Facultatea de Matematică și Informatică
Universitatea din București

Proiect
Baze de Date

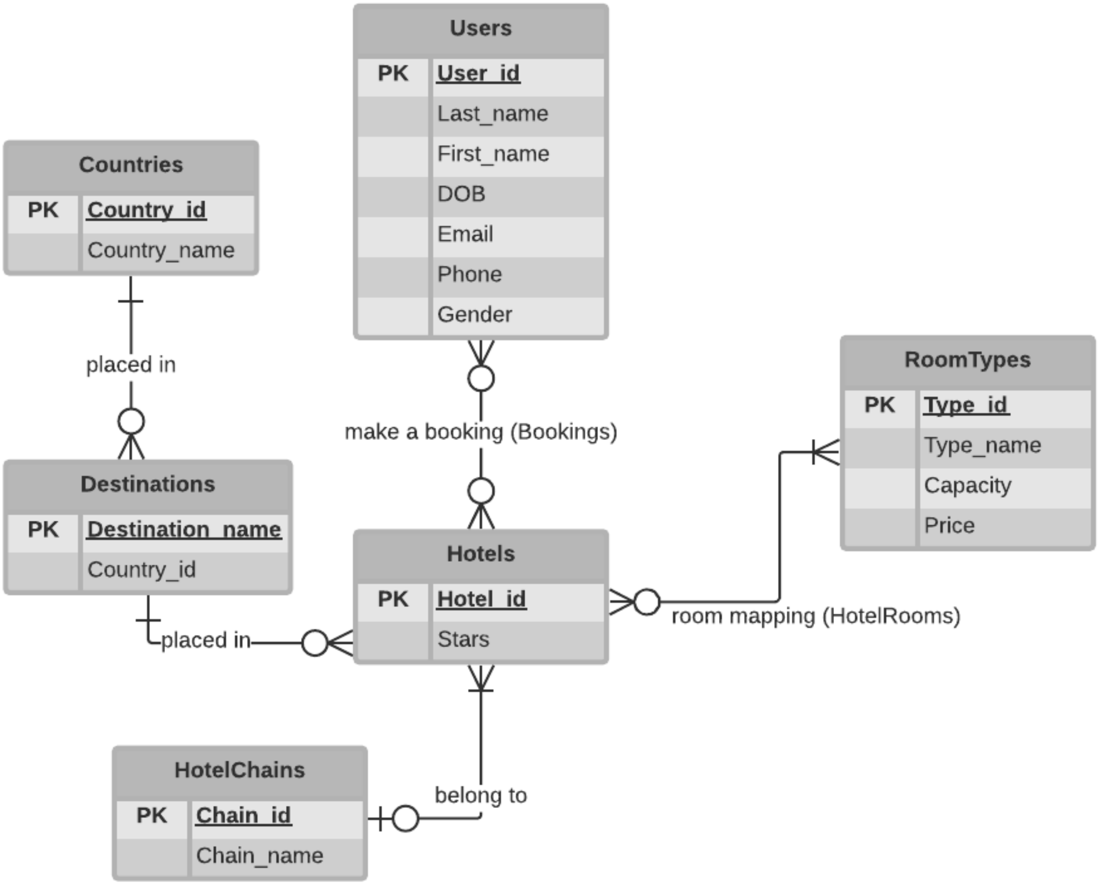
An universitar 2019-2020

Student:
Hermeneanu Mara, grupa 212

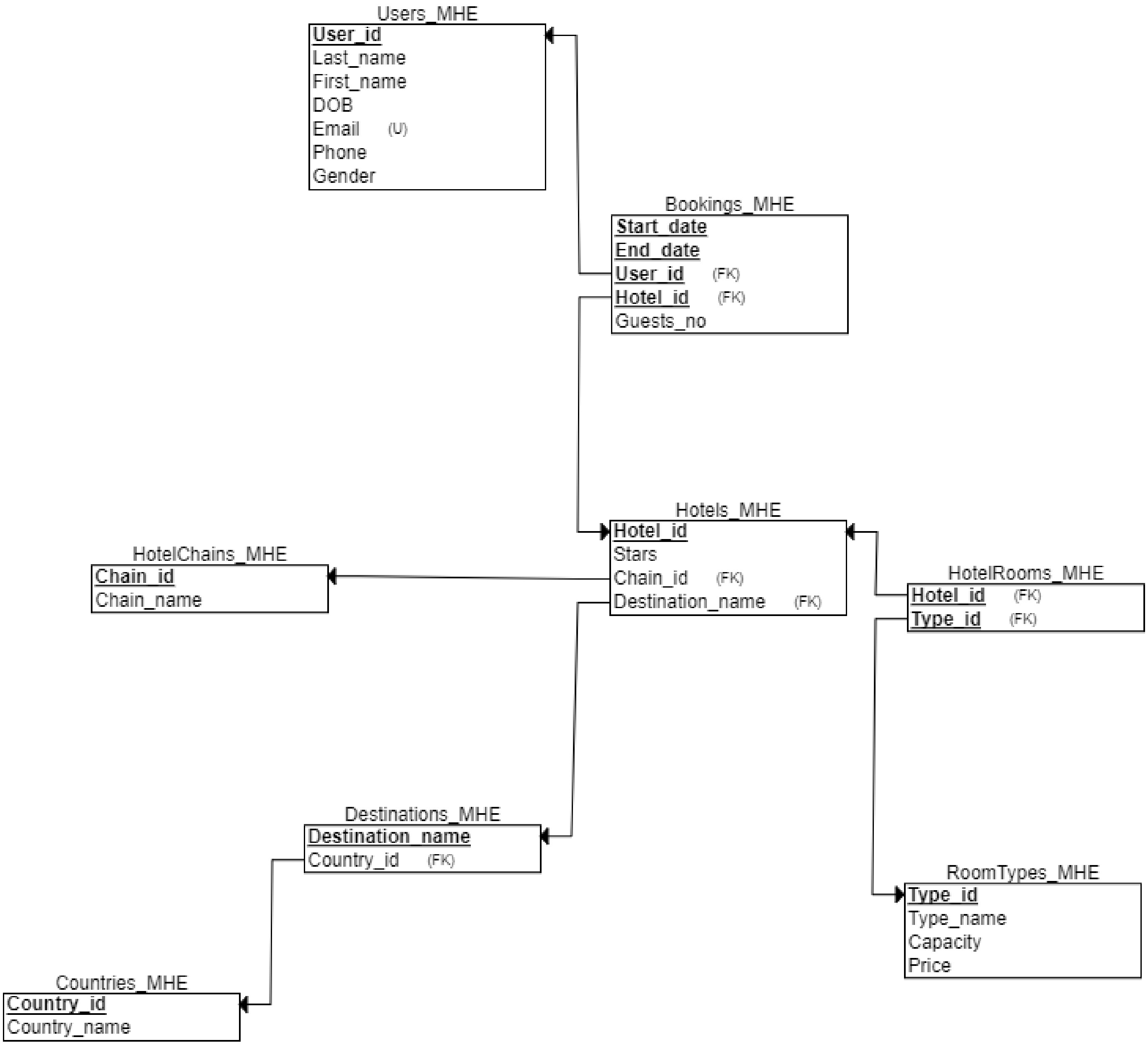
1. *Scurtă prezentare a bazei de date*

Proiecul mimează o bază de date destinată unei aplicații de booking, unde persoanele iși pot face cont și iși pot rezerva online o vacanță în una sau mai multe destinați din diferite tări ale lumii. Baza de date conține 8 tabele, dintre care 6 independete și 2 asociative, menite să gestioneze relațiile many-to-may dintre Users și Hotels, respectiv dintre Hotels și RoomTypes. Astfel, relația make a booking se transformă în tabelul Bookings, care reține informațiile specifice unei rezervări (un user poate face rezervare la mai multe hoteluri și un hotel poate fi rezervat de mai mulți useri). Relația room mapping devine tabelul HotelRooms care gestionează distribuția tipurilor de camere între hoteluri (un hotel poate avea mai multe tipuri de camere și un tip de cameră poate aparea în mai multe hoteluri).

2. *Diagrama Entitate-Relație*



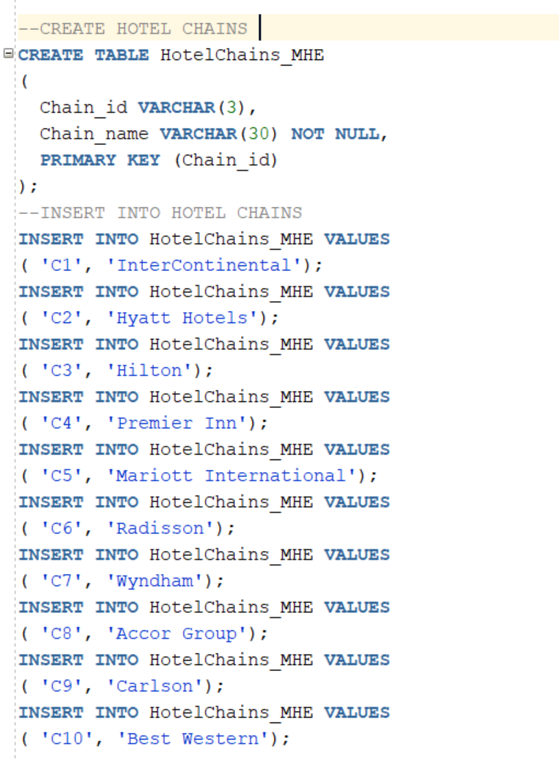
3. Diagrama Conceptuală



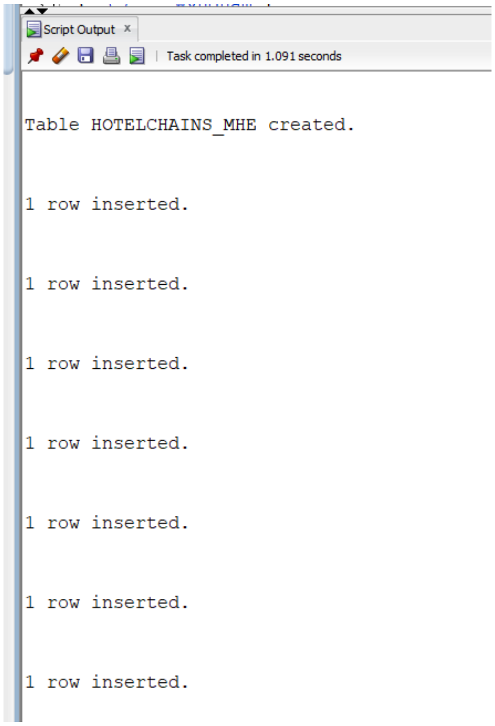
Mențiune: câmpurile subliniate reprezintă cheile primare ale tabelelor

4. *Definirea tabelelor în Oracle, implementând toate constrângerile de integritate necesare*
5. *Adăugarea de informații coerente în tabelele create*

4.5.1 Hotel Chains

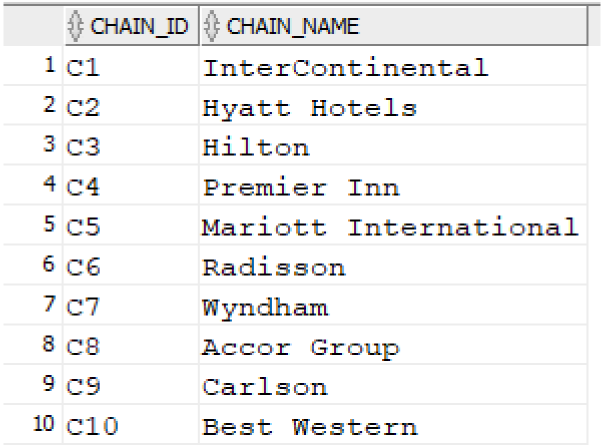


```
--CREATE HOTEL CHAINS
CREATE TABLE HotelChains_MHE
(
  Chain_id VARCHAR(3),
  Chain_name VARCHAR(30) NOT NULL,
  PRIMARY KEY (Chain_id)
);
--INSERT INTO HOTEL CHAINS
INSERT INTO HotelChains_MHE VALUES
( 'C1', 'InterContinental');
INSERT INTO HotelChains_MHE VALUES
( 'C2', 'Hyatt Hotels');
INSERT INTO HotelChains_MHE VALUES
( 'C3', 'Hilton');
INSERT INTO HotelChains_MHE VALUES
( 'C4', 'Premier Inn');
INSERT INTO HotelChains_MHE VALUES
( 'C5', 'Mariott International');
INSERT INTO HotelChains_MHE VALUES
( 'C6', 'Radisson');
INSERT INTO HotelChains_MHE VALUES
( 'C7', 'Wyndham');
INSERT INTO HotelChains_MHE VALUES
( 'C8', 'Accor Group');
INSERT INTO HotelChains_MHE VALUES
( 'C9', 'Carlson');
INSERT INTO HotelChains_MHE VALUES
( 'C10', 'Best Western');
```



