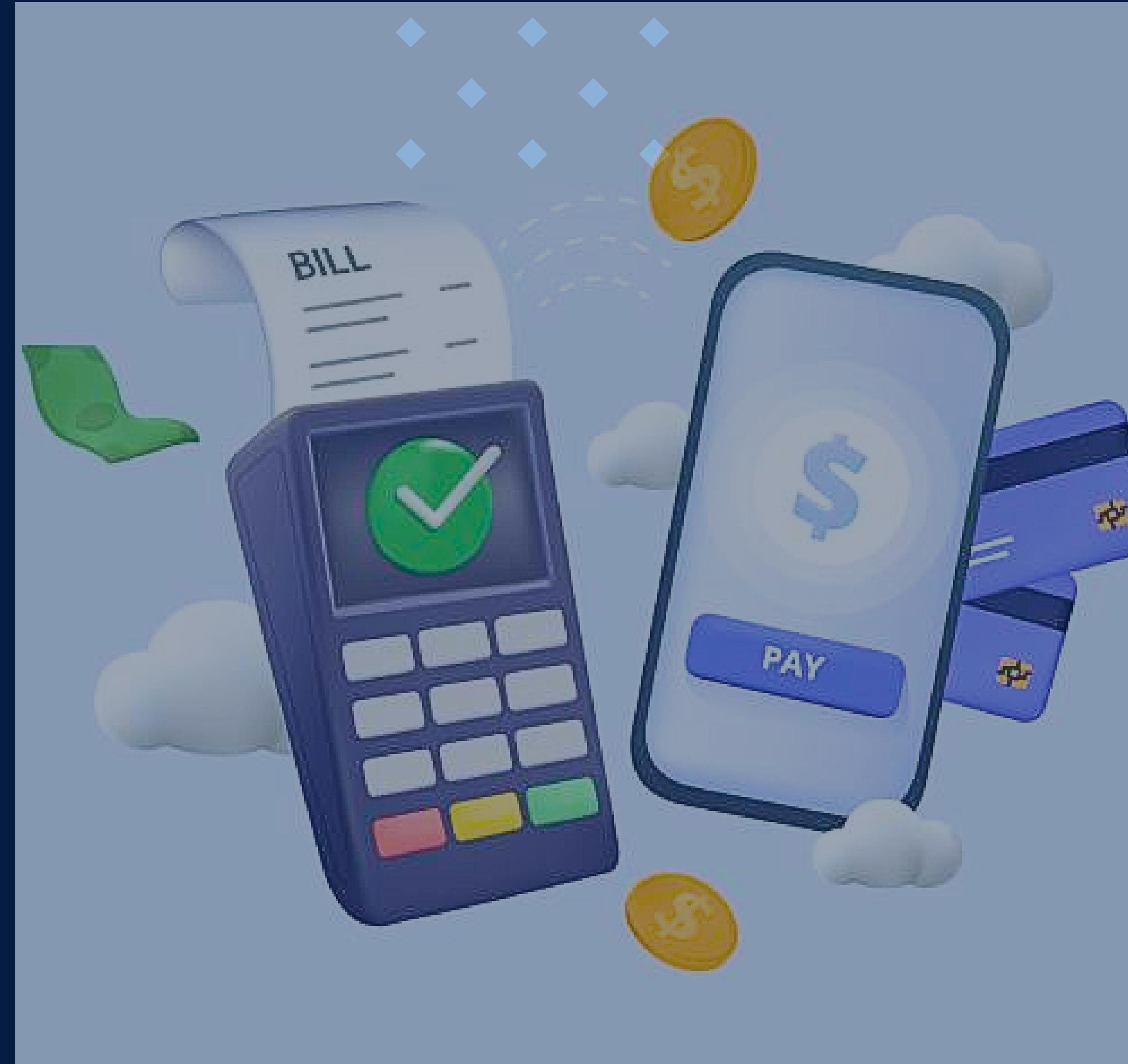




RECEIPT LOTTERY



INTRODUCTION

What is the receipt lottery?

The receipt lottery is an Italian Government's initiative to encourage the use of credit cards, debit cards and other electronic payment methods for a more digital, faster, simpler and more transparent system.

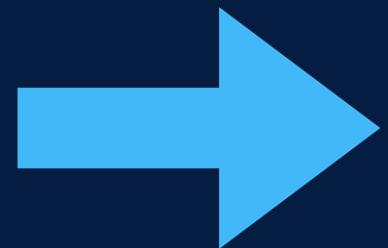


INTRODUCTION

How to participate?

You must:

- Be of **age** and **resident in Italy**;
- Obtain the **lottery code** on the website and show it everytime you make a purchase.



For every euro spent you will get 1 ticket,
until a maximum of 1.000 (for each receipt)

INTRODUCTION

Limits to the participation

Your receipt is not valid if:

- You spend **less than 1€**;
- The purchase is made **online**;
- The purchase is made in the **exercise of business**;
- The purchase is transmitted to the **Healthcare Card system**;
- You get an **electronic invoice**;
- You request **tax deduction** over the purchase.



