دانشگاه اصفهان

دانشکده مهندسی کامپیوتر

گزارش پروژه اول پایگاه داده

Hospital

پدیدآورندگان:

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دانشجویان کارشناسی، دانشکده‌ی کامپیوتر، دانشگاه اصفهان، اصفهان،

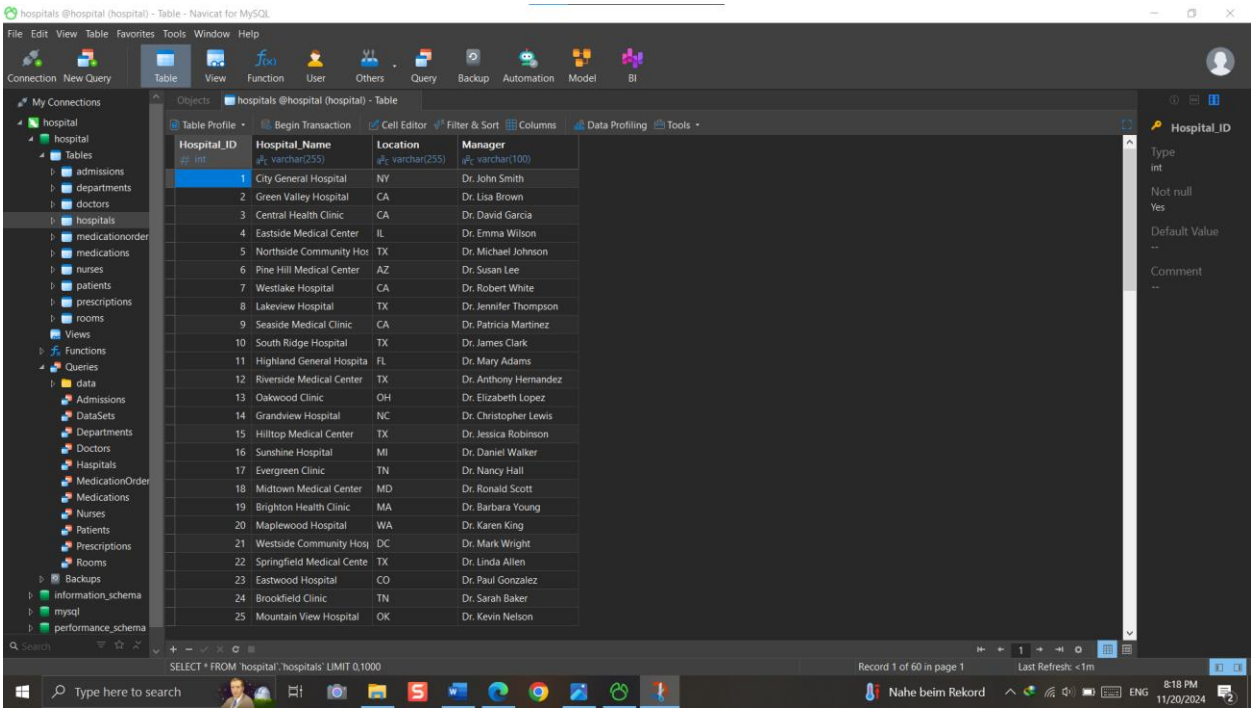
استاد درس: سرکار خانم دکترعاشوری

نیمسال اول تحصیلی 04-1403

فهرست مطالب

مستندات

جداول




```
CREATE TABLE Hospitals (
    Hospital_ID INT PRIMARY KEY,
    Hospital_Name VARCHAR(255),
    Location VARCHAR(255),
    Manager VARCHAR(100)
);


CREATE TABLE Departments (
    Department_ID INT PRIMARY KEY,
    Hospital_ID INT,
    Department_Name VARCHAR(255),
    Create_Year DATE,
    Budget INT,
    FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(Hospital_ID)
```

```
);

CREATE TABLE Patients (
    Patient_ID INT PRIMARY KEY,
    Hospital_ID INT,
    First_Name VARCHAR(255),
    Last_Name VARCHAR(255),
    Gender VARCHAR(10),
    Birth_Date DATE,
    Address VARCHAR(255),
    Age INT,
    Phone_Number VARCHAR(15),
    Blood_Group VARCHAR(5),
    FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(Hospital_ID)
);


CREATE TABLE Doctors (
    Doctor_ID INT PRIMARY KEY,
    Hospital_ID INT,
    Department_ID INT,
    First_Name VARCHAR(255),
    Last_Name VARCHAR(255),
    Specialization VARCHAR(50),
    Age INT,
    Phone_Number VARCHAR(15),
    FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(Hospital_ID),
    FOREIGN KEY (Department_ID) REFERENCES Departments(Department_ID)
);
```