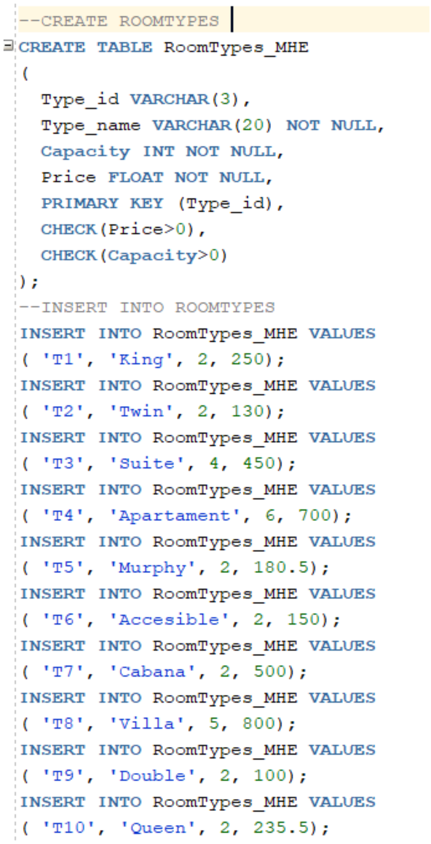
Task completed in 1.091 seconds

```
Table HOTELCHAINS_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

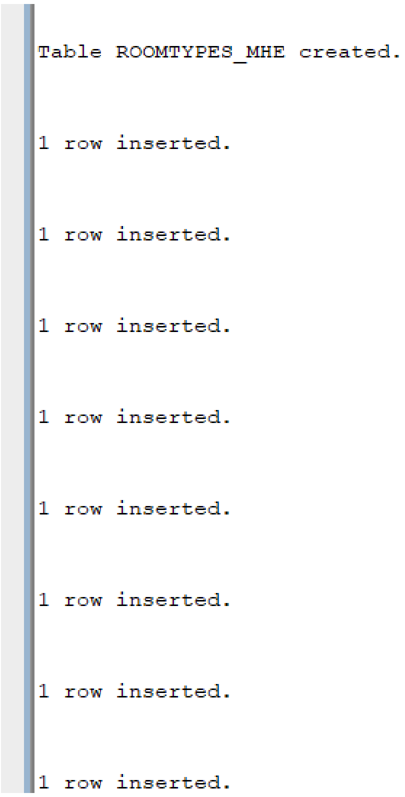


	CHAIN_ID	CHAIN_NAME
1	C1	InterContinental
2	C2	Hyatt Hotels
3	C3	Hilton
4	C4	Premier Inn
5	C5	Mariott International
6	C6	Radisson
7	C7	Wyndham
8	C8	Accor Group
9	C9	Carlson
10	C10	Best Western

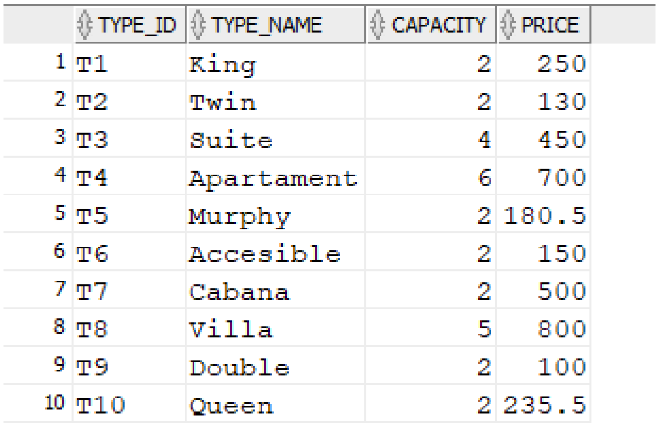
4.5.2 RoomTypes



```
--CREATE ROOMTYPES
CREATE TABLE RoomTypes_MHE
(
  Type_id VARCHAR(3),
  Type_name VARCHAR(20) NOT NULL,
  Capacity INT NOT NULL,
  Price FLOAT NOT NULL,
  PRIMARY KEY (Type_id),
  CHECK(Price>0),
  CHECK(Capacity>0)
);
--INSERT INTO ROOMTYPES
INSERT INTO RoomTypes_MHE VALUES
( 'T1', 'King', 2, 250);
INSERT INTO RoomTypes_MHE VALUES
( 'T2', 'Twin', 2, 130);
INSERT INTO RoomTypes_MHE VALUES
( 'T3', 'Suite', 4, 450);
INSERT INTO RoomTypes_MHE VALUES
( 'T4', 'Apartament', 6, 700);
INSERT INTO RoomTypes_MHE VALUES
( 'T5', 'Murphy', 2, 180.5);
INSERT INTO RoomTypes_MHE VALUES
( 'T6', 'Accesible', 2, 150);
INSERT INTO RoomTypes_MHE VALUES
( 'T7', 'Cabana', 2, 500);
INSERT INTO RoomTypes_MHE VALUES
( 'T8', 'Villa', 5, 800);
INSERT INTO RoomTypes_MHE VALUES
( 'T9', 'Double', 2, 100);
INSERT INTO RoomTypes_MHE VALUES
( 'T10', 'Queen', 2, 235.5);
```

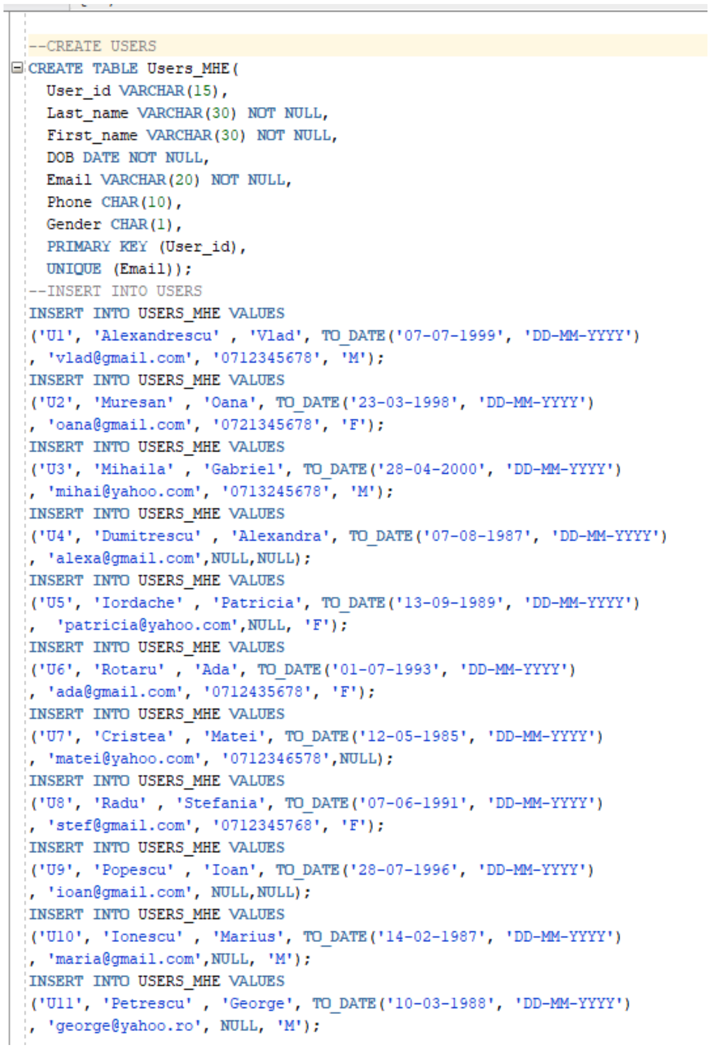


```
Table ROOMTYPES_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

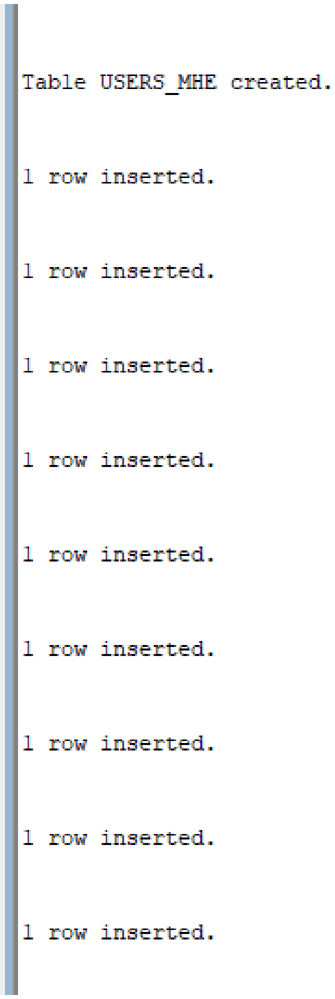


	TYPE_ID	TYPE_NAME	CAPACITY	PRICE
1	T1	King	2	250
2	T2	Twin	2	130
3	T3	Suite	4	450
4	T4	Apartament	6	700
5	T5	Murphy	2	180.5
6	T6	Accesible	2	150
7	T7	Cabana	2	500
8	T8	Villa	5	800
9	T9	Double	2	100
10	T10	Queen	2	235.5

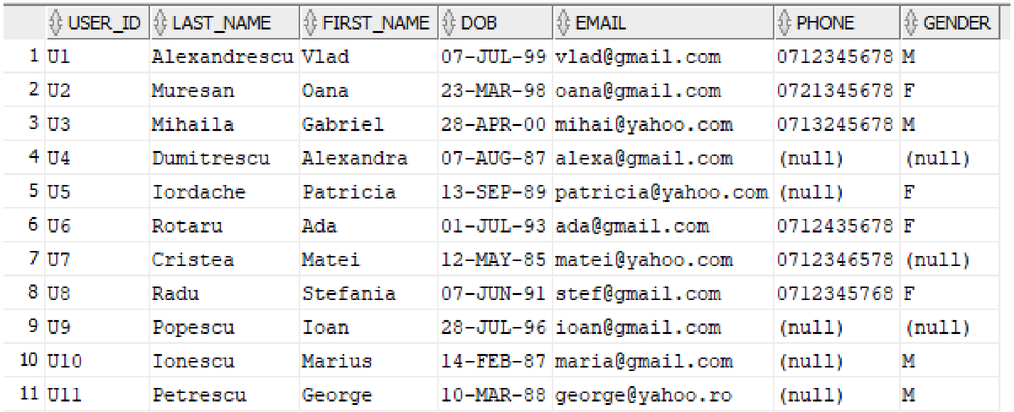
4.5.3 Users



```
--CREATE USERS
CREATE TABLE Users_MHE(
  User_id VARCHAR(15),
  Last_name VARCHAR(30) NOT NULL,
  First_name VARCHAR(30) NOT NULL,
  DOB DATE NOT NULL,
  Email VARCHAR(20) NOT NULL,
  Phone CHAR(10),
  Gender CHAR(1),
  PRIMARY KEY (User_id),
  UNIQUE (Email));
--INSERT INTO USERS
INSERT INTO USERS_MHE VALUES
('U1', 'Alexandrescu' , 'Vlad', TO_DATE('07-07-1999', 'DD-MM-YYYY')
, 'vlad@gmail.com', '0712345678', 'M');
INSERT INTO USERS_MHE VALUES
('U2', 'Muresan' , 'Oana', TO_DATE('23-03-1998', 'DD-MM-YYYY')
, 'oana@gmail.com', '0721345678', 'F');
INSERT INTO USERS_MHE VALUES
('U3', 'Mihaila' , 'Gabriel', TO_DATE('28-04-2000', 'DD-MM-YYYY')
, 'mihai@yahoo.com', '0713245678', 'M');
INSERT INTO USERS_MHE VALUES
('U4', 'Dumitrescu' , 'Alexandra', TO_DATE('07-08-1987', 'DD-MM-YYYY')
, 'alexa@gmail.com',NULL,NULL);
INSERT INTO USERS_MHE VALUES
('U5', 'Iordache' , 'Patricia', TO_DATE('13-09-1989', 'DD-MM-YYYY')
,  'patricia@yahoo.com',NULL, 'F');
INSERT INTO USERS_MHE VALUES
('U6', 'Rotaru' , 'Ada', TO_DATE('01-07-1993', 'DD-MM-YYYY')
, 'ada@gmail.com', '0712435678', 'F');
INSERT INTO USERS_MHE VALUES
('U7', 'Cristea' , 'Matei', TO_DATE('12-05-1985', 'DD-MM-YYYY')
, 'matei@yahoo.com', '0712346578',NULL);
INSERT INTO USERS_MHE VALUES
('U8', 'Radu' , 'Stefania', TO_DATE('07-06-1991', 'DD-MM-YYYY')
, 'stef@gmail.com', '0712345768', 'F');
INSERT INTO USERS_MHE VALUES
('U9', 'Popescu' , 'Ioan', TO_DATE('28-07-1996', 'DD-MM-YYYY')
, 'ioan@gmail.com', NULL,NULL);
INSERT INTO USERS_MHE VALUES
('U10', 'Ionescu' , 'Marius', TO_DATE('14-02-1987', 'DD-MM-YYYY')
, 'maria@gmail.com',NULL, 'M');
INSERT INTO USERS_MHE VALUES
('U11', 'Petrescu' , 'George', TO_DATE('10-03-1988', 'DD-MM-YYYY')
, 'george@yahoo.ro', NULL, 'M');
```