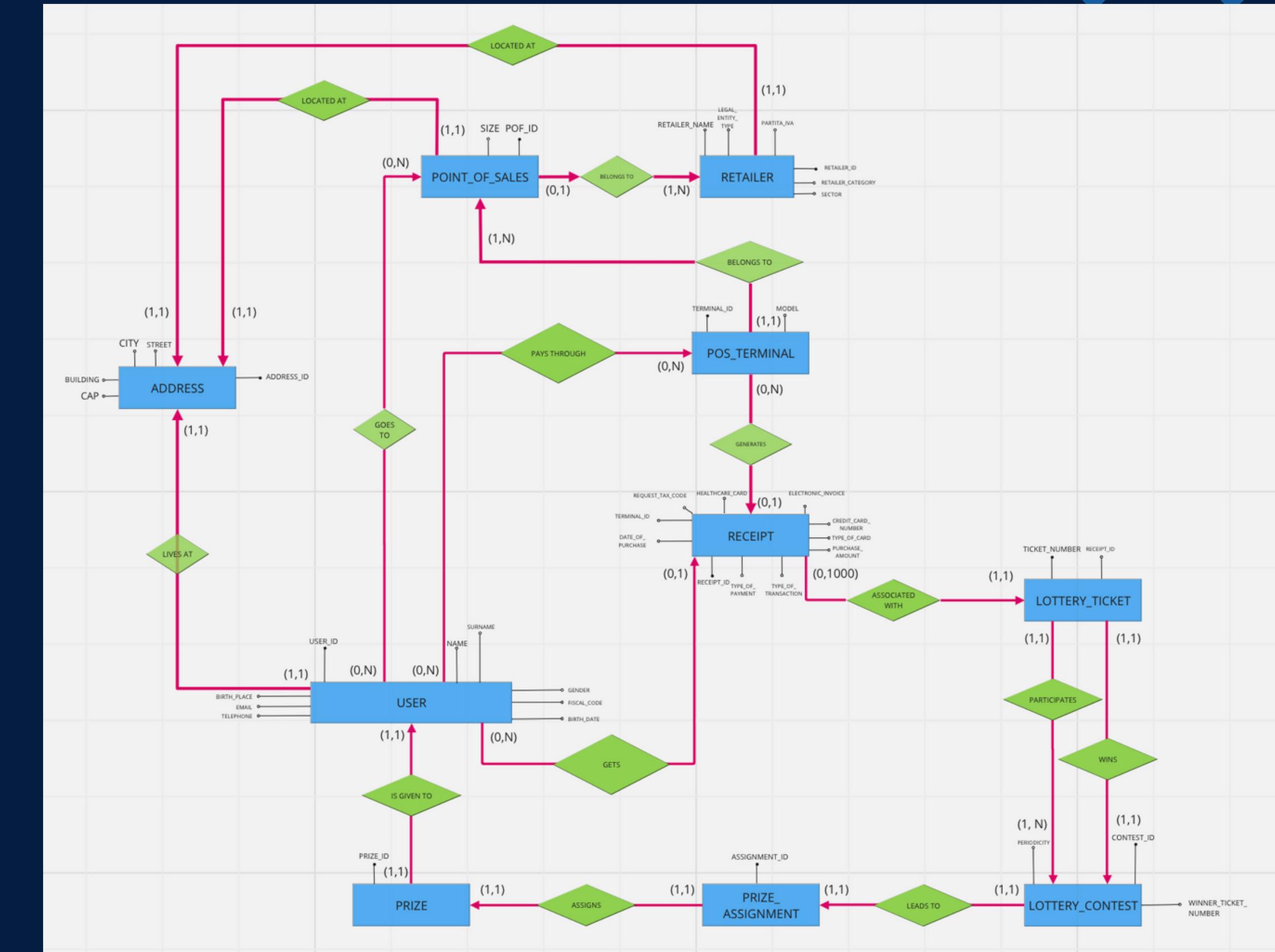
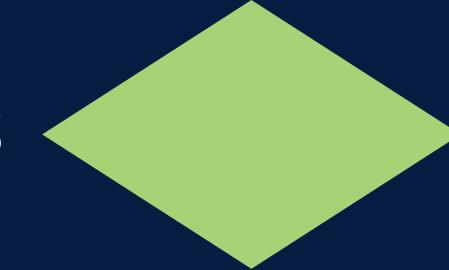