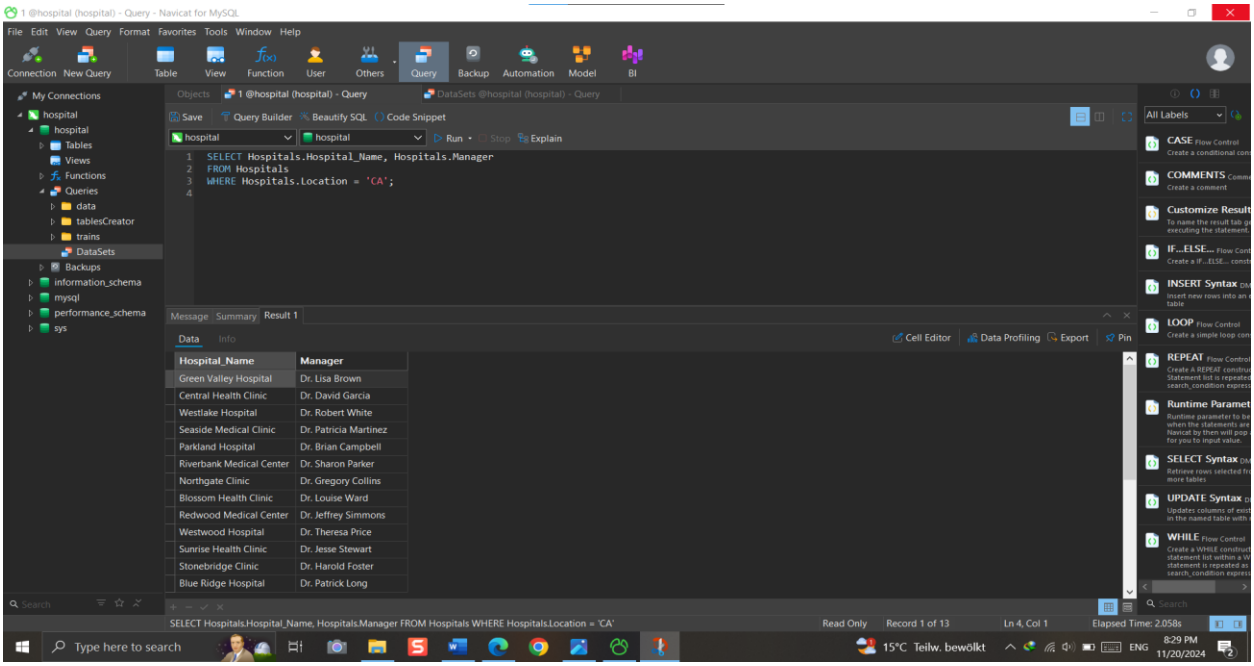
```
CREATE TABLE Nurses (
    Nurse_ID INT PRIMARY KEY,
    Hospital_ID INT,
    Department_ID INT,
    First_Name VARCHAR(255),
    Last_Name VARCHAR(255),
    Phone_Number VARCHAR(15),
    FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(Hospital_ID),
    FOREIGN KEY (Department_ID) REFERENCES Departments(Department_ID)
);

CREATE TABLE Rooms (
    Room_ID INT PRIMARY KEY,
    Hospital_ID INT,
    Room_Number INT,
    Room_Type VARCHAR(100),
    Is_Full BOOLEAN,
    FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(Hospital_ID)
);

CREATE TABLE Admissions (
    Admission_ID INT PRIMARY KEY,
    Hospital_ID INT,
    Doctor_ID INT,
    Patient_ID INT,
    Nurse_ID INT,
    Room_ID INT,
    Admission_Date DATE,
    FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(Hospital_ID),
    FOREIGN KEY (Doctor_ID) REFERENCES Doctors(Doctor_ID),
```

```
    FOREIGN KEY (Patient_ID) REFERENCES Patients(Patient_ID),
    FOREIGN KEY (Nurse_ID) REFERENCES Nurses(Nurse_ID),
    FOREIGN KEY (Room_ID) REFERENCES Rooms(Room_ID)
);

CREATE TABLE Prescriptions (
    Prescription_ID INT PRIMARY KEY,
    Patient_ID INT,
    Doctor_ID INT,
    Description TEXT,
    Date DATE,
    FOREIGN KEY (Patient_ID) REFERENCES Patients(Patient_ID),
    FOREIGN KEY (Doctor_ID) REFERENCES Doctors(Doctor_ID)
);

CREATE TABLE Medications (
    Medication_ID INT PRIMARY KEY,
    Medication_Name VARCHAR(100),
    Description TEXT,
    Dosage INT
);

CREATE TABLE MedicationOrders (
    Order_ID INT PRIMARY KEY,
    Prescription_ID INT,
    Medication_ID INT,
    Quantity INT,
    Order_Date DATE,
    FOREIGN KEY (Prescription_ID) REFERENCES Prescriptions(Prescription_ID),
    FOREIGN KEY (Medication_ID) REFERENCES Medications(Medication_ID) );
```

کوئری‌ها

سوالات:

//----------1



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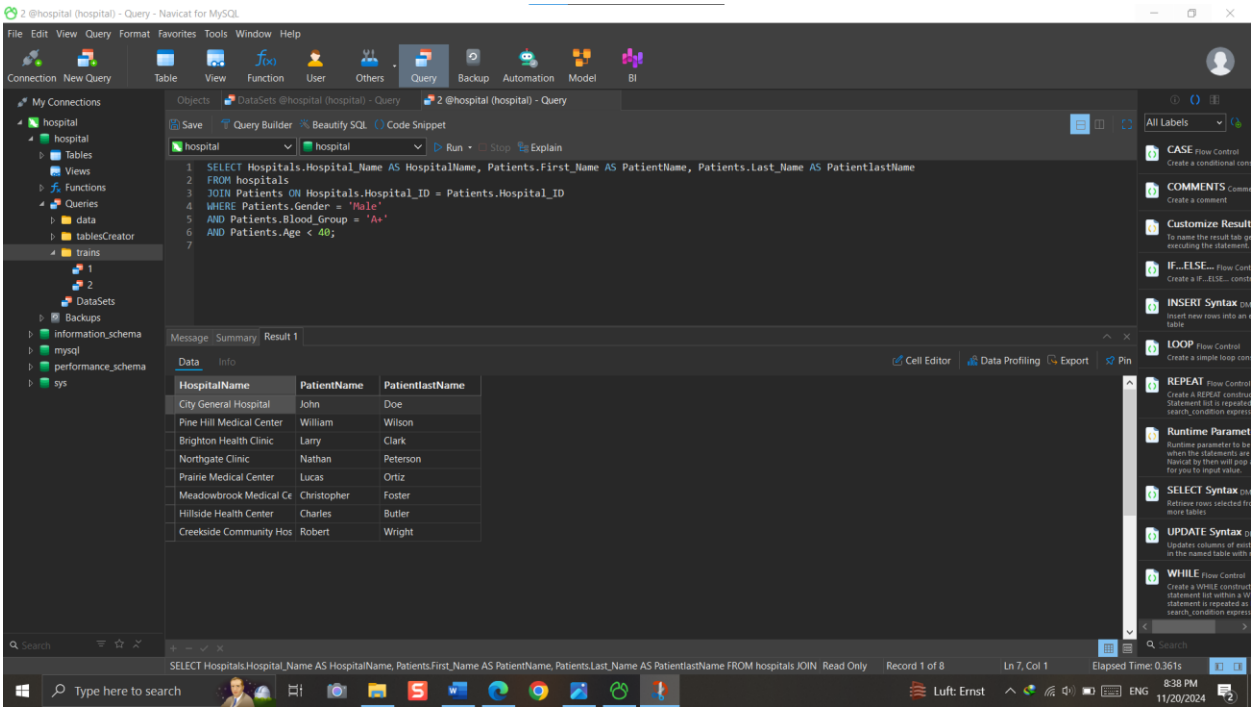

