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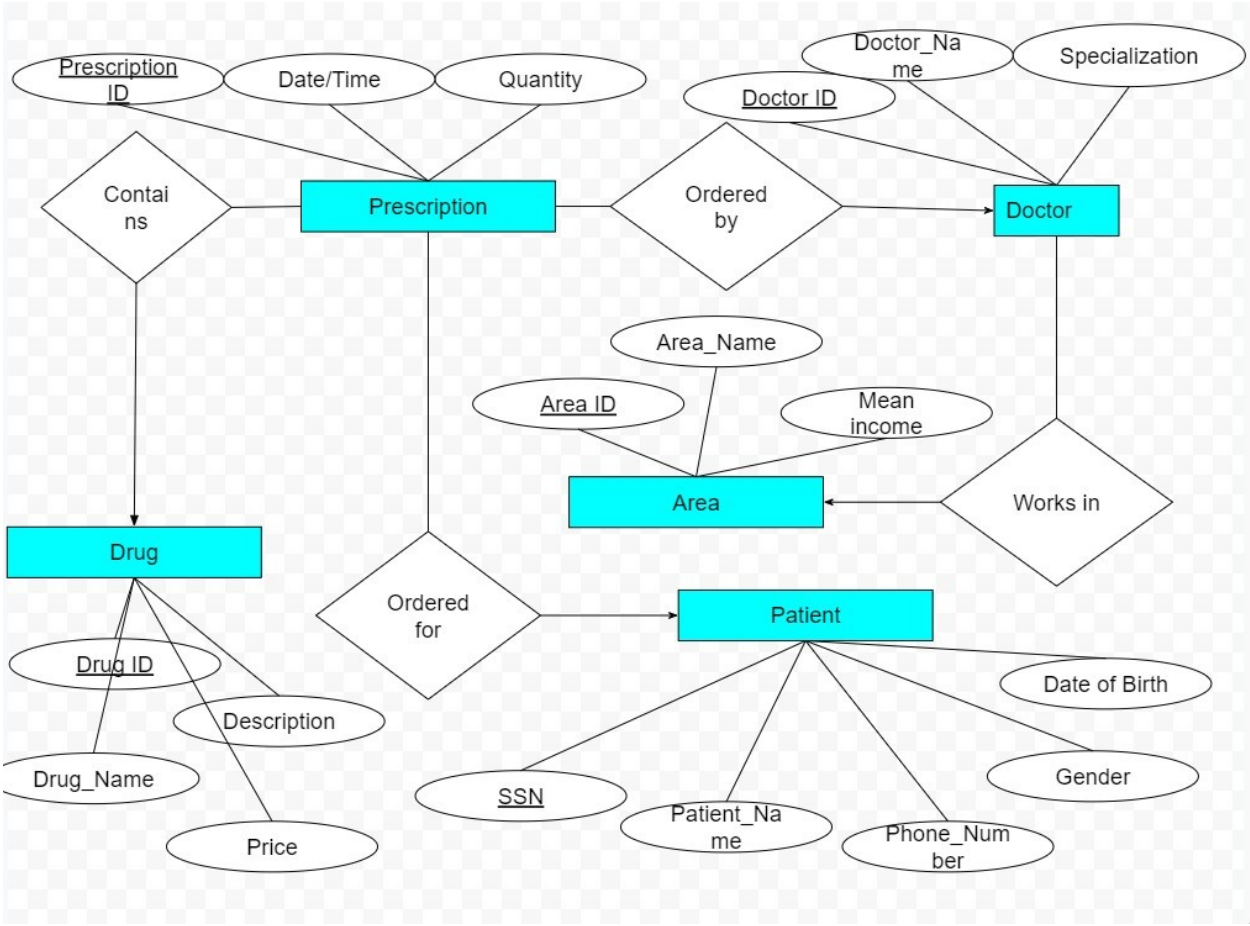
Analysis of Medical prescriptions:

1. **ERD Model**



2. CREATE TABLE Statements

```
CREATE TABLE Prescription(
Prescription_ID INT PRIMARY KEY,
Date_Time DATETIME,
Quantity INT,
Doctor_ID INT,
Drug_ID INT,
SSN INT,
FOREIGN KEY (Doctor_ID) REFERENCES doctor(Doctor_ID),
FOREIGN KEY (Drug_ID) REFERENCES drug(Drug_ID),
FOREIGN KEY (SSN) REFERENCES patient(SSN));

CREATE TABLE Doctor(
Doctor_ID INT PRIMARY KEY,
Doctor_Name VARCHAR(40),
Specialization VARCHAR(40),
Area_ID INT,
FOREIGN KEY (Area_ID) REFERENCES areaa(Area_ID));

CREATE TABLE Areaa(
Area_ID INT PRIMARY KEY,
Area_Name VARCHAR(40),
Mean_Income INT);

CREATE TABLE Drug(
Drug_ID INT PRIMARY KEY,
Drug_Name VARCHAR(40),
Descriptionn VARCHAR(100),
Price DECIMAL(10,2));

CREATE TABLE Patient(
SSN INT PRIMARY KEY,
Patient_Name VARCHAR(40),
Phone_Number INT,
Gender VARCHAR(40),
Date_of_Birth DATE);
```

3. SQL Code

a.

```
SELECT
   p.Patient_Name,p.SSN
FROM
   patient AS p,
   prescription AS pr
WHERE
   Gender = 'Male'
      AND DATE_FORMAT(FROM_DAYS(DATEDIFF(NOW(), date_of_Birth)),
         '%Y') + 0 > 30
      AND YEAR(Date_Time) = '2021'
      AND p.SSN = pr.SSN
GROUP BY p.SSN;
```

b.

```
select SSN, Total_Amount
FROM( SELECT
         p.SSN,Quantity, Price, sum(Price*Quantity) AS Total_Amount
from prescription pr
JOIN drug dr ON pr.Drug_ID = dr.Drug_ID
JOIN patient p ON p.SSN = pr.SSN
WHERE Gender = 'Female' AND
        year(Date_Time) = '2021'
group by p.SSN) as tableee
where Total_Amount>1000;
```

c.

```
SELECT
        a.Area_ID,
   a.Area_Name,
   sum(Price*Quantity) as Total_Amount_of_Money
FROM areaa a
JOIN doctor d ON d.Area_ID = a.Area_ID
JOIN prescription p ON p.Doctor_ID = d.Doctor_ID
JOIN drug dr ON dr.Drug_ID = p.Drug_ID
        group by a.Area_ID;
```

d.

```
SELECT
        p.Drug_ID,
        EXTRACT(MONTH FROM Date_Time) as Month,
   sum(Price*Quantity) as Total_Amount_of_Money
FROM prescription p
JOIN drug dr ON dr.Drug_ID = p.Drug_ID
WHERE YEAR(Date_Time) = '2021'
GROUP BY EXTRACT(MONTH FROM Date_Time),p.Drug_ID;
```

e.

```
select
        pr.Doctor_ID,
        Doctor_Name,
   sum(Price*Quantity) as Total_Amount_of_Money
from areaa a
JOIN doctor dr ON dr.Area_ID = a.Area_ID
JOIN prescription pr ON pr.Doctor_ID = dr.Doctor_ID
JOIN drug drg ON drg.Drug_ID = pr.Drug_ID
WHERE Mean_Income BETWEEN 20000 and 30000
group by pr.Doctor_ID;
```

f.

```
select
Specialization,
count(Prescription_ID) as total_number_of_perscriptions
from doctor d
JOIN prescription p ON p.Doctor_ID = d.Doctor_ID
WHERE year(Date_Time) = '2021'
group by Specialization;
```

g.

```
select
        pr.Drug_ID,
        concat((SUM(CASE when year(Date_Time) = '2021' then Price*Quantity
end) - SUM(CASE when year(Date_Time) = '2020' then Price*Quantity end))
   /
   SUM(CASE when year(Date_Time) = '2020' then Price*Quantity end)*100, '%')
as Total_Amount_of_Money
from prescription pr
JOIN drug dr ON dr.Drug_ID = pr.Drug_ID
group by Drug_ID;
```

h.

```
select
        pr.Drug_ID,
        sum(CASE
                WHEN Gender = 'Male' THEN  Price*Quantity
        END) as MALES,
   sum(CASE
                WHEN Gender = 'Female' THEN  Price*Quantity
        END) as FEMALES
from patient p
JOIN prescription pr ON p.SSN = pr.SSN
JOIN drug dr ON dr.Drug_ID = pr.Drug_ID
WHERE YEAR(Date_Time) = '2021'
GROUP BY Gender, pr.Drug_ID;
```

