Online Hotel Reservation (OHR) database schema

(Booking.com)

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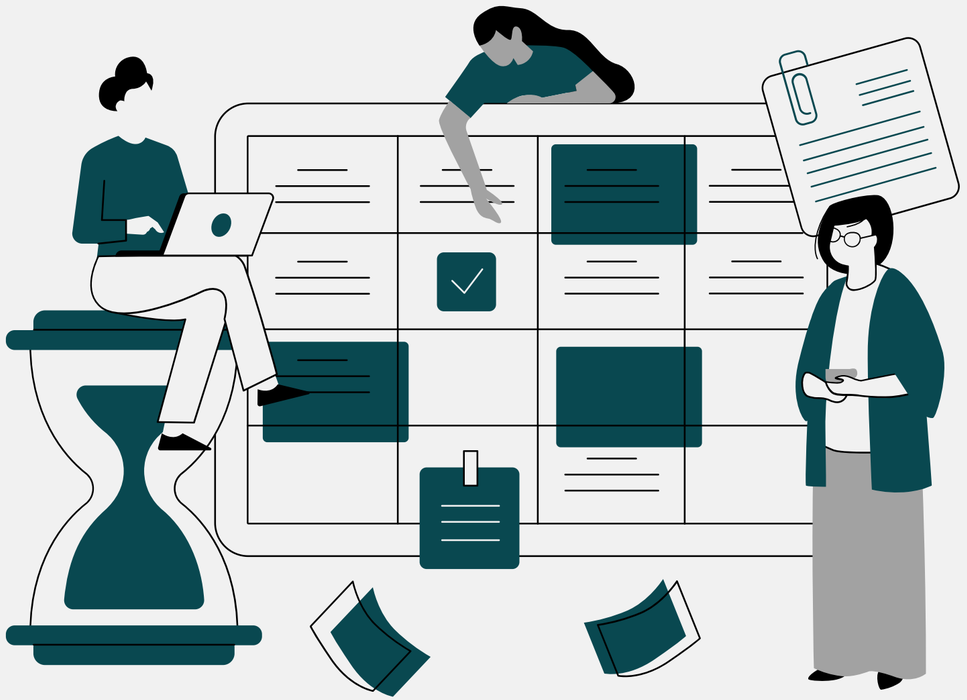
Agenda

A brief look at what we will discuss on this presentation



01 Introduction. Task description

02 ERD model

03 Table statement with sample data

04 Collab part

OHR system provides hotel booking services to various travelers and visitors. It serves lots of customers. Each Hotel in the site requires a modern database system for efficient management of its services and rooms. Our team is hired to design and develop a database and its schema that can meet requirements of the hotels database management.