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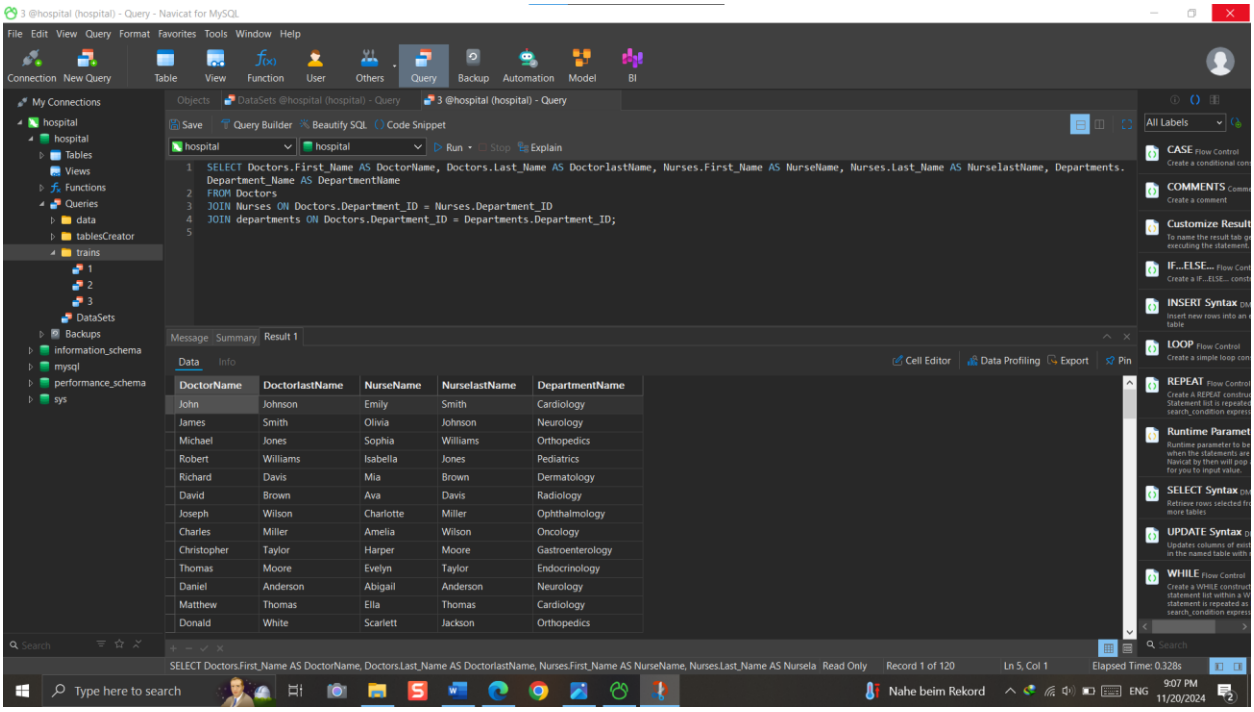
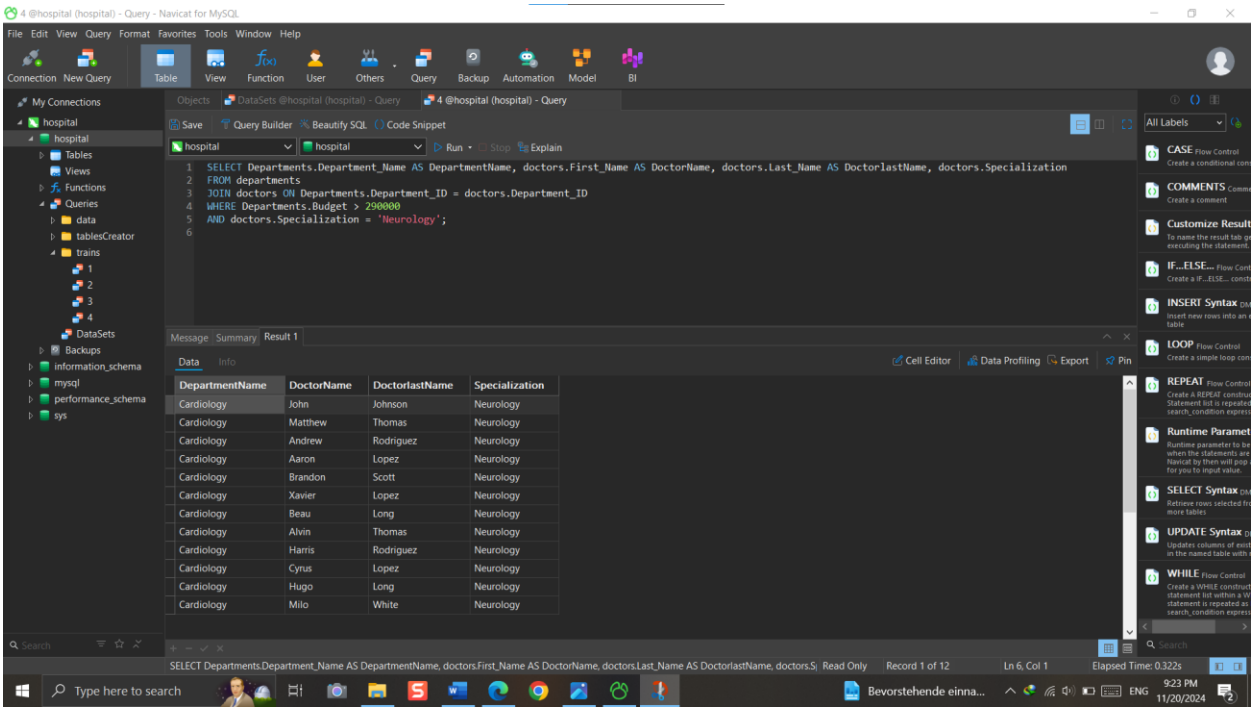
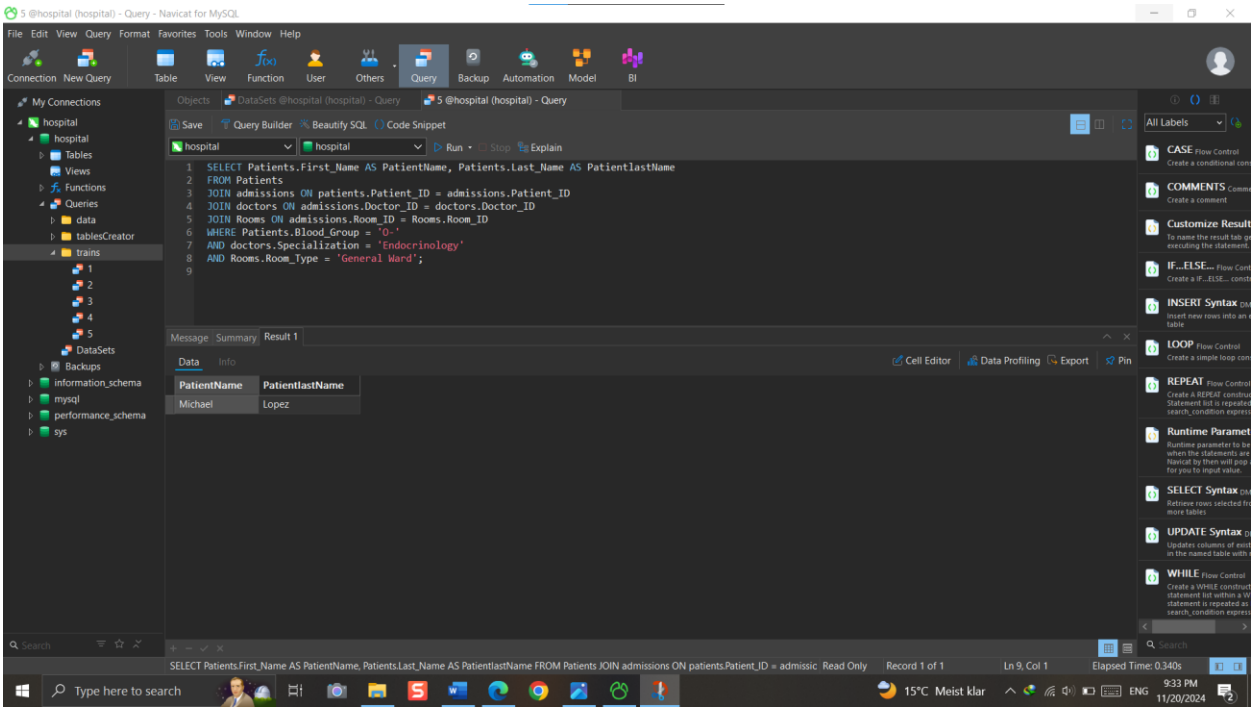