CONCEPTUAL SCHEMA

- Entities



- Relationships



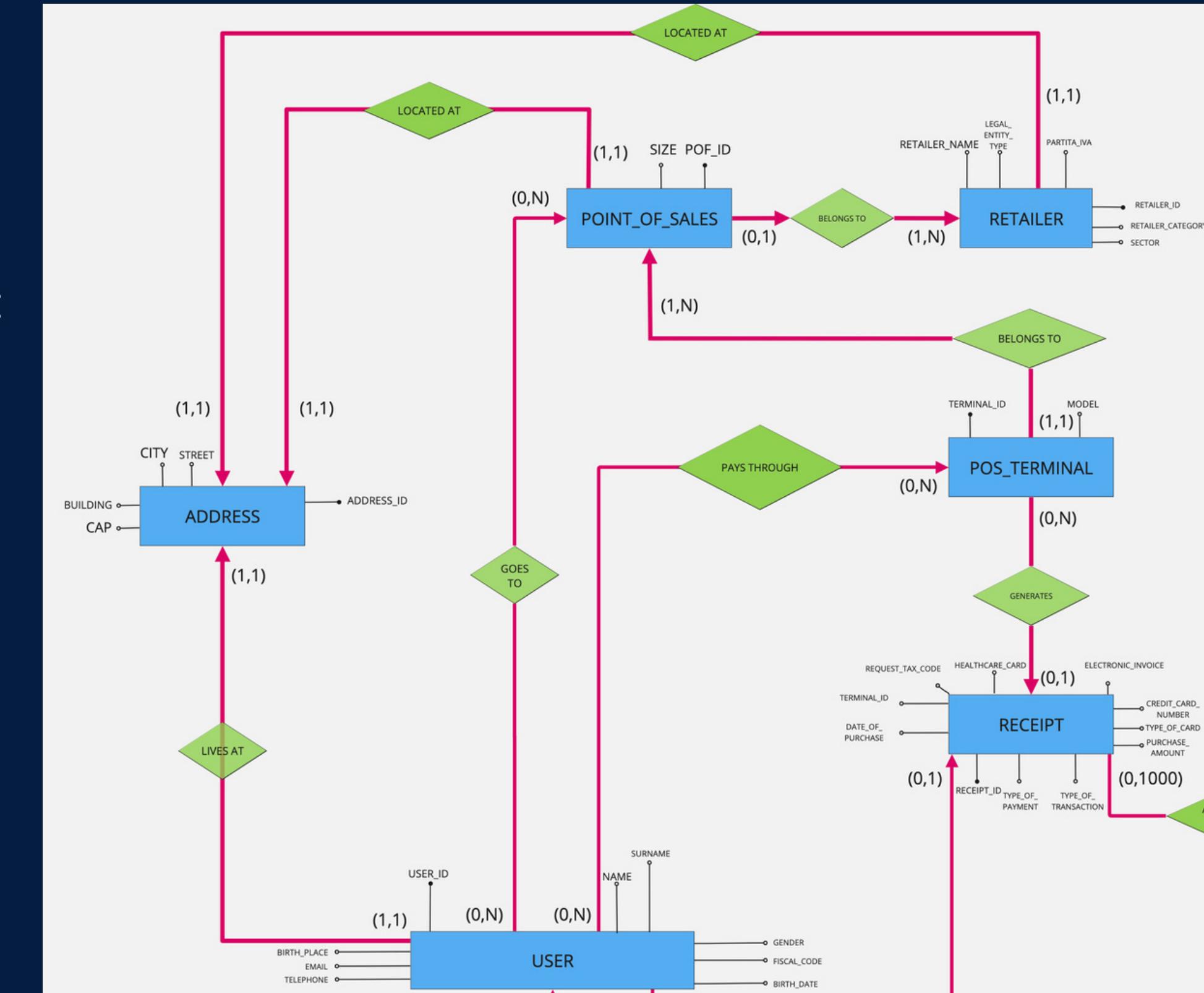


CONCEPTUAL SCHEMA

First part

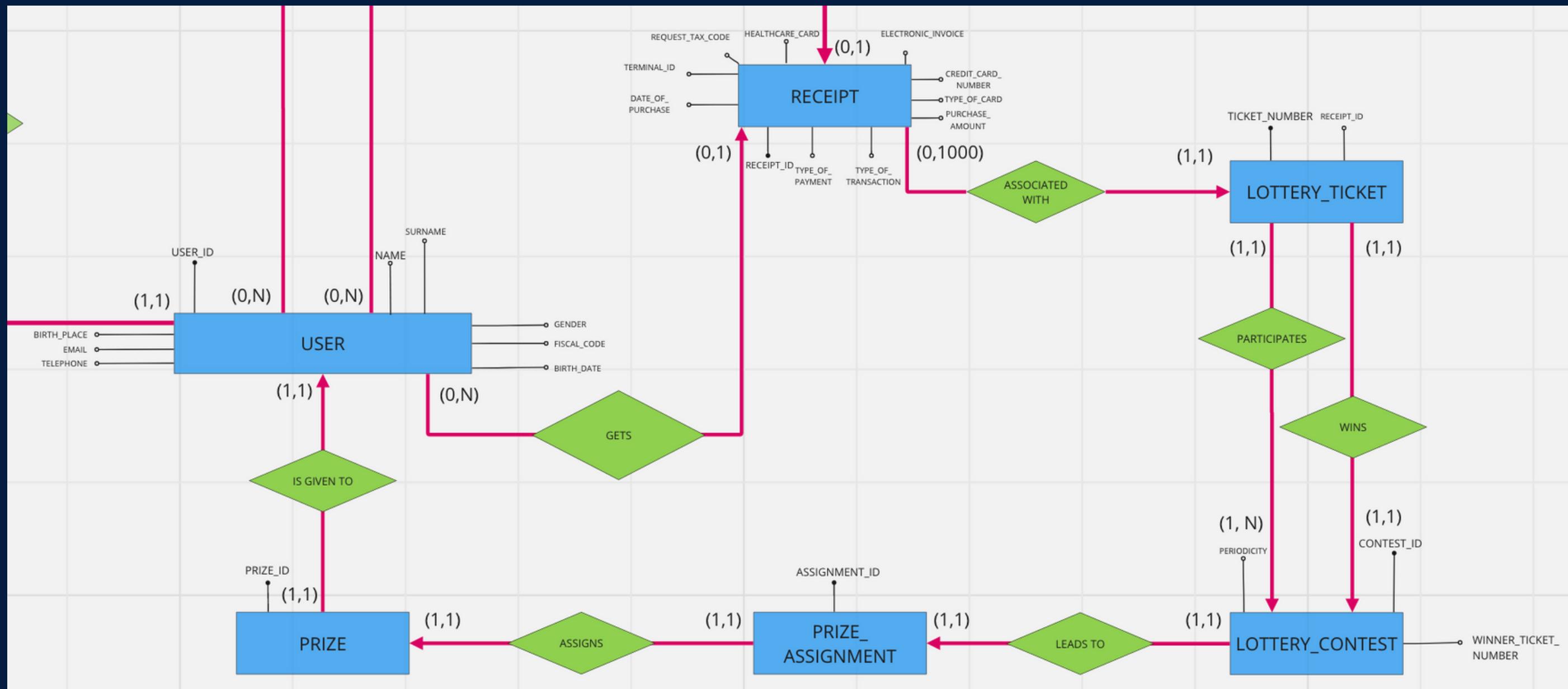
We take into consideration 6 entities:

- **USER**
- **ADDRESS**
- **POINT_OF_SALES**
- **RETAILER**
- **POS_TERMINAL**
- **RECEIPT**





CONCEPTUAL SCHEMA



We take into consideration the last 4 entities:

- **LOTTERY_TICKET**
- **LOTTERY_CONTEST**
- **PRIZE_ASSIGNMENT**
- **PRIZE**

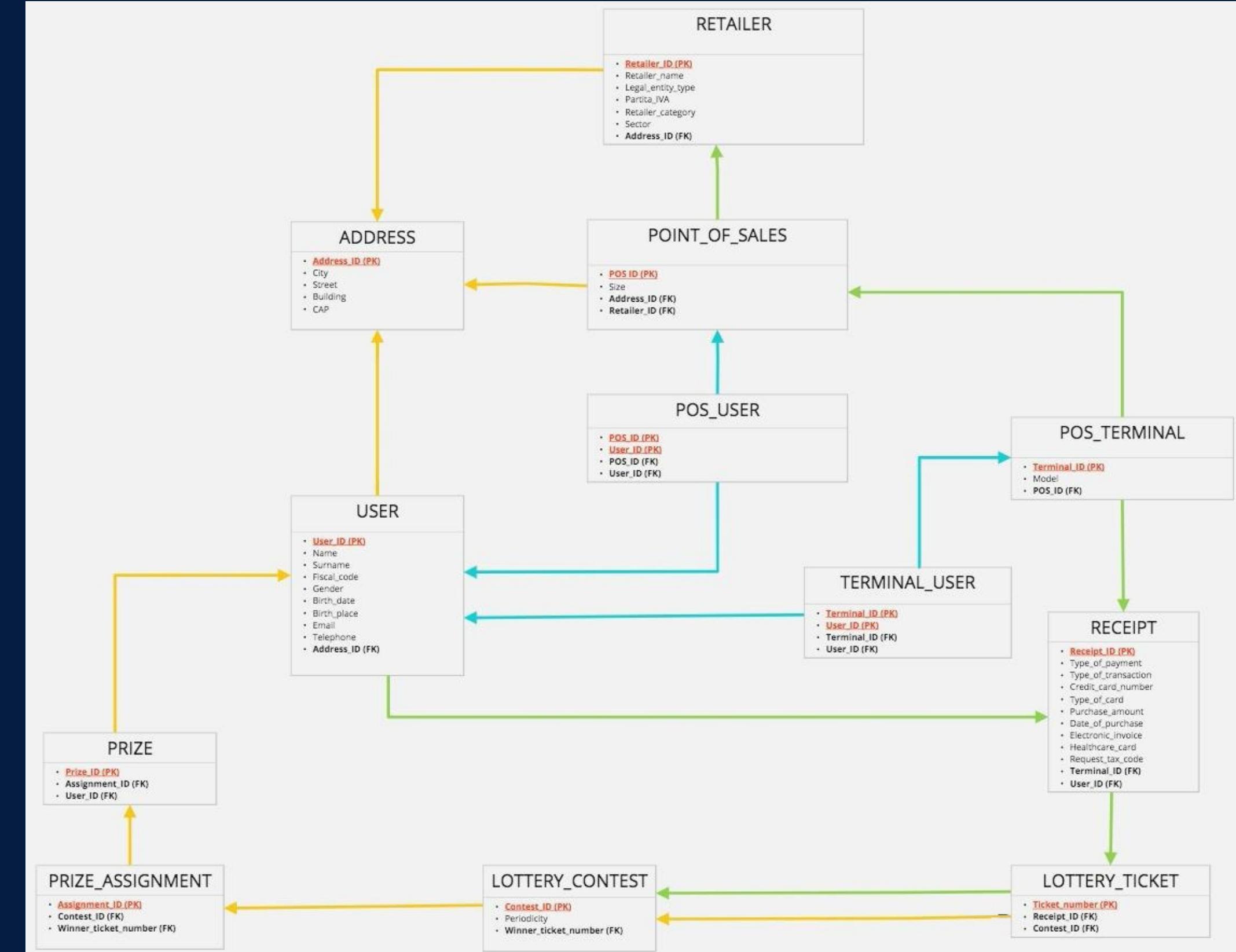
Last Part



LOGICAL SCHEMA

Conceptual ---> Logical

- Entity ---> Relation (Table)
- Relationship ---> Relation (Table)
- Attribute ---> Attribute (Column)
- Participation constraints --->
FK constraints