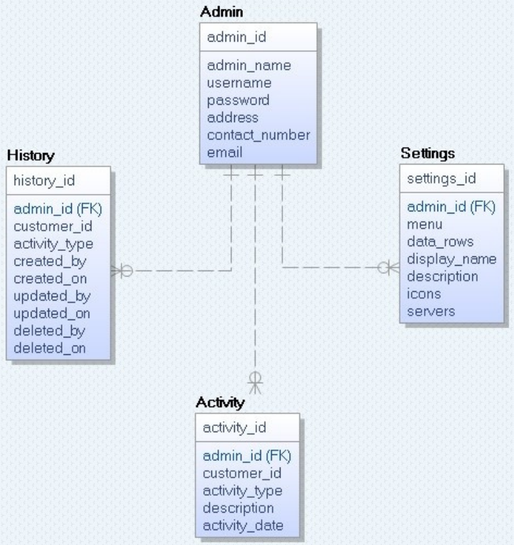
Admin schema

- History
- Admin
- Settings

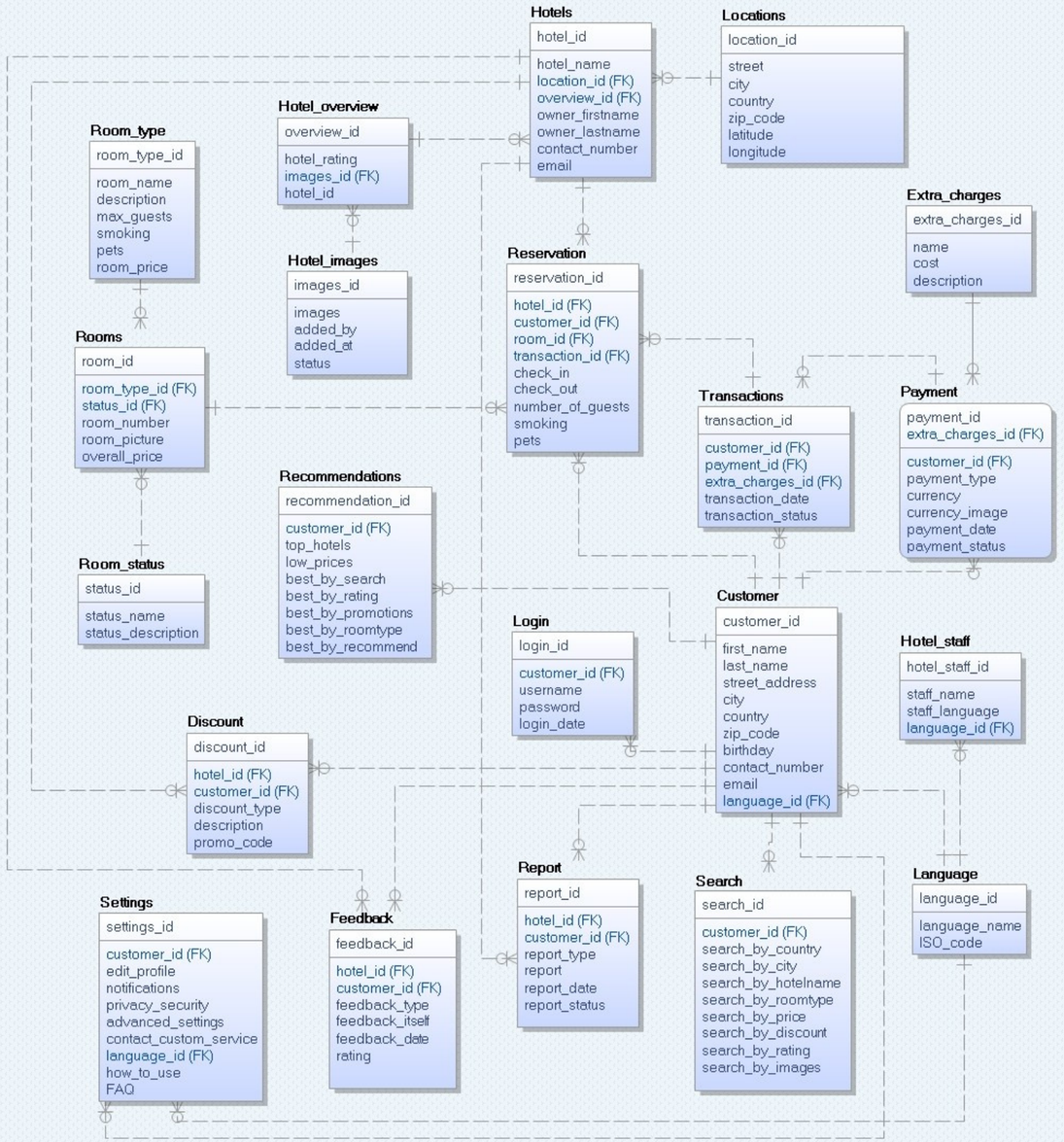
User schema

- Hotels
- Location
- Hotel overview
- Hotel images
- Rooms
- Room status
- Recommendation
- Reservation
- Customer
- Transaction
- Payment
- Extra charge
- Discount
- Hotel stuff
- Login
- Report
- Search
- Languages
- Feedback and setting