3 @hospital (hospital) - Query - Navicat for MySQL
SELECT Doctors.First_Name AS DoctorName, Doctors.Last_Name AS DoctorlastName, Nurses.First_Name AS NurseName, Nurses.Last_Name AS NurselastName, Departments.Department_Name AS DepartmentName
FROM Doctors
JOIN Nurses ON Doctors.Department_ID = Nurses.Department_ID
JOIN departments ON Doctors.Department_ID = Departments.Department_ID;
DoctorName | DoctorlastName | NurseName | NurselastName | DepartmentName
John | Johnson | Emily | Smith | Cardiology
James | Smith | Olivia | Johnson | Neurology
Michael | Jones | Sophia | Williams | Orthopedics
Robert | Williams | Isabella | Jones | Pediatrics
Richard | Davis | Mia | Brown | Dermatology
David | Brown | Ava | Davis | Radiology
Joseph | Wilson | Charlotte | Miller | Ophthalmology
Charles | Miller | Amelia | Wilson | Oncology
Christopher | Taylor | Harper | Moore | Gastroenterology
Thomas | Moore | Evelyn | Taylor | Endocrinology
Daniel | Anderson | Abigail | Anderson | Neurology
Matthew | Thomas | Ella | Thomas | Cardiology
Donald | White | Scarlett | Jackson | Orthopedics

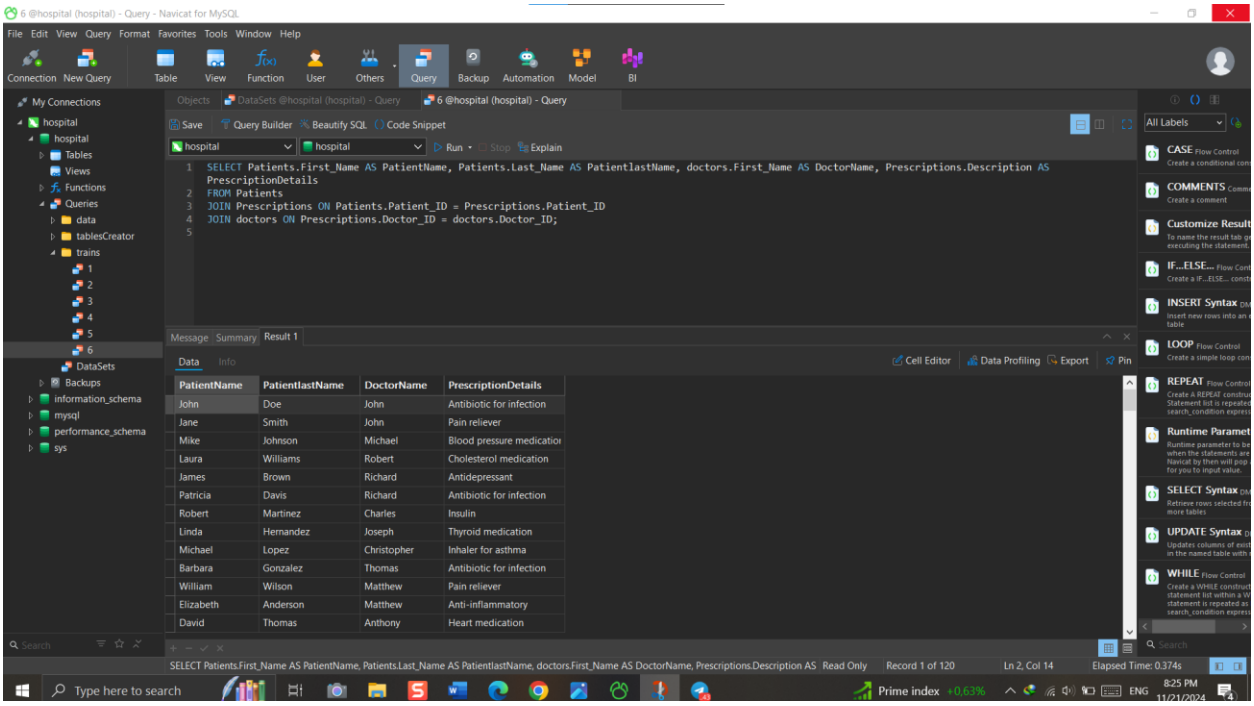
//----------4


4 @hospital (hospital) - Query - Navicat for MySQL
SELECT Departments.Department_Name AS DepartmentName, doctors.First_Name AS DoctorName, doctors.Last_Name AS DoctorlastName, doctors.Specialization
FROM departments
JOIN doctors ON Departments.Department_ID = doctors.Department_ID
WHERE Departments.Budget > 290000
AND doctors.Specialization = 'Neurology';
DepartmentName | DoctorName | DoctorlastName | Specialization
Cardiology | John | Johnson | Neurology
Cardiology | Matthew | Thomas | Neurology
Cardiology | Andrew | Rodriguez | Neurology
Cardiology | Aaron | Lopez | Neurology
Cardiology | Brandon | Scott | Neurology
Cardiology | Xavier | Lopez | Neurology
Cardiology | Beau | Long | Neurology
Cardiology | Alvin | Thomas | Neurology
Cardiology | Harris | Rodriguez | Neurology
Cardiology | Cyrus | Lopez | Neurology
Cardiology | Hugo | Long | Neurology
Cardiology | Milo | White | Neurology

