# Time Action Message Duration / Fetch
70 12:47:14 LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/uploads/companies.csv' ... Error Code: 1261. Row 1 doesn't contain data for all columns 0.000 sec
71 12:48:45 LOAD DATA INFILE 'C:/ProgramData/MySQL/MySQL Server 8.0/uploads/companies.csv' ... 100 row(s) affected Records: 100 Deleted: 0 Skipped: 0 Warnings: 0 0.000 sec
72 12:48:53 SELECT * FROM empresa.companies LIMIT 0, 1000 100 row(s) returned 0.000 sec / 0.000 sec
```



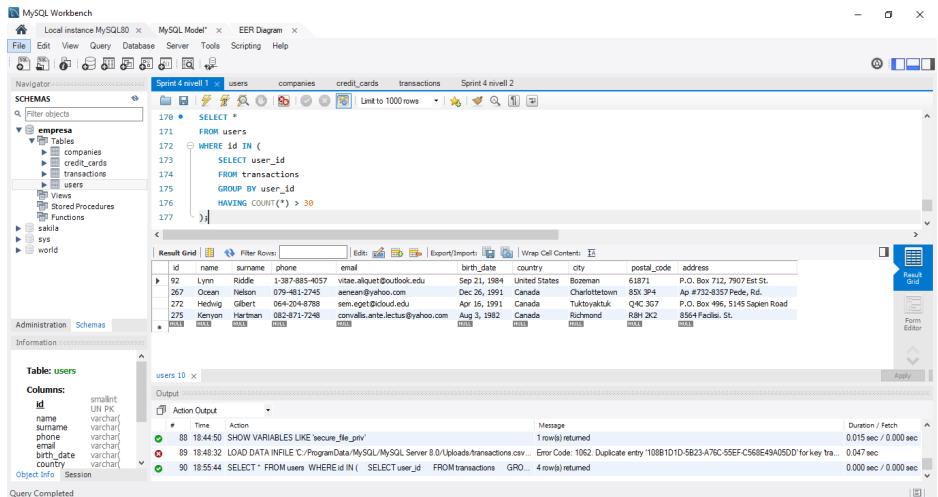
Al importar les 3 taules de users, rebo un error conforme que hi ha més informació que número de columnes a les taules, per tant, he de informar el tipus d'informació que va a cada columna, obviant la que no correspon a aquesta taula. De manera que la informació extra, no formi part de les taules users.

Importo les 3 taules de users seguides, de la mateixa forma:



Exercici 1

Realitza una subconsulta que mostri tots els usuaris amb més de 30 transaccions utilitzant almenys 2 taules.



Exercici 2

Mostra la mitjana d'amount per IBAN de les targetes de crèdit a la companyia Donec Ltd, utilitza almenys 2 taules.

MySQL Workbench

Local instance MySQL80 x MySQL Model x EER Diagram x

File Edit View Query Database Server Tools Scripting Help

Navigator

Schemas

- empreses
 - companies
 - credit_cards
 - transactions
 - users
- Views
- Stored Procedures
- Functions
- sakila
- sys
- world

Administration Schemas

Information

Table: users

Columns:

- id: smallint, UN PK
- name: varchar
- surname: varchar
- phone: varchar
- email: varchar
- birth_date: varchar
- country: varchar

Object Info Session

Sprint 4 nivell 1 x users companies credit_cards transactions Sprint 4 nivell 2

Limit to 1000 rows

```
178 -- Exercici 2
179 -- Mostra la mitjana d'amount per IBAN de les targetes de crèdit a la companyia Donec Ltd, utilitza almenys 2 taules.
180
181 SELECT credit_cards.iban, AVG(transactions.amount) AS mitjana_amount
182 FROM credit_cards
183 JOIN transactions ON credit_cards.id = transactions.card_id
184 JOIN companies ON transactions.business_id = companies.company_id
185 WHERE companies.company_name = 'Donec Ltd'
186 GROUP BY credit_cards.iban;
187
188
```

Result Grid

iban	mitjana_amount
PT87806228135092429456346	203.715000

Result 11 x

Read Only

Output

#	Time	Action	Message	Duration / Fetch
91	18:57:54	SELECT iban, AVG(amount) AS mitjana_amount FROM credit_cards JOIN transactions ON ...	Error Code: 1054. Unknown column 'users.company_id' in 'on clause'	0.000 sec
92	19:35:05	SELECT credit_cards.iban, AVG(amount) AS mitjana_amount FROM credit_cards JOIN tra...	Error Code: 1054. Unknown column 't.amount' in 'field list'	0.000 sec
93	19:35:21	SELECT credit_cards.iban, AVG(transactions.amount) AS mitjana_amount FROM credit_car...	1 row(s) returned	0.000 sec / 0.000 sec