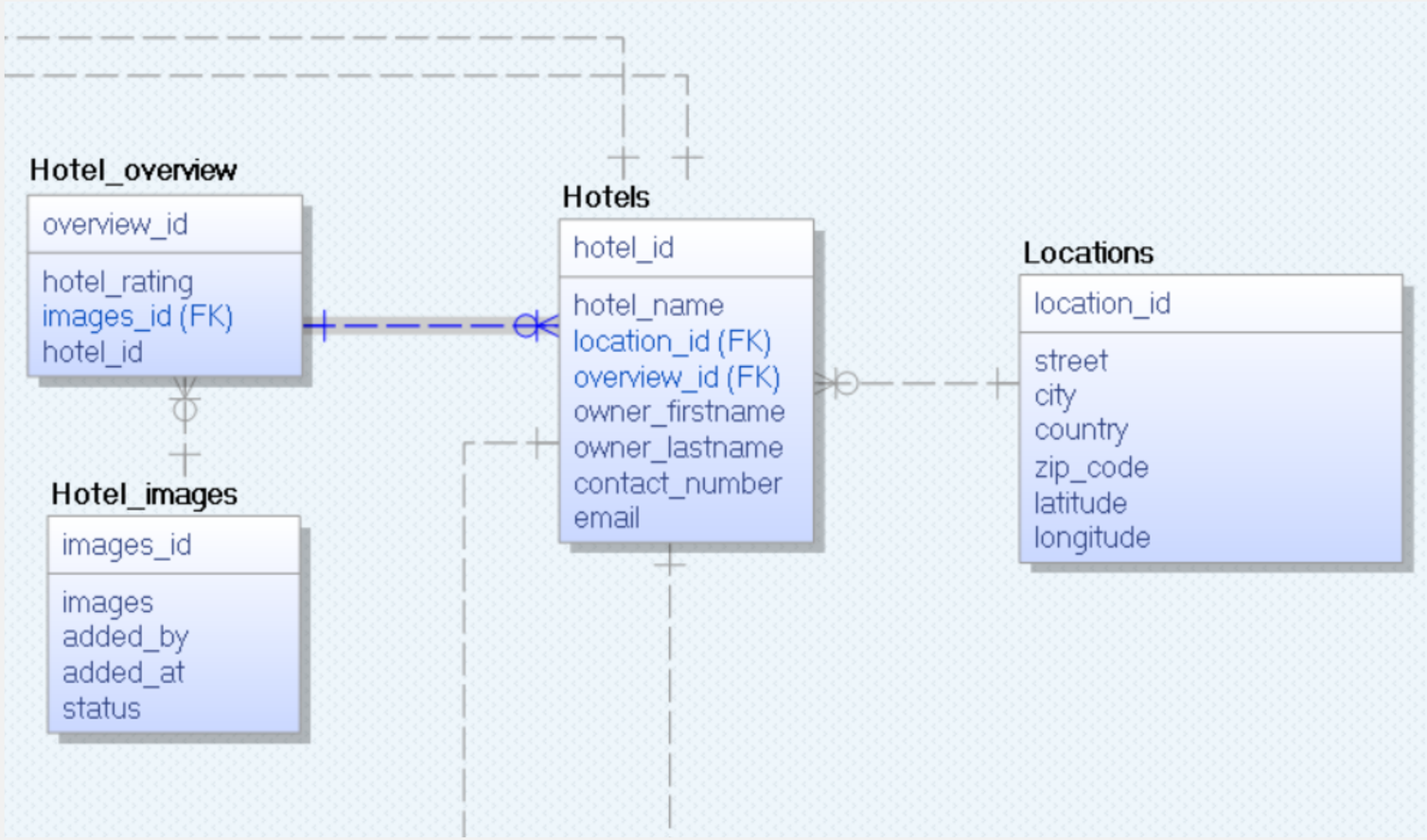
ADMIN Schema



USER Schema



One of the main tables in our ERD is hotels, because booking website work between customer and hotels. Hotels table include information about hotel that customer wants to visit, and it contain hotel name location id overview id owner first and last name contact number and email box. Here first related table is location. In location table we use the information of address, street, city, country, zip code, latitude, longitude. To choose hotel most customer try to quick overview, and here we use hotel overview table to give information about hotel rating and image id. In that table, there is hotel images, including images, added by, added at, status.



Out[7]:

	hotel_id	hotel_name	location_id	overview_id	owner_firstname	owner_last_name	contact_number	email
0	hm1	Paradise Hotel	lcn1	ovr11	Abdulaziz	Sirojiddinov	+821023456789	paradise.ht@gmail.com
1	hm2	Sunshine Hotel	lcn2	ovr22	Maftuna	Mukhtorova	+821098765432	hotel.sunshine@gmail.com
2	hm3	Namangan Plaza	lcn3	ovr33	Bekhzod	Mukhammadaliev	+821039212299	namplaza@gmail.com

Out[41]:

	overview_id	hotel_rating	images_id	hotel_id
0	ovr11	5	img12	hm1
1	ovr22	4	img13	hm2
2	ovr33	5	img14	hm3

Out[44]:

	images_id	images	added_by	added_at	status
0	img12	images32	Anna	2021-10-02	This is actually Paradise Hotel's picture
1	img13	images33	Richal	2017-12-07	This is another Hotel's picture
2	img14	images34	George	2022-05-01	The picture is quite old because there were so...

Out[38]:

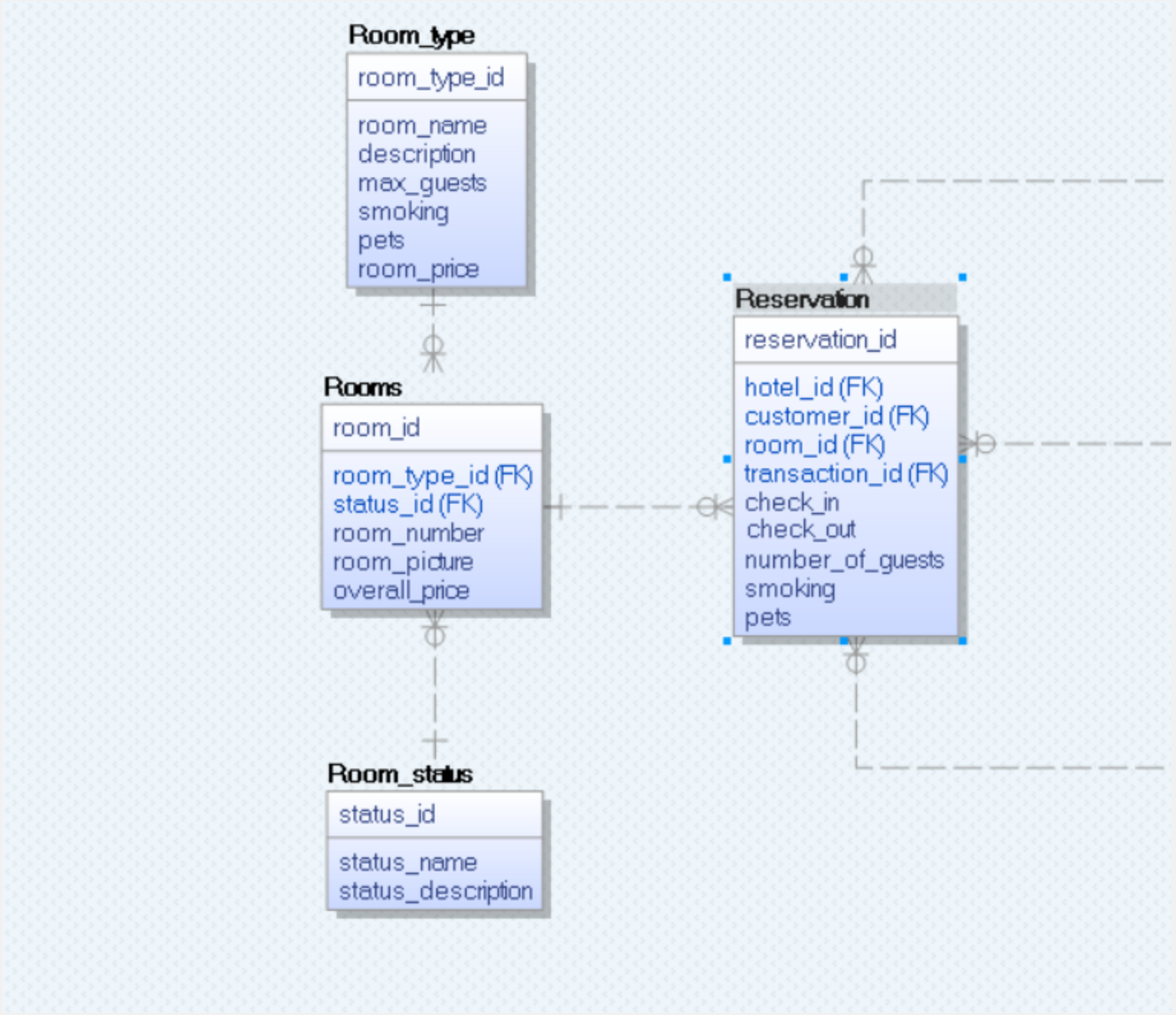
	location_id	street	city	country	zip_code	latitude	longitude
0	gps1	128 Bukhary	Paris	France	761111	20226344	980221029
1	gps2	302 Michuhol-gu	Incheon	S.Korea	22211	202141201	780211210
2	gps3	222 Mustaqillik	Namangan	Uzbekistan	702100	201971015	130191017