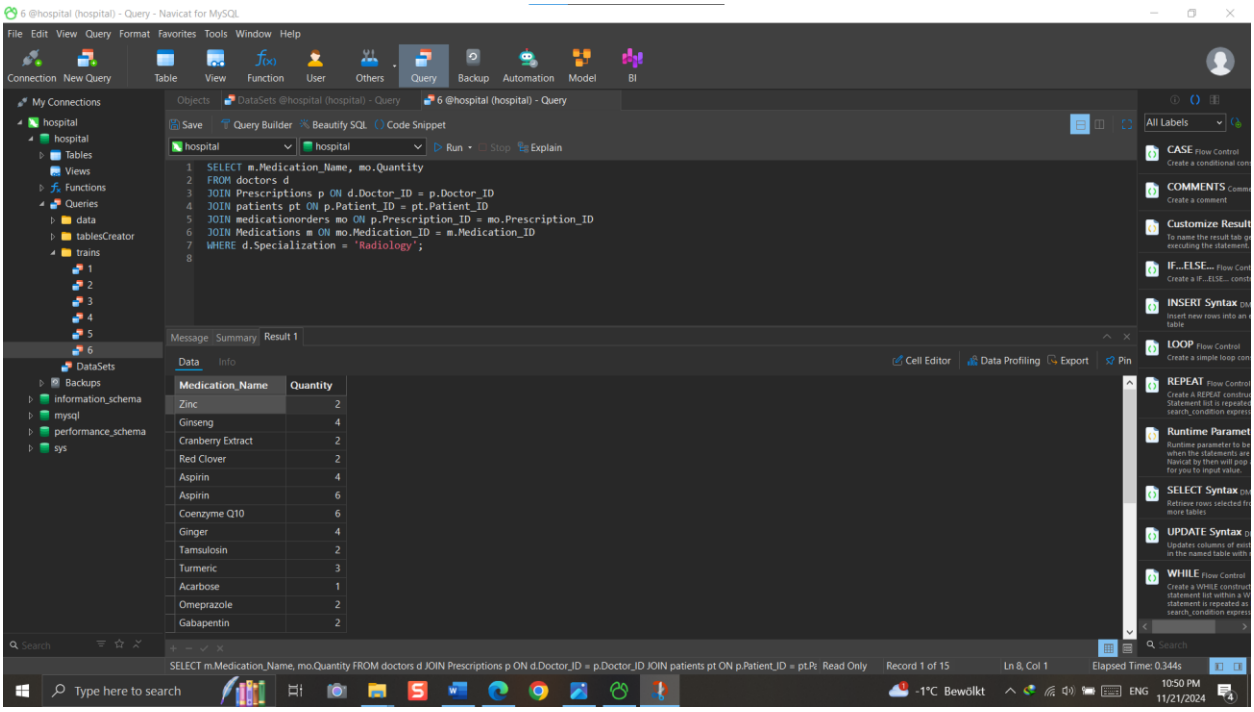
//----------5


5 @hospital (hospital) - Query - Navicat for MySQL
SELECT Patients.First_Name AS PatientName, Patients.Last_Name AS PatientlastName
FROM Patients
JOIN admissions ON patients.Patient_ID = admissions.Patient_ID
JOIN doctors ON admissions.Doctor_ID = doctors.Doctor_ID
JOIN Rooms ON admissions.Room_ID = Rooms.Room_ID
WHERE Patients.Blood_Group = 'O-'
AND doctors.Specialization = 'Endocrinology'
AND Rooms.Room_Type = 'General Ward';
PatientName
PatientlastName
Michael
Lopez