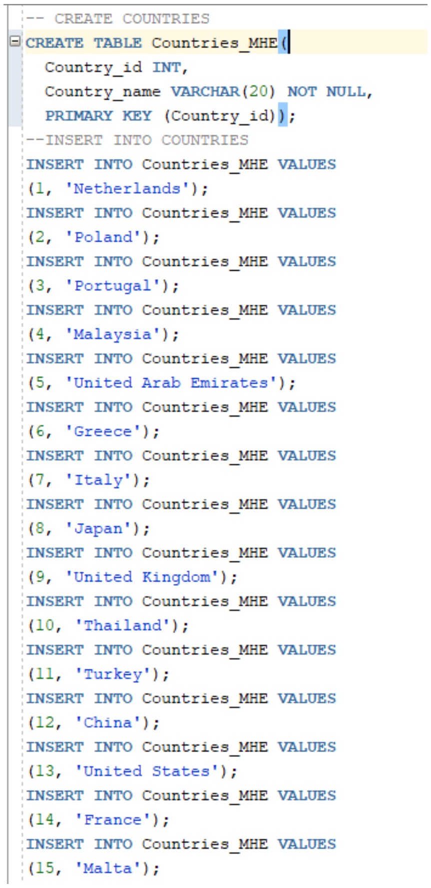


```
Table USERS_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

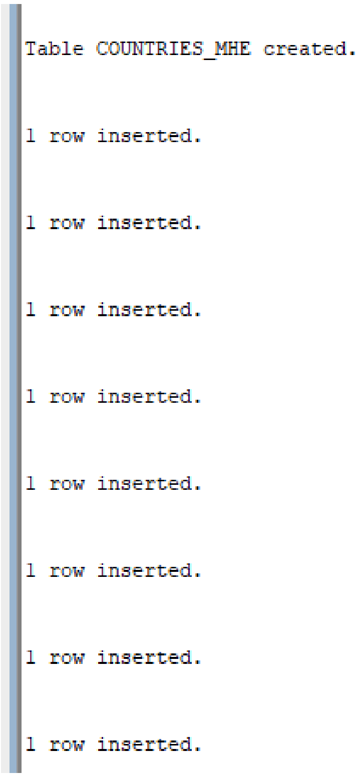


	USER_ID	LAST_NAME	FIRST_NAME	DOB	EMAIL	PHONE	GENDER
1	U1	Alexandrescu	Vlad	07-JUL-99	vlad@gmail.com	0712345678	M
2	U2	Muresan	Oana	23-MAR-98	oana@gmail.com	0721345678	F
3	U3	Mihaila	Gabriel	28-APR-00	mihai@yahoo.com	0713245678	M
4	U4	Dumitrescu	Alexandra	07-AUG-87	alexa@gmail.com	(null)	(null)
5	U5	Iordache	Patricia	13-SEP-89	patricia@yahoo.com	(null)	F
6	U6	Rotaru	Ada	01-JUL-93	ada@gmail.com	0712435678	F
7	U7	Cristea	Matei	12-MAY-85	matei@yahoo.com	0712346578	(null)
8	U8	Radu	Stefania	07-JUN-91	stef@gmail.com	0712345768	F
9	U9	Popescu	Ioan	28-JUL-96	ioan@gmail.com	(null)	(null)
10	U10	Ionescu	Marius	14-FEB-87	maria@gmail.com	(null)	M
11	U11	Petrescu	George	10-MAR-88	george@yahoo.ro	(null)	M

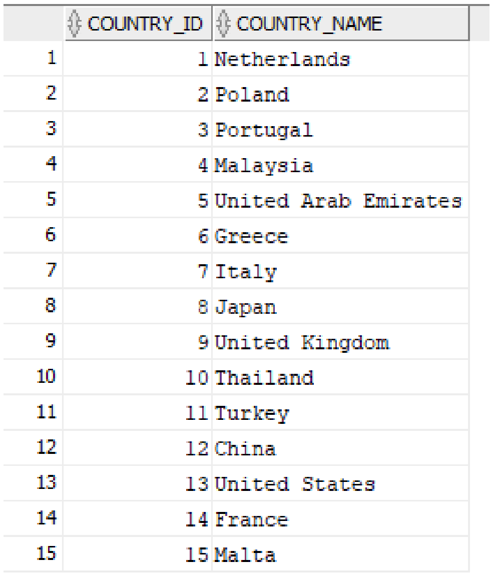
4.5.4 Countries



```
-- CREATE COUNTRIES
CREATE TABLE Countries_MHE(
  Country_id INT,
  Country_name VARCHAR(20) NOT NULL,
  PRIMARY KEY (Country_id));
--INSERT INTO COUNTRIES
INSERT INTO Countries_MHE VALUES
(1, 'Netherlands');
INSERT INTO Countries_MHE VALUES
(2, 'Poland');
INSERT INTO Countries_MHE VALUES
(3, 'Portugal');
INSERT INTO Countries_MHE VALUES
(4, 'Malaysia');
INSERT INTO Countries_MHE VALUES
(5, 'United Arab Emirates');
INSERT INTO Countries_MHE VALUES
(6, 'Greece');
INSERT INTO Countries_MHE VALUES
(7, 'Italy');
INSERT INTO Countries_MHE VALUES
(8, 'Japan');
INSERT INTO Countries_MHE VALUES
(9, 'United Kingdom');
INSERT INTO Countries_MHE VALUES
(10, 'Thailand');
INSERT INTO Countries_MHE VALUES
(11, 'Turkey');
INSERT INTO Countries_MHE VALUES
(12, 'China');
INSERT INTO Countries_MHE VALUES
(13, 'United States');
INSERT INTO Countries_MHE VALUES
(14, 'France');
INSERT INTO Countries_MHE VALUES
(15, 'Malta');
```

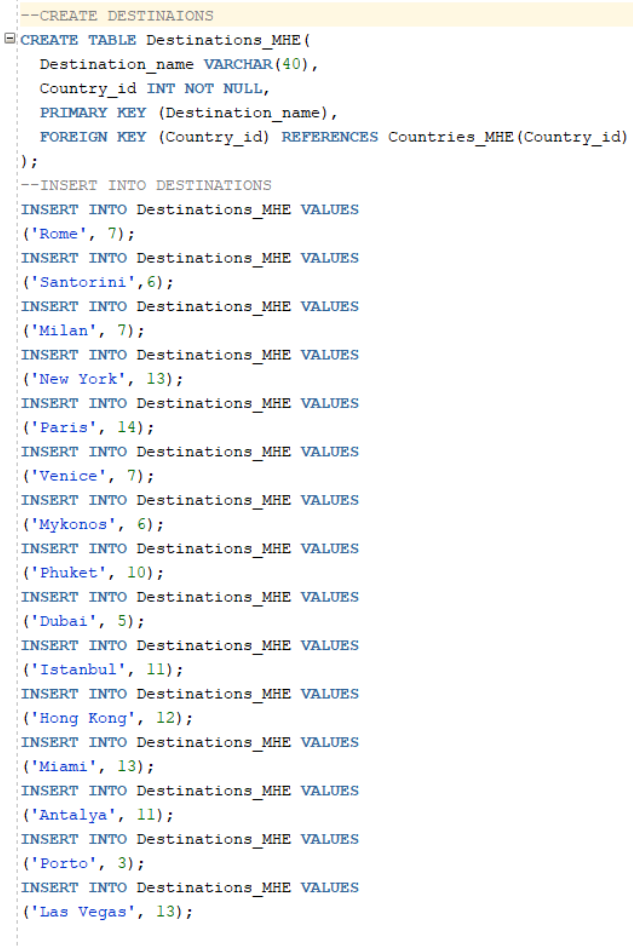


```
Table COUNTRIES_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

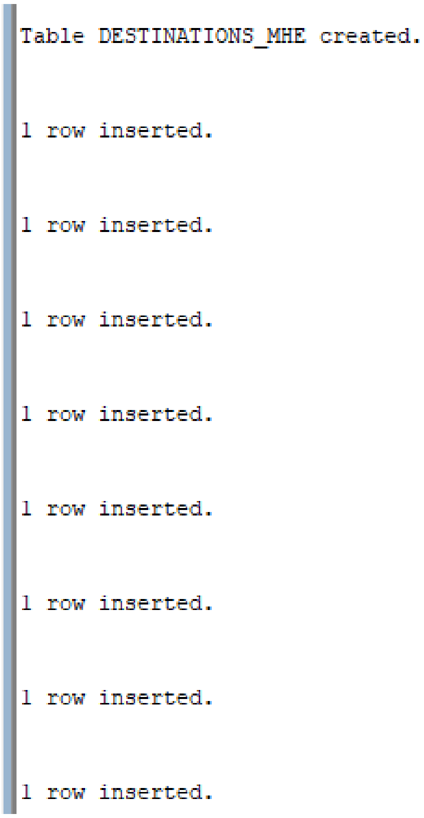


	COUNTRY_ID	COUNTRY_NAME
1	1	Netherlands
2	2	Poland
3	3	Portugal
4	4	Malaysia
5	5	United Arab Emirates
6	6	Greece
7	7	Italy
8	8	Japan
9	9	United Kingdom
10	10	Thailand
11	11	Turkey
12	12	China
13	13	United States
14	14	France
15	15	Malta

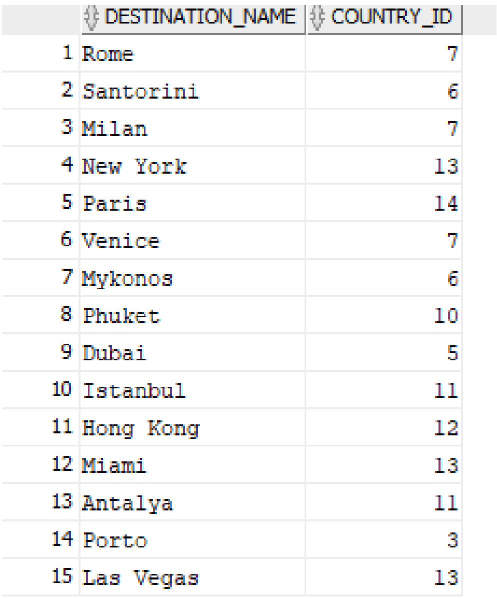
4.5.5 Destinations



```
--CREATE DESTINAIONS
CREATE TABLE Destinations_MHE(
  Destination_name VARCHAR(40),
  Country_id INT NOT NULL,
  PRIMARY KEY (Destination_name),
  FOREIGN KEY (Country_id) REFERENCES Countries_MHE(Country_id)
);
--INSERT INTO DESTINATIONS
INSERT INTO Destinations_MHE VALUES
('Rome', 7);
INSERT INTO Destinations_MHE VALUES
('Santorini',6);
INSERT INTO Destinations_MHE VALUES
('Milan', 7);
INSERT INTO Destinations_MHE VALUES
('New York', 13);
INSERT INTO Destinations_MHE VALUES
('Paris', 14);
INSERT INTO Destinations_MHE VALUES
('Venice', 7);
INSERT INTO Destinations_MHE VALUES
('Mykonos', 6);
INSERT INTO Destinations_MHE VALUES
('Phuket', 10);
INSERT INTO Destinations_MHE VALUES
('Dubai', 5);
INSERT INTO Destinations_MHE VALUES
('Istanbul', 11);
INSERT INTO Destinations_MHE VALUES
('Hong Kong', 12);
INSERT INTO Destinations_MHE VALUES
('Miami', 13);
INSERT INTO Destinations_MHE VALUES
('Antalya', 11);
INSERT INTO Destinations_MHE VALUES
('Porto', 3);
INSERT INTO Destinations_MHE VALUES
('Las Vegas', 13);
```