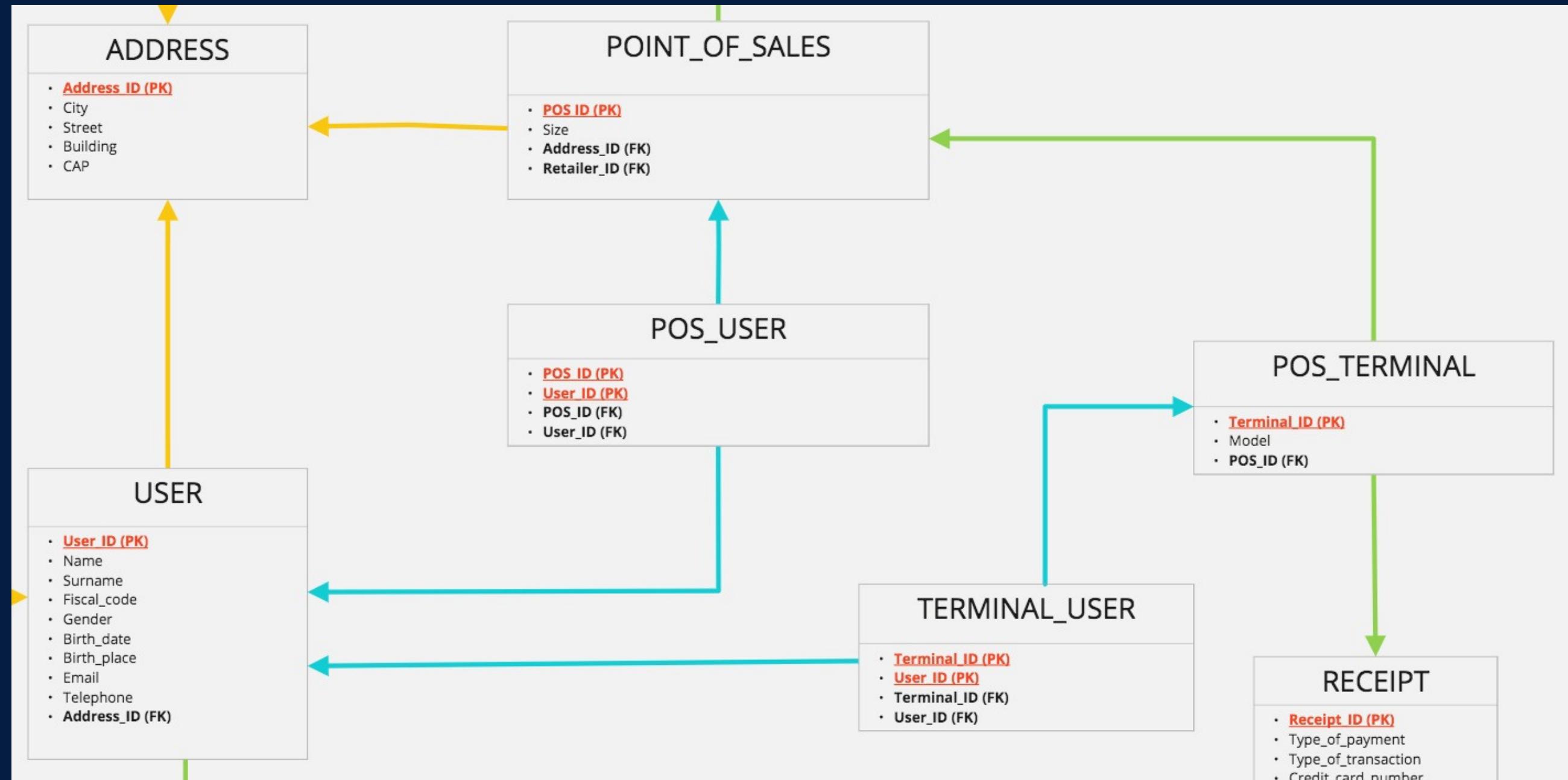




Many-to-many relationship

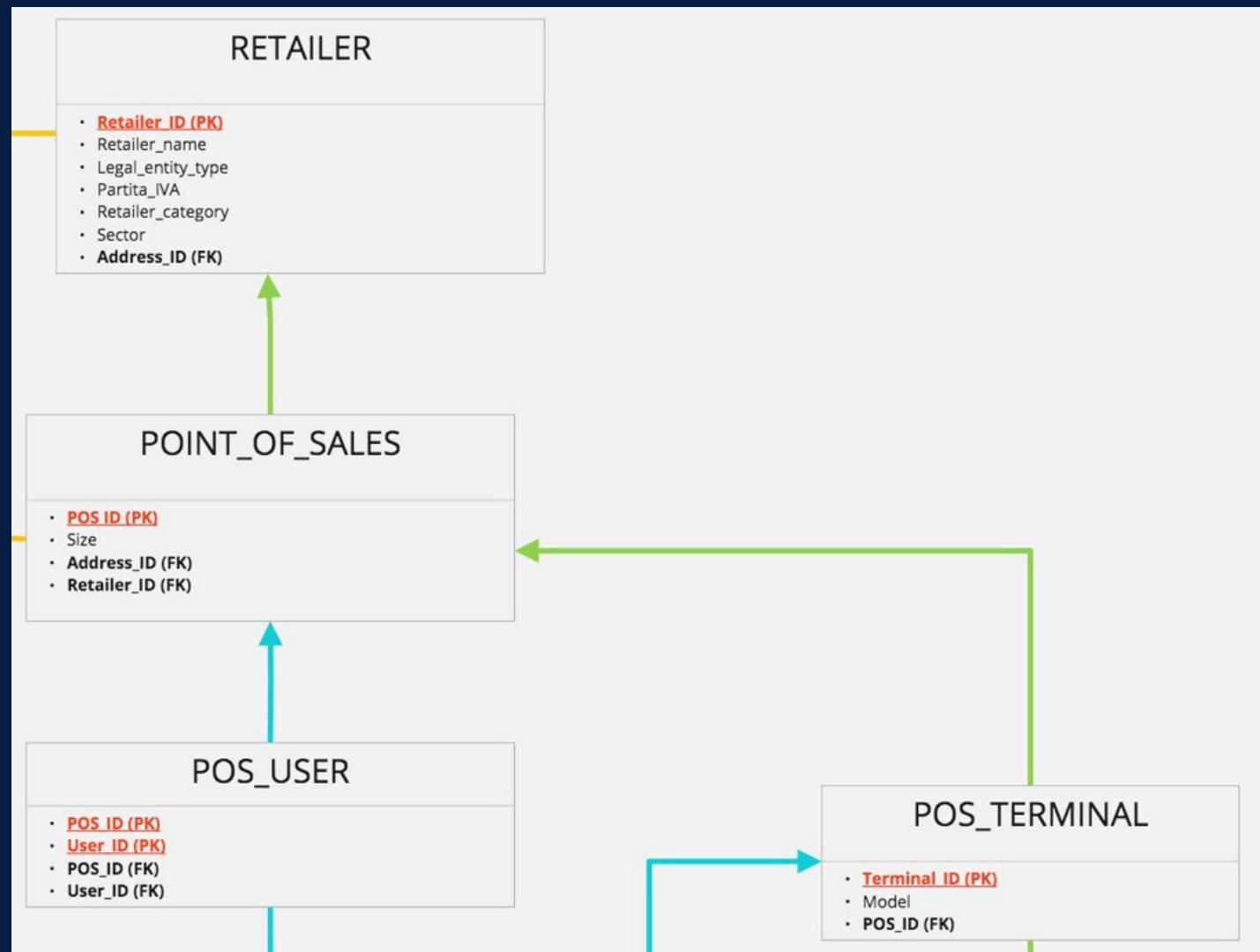
Focus on light blue relationships:

We create a separate table
that links the other two
tables.