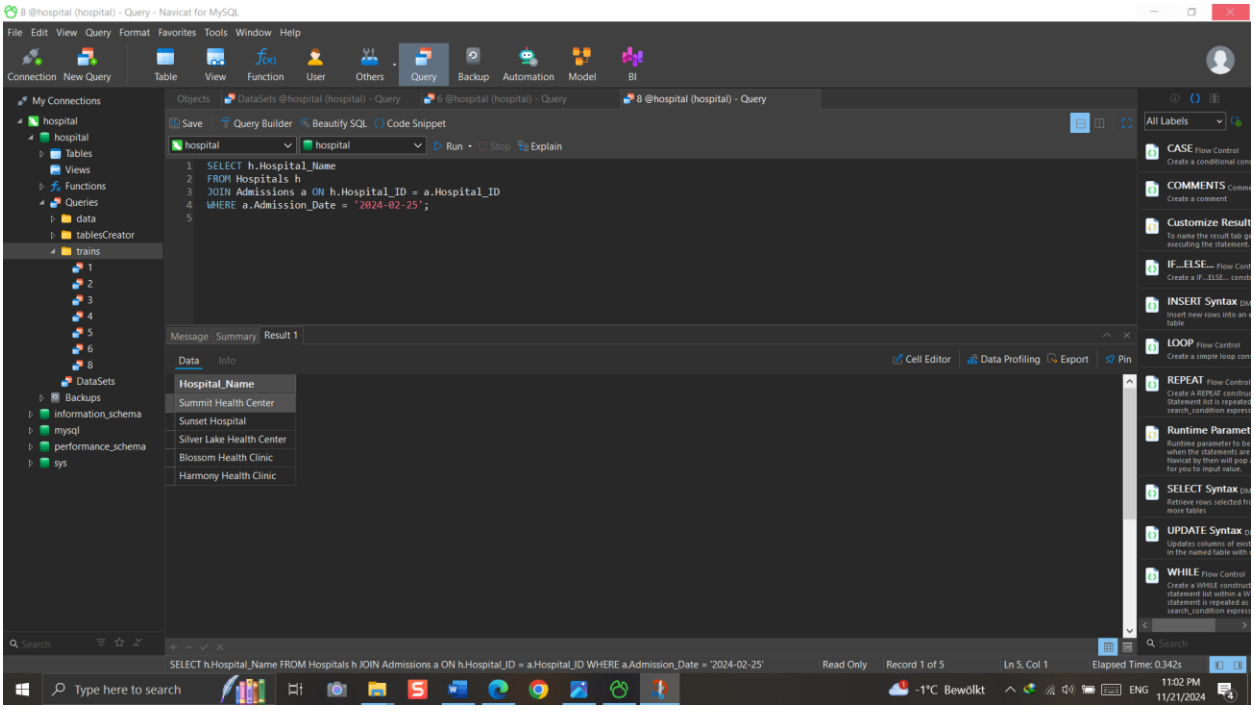
//----------6


6 @hospital (hospital) - Query - Navicat for MySQL
SELECT Patients.First_Name AS PatientName, Patients.Last_Name AS PatientlastName, doctors.First_Name AS DoctorName, Prescriptions.Description AS PrescriptionDetails
FROM Patients
JOIN Prescriptions ON Patients.Patient_ID = Prescriptions.Patient_ID
JOIN doctors ON Prescriptions.Doctor_ID = doctors.Doctor_ID;
PatientName
PatientlastName
DoctorName
PrescriptionDetails
John Doe John Antibiotic for infection
Jane Smith John Pain reliever
Mike Johnson Michael Blood pressure medicatio
Laura Williams Robert Cholesterol medication
James Brown Richard Antidepressant
Patricia Davis Richard Antibiotic for infection
Robert Martinez Charles Insulin
Linda Hernandez Joseph Thyroid medication
Michael Lopez Christopher Inhaler for asthma
Barbara Gonzalez Thomas Antibiotic for infection
William Wilson Matthew Pain reliever
Elizabeth Anderson Matthew Anti-inflammatory
David Thomas Anthony Heart medication

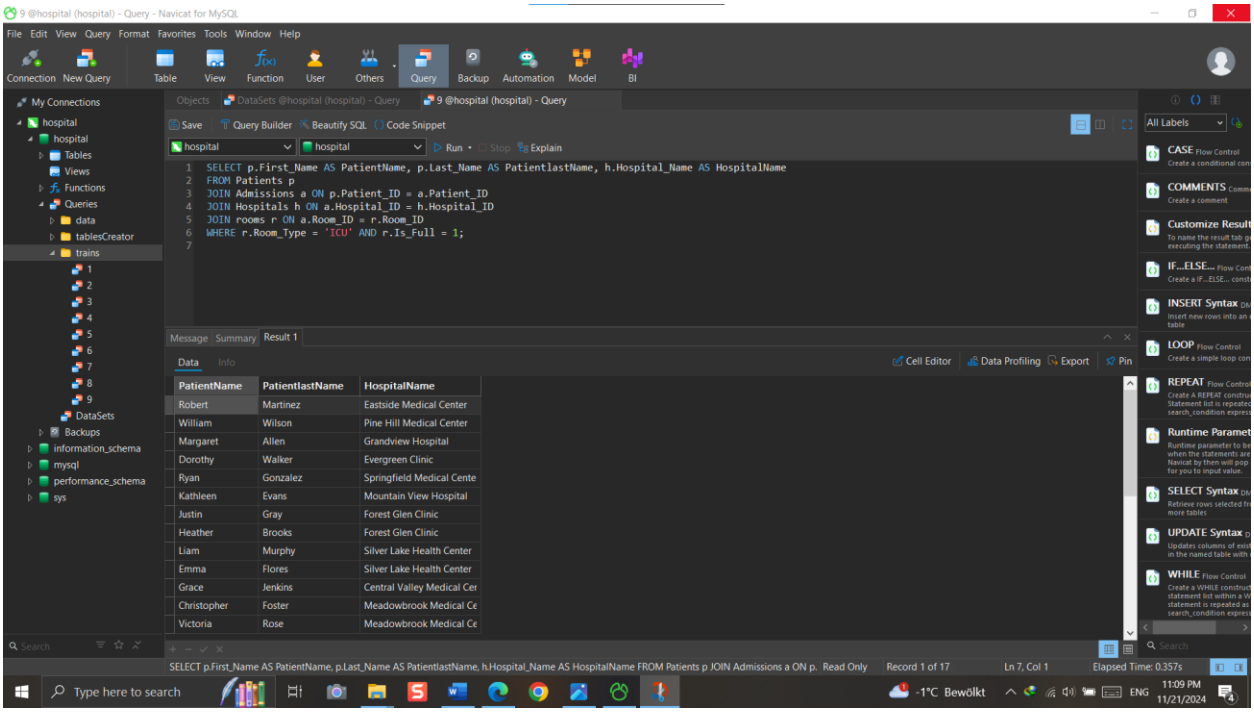
//----------7


6 @hospital (hospital) - Query - Navicat for MySQL
SELECT m.Medication_Name, mo.Quantity
FROM doctors d
JOIN Prescriptions p ON d.Doctor_ID = p.Doctor_ID
JOIN patients pt ON p.Patient_ID = pt.Patient_ID
JOIN medicationorders mo ON p.Prescription_ID = mo.Prescription_ID
JOIN Medications m ON mo.Medication_ID = m.Medication_ID
WHERE d.Specialization = 'Radiology';
Medication_Name | Quantity
Zinc | 2
Ginseng | 4
Cranberry Extract | 2
Red Clover | 2
Aspirin | 4
Aspirin | 6
Coenzyme Q10 | 6
Ginger | 4
Tamsulosin | 2
Turmeric | 3
Acarbose | 1
Omeprazole | 2
Gabapentin | 2

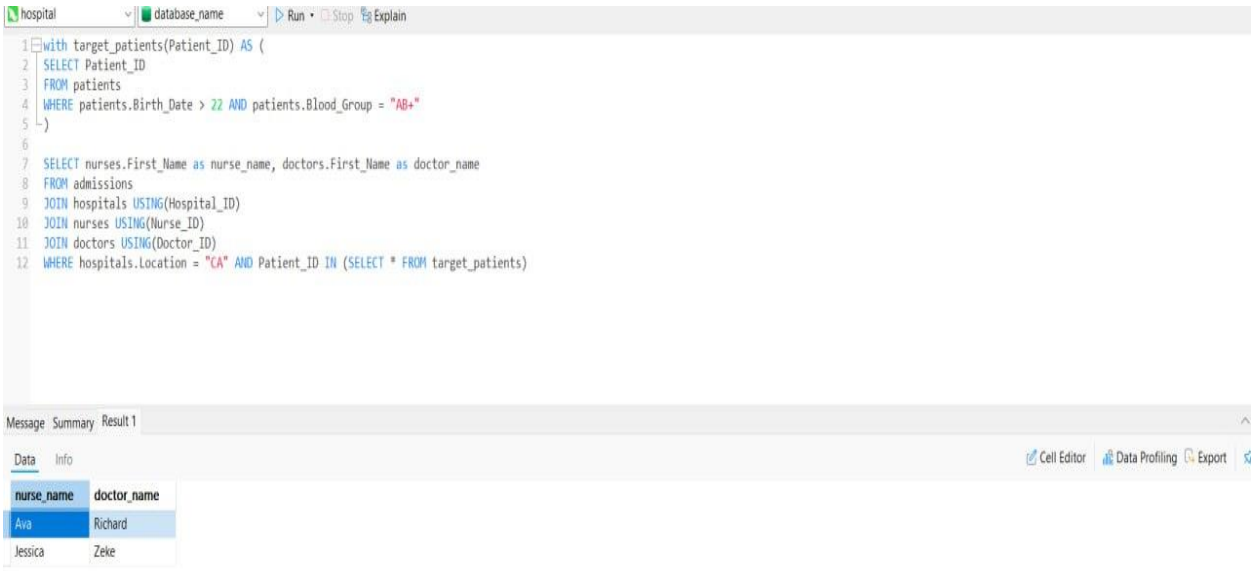
//----------8


8 @hospital (hospital) - Query - Navicat for MySQL
SELECT h.Hospital_Name
FROM Hospitals h
JOIN Admissions a ON h.Hospital_ID = a.Hospital_ID
WHERE a.Admission_Date = '2024-02-25';
Hospital_Name
Summit Health Center
Sunset Hospital
Silver Lake Health Center
Blossom Health Clinic
Harmony Health Clinic