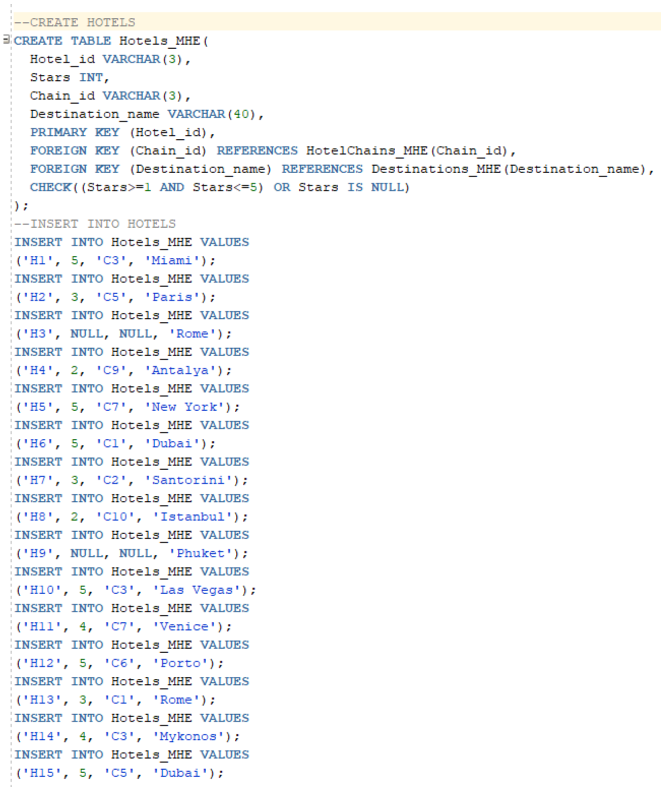


```
Table DESTINATIONS_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

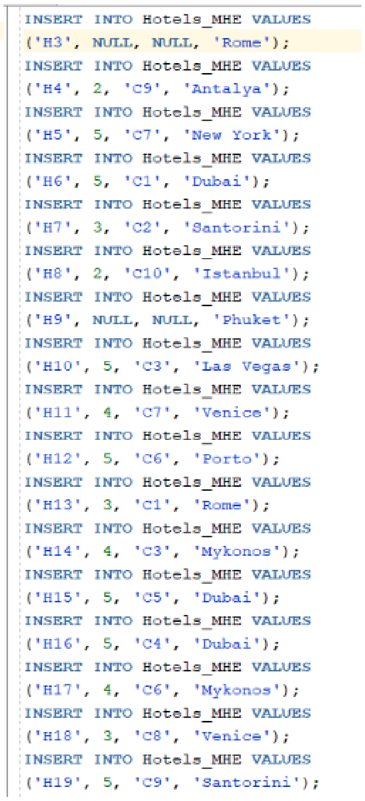


	DESTINATION_NAME	COUNTRY_ID
1	Rome	7
2	Santorini	6
3	Milan	7
4	New York	13
5	Paris	14
6	Venice	7
7	Mykonos	6
8	Phuket	10
9	Dubai	5
10	Istanbul	11
11	Hong Kong	12
12	Miami	13
13	Antalya	11
14	Porto	3
15	Las Vegas	13

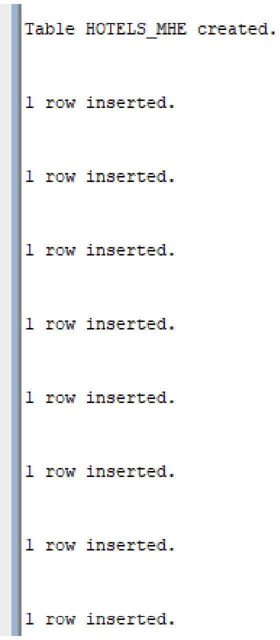
4.5.6 Hotels



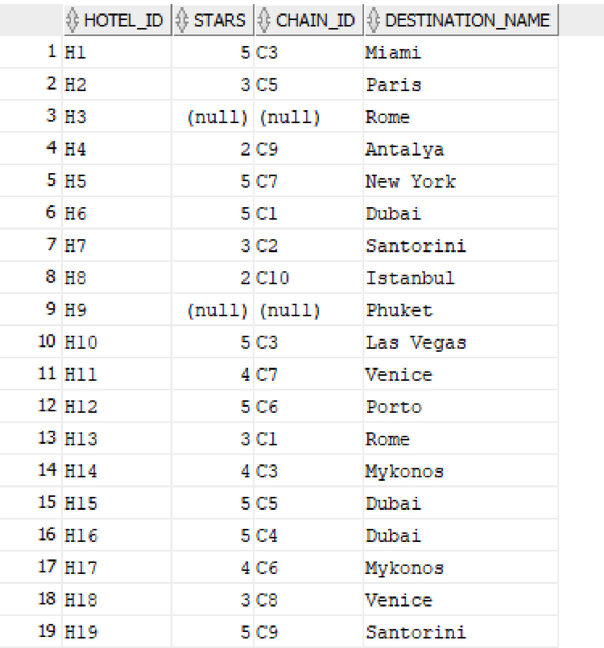
```
--CREATE HOTELS
CREATE TABLE Hotels_MHE(
  Hotel_id VARCHAR(3),
  Stars INT,
  Chain_id VARCHAR(3),
  Destination_name VARCHAR(40),
  PRIMARY KEY (Hotel_id),
  FOREIGN KEY (Chain_id) REFERENCES HotelChains_MHE(Chain_id),
  FOREIGN KEY (Destination_name) REFERENCES Destinations_MHE(Destination_name),
  CHECK((Stars>=1 AND Stars<=5) OR Stars IS NULL)
);
--INSERT INTO HOTELS
INSERT INTO Hotels_MHE VALUES
('H1', 5, 'C3', 'Miami');
INSERT INTO Hotels_MHE VALUES
('H2', 3, 'C5', 'Paris');
INSERT INTO Hotels_MHE VALUES
('H3', NULL, NULL, 'Rome');
INSERT INTO Hotels_MHE VALUES
('H4', 2, 'C9', 'Antalya');
INSERT INTO Hotels_MHE VALUES
('H5', 5, 'C7', 'New York');
INSERT INTO Hotels_MHE VALUES
('H6', 5, 'C1', 'Dubai');
INSERT INTO Hotels_MHE VALUES
('H7', 3, 'C2', 'Santorini');
INSERT INTO Hotels_MHE VALUES
('H8', 2, 'C10', 'Istanbul');
INSERT INTO Hotels_MHE VALUES
('H9', NULL, NULL, 'Phuket');
INSERT INTO Hotels_MHE VALUES
('H10', 5, 'C3', 'Las Vegas');
INSERT INTO Hotels_MHE VALUES
('H11', 4, 'C7', 'Venice');
INSERT INTO Hotels_MHE VALUES
('H12', 5, 'C6', 'Porto');
INSERT INTO Hotels_MHE VALUES
('H13', 3, 'C1', 'Rome');
INSERT INTO Hotels_MHE VALUES
('H14', 4, 'C3', 'Mykonos');
INSERT INTO Hotels_MHE VALUES
('H15', 5, 'C5', 'Dubai');
```



```
INSERT INTO Hotels_MHE VALUES
('H3', NULL, NULL, 'Rome');
INSERT INTO Hotels_MHE VALUES
('H4', 2, 'C9', 'Antalya');
INSERT INTO Hotels_MHE VALUES
('H5', 5, 'C7', 'New York');
INSERT INTO Hotels_MHE VALUES
('H6', 5, 'C1', 'Dubai');
INSERT INTO Hotels_MHE VALUES
('H7', 3, 'C2', 'Santorini');
INSERT INTO Hotels_MHE VALUES
('H8', 2, 'C10', 'Istanbul');
INSERT INTO Hotels_MHE VALUES
('H9', NULL, NULL, 'Phuket');
INSERT INTO Hotels_MHE VALUES
('H10', 5, 'C3', 'Las Vegas');
INSERT INTO Hotels_MHE VALUES
('H11', 4, 'C7', 'Venice');
INSERT INTO Hotels_MHE VALUES
('H12', 5, 'C6', 'Porto');
INSERT INTO Hotels_MHE VALUES
('H13', 3, 'C1', 'Rome');
INSERT INTO Hotels_MHE VALUES
('H14', 4, 'C3', 'Mykonos');
INSERT INTO Hotels_MHE VALUES
('H15', 5, 'C5', 'Dubai');
INSERT INTO Hotels_MHE VALUES
('H16', 5, 'C4', 'Dubai');
INSERT INTO Hotels_MHE VALUES
('H17', 4, 'C6', 'Mykonos');
INSERT INTO Hotels_MHE VALUES
('H18', 3, 'C8', 'Venice');
INSERT INTO Hotels_MHE VALUES
('H19', 5, 'C9', 'Santorini');
```

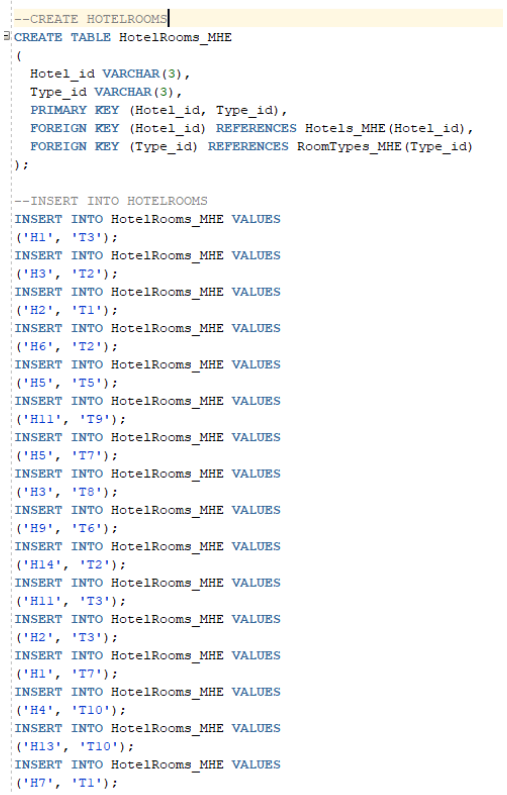


```
Table HOTELS_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

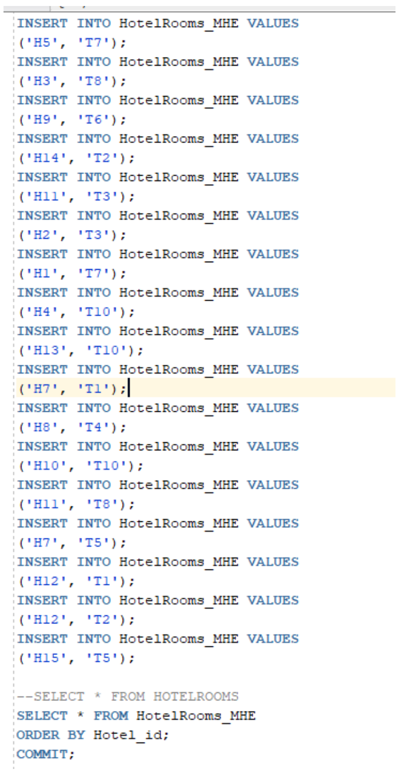


	HOTEL_ID	STARS	CHAIN_ID	DESTINATION_NAME
1	H1	5	C3	Miami
2	H2	3	C5	Paris
3	H3	(null)	(null)	Rome
4	H4	2	C9	Antalya
5	H5	5	C7	New York
6	H6	5	C1	Dubai
7	H7	3	C2	Santorini
8	H8	2	C10	Istanbul
9	H9	(null)	(null)	Phuket
10	H10	5	C3	Las Vegas
11	H11	4	C7	Venice
12	H12	5	C6	Porto
13	H13	3	C1	Rome
14	H14	4	C3	Mykonos
15	H15	5	C5	Dubai
16	H16	5	C4	Dubai
17	H17	4	C6	Mykonos
18	H18	3	C8	Venice
19	H19	5	C9	Santorini

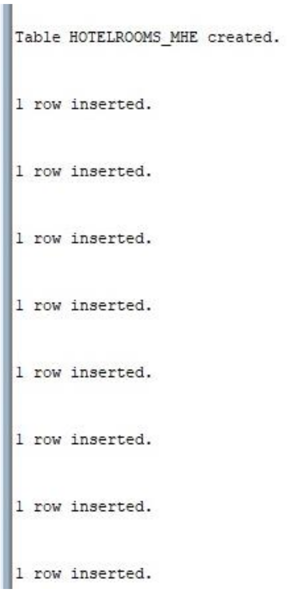
4.5.7 HotelRooms



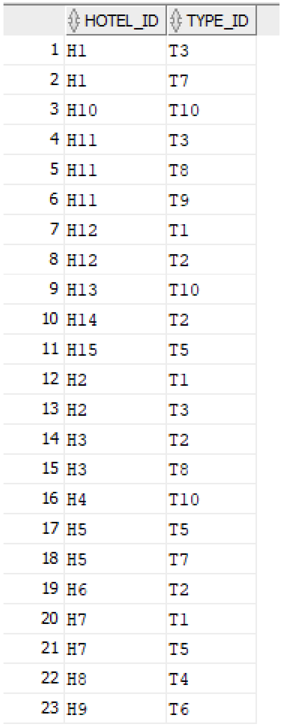
```
--CREATE HOTELROOMS
CREATE TABLE HotelRooms_MHE
(
  Hotel_id VARCHAR(3),
  Type_id VARCHAR(3),
  PRIMARY KEY (Hotel_id, Type_id),
  FOREIGN KEY (Hotel_id) REFERENCES Hotels_MHE(Hotel_id),
  FOREIGN KEY (Type_id) REFERENCES RoomTypes_MHE(Type_id)
);

--INSERT INTO HOTELROOMS
INSERT INTO HotelRooms_MHE VALUES
('H1', 'T3');
INSERT INTO HotelRooms_MHE VALUES
('H3', 'T2');
INSERT INTO HotelRooms_MHE VALUES
('H2', 'T1');
INSERT INTO HotelRooms_MHE VALUES
('H6', 'T2');
INSERT INTO HotelRooms_MHE VALUES
('H5', 'T5');
INSERT INTO HotelRooms_MHE VALUES
('H11', 'T9');
INSERT INTO HotelRooms_MHE VALUES
('H5', 'T7');
INSERT INTO HotelRooms_MHE VALUES
('H3', 'T8');
INSERT INTO HotelRooms_MHE VALUES
('H9', 'T6');
INSERT INTO HotelRooms_MHE VALUES
('H14', 'T2');
INSERT INTO HotelRooms_MHE VALUES
('H11', 'T3');
INSERT INTO HotelRooms_MHE VALUES
('H2', 'T3');
INSERT INTO HotelRooms_MHE VALUES
('H1', 'T7');
INSERT INTO HotelRooms_MHE VALUES
('H4', 'T10');
INSERT INTO HotelRooms_MHE VALUES
('H13', 'T10');
INSERT INTO HotelRooms_MHE VALUES
('H7', 'T1');
```



```
INSERT INTO HotelRooms_MHE VALUES
('H5', 'T7');
INSERT INTO HotelRooms_MHE VALUES
('H3', 'T8');
INSERT INTO HotelRooms_MHE VALUES
('H9', 'T6');
INSERT INTO HotelRooms_MHE VALUES
('H14', 'T2');
INSERT INTO HotelRooms_MHE VALUES
('H11', 'T3');
INSERT INTO HotelRooms_MHE VALUES
('H2', 'T3');
INSERT INTO HotelRooms_MHE VALUES
('H1', 'T7');
INSERT INTO HotelRooms_MHE VALUES
('H4', 'T10');
INSERT INTO HotelRooms_MHE VALUES
('H13', 'T10');
INSERT INTO HotelRooms_MHE VALUES
('H7', 'T1');
INSERT INTO HotelRooms_MHE VALUES
('H8', 'T4');
INSERT INTO HotelRooms_MHE VALUES
('H10', 'T10');
INSERT INTO HotelRooms_MHE VALUES
('H11', 'T8');
INSERT INTO HotelRooms_MHE VALUES
('H7', 'T5');
INSERT INTO HotelRooms_MHE VALUES
('H12', 'T1');
INSERT INTO HotelRooms_MHE VALUES
('H12', 'T2');
INSERT INTO HotelRooms_MHE VALUES
('H15', 'T5');

--SELECT * FROM HOTELROOMS
SELECT * FROM HotelRooms_MHE
ORDER BY Hotel_id;
COMMIT;
```

