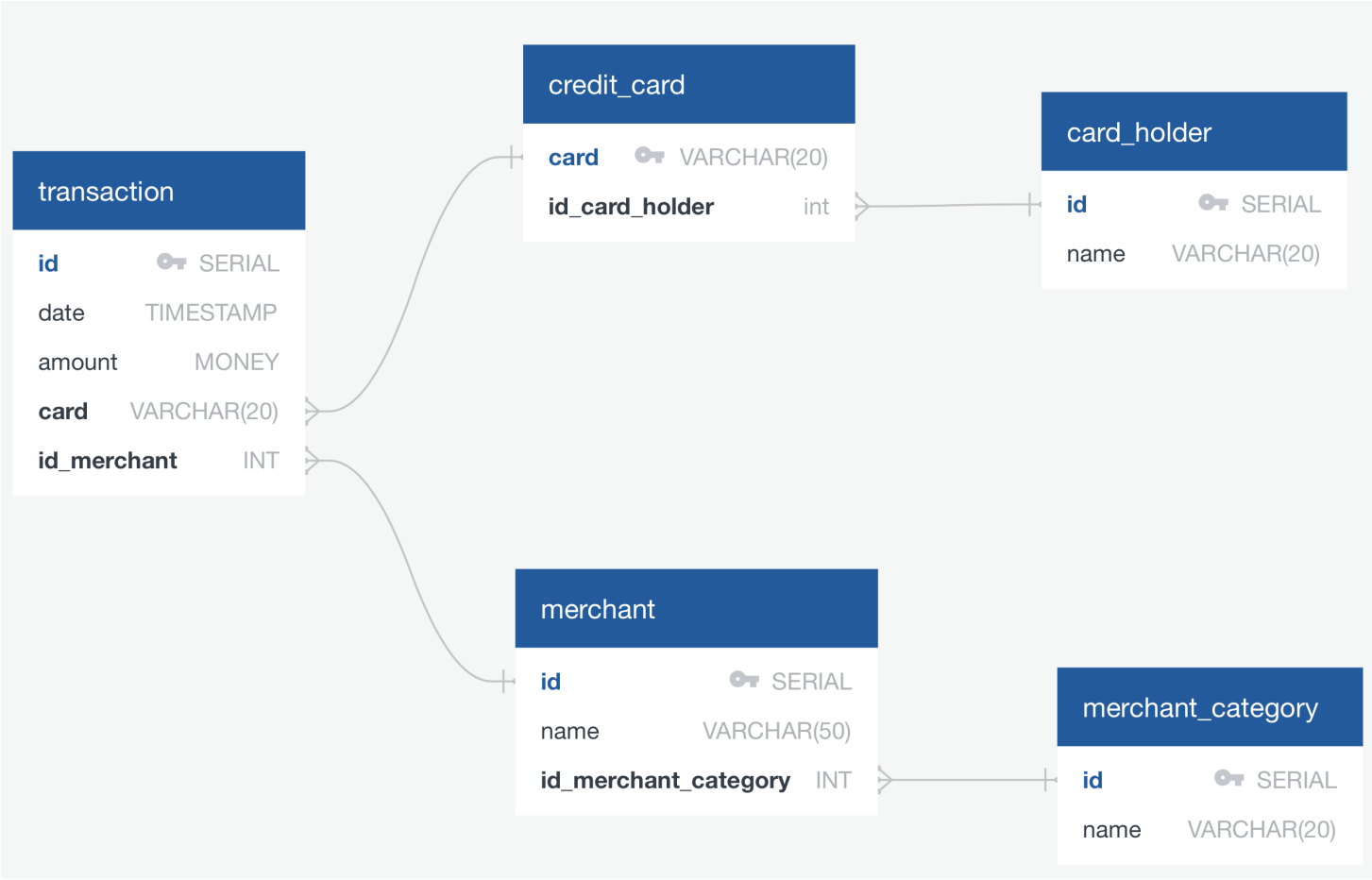


# Suspicious Transactions

## Entity Relationship Diagram (ERD):



I created the above ERD using QuickDBD and the following code:

```

transaction
-
id PK SERIAL
date TIMESTAMP
amount MONEY
card VARCHAR(20) FK >- credit_card.card
id_merchant INT FK >- merchant.id

merchant
-
id PK SERIAL
name VARCHAR(50)
id_merchant_category INT FK >- merchant_category.id

credit_card
-
card PK VARCHAR(20)
id_card_holder int FK >- card_holder.id

card_holder
-
id PK SERIAL
name VARCHAR(20)

merchant_category
-
id PK SERIAL
name VARCHAR(20)

```

To figure out how many tables I needed to create, as well as what kind of relationships I needed to define among the tables, I looked at the five CSV files and created a simple color-coded spreadsheet to show linkages between Primary Keys and Foreign Keys:

	A	B	C	D	E	F
1		PRIMARY KEY				
2						
3	transaction	id	date	amount	card (FK)	id_merchant (FK)
4						
5	merchant	id	name	id_merchant_category (FK)		
6						
7	credit_card	card	id_card_holder (FK)			
8						
9	card_holder	id	name			
10						
11	merchant_category	id	name			
12						

I used the following code for the table schemata which can be viewed in "schema.sql":

```
DROP TABLE IF EXISTS transaction;
DROP TABLE IF EXISTS merchant;
DROP TABLE IF EXISTS credit_card;
DROP TABLE IF EXISTS card_holder;
DROP TABLE IF EXISTS merchant_category;
```

```
CREATE TABLE transaction (
    id SERIAL PRIMARY KEY NOT NULL,
    date TIMESTAMP NOT NULL,
    amount MONEY NOT NULL,
    card VARCHAR(20) NOT NULL,
    id_merchant INT
);
```

```
CREATE TABLE merchant (
    id SERIAL PRIMARY KEY NOT NULL,
    name VARCHAR(50) NOT NULL,
    id_merchant_category INT NOT NULL
);
```

```
CREATE TABLE credit_card (
    card VARCHAR(20) PRIMARY KEY NOT NULL,
    id_card_holder INT NOT NULL
);
```

```
CREATE TABLE card_holder (
    id SERIAL PRIMARY KEY NOT NULL,
    name VARCHAR(50) NOT NULL
);
```

```
CREATE TABLE merchant_category (
    id SERIAL PRIMARY KEY NOT NULL,
    name VARCHAR(20) NOT NULL
);
```

```
ALTER TABLE transaction
ADD FOREIGN KEY (card) REFERENCES credit_card (card);
```

```
ALTER TABLE transaction
ADD FOREIGN KEY (id_merchant) REFERENCES merchant (id);
```

```
ALTER TABLE credit_card
ADD FOREIGN KEY (id_card_holder) REFERENCES card_holder (id);
```

```
ALTER TABLE merchant
ADD FOREIGN KEY (id_merchant_category) REFERENCES merchant_category (id);
```

I then read the database into Python and ran my queries from within JupyterLab. Please reference "visual\_data\_analysis.ipynb" to see my queries and analysis.