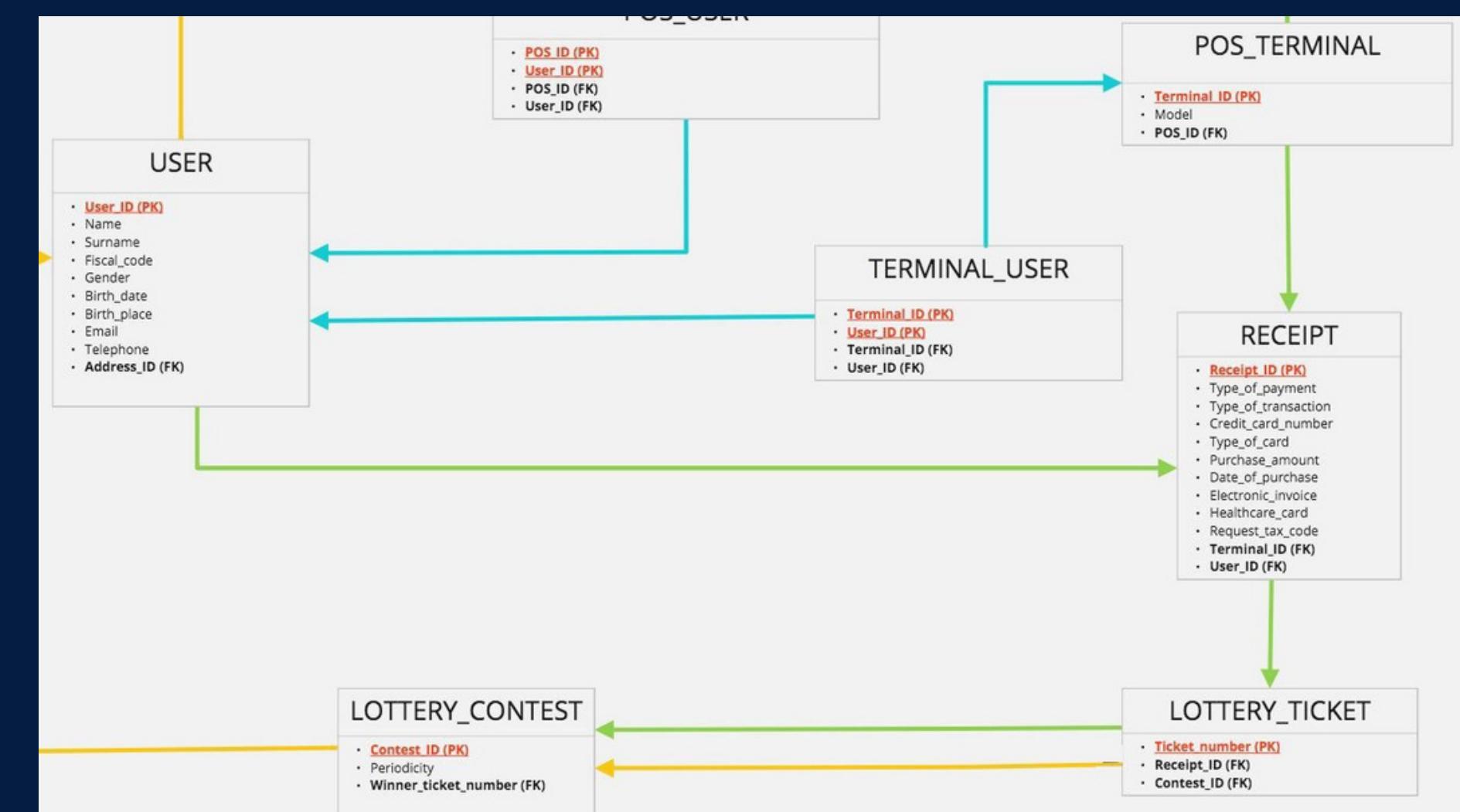


One-to-many relationship



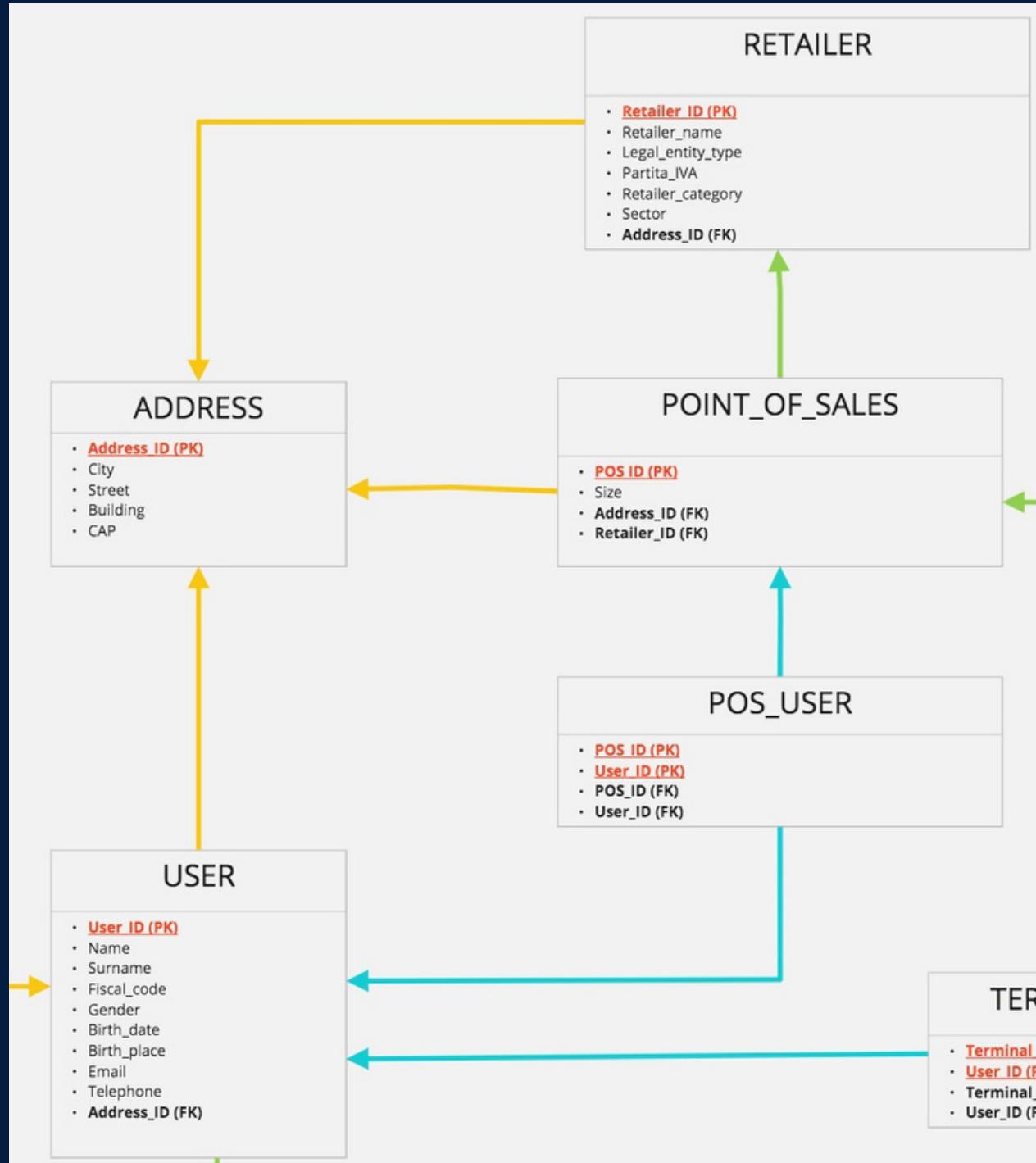
Focus on **green** relationships:

The relation can collapse into the entity whose entries participate with the lowest cardinality.



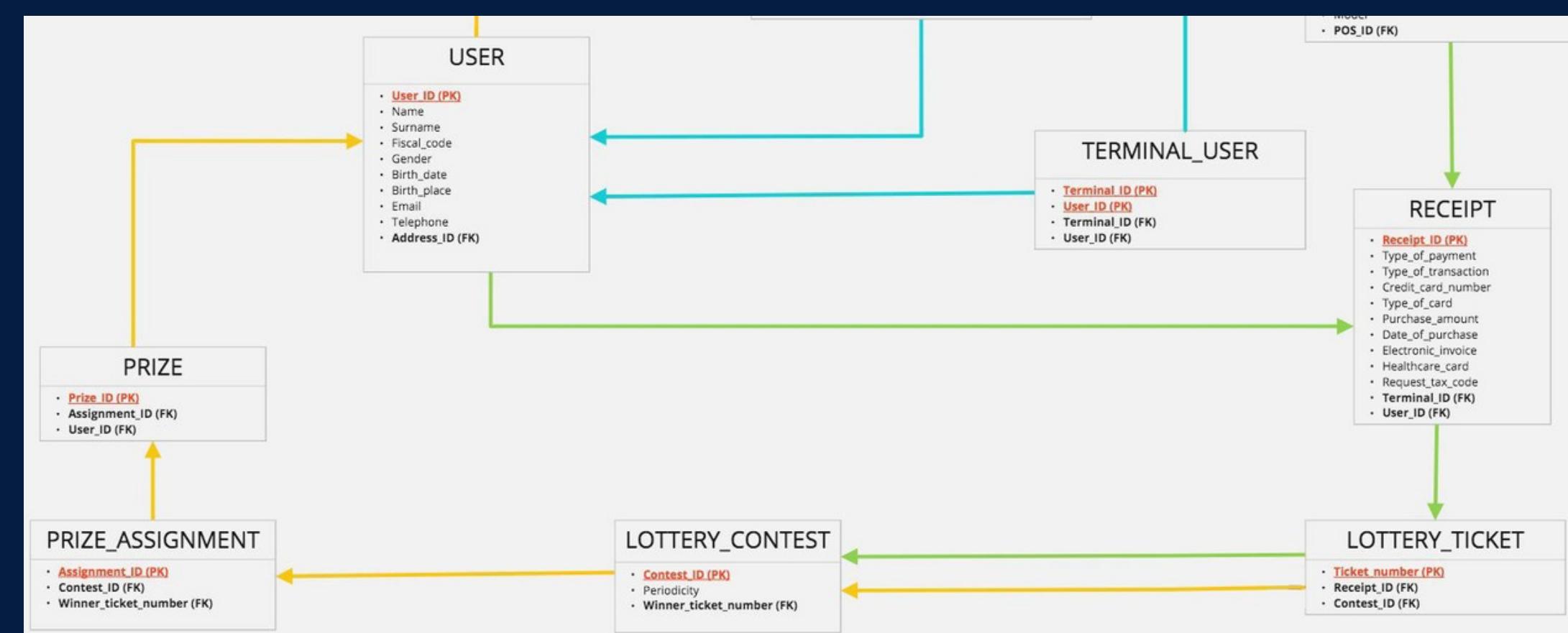


One-to-one relationship



Focus on yellow relationships:

The relation can collapse into either of the two entities.





PHYSICAL SCHEMA

```
1 -- ADDRESS table
2 CREATE TABLE ADDRESS (
3   Address_ID INT PRIMARY KEY,
4   City VARCHAR(30),
5   Street VARCHAR(30),
6   Building INT,
7   CAP INT
8 );
```

Address_ID	City	Street	Building	CAP
1	Milano	Viale Monza	200	123123
2	Milano	Via Romagna	100	111111
3	Milano	Viale Evaristo Stefini	50	222222

```
11 -- USER table
12 CREATE TABLE USER (
13   User_ID INT PRIMARY KEY,
14   Name VARCHAR(30),
15   Surname VARCHAR(30),
16   Fiscal_code VARCHAR(16),
17   Birth_date DATE,
18   Birth_place VARCHAR(30),
19   Gender CHAR(1),
20   Email VARCHAR(30),
21   Telephone VARCHAR(10),
22   address_id INT,
23   FOREIGN KEY (address_id) REFERENCES ADDRESS (address_id)
24 );
```

User_ID	Name	Surname	Fiscal_code	Birth_date	Birth_place	Gender	Email	Telephone	address_id
1	Liza	Dyachenko	123456789...	27-08-1999	Russia	F	dyache...	1234567...	1
2	Giada	Caviglia	123456789...	12-01-2000	Italy	F	absdef...	1234567...	2
3	Eleonora	Piatti	123456789...	11-03-2001	Italy	F	absdef...	1234567...	3



PHYSICAL SCHEMA

```
27 -- RETAILER table
28 CREATE TABLE RETAILER (
29   Retailer_ID INT PRIMARY KEY,
30   Retailer_name VARCHAR(30),
31   Legal_entity_type VARCHAR(10),
32   Partita_IVA VARCHAR(11),
33   Retailer_category VARCHAR(30),
34   Sector VARCHAR(30),
35   address_id INT,
36   FOREIGN KEY (address_id) REFERENCES ADDRESS (address_id)
37 );
```

```
40 -- POINT OF SALES table
41 CREATE TABLE POINT_OF_SALES (
42   POS_ID INT PRIMARY KEY,
43   Size VARCHAR(50),
44   address_id INT,
45   Retailer_ID INT,
46   FOREIGN KEY (address_id) REFERENCES ADDRESS (address_id),
47   FOREIGN KEY (retailer_id) REFERENCES RETAILER (retailer_id)
48 );
```