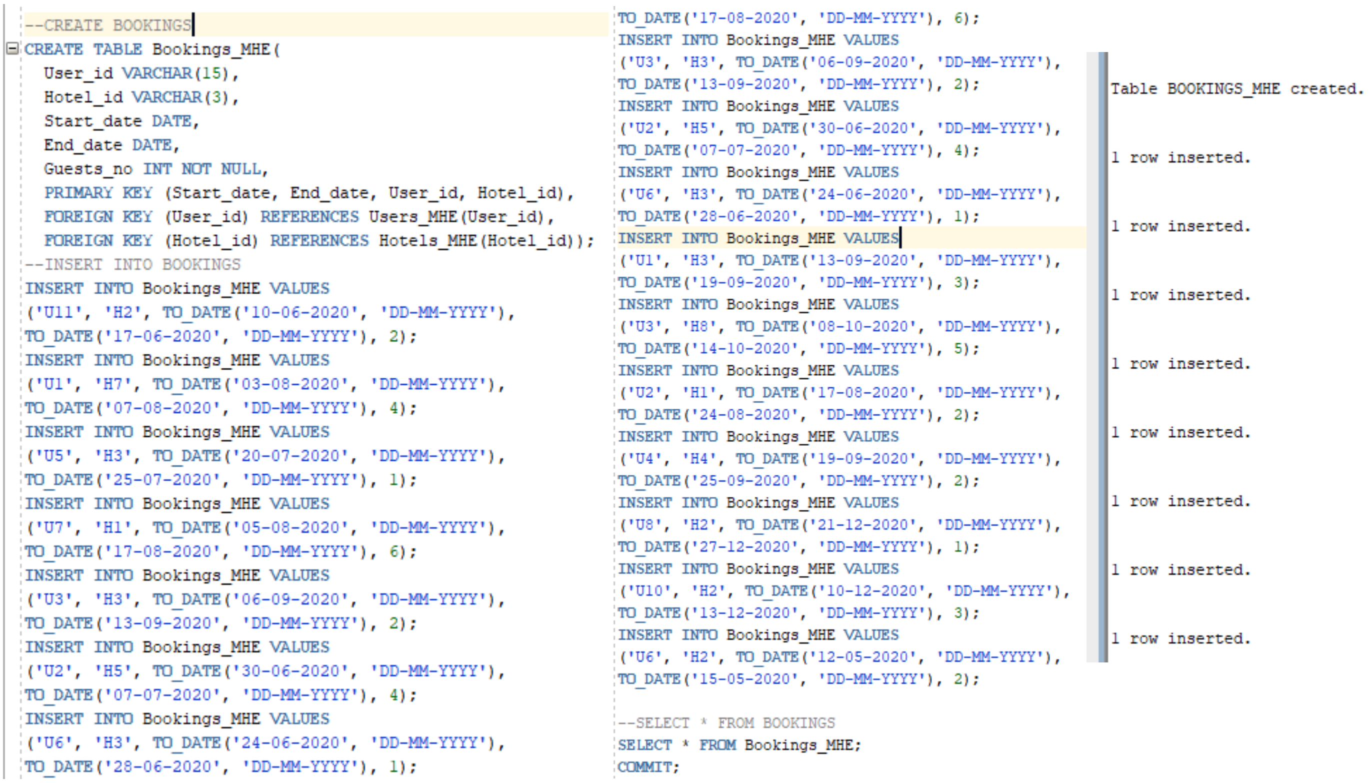


```
Table HOTELROOMS_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```



	HOTEL_ID	TYPE_ID
1	H1	T3
2	H1	T7
3	H10	T10
4	H11	T3
5	H11	T8
6	H11	T9
7	H12	T1
8	H12	T2
9	H13	T10
10	H14	T2
11	H15	T5
12	H2	T1
13	H2	T3
14	H3	T2
15	H3	T8
16	H4	T10
17	H5	T5
18	H5	T7
19	H6	T2
20	H7	T1
21	H7	T5
22	H8	T4
23	H9	T6

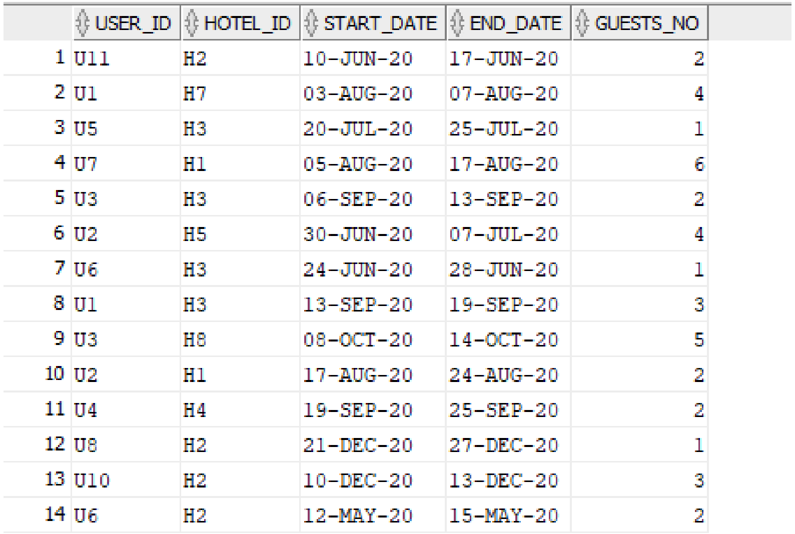
4.5.8 Bookings



```
--CREATE BOOKINGS
CREATE TABLE Bookings_MHE(
  User_id VARCHAR(15),
  Hotel_id VARCHAR(3),
  Start_date DATE,
  End_date DATE,
  Guests_no INT NOT NULL,
  PRIMARY KEY (Start_date, End_date, User_id, Hotel_id),
  FOREIGN KEY (User_id) REFERENCES Users_MHE(User_id),
  FOREIGN KEY (Hotel_id) REFERENCES Hotels_MHE(Hotel_id));
--INSERT INTO BOOKINGS
INSERT INTO Bookings_MHE VALUES
('U11', 'H2', TO_DATE('10-06-2020', 'DD-MM-YYYY'),
TO_DATE('17-06-2020', 'DD-MM-YYYY'), 2);
INSERT INTO Bookings_MHE VALUES
('U1', 'H7', TO_DATE('03-08-2020', 'DD-MM-YYYY'),
TO_DATE('07-08-2020', 'DD-MM-YYYY'), 4);
INSERT INTO Bookings_MHE VALUES
('U5', 'H3', TO_DATE('20-07-2020', 'DD-MM-YYYY'),
TO_DATE('25-07-2020', 'DD-MM-YYYY'), 1);
INSERT INTO Bookings_MHE VALUES
('U7', 'H1', TO_DATE('05-08-2020', 'DD-MM-YYYY'),
TO_DATE('17-08-2020', 'DD-MM-YYYY'), 6);
INSERT INTO Bookings_MHE VALUES
('U3', 'H3', TO_DATE('06-09-2020', 'DD-MM-YYYY'),
TO_DATE('13-09-2020', 'DD-MM-YYYY'), 2);
INSERT INTO Bookings_MHE VALUES
('U2', 'H5', TO_DATE('30-06-2020', 'DD-MM-YYYY'),
TO_DATE('07-07-2020', 'DD-MM-YYYY'), 4);
INSERT INTO Bookings_MHE VALUES
('U6', 'H3', TO_DATE('24-06-2020', 'DD-MM-YYYY'),
TO_DATE('28-06-2020', 'DD-MM-YYYY'), 1);
```

```
TO_DATE('17-08-2020', 'DD-MM-YYYY'), 6);
INSERT INTO Bookings_MHE VALUES
('U3', 'H3', TO_DATE('06-09-2020', 'DD-MM-YYYY'),
TO_DATE('13-09-2020', 'DD-MM-YYYY'), 2);
INSERT INTO Bookings_MHE VALUES
('U2', 'H5', TO_DATE('30-06-2020', 'DD-MM-YYYY'),
TO_DATE('07-07-2020', 'DD-MM-YYYY'), 4);
INSERT INTO Bookings_MHE VALUES
('U6', 'H3', TO_DATE('24-06-2020', 'DD-MM-YYYY'),
TO_DATE('28-06-2020', 'DD-MM-YYYY'), 1);
INSERT INTO Bookings_MHE VALUES
('U1', 'H3', TO_DATE('13-09-2020', 'DD-MM-YYYY'),
TO_DATE('19-09-2020', 'DD-MM-YYYY'), 3);
INSERT INTO Bookings_MHE VALUES
('U3', 'H8', TO_DATE('08-10-2020', 'DD-MM-YYYY'),
TO_DATE('14-10-2020', 'DD-MM-YYYY'), 5);
INSERT INTO Bookings_MHE VALUES
('U2', 'H1', TO_DATE('17-08-2020', 'DD-MM-YYYY'),
TO_DATE('24-08-2020', 'DD-MM-YYYY'), 2);
INSERT INTO Bookings_MHE VALUES
('U4', 'H4', TO_DATE('19-09-2020', 'DD-MM-YYYY'),
TO_DATE('25-09-2020', 'DD-MM-YYYY'), 2);
INSERT INTO Bookings_MHE VALUES
('U8', 'H2', TO_DATE('21-12-2020', 'DD-MM-YYYY'),
TO_DATE('27-12-2020', 'DD-MM-YYYY'), 1);
INSERT INTO Bookings_MHE VALUES
('U10', 'H2', TO_DATE('10-12-2020', 'DD-MM-YYYY'),
TO_DATE('13-12-2020', 'DD-MM-YYYY'), 3);
INSERT INTO Bookings_MHE VALUES
('U6', 'H2', TO_DATE('12-05-2020', 'DD-MM-YYYY'),
TO_DATE('15-05-2020', 'DD-MM-YYYY'), 2);

--SELECT * FROM BOOKINGS
SELECT * FROM Bookings_MHE;
COMMIT;
```

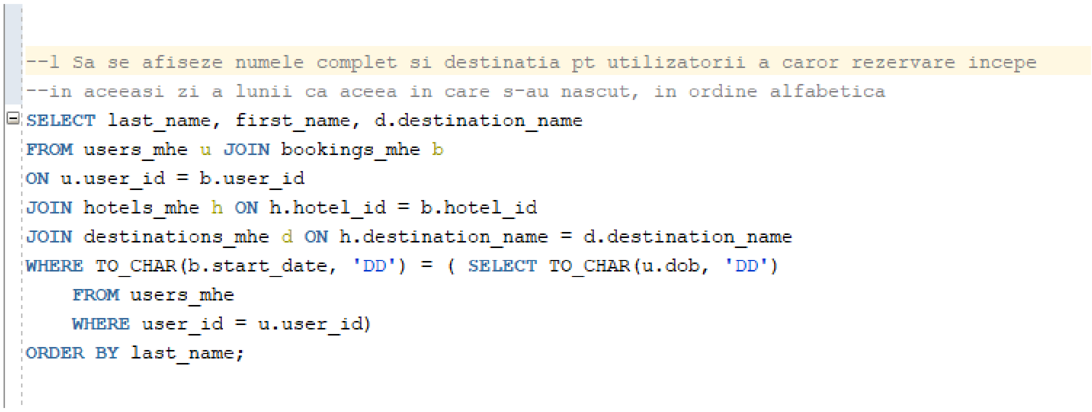
```
Table BOOKINGS_MHE created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```



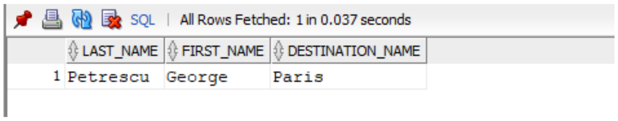
	USER_ID	HOTEL_ID	START_DATE	END_DATE	GUESTS_NO
1	U11	H2	10-JUN-20	17-JUN-20	2
2	U1	H7	03-AUG-20	07-AUG-20	4
3	U5	H3	20-JUL-20	25-JUL-20	1
4	U7	H1	05-AUG-20	17-AUG-20	6
5	U3	H3	06-SEP-20	13-SEP-20	2
6	U2	H5	30-JUN-20	07-JUL-20	4
7	U6	H3	24-JUN-20	28-JUN-20	1
8	U1	H3	13-SEP-20	19-SEP-20	3
9	U3	H8	08-OCT-20	14-OCT-20	5
10	U2	H1	17-AUG-20	24-AUG-20	2
11	U4	H4	19-SEP-20	25-SEP-20	2
12	U8	H2	21-DEC-20	27-DEC-20	1
13	U10	H2	10-DEC-20	13-DEC-20	3
14	U6	H2	12-MAY-20	15-MAY-20	2

6. *Interogări*

6.1



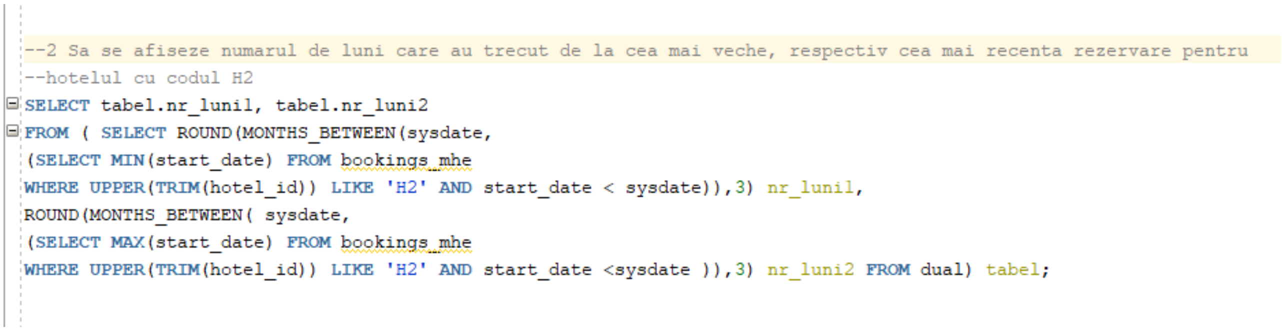
```
--1 Sa se afiseze numele complet si destinatia pt utilizatorii a caror rezervare incepe
--in aceeasi zi a lunii ca aceea in care s-au nascut, in ordine alfabetica
SELECT last_name, first_name, d.destination_name
FROM users_mhe u JOIN bookings_mhe b
ON u.user_id = b.user_id
JOIN hotels_mhe h ON h.hotel_id = b.hotel_id
JOIN destinations_mhe d ON h.destination_name = d.destination_name
WHERE TO_CHAR(b.start_date, 'DD') = ( SELECT TO_CHAR(u.dob, 'DD')
    FROM users_mhe
    WHERE user_id = u.user_id)
ORDER BY last_name;
```



