Eastern Mediterranean University

Design of a Pharmacy Database

CMPE353/CMSE354

Database Management Systems

Labs 2-6

Spring 2020 Semester

Task: You are asked to design a relational database according to the given schema diagram below using Oracle Live SQL software. The task has several subtasks and each of them are described below. Each task will be carried out during weekly lab hours (Labs 2-6). Therefore, each subtask must be completed weekly in accordance with the set lab dates (see dates below).
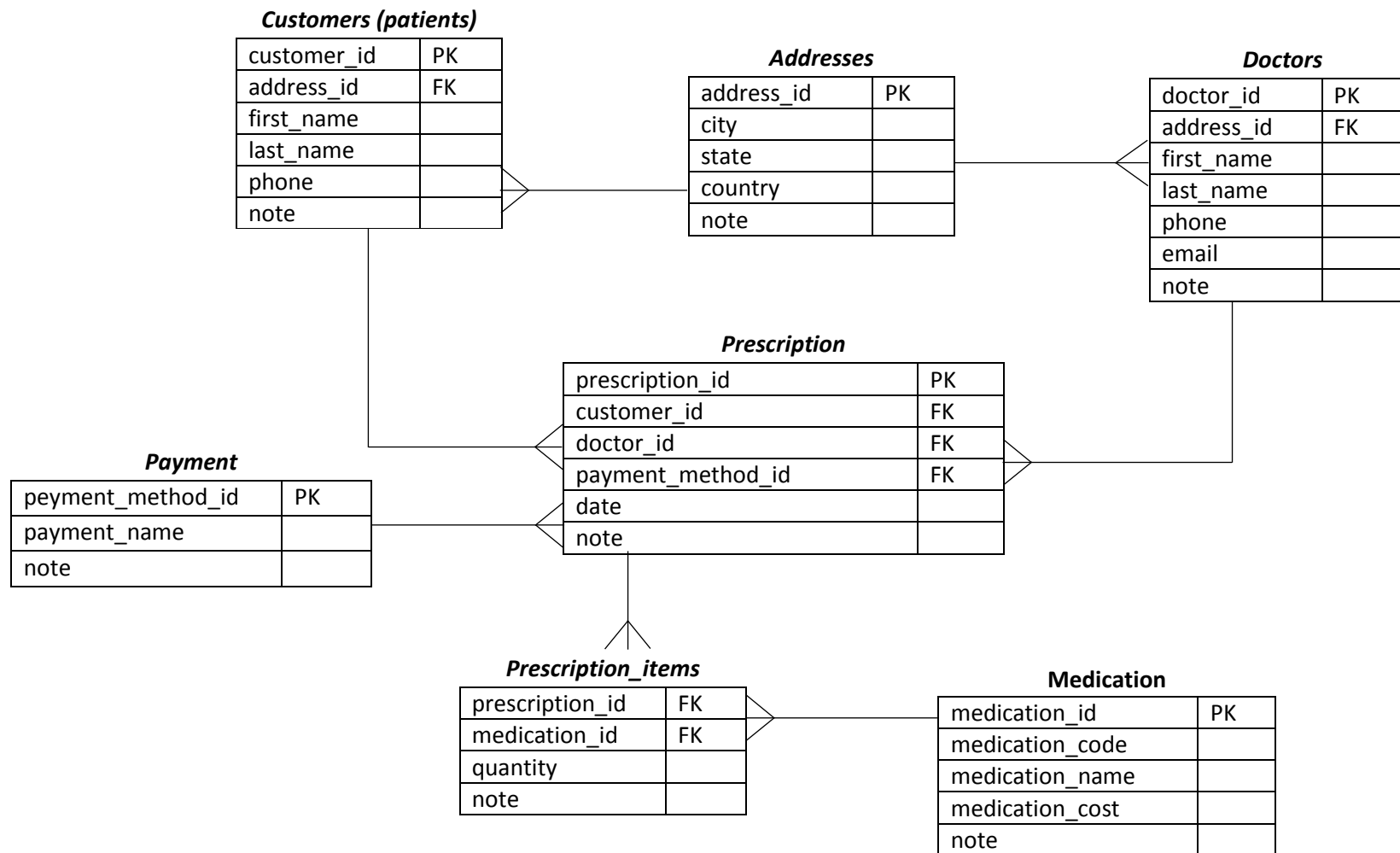
Problem: The aim is to develop a database scheme which represents an example of a used dataset in a pharmacy system.