Each reservation that a guest makes or that a front desk agent completes is recorded in the hotel's "Reservations" database. This table keeps track of data such the reservation id, check-in and check-out dates, guest count, room id, customer id, and transaction id as functional dependencies.

The "Room" table uses the variables room type id, room number, floor num, and status id to keep track of all the various room-related information for each hotel.

The "Room type" table uses the room type id, room name, maximum number of guests, smoking availability, description, room cost (USD), and, if relevant, any additional characteristics to keep track of all the various room kinds.

The "Room Status" table displays whether a room is inhabited, unoccupied, or being cleaned based on the functional dependence of status id, status name, and status description.



Out[31]:

	room_id	room_type_id	status_id	room_number	room_picture	overall_price
0	room11	room1	st1	203	image2	$400
1	room22	room2	st2	107	image1	$310
2	room33	room3	st2	101	image1	$550
3	room44	room2	st3	304	image3	$235
4	room55	room1	st1	205	image2	$1245

Out[28]:

	status_id	status_name	status_description
0	st1	Booked	The room is booked
1	st2	Vacant	The room is available to book
2	st3	Being cleaned	The room is in the cleaning process

Out[25]:

	room_type_id	room_name	description	max_guests	smoking	pets	room_price
0	room1	Double Queen	There are two double bedrooms	4	Not Allowed	Allowed	$170
1	room2	Single King	It is a single room type	2	Not Allowed	Not Allowed	$100
2	room3	Suite Style	There are four bedrooms	6	Allowed	Allowed	$310

Out[44]:

	images_id	images	added_by	added_at	status
0	img12	images32	Anna	2021-10-02	This is actually Paradise Hotel's picture
1	img13	images33	Richal	2017-12-07	This is another Hotel's picture
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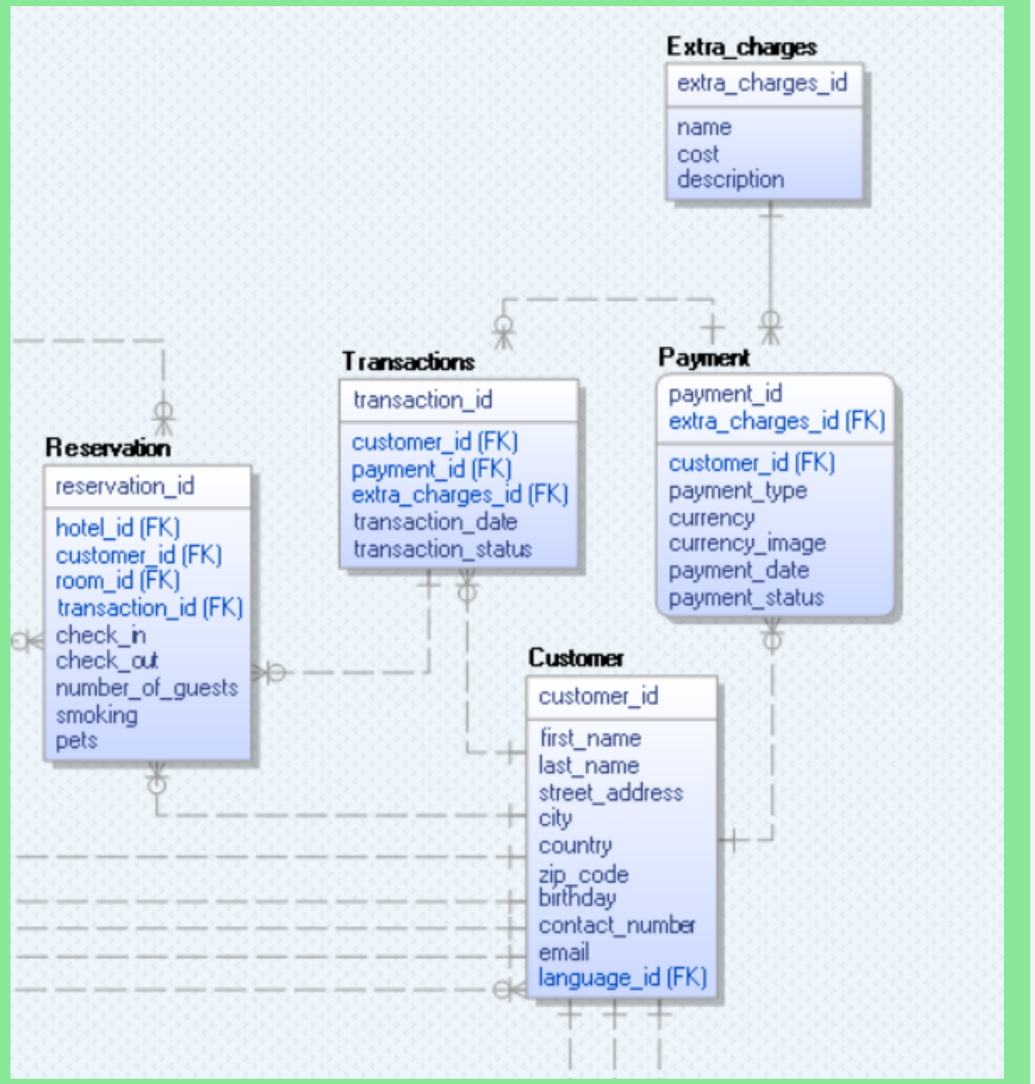


All of the information related to the transactions that occur daily in each hotel database system is contained in the table named “Transactions”, which includes transaction id, payment id, customer id, extra charges id, transaction date, and transaction status.

There is customer table that save all personal information about booking.com customers, their first and last name birthday, contact number and email, address related information, for example street, city, country and zip code, and acceptable language too.

These two-table related to payment to make payment online through website. Here, we use payment id and extra charge id if there was and c ustomer id, payment type, currency according to visa or master card, currency image, payment data and payment status.

Extra charge only uses when customer brake down something like dish or furniture. We use name of broken item, its cost and description.

"Reservation” table: The data in this table pertains to each reservation a client makes or that a front desk agent executes. This table stores the data of hotel id customer id, room id, reservation id, check in, check out, no of guests, smoking and pets id.

2]:

	transaction_id	customer_id	payment_id	extra_charges_id	transaction_date	transaction_status
0	1111	s1	py1	vc11	2022-10-09	processing
1	1222	s2	py2	vc22	2022-09-07	completed
2	2222	s3	py3	vs33	2022-12-01	completed
3	2111	s4	py4	vc44	2021-01-01	processing
4	3222	s5	py5	vc55	2022-08-30	completed

Out[17]:

	customer_id	first_name	last_name	street_address	city	country	zip_code	birthday	contact_number	email	language_id
0	12194852	Bekhzod	Mukhammadaliev	46, Mustakillik	Seoul	S.Korea	22211	1999-12-28	821039212299	behzcd@gmail.com	lan11
1	12190257	Abdulaziz	Sirojiddinov	302, Inha-ro	Incheon	S.Korea	4328421	1999-05-13	821045673434	abdulaziz.s@gmail.com	lan21
2	12194846	Mukhammadsidik	Sobirov	42, Mapple street	Pusan	S.Korea	220125	1999-07-25	821012345678	m.sobirov@gmail.com	lan25
3	12194850	Bakhodir	Alayorov	11, University street	Gimpo	S.Korea	22245	2001-01-01	821055541010	bakhodir@gmail.com	lan45
4	12194847	Maftuna	Mukhtorova	123, Michuhol-gu	Incheon	S.Korea	123456	2000-11-30	821034549078	maftunam@gmail.com	lan56

]:

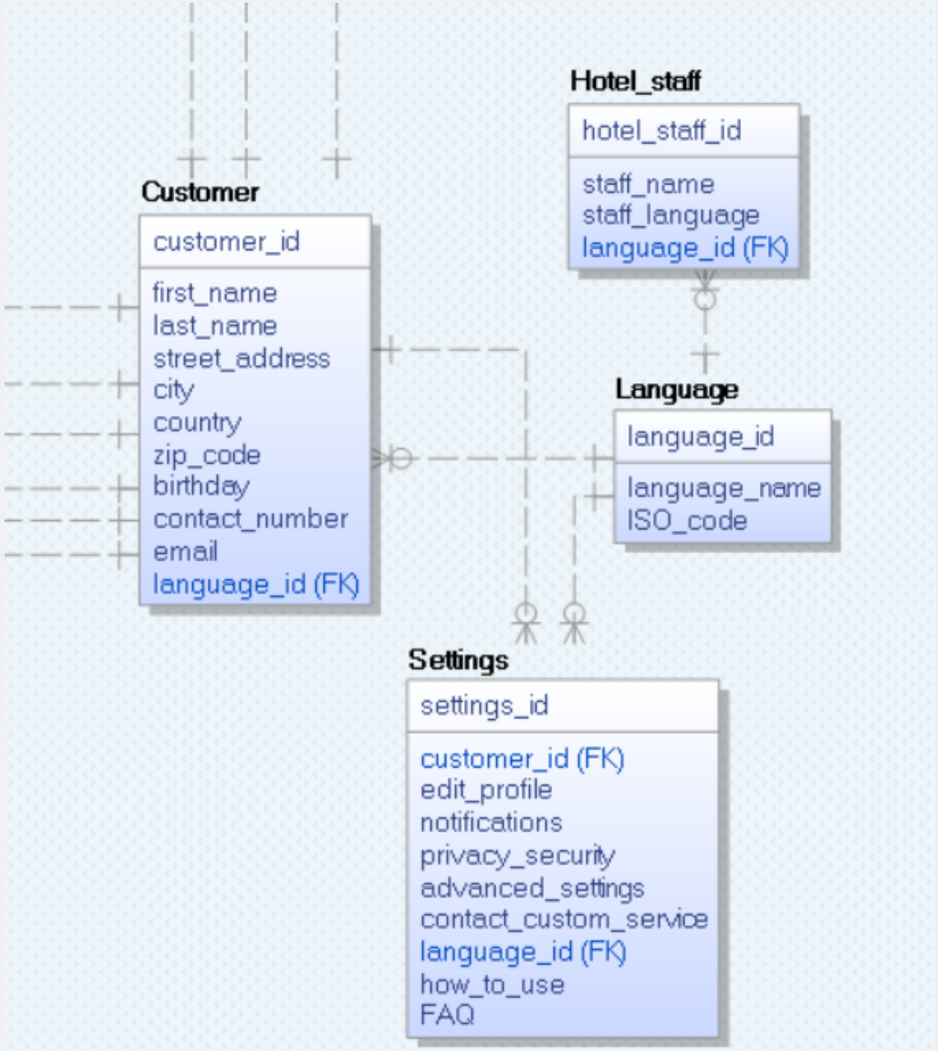
	payment_id	extra_charges_id	payment_type	currency	currency_image	payment_date	payment_status
0	pyt1	vc11	Cash	USD	image1	2022-10-09	processing
1	pyt2	vc22	Card	EURO	image2	2022-09-07	completed
2	pyt3	vs33	Crypto money	BITCOIN	image3	2022-12-01	completed
3	pyt4	vc44	Cheque	WON	image4	2021-01-01	processing

Out[10]:

	extra_charges_id	name	cost	description
0	vc11	Stolen item	$47	the hair drier is missing the room 123A
1	vc22	Broken window	$120	The big window is broken and needs to be replaced
2	vs33	Food	$30	All room service for food is under about $30 b...

As we explained customer table above it saves customer personal information. There are settings that include customer information and additional functions to make convenience to customer. Customer can edit profile use notifications, privacy, and security of customer service, how to use, FAQ and language too.

For language table we created functions by naming languages by typing or ISO code to find by scrolling. And this table matches customer to hotel staff who know the language that customer choose as his or her first or acceptable language. And customer can see staff name, staff language by choosing appropriate language.



Out[47]:

	hotel_staff_id	staff_name	staff_language	language_id
0	emp1	Alvarez	French, English	lan11
1	imp2	Charlson	Korean, Russian, English	lan21
2	imp3	Julia	Uzbek, Korean, English	lan25