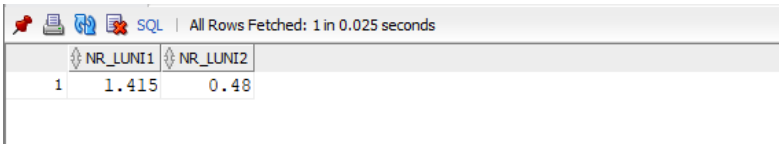
All Rows Fetched: 1 in 0.037 seconds

	LAST_NAME	FIRST_NAME	DESTINATION_NAME
1	Petrescu	George	Paris

6.2



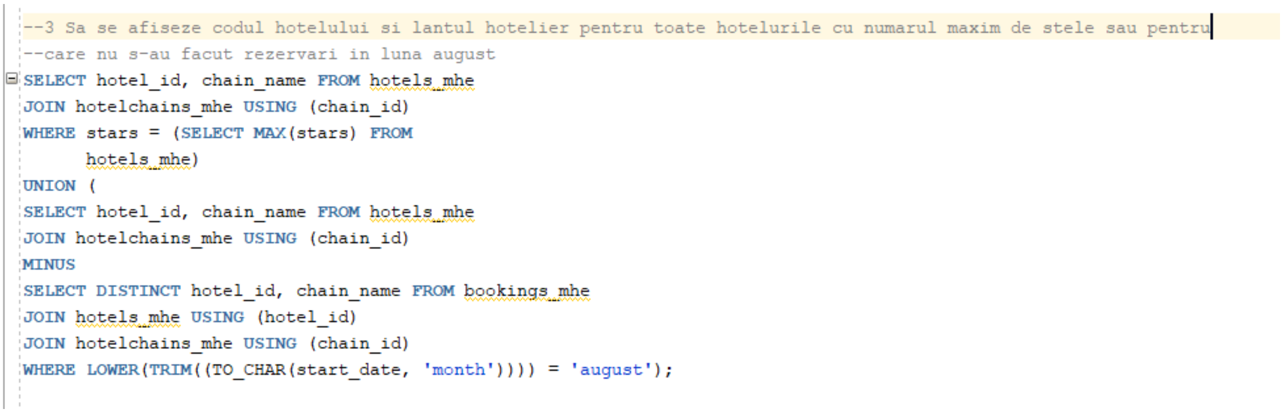
```
--2 Sa se afiseze numarul de luni care au trecut de la cea mai veche, respectiv cea mai recenta rezervare pentru
--hotelul cu codul H2
SELECT tabel.nr_luni1, tabel.nr_luni2
FROM ( SELECT ROUND(MONTHS_BETWEEN(sysdate,
(SELECT MIN(start_date) FROM bookings_mhe
WHERE UPPER(TRIM(hotel_id)) LIKE 'H2' AND start_date < sysdate)),3) nr_luni1,
ROUND(MONTHS_BETWEEN( sysdate,
(SELECT MAX(start_date) FROM bookings_mhe
WHERE UPPER(TRIM(hotel_id)) LIKE 'H2' AND start_date <sysdate )),3) nr_luni2 FROM dual) tabel;
```



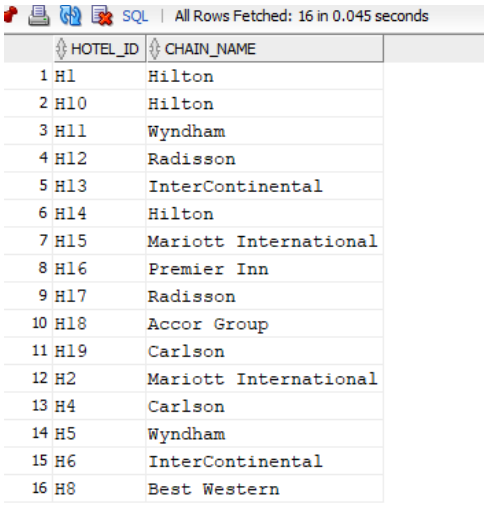
All Rows Fetched: 1 in 0.025 seconds

	NR_LUNI1	NR_LUNI2
1	1.415	0.48

6.3



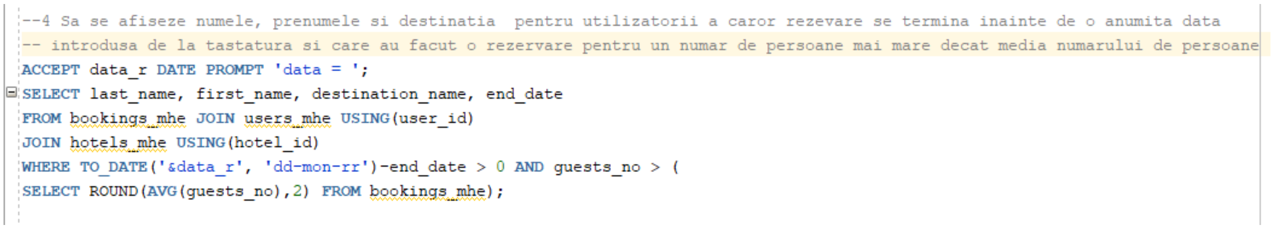
```sql
--3 Sa se afiseze codul hotelului si lantul hotelier pentru toate hotelurile cu numarul maxim de stele sau pentru
--care nu s-au facut rezervari in luna august
SELECT hotel_id, chain_name FROM hotels_mhe
JOIN hotelchains_mhe USING (chain_id)
WHERE stars = (SELECT MAX(stars) FROM
      hotels_mhe)
UNION (
SELECT hotel_id, chain_name FROM hotels_mhe
JOIN hotelchains_mhe USING (chain_id)
MINUS
SELECT DISTINCT hotel_id, chain_name FROM bookings_mhe
JOIN hotels_mhe USING (hotel_id)
JOIN hotelchains_mhe USING (chain_id)
WHERE LOWER(TRIM((TO_CHAR(start_date, 'month')))) = 'august');
```



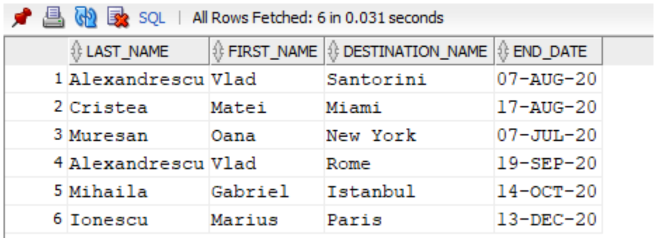
All Rows Fetched: 16 in 0.045 seconds

```
   HOTEL_ID  CHAIN_NAME
 1 H1        Hilton
 2 H10       Hilton
 3 H11       Wyndham
 4 H12       Radisson
 5 H13       InterContinental
 6 H14       Hilton
 7 H15       Mariott International
 8 H16       Premier Inn
 9 H17       Radisson
10 H18       Accor Group
11 H19       Carlson
12 H2        Mariott International
13 H4        Carlson
14 H5        Wyndham
15 H6        InterContinental
16 H8        Best Western
```

6.4

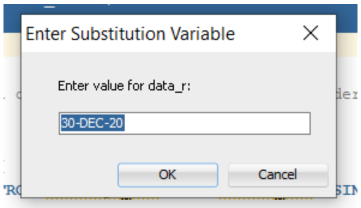


```sql
--4 Sa se afiseze numele, prenumele si destinatia  pentru utilizatorii a caror rezevare se termina inainte de o anumita data
-- introdusa de la tastatura si care au facut o rezervare pentru un numar de persoane mai mare decat media numarului de persoane
ACCEPT data_r DATE PROMPT 'data = ';
SELECT last_name, first_name, destination_name, end_date
FROM bookings_mhe JOIN users_mhe USING(user_id)
JOIN hotels_mhe USING(hotel_id)
WHERE TO_DATE('&data_r', 'dd-mon-rr')-end_date > 0 AND guests_no > (
SELECT ROUND(AVG(guests_no),2) FROM bookings_mhe);
```



All Rows Fetched: 6 in 0.031 seconds

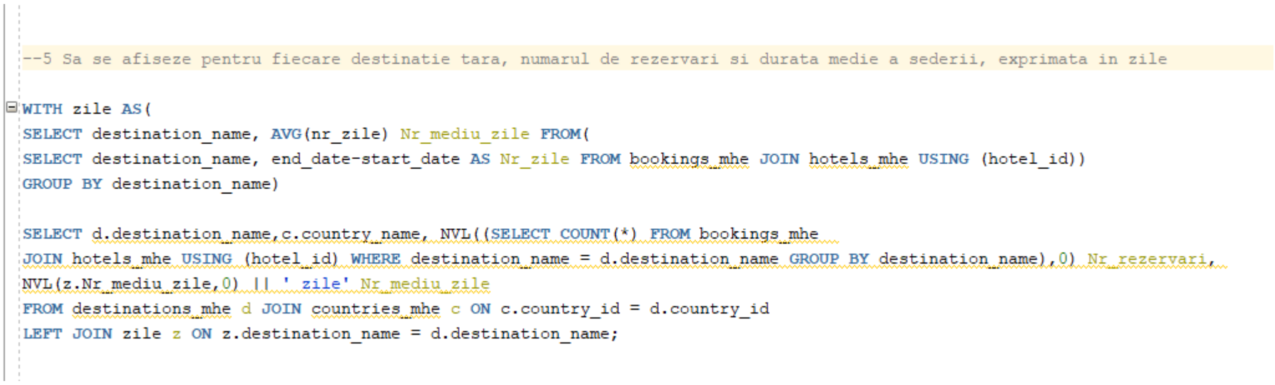
```
  LAST_NAME    FIRST_NAME DESTINATION_NAME END_DATE
1 Alexandrescu Vlad       Santorini        07-AUG-20
2 Cristea      Matei      Miami            17-AUG-20
3 Muresan      Oana       New York         07-JUL-20
4 Alexandrescu Vlad       Rome             19-SEP-20
5 Mihaila      Gabriel    Istanbul         14-OCT-20
6 Ionescu      Marius     Paris            13-DEC-20
```



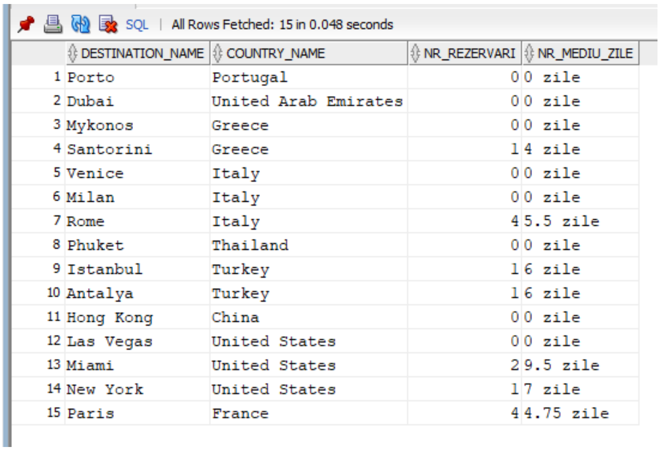
Enter Substitution Variable

Enter value for data_r: 30-DEC-20

6.5



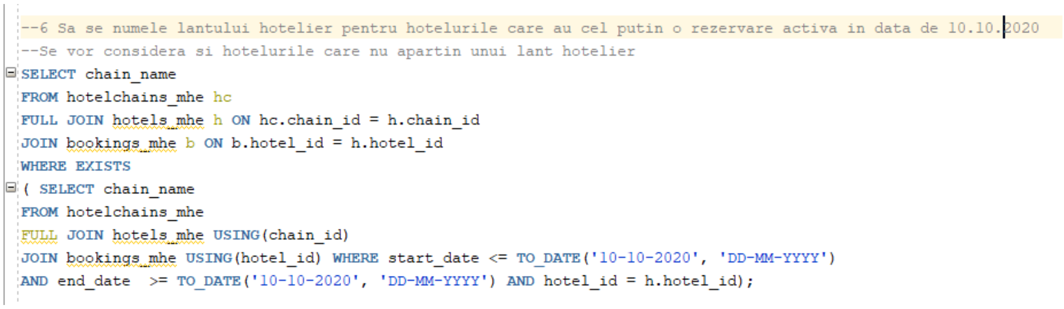
```
--5 Sa se afiseze pentru fiecare destinatie tara, numarul de rezervari si durata medie a sederii, exprimata in zile

WITH zile AS(
SELECT destination_name, AVG(nr_zile) Nr_mediu_zile FROM(
SELECT destination_name, end_date-start_date AS Nr_zile FROM bookings_mhe JOIN hotels_mhe USING (hotel_id))
GROUP BY destination_name)

SELECT d.destination_name,c.country_name, NVL((SELECT COUNT(*) FROM bookings_mhe
JOIN hotels_mhe USING (hotel_id) WHERE destination_name = d.destination_name GROUP BY destination_name),0) Nr_rezervari,
NVL(z.Nr_mediu_zile,0) || ' zile' Nr_mediu_zile
FROM destinations_mhe d JOIN countries_mhe c ON c.country_id = d.country_id
LEFT JOIN zile z ON z.destination_name = d.destination_name;
```



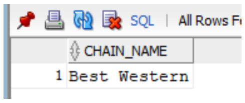
SQL | All Rows Fetched: 15 in 0.048 seconds