The schema diagram below is designed to keep the data of the pharmacy system.

In a pharmacy system, patients (customers) have prescriptions and receive service accordingly. In this system each patient is known with a unique ID and non-unique personal information such as address ID, first name, last name and phone number. In each prescription the patient and the doctor are determined uniquely with their IDs. Similarly, doctors have their own dataset table including their information and unique IDs. Information regarding prescribed medicines is saved in another table. Each medicine has a unique ID in addition to non-unique information such as name, code, etc.

Following criteria are considered in the database design.

1. Each patient can have different prescriptions, while each prescription belongs only to one patient.
2. Each prescription belongs only to a doctor. However, each doctor can write many prescriptions.
3. Each patient or doctor has a single specific address. However, many patients and doctors can have similar address.
4. For the payment of prescriptions, different payment methods with unique IDs are available. Each prescription can be paid with only one method.
5. There can be different medicines in the prescription of a patient. However, each prescribed medicine belongs specifically to one prescription.
6. Although each medicine has a specific ID in the stock, it can belong to many prescriptions.

Customers (patients)

customer_id	PK
address_id	FK
first_name	
last_name	
phone	
note	

Addresses

address_id	PK
city	
state	
country	
note	

Doctors

doctor_id	PK
address_id	FK
first_name	
last_name	
phone	
email	
note	

Prescription

prescription_id	PK
customer_id	FK
doctor_id	FK
payment_method_id	FK
date	
note	

Payment

peyment_method_id	PK
payment_name	
note	

Prescription_items

prescription_id	FK
medication_id	FK
quantity	
note	

Medication

medication_id	PK
medication_code	
medication_name	
medication_cost	
note	

LAB 2:

- SUBTASK 1: Fill in the following tables: as preliminary lab work (some are filled for your guidance)
- SUBTASK 2: Build the tables in Oracle Live SQL with your account according to the tables above.
- SUBTASK 3: Build the relations among the tables.

Addresses

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
address_id	√	-	varchar2(10)	NO	-	1234567890
City						Etimesgut
State						Ankara
Country						Turkey
Note						-

Customers

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
customer_id						1122334455
address_id	-	√	varchar2(10)	NO	-	1234567890
first_name						Maria
last_name						Andres
phone						5331112233
note						-

Doctors

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
doctor_id						1212121212
address_id						1234567890
first_name						Lincoln
last_name						Bergamo
phone						5331112233
email						email@email.com
note	-	-	varchar2(50)	-	-	-

Payment

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
payment_method_id						03
payment_name						'POS'

Prescription

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
prescription_id						9988776655
customer_id						1122334455
doctor_id						1212121212
payment_method_id						03
p_date	-	-	date	NO	-	2021-02-05
Note						-

Medication

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
medication_id						5544668822
medication_code						12345
medication_name						Medi1
medication_cost						50
Note						-

Prescription_items

Column Name	Primary Key	Foreign Key	Data Type	Nullable	Default	Sample Entry
prescription_id						9988776655
medication_id						5544668822
quantity						20
note						-

LAB 3:

- Insert sample data into the tables. (At least 15 records for each table)

LAB 4:

- Write an SQL query for the following questions:

1. How many prescriptions are recorded in the database?
2. Which doctor (name) does have the most number of patients?
3. What is the most common method of payment?
4. List the medicines have been prescribed more than 2 times.
5. List the name of doctors with the number of written prescriptions.
6. List the customers and the number of prescriptions each has.
7. List the most prescribed medicines in the ascending order.
8. What is the average number of medicines in each prescription?
9. What is the average cost of each prescription?
10. What is the code of the most expensive prescription?
11. Which city has the most number of doctors?
12. List and rank preferred methods of payment.
13. What is the name of mostly prescribed medicine?

LAB 5:

- Write a trigger to save all modification on table Doctors. (Update and Delete).

LAB 6:

- Finalization and show of all work done throughout the semester.

Time-Line:

Lab #	Date	Description
1	01/04/2021	Task description and Introduction to Oracle Live SQL (in lab)
2	08/04/2021	Table design and construction (as preliminary lab work and in lab)
3	15/04/2021	Population of tables with data (as preliminary lab work and in lab)
4	22/04/2021	Answering SQL queries (as preliminary lab work and in lab)
5	20/05/2021	Triggers (as preliminary lab work and in lab)
6	10/06/2021	Finalization and show of all work (in lab)