4. Using Python for printing results

```
connection = pyodbc.connect('Driver={MySQL ODBC 8.0 ANSI
Driver};'
                            'Server=localhost;'
                            'UID=root;'
                            'Database=assigment 1;'
                            'PASSWORD=*********')

cursor = connection.cursor()
```

```
cursor.execute('SELECT pr.Prescription_ID, pr.Date_Time,
p.Patient_Name, p.Phone_Number, dr.Doctor_Name,
dr.Specialization, d.Drug_Name, d.Price, pr.Quantity '
               'FROM patient p '
               'JOIN prescription pr ON p.SSN = pr.SSN '
               'JOIN doctor dr ON dr.Doctor_ID = pr.Doctor_ID '
               'JOIN areaa a ON dr. Area_ID = a.Area_ID '
               'JOIN drug d ON pr.Drug_ID = d.Drug_ID')

for row in cursor:
   print(row)
```

Here are some of the inserts that were made.

INSERT INTO areaa VALUES (3, 'thesalonika',10000);
INSERT INTO areaa VALUES (4, 'Kerkyra',5000);
INSERT INTO areaa VALUES (4, 'Patras',40000);
INSERT INTO areaa VALUES (5, 'Ioannina',30000);
INSERT INTO areaa VALUES (6, 'Agias Lavras',80000);
INSERT INTO areaa VALUES (7, 'Peireas',4000);
INSERT INTO areaa VALUES (8, 'Komotini',13000);
INSERT INTO areaa VALUES (12, 'Leykada',40000);

INSERT INTO doctor VALUES(1,'Takis','Kardiologos',1);
INSERT INTO doctor VALUES(2,'akis','Kardiologos',2);
INSERT INTO doctor VALUES(3,'alkis','Kardiologos',2);
INSERT INTO doctor VALUES(4,'Christs','Ofthalmiators',3);
INSERT INTO doctor VALUES(5,'Kwstas','Paidiatros',3);
INSERT INTO doctor VALUES(6,'Spyros','Pathologos',4);

INSERT INTO Patient VALUES(22222,'Takis', 69820555,'Male','1998-06-15');
INSERT INTO Patient VALUES(44444,'akis', 69877700,'Female','1994-09-24');
INSERT INTO Patient VALUES(33333333,'alkis', 69829990,'Male','1998-06-21');
INSERT INTO Patient VALUES(77777777,'Christs', 69555550,'Female','1987-05-22');
INSERT INTO Patient VALUES(88888888,'Kwstas', 69950,'Male','1990-07-14');

```
INSERT INTO Patient VALUES(999999,'Spyros', 698672200,'Female','1950-04-
01');

INSERT INTO prescription VALUES(111,'2022-01-03 15:30:00',25,1,22222);
INSERT INTO prescription VALUES(112,'2022-01-03 15:30:00',25,1,22222);
INSERT INTO prescription VALUES(113,'2022-01-03 15:30:00',25,1,22222);

INSERT INTO drug VALUES(22,'Otivin','cold',50);
INSERT INTO drug VALUES(23,'Eyes m','Sadsa',30);
INSERT INTO drug VALUES(24,'Ponstant','PAin reliveer',14);

INSERT INTO perscription_drug_identification VALUES(111,24);
INSERT INTO perscription_drug_identification VALUES(111,23);
INSERT INTO perscription_drug_identification VALUES(112,24);
INSERT INTO perscription_drug_identification VALUES(112,22);
INSERT INTO perscription_drug_identification VALUES(113,22);
INSERT INTO perscription_drug_identification VALUES(111,22);

insert into prescription VALUES(114,'2021-04-08 19:30:00',30,2,3389);
insert into prescription VALUES(115,'2021-04-08 19:30:00',30,2,3389);
insert into prescription VALUES(116,'2021-04-08 19:30:00',30,2,3389);

insert into prescription VALUES(125,'2021-04-08 20:30:00',30,2,88888888);
insert into prescription VALUES(127,'2021-04-08 20:30:00',30,2,88888888);
insert into prescription VALUES(128,'2021-04-08 20:30:00',30,2,88888888);

insert into patient VALUES(3389,'PETROS',69845365,'Male','1990-07-14');
```