	DESTINATION_NAME	COUNTRY_NAME	NR_REZERVARI	NR_MEDIU_ZILE
1	Porto	Portugal	0	0 zile
2	Dubai	United Arab Emirates	0	0 zile
3	Mykonos	Greece	0	0 zile
4	Santorini	Greece	1	4 zile
5	Venice	Italy	0	0 zile
6	Milan	Italy	0	0 zile
7	Rome	Italy	4	5.5 zile
8	Phuket	Thailand	0	0 zile
9	Istanbul	Turkey	1	6 zile
10	Antalya	Turkey	1	6 zile
11	Hong Kong	China	0	0 zile
12	Las Vegas	United States	0	0 zile
13	Miami	United States	2	9.5 zile
14	New York	United States	1	7 zile
15	Paris	France	4	4.75 zile

6.6



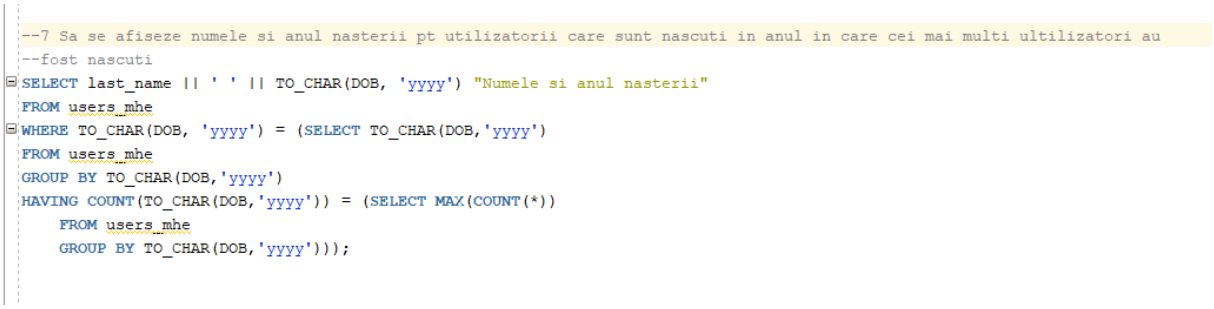
```
--6 Sa se numele lantului hotelier pentru hotelurile care au cel putin o rezervare activa in data de 10.10.2020
--Se vor considera si hotelurile care nu apartin unui lant hotelier
SELECT chain_name
FROM hotelchains_mhe hc
FULL JOIN hotels_mhe h ON hc.chain_id = h.chain_id
JOIN bookings_mhe b ON b.hotel_id = h.hotel_id
WHERE EXISTS
( SELECT chain_name
FROM hotelchains_mhe
FULL JOIN hotels_mhe USING(chain_id)
JOIN bookings_mhe USING(hotel_id) WHERE start_date <= TO_DATE('10-10-2020', 'DD-MM-YYYY')
AND end_date  >= TO_DATE('10-10-2020', 'DD-MM-YYYY') AND hotel_id = h.hotel_id);
```



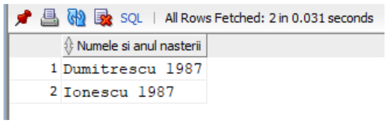
SQL | All Rows F

	CHAIN_NAME
1	Best Western

6.7



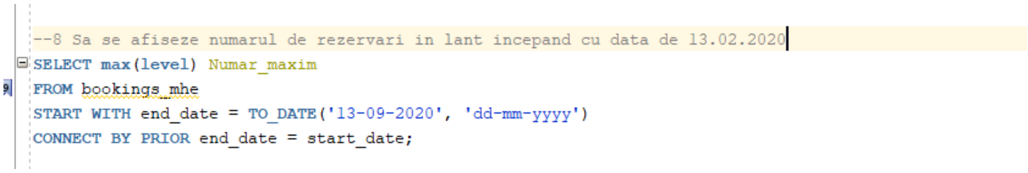
```
--7 Sa se afiseze numele si anul nasterii pt utilizatorii care sunt nascuti in anul in care cei mai multi ultilizatori au
--fost nascuti
SELECT last_name || ' ' || TO_CHAR(DOB, 'yyyy') "Numele si anul nasterii"
FROM users_mhe
WHERE TO_CHAR(DOB, 'yyyy') = (SELECT TO_CHAR(DOB,'yyyy')
FROM users_mhe
GROUP BY TO_CHAR(DOB,'yyyy')
HAVING COUNT(TO_CHAR(DOB,'yyyy')) = (SELECT MAX(COUNT(*))
    FROM users_mhe
    GROUP BY TO_CHAR(DOB,'yyyy')));
```



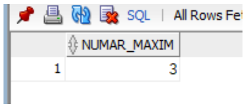
All Rows Fetched: 2 in 0.031 seconds

	Numele si anul nasterii
1	Dumitrescu 1987
2	Ionescu 1987

6.8



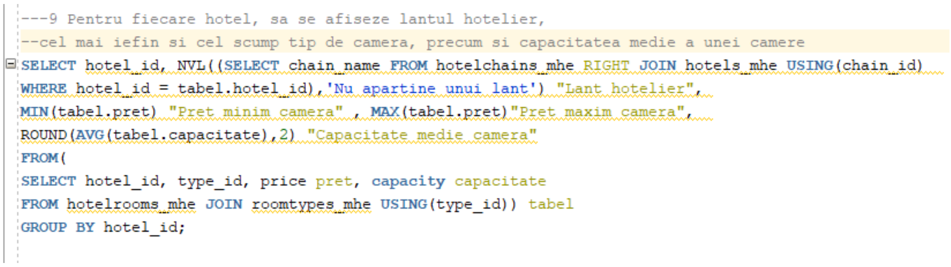
```
--8 Sa se afiseze numarul de rezervari in lant incepand cu data de 13.02.2020
SELECT max(level) Numar_maxim
FROM bookings_mhe
START WITH end_date = TO_DATE('13-09-2020', 'dd-mm-yyyy')
CONNECT BY PRIOR end_date = start_date;
```



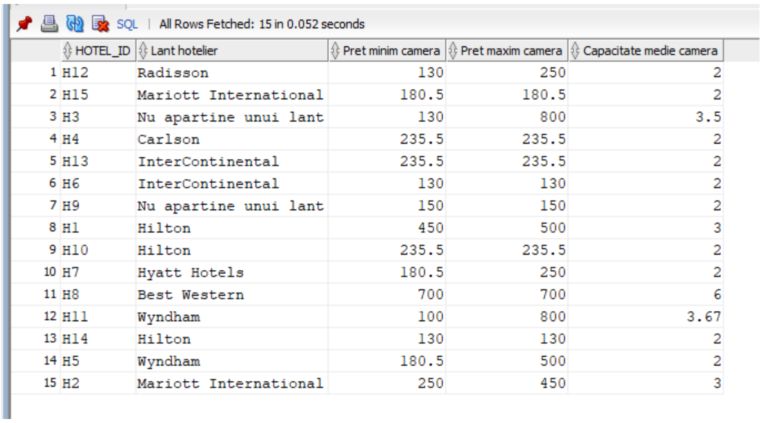
All Rows Fe

	NUMAR_MAXIM
1	3

6.9



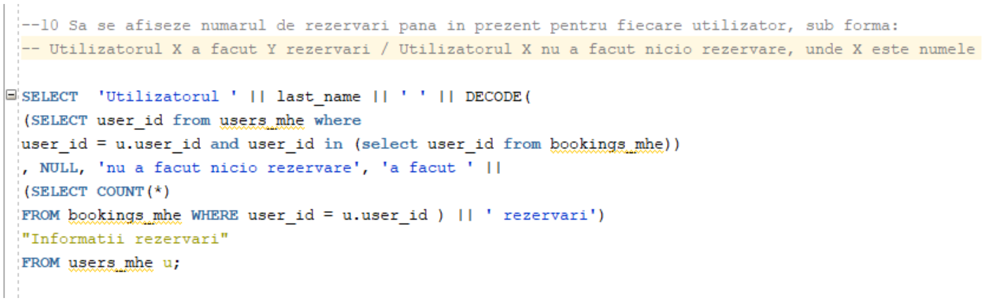
```
---9 Pentru fiecare hotel, sa se afiseze lantul hotelier,
--cel mai iefin si cel scump tip de camera, precum si capacitatea medie a unei camere
SELECT hotel_id, NVL((SELECT chain_name FROM hotelchains_mhe RIGHT JOIN hotels_mhe USING(chain_id)
WHERE hotel_id = tabel.hotel_id),'Nu apartine unui lant') "Lant hotelier",
MIN(tabel.pret) "Pret minim camera" , MAX(tabel.pret)"Pret maxim camera",
ROUND(AVG(tabel.capacitate),2) "Capacitate medie camera"
FROM(
SELECT hotel_id, type_id, price pret, capacity capacitate
FROM hotelrooms_mhe JOIN roomtypes_mhe USING(type_id)) tabel
GROUP BY hotel_id;
```



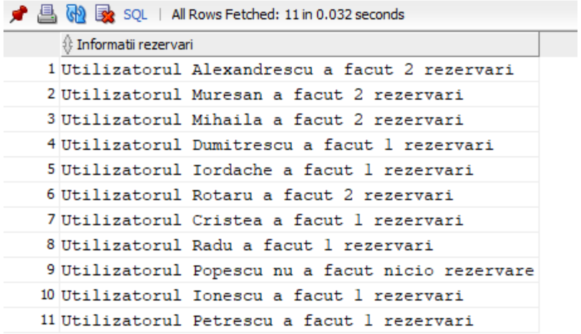
All Rows Fetched: 15 in 0.052 seconds

	HOTEL_ID	Lant hotelier	Pret minim camera	Pret maxim camera	Capacitate medie camera
1	H12	Radisson	130	250	2
2	H15	Mariott International	180.5	180.5	2
3	H3	Nu apartine unui lant	130	800	3.5
4	H4	Carlson	235.5	235.5	2
5	H13	InterContinental	235.5	235.5	2
6	H6	InterContinental	130	130	2
7	H9	Nu apartine unui lant	150	150	2
8	H1	Hilton	450	500	3
9	H10	Hilton	235.5	235.5	2
10	H7	Hyatt Hotels	180.5	250	2
11	H8	Best Western	700	700	6
12	H11	Wyndham	100	800	3.67
13	H14	Hilton	130	130	2
14	H5	Wyndham	180.5	500	2
15	H2	Mariott International	250	450	3

6.10



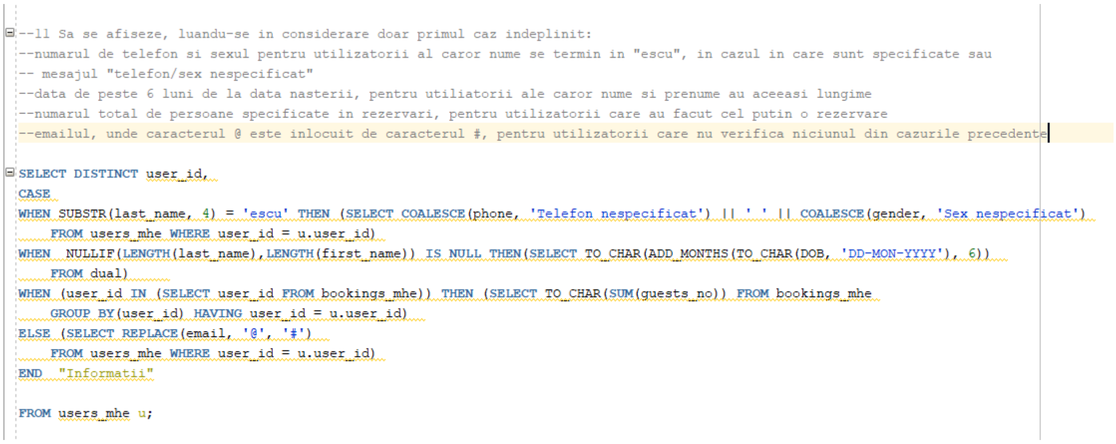
```
--10 Sa se afiseze numarul de rezervari pana in prezent pentru fiecare utilizator, sub forma:
-- Utilizatorul X a facut Y rezervari / Utilizatorul X nu a facut nicio rezervare, unde X este numele

SELECT  'Utilizatorul ' || last_name || ' ' || DECODE(
(SELECT user_id from users_mhe where
user_id = u.user_id and user_id in (select user_id from bookings_mhe))
, NULL, 'nu a facut nicio rezervare', 'a facut ' ||
(SELECT COUNT(*)
FROM bookings_mhe WHERE user_id = u.user_id ) || ' rezervari')
"Informatii rezervari"
FROM users_mhe u;
```



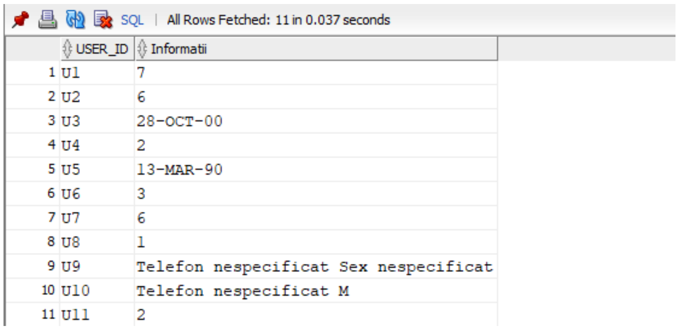
SQL | All Rows Fetched: 11 in 0.032 seconds

	Informatii rezervari
1	Utilizatorul Alexandrescu a facut 2 rezervari
2	Utilizatorul Muresan a facut 2 rezervari
3	Utilizatorul Mihaila a facut 2 rezervari
4	Utilizatorul Dumitrescu a facut 1 rezervari
5	Utilizatorul Iordache a facut 1 rezervari
6	Utilizatorul Rotaru a facut 2 rezervari
7	Utilizatorul Cristea a facut 1 rezervari
8	Utilizatorul Radu a facut 1 rezervari
9	Utilizatorul Popescu nu a facut nicio rezervare
10	Utilizatorul Ionescu a facut 1 rezervari
11	Utilizatorul Petrescu a facut 1 rezervari