Retailer_ID	Retailer_name	Legal_entity_type	Partita_IVA	Retailer_category	Sector	address_id
1	A	SRL	12345678...	Grocery	ABC	4

POS_ID	Size	address_id	Retailer_ID
1	A	5	1



PHYSICAL SCHEMA

```
51 -- POS_TERMINAL table
52 CREATE TABLE POS_TERMINAL(
53   Terminal_id INT PRIMARY KEY,
54   pos_id INT,
55   Model VARCHAR(50),
56   FOREIGN KEY (pos_id) REFERENCES POINT_OF_SALES (pos_id)
57 );
```

Terminal_id	pos_id	Model
1	1	ads21njkbh2

```
60 -- RECEIPT table
61 CREATE TABLE RECEIPT (
62   Receipt_ID INT PRIMARY KEY,
63   User_ID INT,
64   Terminal_ID INT,
65   Type_of_payment VARCHAR(50),
66   Type_of_transaction VARCHAR(50),
67   Credit_card_number VARCHAR(12),
68   Type_of_card VARCHAR(50),
69   Purchase_amount DECIMAL(10,2),
70   Date_of_purchase DATE,
71   Electronic_invoice BOOLEAN,
72   Healthcare_card BOOLEAN,
73   Request_tax_code BOOLEAN,
74   FOREIGN KEY (Terminal_ID) REFERENCES POS_TERMINAL (Terminal_ID),
75   FOREIGN KEY (User_ID) REFERENCES USERS (User_ID),
76   CONSTRAINT check_purchase_amount CHECK (Purchase_amount >= 1),
77   CONSTRAINT check_transaction_type CHECK (Type_of_transaction = 'succeed'),
78   CONSTRAINT check_payment_type CHECK (Type_of_payment = 'in-store'),
79   CONSTRAINT check_electronic_invoice CHECK (Electronic_invoice = 0),
80   CONSTRAINT check_healthcare_card CHECK (Healthcare_card = 0),
81   CONSTRAINT check_tax_code CHECK (Request_tax_code = 0)
82 );
```

Receipt_ID	User_ID	Terminal_ID	Type_of_payment	Type_of_transaction	Credit_card_number	Type_of_card	Purchase_amount	Date_of_purchase	Electronic_invoice	Healthcare_card	Request_tax_code
1	1	1	in-store	succeed	123456789012	debit	5	11-03-2024	0	0	0
2	2	1	in-store	succeed	123456789012	debit	1	11-03-2024	0	0	0



PHYSICAL SCHEMA

```
85 -- LOTTERY_TICKET table
86 CREATE TABLE LOTTERY_TICKET (
87   Ticket_number INT PRIMARY KEY,
88   Receipt_ID INT,
89   Contest_ID INT,
90   FOREIGN KEY (Receipt_ID) REFERENCES RECEIPT (Receipt_ID),
91   FOREIGN KEY (Contest_ID) REFERENCES LOTTERY_CONTEST (Contest_ID)
92 );
```



Ticket_number	Receipt_ID	Contest_ID
1	1	1
2	2	1
3	3	1

```
95 -- LOTTERY_CONTEST table
96 CREATE TABLE LOTTERY_CONTEST (
97   Contest_ID INT PRIMARY KEY,
98   Periodicity VARCHAR(30),
99   Winner_ticket_number INT,
100  FOREIGN KEY (Winner_ticket_number) REFERENCES LOTTERY_TICKET (Ticket_number)
101 );
```



Contest_ID	Periodicity	Winner_ticket_number
1	weekly	3
2	monthly	1



PHYSICAL SCHEMA

```
104 -- PRIZE_ASSIGNMENT table
105 CREATE TABLE PRIZE_ASSIGNMENT (
106   Assignment_ID INT PRIMARY KEY,
107   Winner_ticket_number INT,
108   Contest_ID INT,
109   FOREIGN KEY (Winner_ticket_number) REFERENCES LOTTERY_TICKET (Ticket_number),
110   FOREIGN KEY (Contest_ID) REFERENCES LOTTERY_CONTEST (Contest_ID)
111 );
```

```
114 -- PRIZE table
115 CREATE TABLE PRIZE (
116   Prize_ID INT PRIMARY KEY,
117   Assignment_ID INT,
118   User_ID INT,
119   FOREIGN KEY (Assignment_ID) REFERENCES PRIZE_ASSIGNMENT (Assignment_ID),
120   FOREIGN KEY (User_ID) REFERENCES USERS (User_ID)
121 );
```

Assignment_ID	Winner_ticket_number	Contest_ID
1	1	1
2	2	2

Prize_ID	Assignment_ID	User_ID
1	1	3
2	2	1



PHYSICAL SCHEMA

```
125 -- POS_USER link table
126 CREATE TABLE POS_USER(
127   POS_ID INT,
128   User_ID INT,
129   PRIMARY KEY (POS_ID, User_ID)
130   FOREIGN KEY (POS_ID) REFERENCES POINT_OF_SALES (POS_ID),
131   FOREIGN KEY (User_ID) REFERENCES USER (user_id)
132 );
```