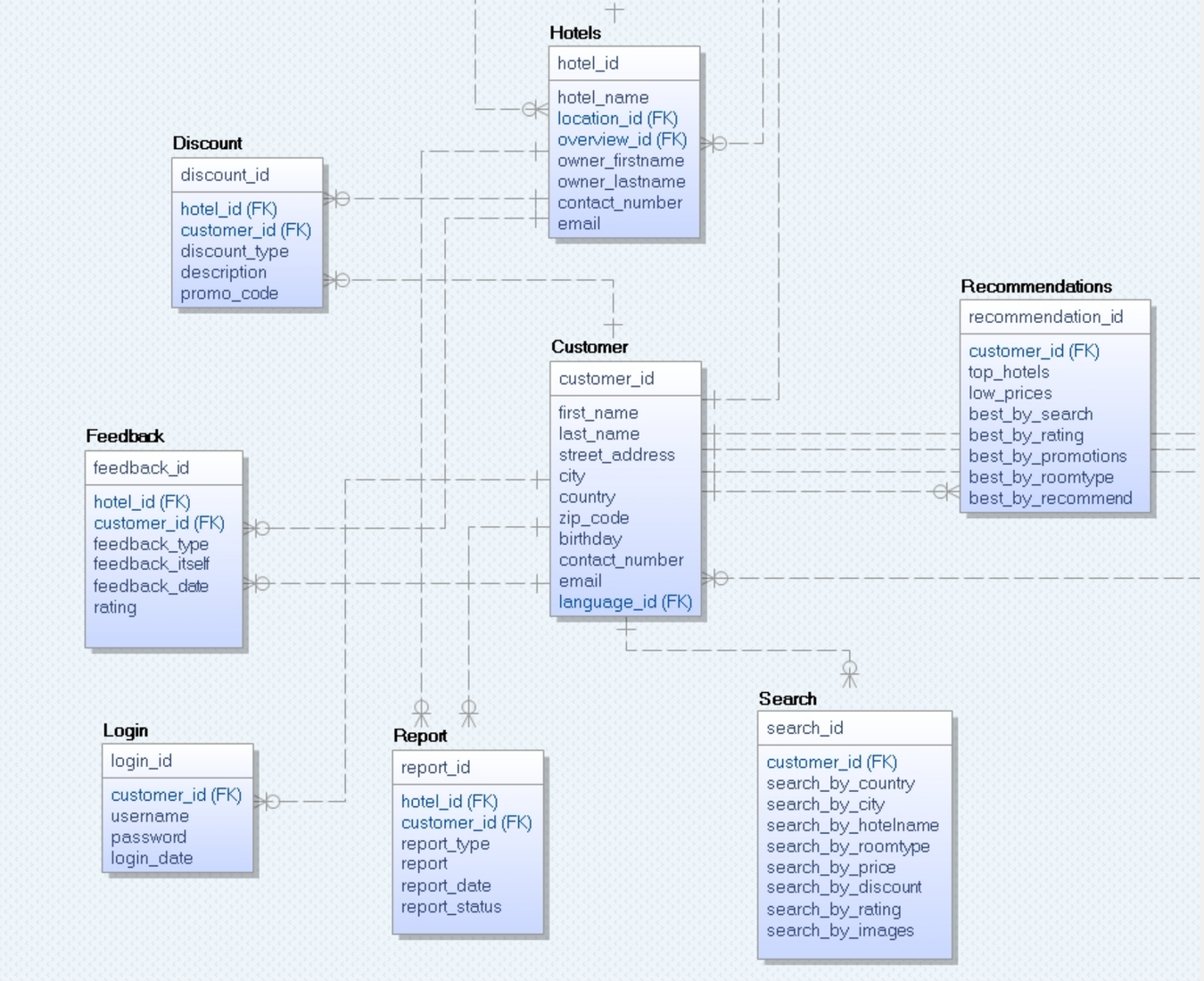
To being familiar with customer and hotels table. In this picture few more related tables too. One is recommendations to recommend and best match customer and hotels. There are top hotels, low price options and best by search, best by rating, best by promoting, best by roomtype, best by recommend functions.

Next is discount table for customers using hotels and customer ids and with the information and function of discount type, description, and promocode.

To make convenience to customer to search, there is search table that includes search by country, search by city, search by hotelname, search by roomtype, search by price, search by discount, search by rating, search by images functions.

Feedback table is created to write feedback after using hotel to give information about hotel including feedback type, feedback itself, feedback date and 5 stars rating functions. If there is any problem using hotel, with the information of report type, report, report date, report status.

