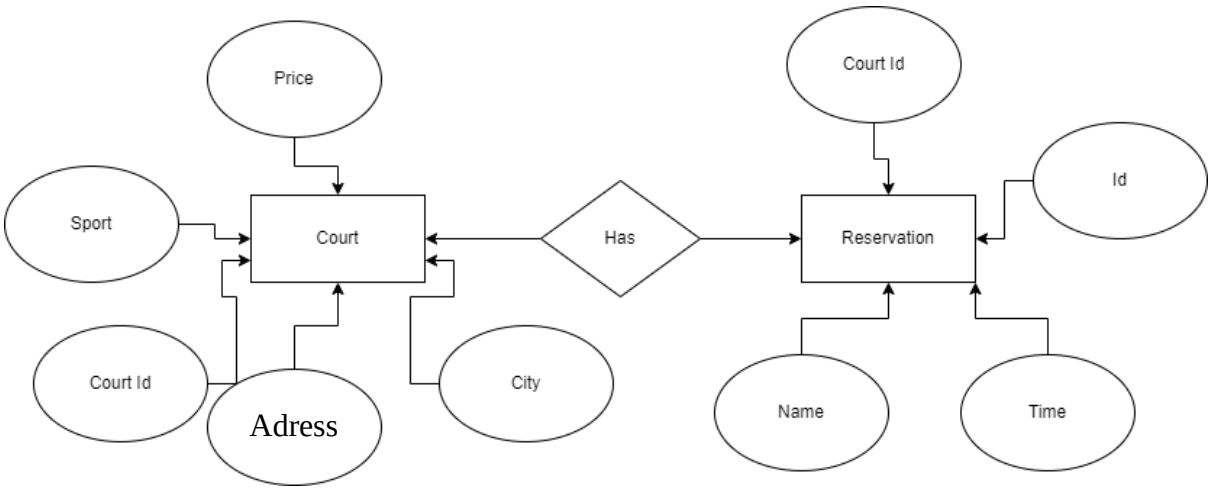
Assignment 3 Report 2DV513

Student: LAROUSSI Marwan

1. Project Idea

For this assignment, I decided to implement a system that would solve a problem that I am directly facing. I'm doing an internship in Dubai to complete my school year and the first thing I looked for when I arrived were sports grounds. I quickly understood that the task was not easy, there are very few basketball, tennis and soccer fields, and they are very badly listed.
My idea is to create a database linked to the sports grounds of the city, wherein two or three clicks you can easily find a free ground and make a reservation.
I didn't find a database listing the sports fields in Dubai, so I had to create it by hand with MySQL. Once my database is well filled, my goal is to bring interesting analysis, like the most practiced sport or the most booked fields.

2. Schema Design



I created two Tables in my schema design, one for the court and one for the reservation. The reservation table uses the 'court Id' as a foreign key. As I didn't want users to enter an id manually, I decided to attribute a unique id to each reservation table corresponding to the exact timestamp of when the reservation was made. For the Court table, we have the address and the city separated. The city is more used to finding courts in a place where the address is more used to locate a specific court.

3. SQL Queries

Q: Search a court for a given sport, city, and/or price
The following query uses the table court to find the courts corresponding to the criteria sought.

```
SELECT *

FROM Court

WHERE sport = 'Basket' and city = 'ABOU DABI';
```

There are two alternatives to this query, one to filter the free sports fields and the other to filter the paying sports fields.

Find a court by City, Sport and the court must be free :

```
SELECT *

FROM Court

WHERE sport = 'Basket' and city = 'ABOU DABI' and price = 0;
```

Find a court by City, Sport and the court must be paid :

```
SELECT *

FROM Court

WHERE sport = 'Basket' and city = 'ABOU DABI' and price <> 0;
```

Q: Check if a reservation has been made in a court
This query looks simple, but it needs both tables to be realized. Indeed, this query must be combined with the search court query to work. Once the courts

for a certain city/sport are found, I store the information in a list that allows me to retrieve the court ID.
I reuse this court Id that is common in both tables to find the reservation made for a specific court.

```
SELECT *

FROM Reservation

WHERE Court_id = '187872' ;
```

Q: Make a reservation for a court
This is a simple query used when a user wants to make a new reservation.

```
Insert into reservation values (id,name,court_id,time) ;
```

So the schema is the following, a user searches an available court in a city, he checks if there is a reservation and then he can make a reservation himself.

Q: MVP statistic: Rank list of the most popular sport
The following query is a multi relation query and uses *JOIN.* The query should give us a list of all the Sports with the number of reservation associates. The list is grouped by sport and ordered by the number of reservations so we can have the popular sport first.

```
select sport, count(*)

from Court c

join Reservation r on c.court_id=r.court_id

group by c.sport

order by count(*) DESC;
```

4. Discussion and Resources

I had a hard time finishing the project because I was caught up at the last moment, nevertheless, I find the subject of the sports fields very interesting because it is quite topical for me. I had a lot of trouble implementing the time in my program, originally I wanted to implement a time slot for each reservation to make sure that none of them would have conflicts but I didn't succeed. That's why I came up with the idea of checking the reservations before booking, if the users are honest there shouldn't be any conflicts. Due to lack of time, I didn't manage to go as far as I could but I got a lot of ideas for improvements during the implementation. I'm thinking of taking a serious look at this when I have time and developing a site with actual sports field rentals as well as listing the prices.

The project uses Tkinter and MySQL library, please check readme.txt for installation details.

Source code:
https://github.com/Capucccino/Assignment3_database_theory_2DV513

Video demonstration: https://youtu.be/CP6MlCjcyDE