//----------9


9 @hospital (hospital) - Query - Navicat for MySQL
File Edit View Query Format Favorites Tools Window Help
Connection New Query Table View Function User Others Query Backup Automation Model BI
My Connections
hospital
Tables
Views
Functions
Queries
data
tablesCreator
trains
1
2
3
4
5
6
7
8
9
DataSets
Backups
information_schema
mysql
performance_schema
sys
Objects DataSets @hospital (hospital) - Query 9 @hospital (hospital) - Query
Save Query Builder Beautify SQL Code Snippet
hospital hospital Run Stop Explain
1 SELECT p.First_Name AS PatientName, p.Last_Name AS PatientlastName, h.Hospital_Name AS HospitalName
2 FROM Patients p
3 JOIN Admissions a ON p.Patient_ID = a.Patient_ID
4 JOIN Hospitals h ON a.Hospital_ID = h.Hospital_ID
5 JOIN rooms r ON a.Room_ID = r.Room_ID
6 WHERE r.Room_Type = 'ICU' AND r.Is_Full = 1;
7
Message Summary Result 1
Data Info
Cell Editor Data Profiling Export Pin
PatientName PatientlastName HospitalName
Robert Martinez Eastside Medical Center
William Wilson Pine Hill Medical Center
Margaret Allen Grandview Hospital
Dorothy Walker Evergreen Clinic
Ryan Gonzalez Springfield Medical Cente
Kathleen Evans Mountain View Hospital
Justin Gray Forest Glen Clinic
Heather Brooks Forest Glen Clinic
Liam Murphy Silver Lake Health Center
Emma Flores Silver Lake Health Center
Grace Jenkins Central Valley Medical Cer
Christopher Foster Meadowbrook Medical Ce
Victoria Rose Meadowbrook Medical Ce
All Labels
CASE Flow Control
COMMENTS
Customize Result
IF...ELSE... Flow Control
INSERT Syntax
LOOP Flow Control
REPEAT Flow Control
Runtime Parameter
SELECT Syntax
UPDATE Syntax
WHILE Flow Control
SELECT p.First_Name AS PatientName, p.Last_Name AS PatientlastName, h.Hospital_Name AS HospitalName FROM Patients p JOIN Admissions a ON p. Read Only
Record 1 of 17 Ln 7, Col 1 Elapsed Time: 0.357s
Type here to search -1°C Bewölkt ENG 11:09 PM 11/21/2024

//----------10


hospital database_name Run Stop Explain
1 with target_patients(Patient_ID) AS (
2 SELECT Patient_ID
3 FROM patients
4 WHERE patients.Birth_Date > 22 AND patients.Blood_Group = "AB+"
5)
6
7 SELECT nurses.First_Name as nurse_name, doctors.First_Name as doctor_name
8 FROM admissions
9 JOIN hospitals USING(Hospital_ID)
10 JOIN nurses USING(Nurse_ID)
11 JOIN doctors USING(Doctor_ID)
12 WHERE hospitals.Location = "CA" AND Patient_ID IN (SELECT * FROM target_patients)
Message Summary Result 1
Data Info
Cell Editor Data Profiling Export
nurse_name doctor_name
Ava Richard
Jessica Zeke

//----------11

```
with zol_users(Patient_ID) as (
  SELECT DISTINCT prescriptions.Patient_ID
  FROM medicationorders
  JOIN medications USING(Medication_ID)
  JOIN prescriptions USING(Prescription_ID)
  WHERE medications.Medication_Name = "Zolpidem"
)

SELECT DISTINCT Department_Name
FROM admissions
JOIN nurses USING(Nurse_ID)
JOIN departments USING(Department_ID)
WHERE Patient_ID IN (SELECT * FROM zol_users)
```

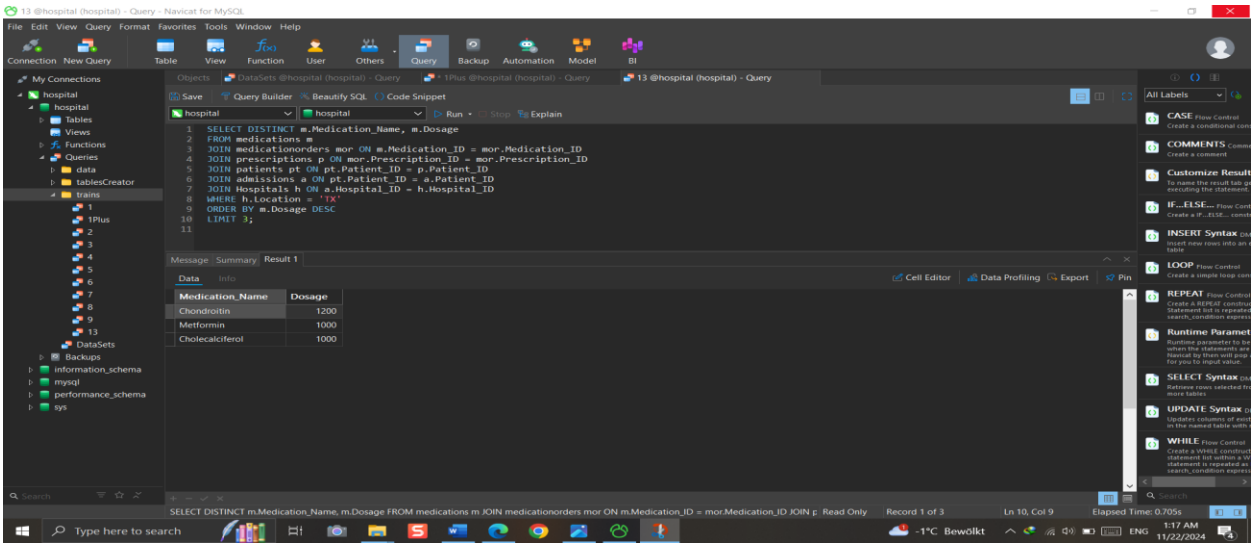
Department_Name
Ophthalmology
Cardiology
Radiology
Gastroenterology