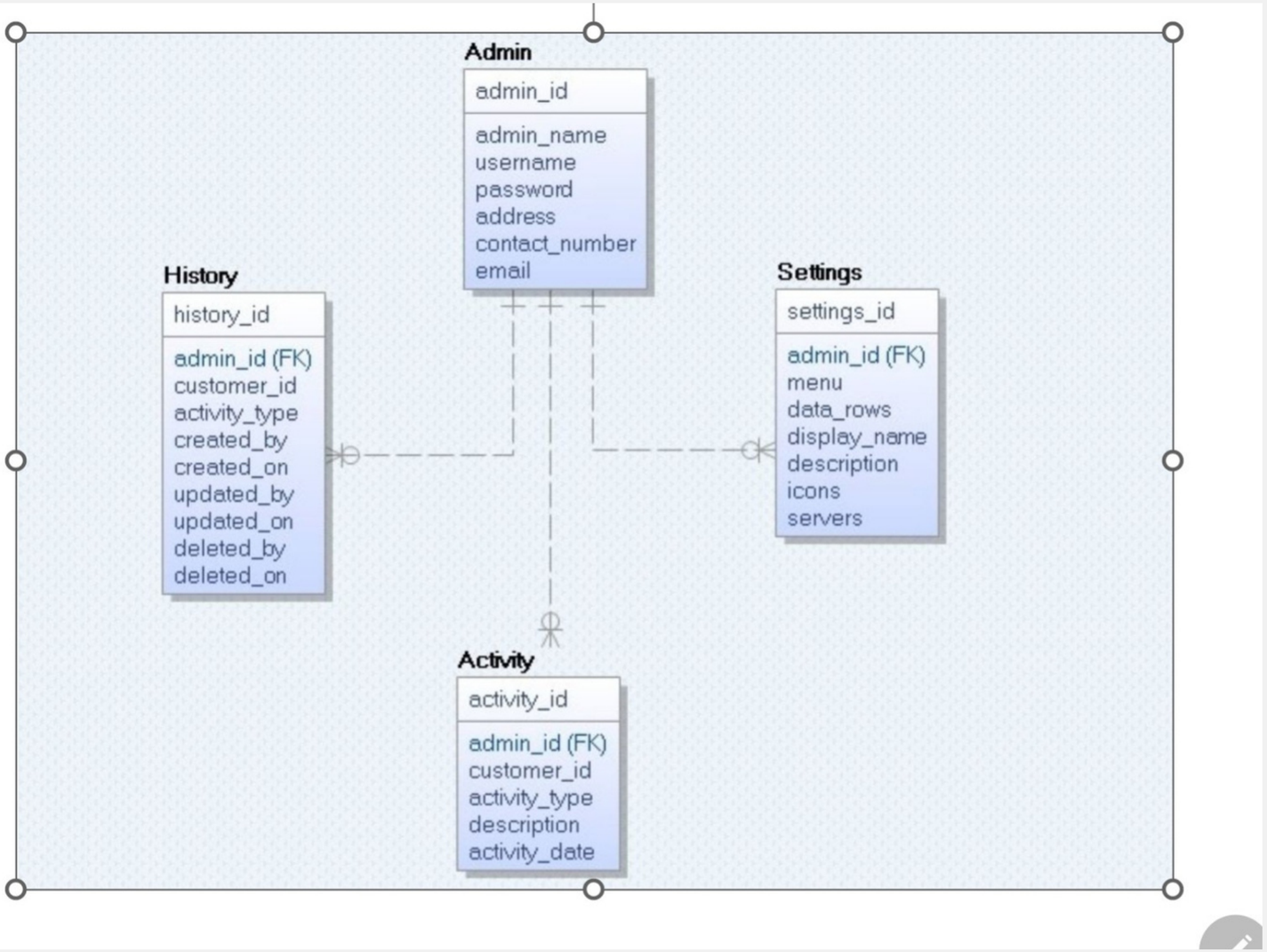
Last table is login for customers with the functions of username, password, login date.



Out[21]:

	login_id	customer_id	username	password	login_date
0	mem1	cus1	uzbekgenius	justsmile99$	2022-10-26
1	mem2	cus2	kingsejong	123hello!	2017-12-01
2	mem3	cus3	qomondon2001	sayok28$	2019-10-15
3	mem4	cus4	justalive	behzcd1999	2007-03-28
4	mem5	cus5	annakim101	anna!me	2021-11-01

Lastly we created “Admin” table that contains Admins name, username, password, address, contact number and email. Also the “Settings” table contains admin id as a foreign key and menu, data rows, display name, description, icons, and servers. Followd by the “Activity” table includes admin id, customer id, type of the activity, description, and activity date. The last table that we inserted is named “History” stores info such as admin id, customer id, activity type, created by, created on, updated by, updated on, deleted by and of course as required deleted on.



In [1]:

```
import sqlite3 as sl
import pandas as pd

con = sl.connect('Hotel.db')
```

In [2]:

```
Transactions = pd.DataFrame({
    'transaction_id': [1111,1222,2222,2111,3222],
    'customer_id': ['s1','s2','s3','s4','s5'],
    'payment_id': ['py1','py2','py3','py4','py5'],
    'extra_charges_id':['vc11','vc22','vs33','vc44','vc55'],
    'transaction_date':['2022-10-09','2022-09-07','2022-12-01','2021-01-01','2022-08-30'],
    'transaction_status':['processing','completed','completed','processing','completed']
})
Transactions
```

Out[2]:

	transaction_id	customer_id	payment_id	extra_charges_id	transaction_date	transaction_status
0	1111	s1	py1	vc11	2022-10-09	processing
1	1222	s2	py2	vc22	2022-09-07	completed
2	2222	s3	py3	vs33	2022-12-01	completed
3	2111	s4	py4	vc44	2021-01-01	processing
4	3222	s5	py5	vc55	2022-08-30	completed

In the Colab we imported two things as written in the code and connected it to the database. And inputted the data as follows.

```
Transactions.to_sql(name = 'Transactions', con = con, if_exists="replace", index=False)
```

```
q="SELECT transaction_id, customer_id, payment_id, extra_charges_id, transaction_date, transaction_status FROM Transactions"
my_cursor=con.execute(q)
for row in my_cursor:
  print(row)
```

```
(1111, 's1', 'py1', 'vc11', '2022-10-09', 'processing')
(1222, 's2', 'py2', 'vc22', '2022-09-07', 'completed')
(2222, 's3', 'py3', 'vs33', '2022-12-01', 'completed')
(2111, 's4', 'py4', 'vc44', '2021-01-01', 'processing')
(3222, 's5', 'py5', 'vc55', '2022-08-30', 'completed')
```

For other data also, we used the same procedure and you can see the whole code by just clicking the link below.

Thanks for the attention.

Here is the link for the code in github:

https://github.com/bmukhammadaliev/Final-Project/blob/8f93df9e212e0c072b3eaa1b51642ca0f75ab7cb/Hotel.ipynb