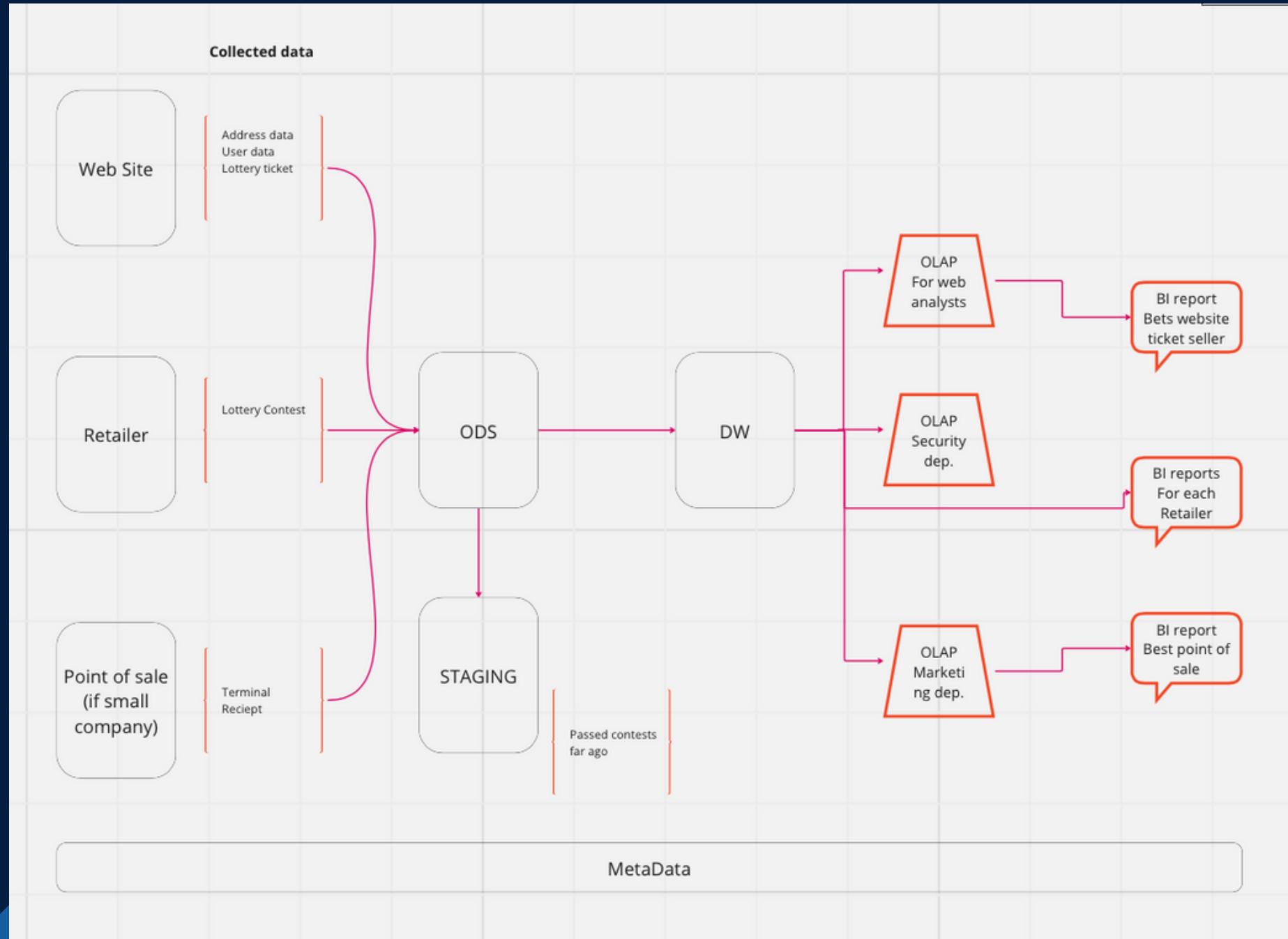
POS_ID	User_ID
1	1
1	2

```
135 -- TERMINAL_USER link table
136 CREATE TABLE TERMINAL_USER(
137   Terminal_ID INT,
138   User_ID INT,
139   PRIMARY KEY (terminal_id, user_id),
140   FOREIGN KEY (terminal_id) REFERENCES POS_TERMINAL (terminal_id),
141   FOREIGN KEY (User_ID) REFERENCES USER (user_id)
142 );
```

Terminal_ID	User_ID
1	1
1	2



DATA WAREHOUSING SCHEMA



Technology used:

Airflow

for orchestrating the ETL workflows, managing dependencies, and scheduling jobs:

Microsoft Excel

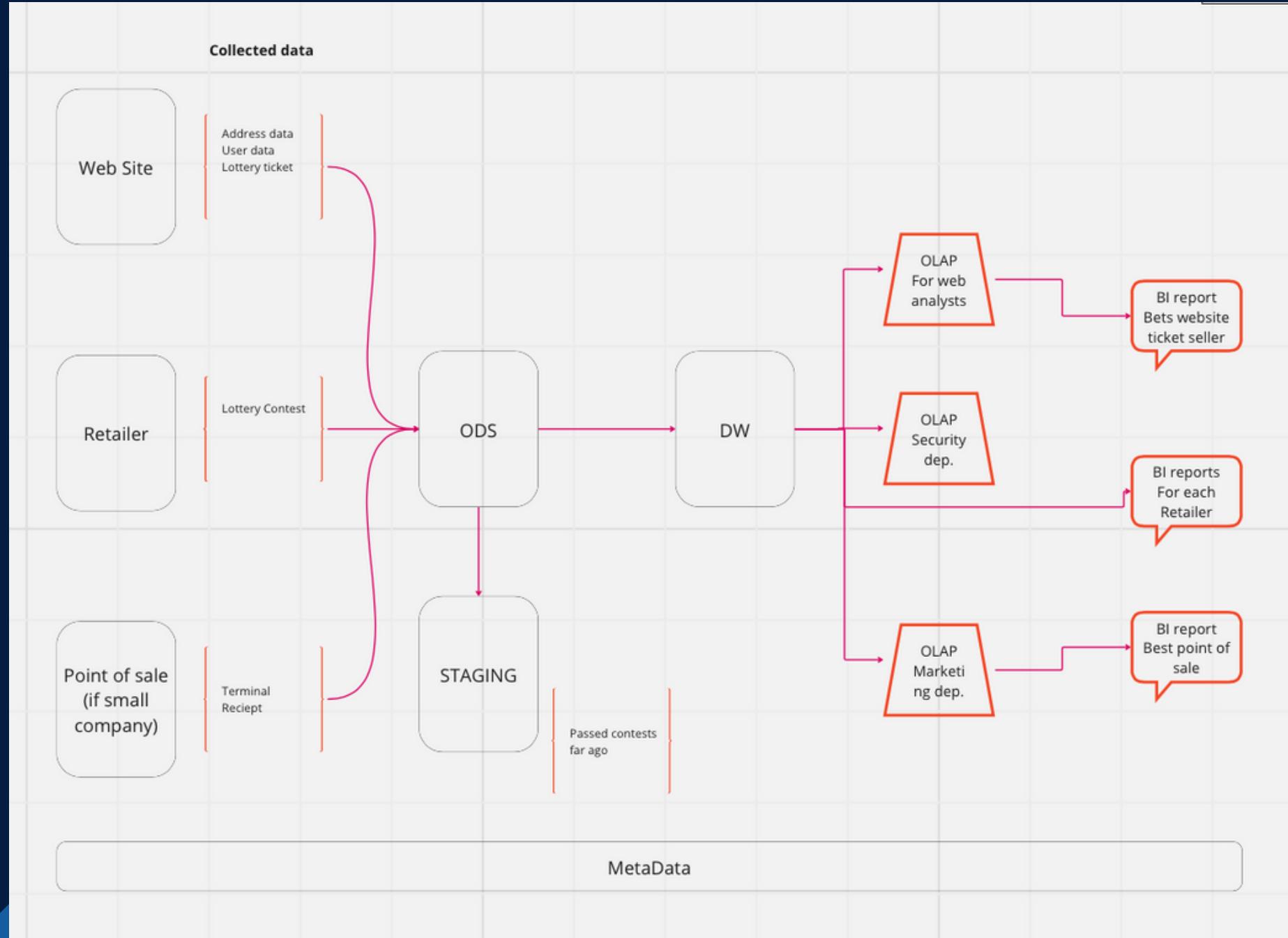
for OLAP

Power BI

for personalised reports



DATA WAREHOUSING SCHEMA



Schedule:

Extract - 11:00 pm:
as all Sale points closed

Transform - 1-2 hours
(depending on the volume)
Run data quality checks

Load - 2:00 am

Update Data Mart - every Sunday



*Thank you
for your attention !*