6.11



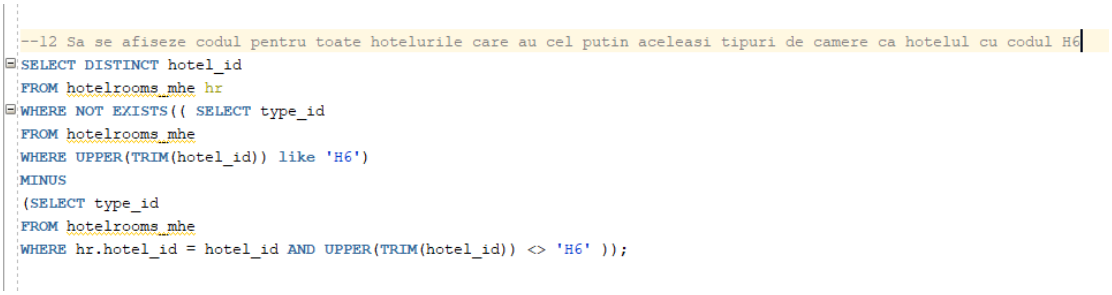
```
--11 Sa se afiseze, luandu-se in considerare doar primul caz indeplinit:
--numarul de telefon si sexul pentru utilizatorii al caror nume se termin in "escu", in cazul in care sunt specificate sau
-- mesajul "telefon/sex nespecificat"
--data de peste 6 luni de la data nasterii, pentru utiliatorii ale caror nume si prenume au aceeasi lungime
--numarul total de persoane specificate in rezervari, pentru utilizatorii care au facut cel putin o rezervare
--emailul, unde caracterul @ este inlocuit de caracterul #, pentru utilizatorii care nu verifica niciunul din cazurile precedente

SELECT DISTINCT user_id,
CASE
WHEN SUBSTR(last_name, 4) = 'escu' THEN (SELECT COALESCE(phone, 'Telefon nespecificat') || ' ' || COALESCE(gender, 'Sex nespecificat')
    FROM users_mhe WHERE user_id = u.user_id)
WHEN  NULLIF(LENGTH(last_name),LENGTH(first_name)) IS NULL THEN(SELECT TO_CHAR(ADD_MONTHS(TO_CHAR(DOB, 'DD-MON-YYYY'), 6))
    FROM dual)
WHEN (user_id IN (SELECT user_id FROM bookings_mhe)) THEN (SELECT TO_CHAR(SUM(guests_no)) FROM bookings_mhe
    GROUP BY(user_id) HAVING user_id = u.user_id)
ELSE (SELECT REPLACE(email, '@', '#')
    FROM users_mhe WHERE user_id = u.user_id)
END  "Informatii"

FROM users_mhe u;
```



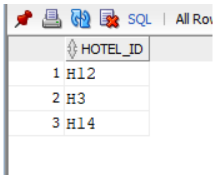
SQL | All Rows Fetched: 11 in 0.037 seconds

	USER_ID	Informatii
1	U1	7
2	U2	6
3	U3	28-OCT-00
4	U4	2
5	U5	13-MAR-90
6	U6	3
7	U7	6
8	U8	1
9	U9	Telefon nespecificat Sex nespecificat
10	U10	Telefon nespecificat M
11	U11	2

6.12

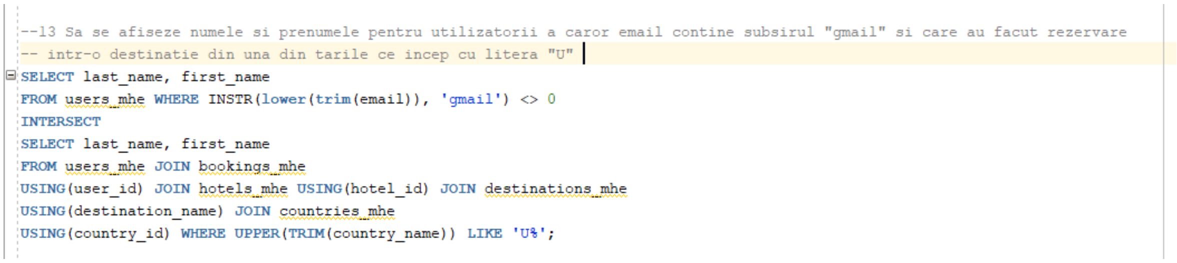


```
--12 Sa se afiseze codul pentru toate hotelurile care au cel putin aceleasi tipuri de camere ca hotelul cu codul H6
SELECT DISTINCT hotel_id
FROM hotelrooms_mhe hr
WHERE NOT EXISTS(( SELECT type_id
FROM hotelrooms_mhe
WHERE UPPER(TRIM(hotel_id)) like 'H6')
MINUS
(SELECT type_id
FROM hotelrooms_mhe
WHERE hr.hotel_id = hotel_id AND UPPER(TRIM(hotel_id)) <> 'H6' ));
```

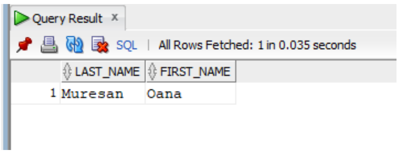


	HOTEL_ID
1	H12
2	H3
3	H14

6.13



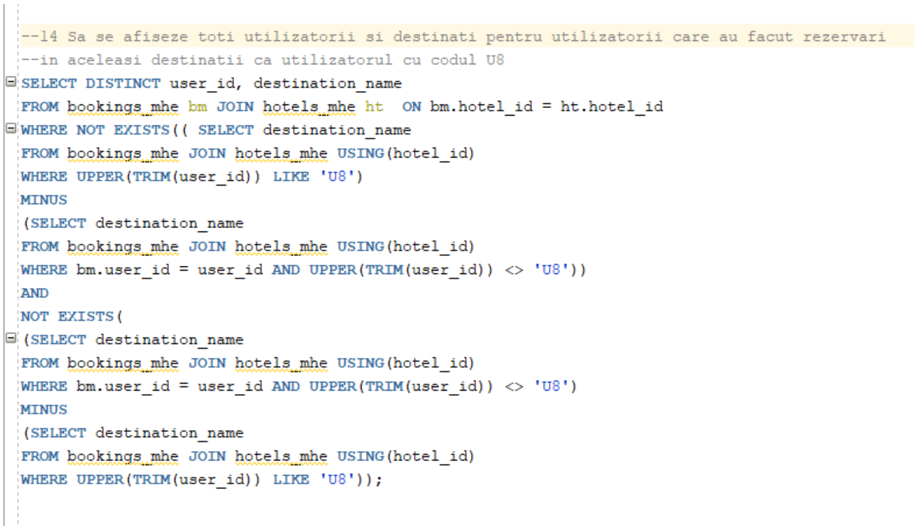
```
--13 Sa se afiseze numele si prenumele pentru utilizatorii a caror email contine subsirul "gmail" si care au facut rezervare
-- intr-o destinatie din una din tarile ce incep cu litera "U"
SELECT last_name, first_name
FROM users_mhe WHERE INSTR(lower(trim(email)), 'gmail') <> 0
INTERSECT
SELECT last_name, first_name
FROM users_mhe JOIN bookings_mhe
USING(user_id) JOIN hotels_mhe USING(hotel_id) JOIN destinations_mhe
USING(destination_name) JOIN countries_mhe
USING(country_id) WHERE UPPER(TRIM(country_name)) LIKE 'U%';
```



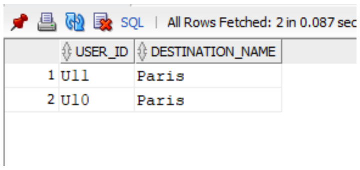
All Rows Fetched: 1 in 0.035 seconds

	LAST_NAME	FIRST_NAME
1	Muresan	Oana

6.14



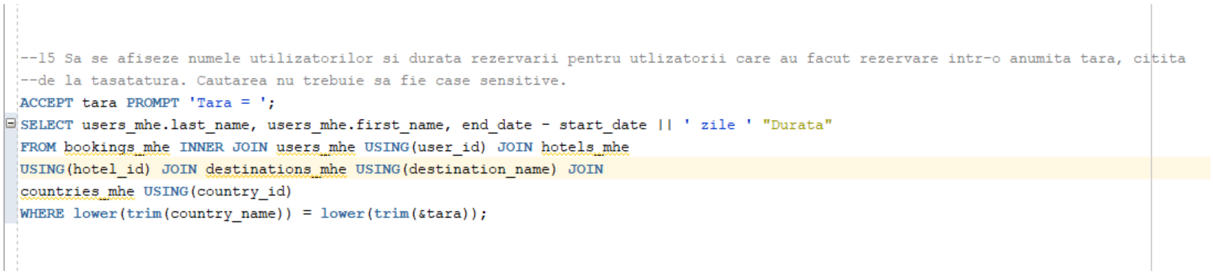
```
--14 Sa se afiseze toti utilizatorii si destinati pentru utilizatorii care au facut rezervari
--in aceleasi destinatii ca utilizatorul cu codul U8
SELECT DISTINCT user_id, destination_name
FROM bookings_mhe bm JOIN hotels_mhe ht  ON bm.hotel_id = ht.hotel_id
WHERE NOT EXISTS(( SELECT destination_name
FROM bookings_mhe JOIN hotels_mhe USING(hotel_id)
WHERE UPPER(TRIM(user_id)) LIKE 'U8')
MINUS
(SELECT destination_name
FROM bookings_mhe JOIN hotels_mhe USING(hotel_id)
WHERE bm.user_id = user_id AND UPPER(TRIM(user_id)) <> 'U8'))
AND
NOT EXISTS(
(SELECT destination_name
FROM bookings_mhe JOIN hotels_mhe USING(hotel_id)
WHERE bm.user_id = user_id AND UPPER(TRIM(user_id)) <> 'U8')
MINUS
(SELECT destination_name
FROM bookings_mhe JOIN hotels_mhe USING(hotel_id)
WHERE UPPER(TRIM(user_id)) LIKE 'U8'));
```



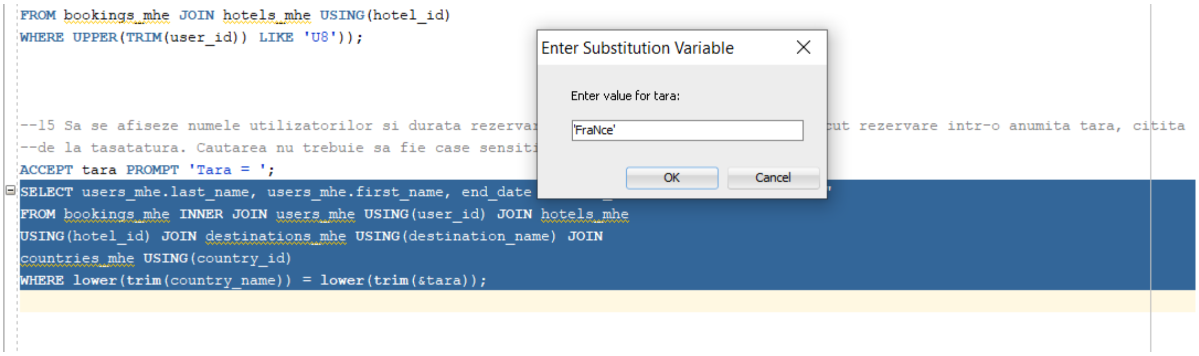
All Rows Fetched: 2 in 0.087 sec

	USER_ID	DESTINATION_NAME
1	U11	Paris
2	U10	Paris

6.15



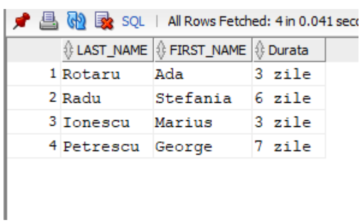
```
--15 Sa se afiseze numele utilizatorilor si durata rezervarii pentru utlizatorii care au facut rezervare intr-o anumita tara, citita
--de la tasatatura. Cautarea nu trebuie sa fie case sensitive.
ACCEPT tara PROMPT 'Tara = ';
SELECT users_mhe.last_name, users_mhe.first_name, end_date - start_date || ' zile ' "Durata"
FROM bookings_mhe INNER JOIN users_mhe USING(user_id) JOIN hotels_mhe
USING(hotel_id) JOIN destinations_mhe USING(destination_name) JOIN
countries_mhe USING(country_id)
WHERE lower(trim(country_name)) = lower(trim(&tara));
```



```
FROM bookings_mhe JOIN hotels_mhe USING(hotel_id)
WHERE UPPER(TRIM(user_id)) LIKE 'U8'));


--15 Sa se afiseze numele utilizatorilor si durata rezervar                                 ut rezervare intr-o anumita tara, citita
--de la tasatatura. Cautarea nu trebuie sa fie case sensit
ACCEPT tara PROMPT 'Tara = ';
SELECT users_mhe.last_name, users_mhe.first_name, end_date
FROM bookings_mhe INNER JOIN users_mhe USING(user_id) JOIN hotels_mhe
USING(hotel_id) JOIN destinations_mhe USING(destination_name) JOIN
countries_mhe USING(country_id)
WHERE lower(trim(country_name)) = lower(trim(&tara));
```

Enter Substitution Variable

Enter value for tara: 'FraNce'



All Rows Fetched: 4 in 0.041 seco

	LAST_NAME	FIRST_NAME	Durata
1	Rotaru	Ada	3 zile
2	Radu	Stefania	6 zile
3	Ionescu	Marius	3 zile
4	Petrescu	George	7 zile