//----------12

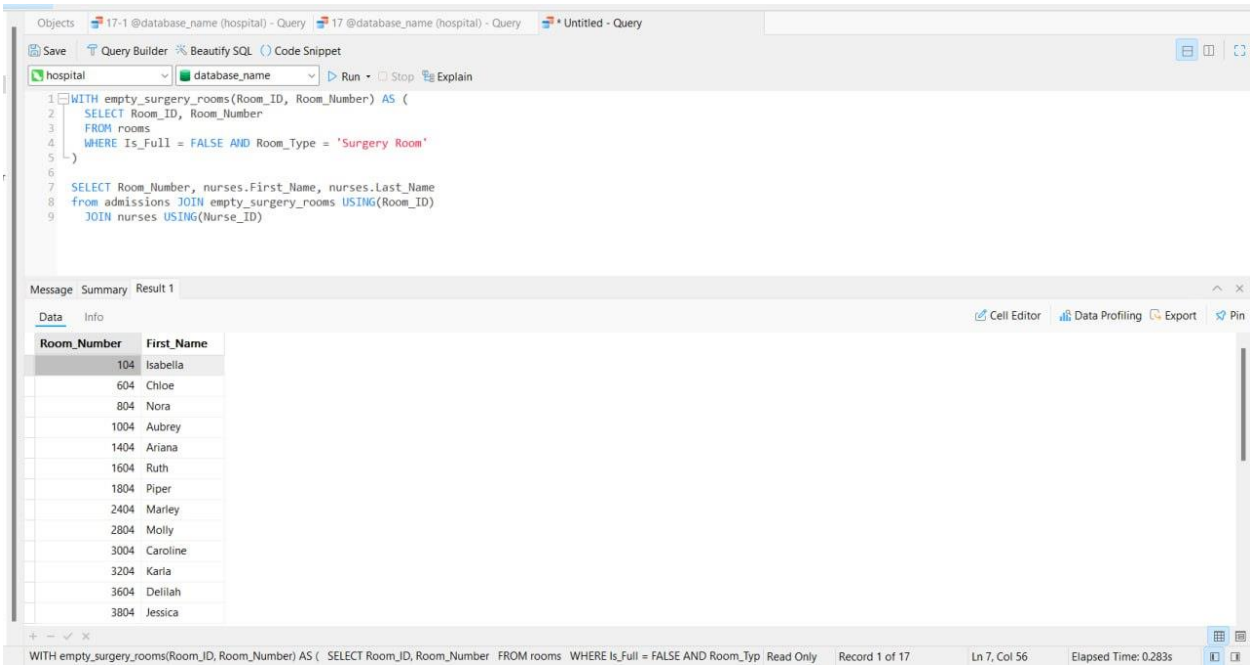
```
WITH b_patients(Patient_ID) AS (
  SELECT patients.Patient_ID
  FROM patients
  WHERE patients.Blood_Group = "B+"
)

SELECT sum(medicationorders.Quantity) / (SELECT sum(Quantity) FROM medicationorders)
FROM medicationorders
JOIN prescriptions USING(Prescription_ID)
WHERE prescriptions.Patient_ID IN (SELECT * from b_patients)
```

sum(medicationorders.
0.1777

//----------13



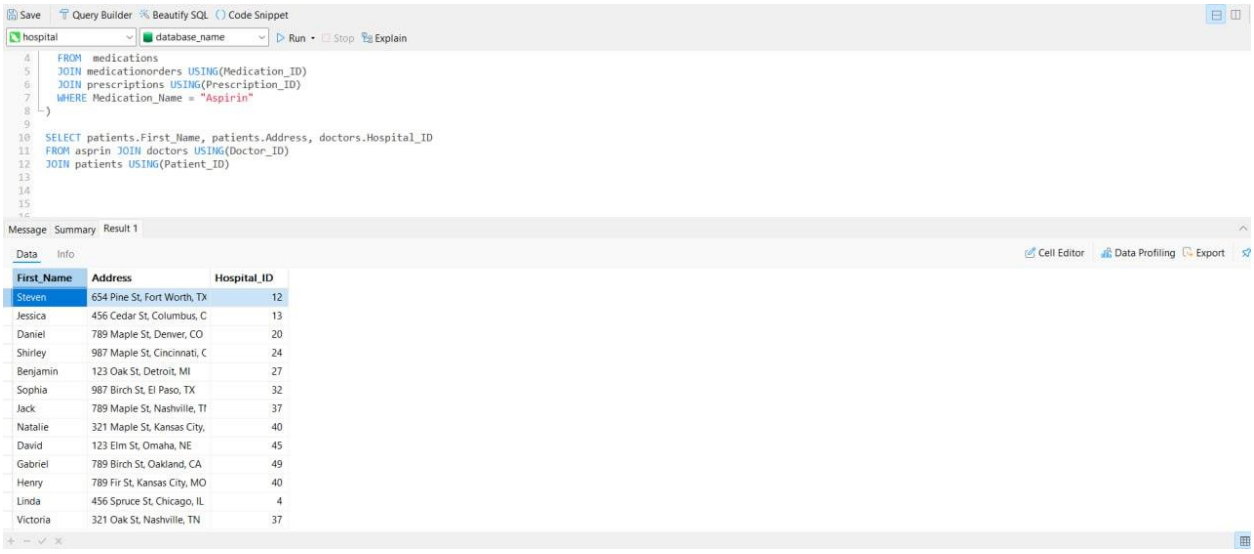
//----------14



```
WITH empty_surgery_rooms(Room_ID, Room_Number) AS (
  SELECT Room_ID, Room_Number
  FROM rooms
  WHERE Is_Full = FALSE AND Room_Type = 'Surgery Room'
)

SELECT Room_Number, nurses.First_Name, nurses.Last_Name
from admissions JOIN empty_surgery_rooms USING(Room_ID)
  JOIN nurses USING(Nurse_ID)
```

Room_Number	First_Name
104	Isabella
604	Chloe
804	Nora
1004	Aubrey
1404	Ariana
1604	Ruth
1804	Piper
2404	Marley
2804	Molly
3004	Caroline
3204	Karla
3604	Delilah
3804	Jessica

//----------15



```
  FROM  medications
  JOIN medicationorders USING(Medication_ID)
  JOIN prescriptions USING(Prescription_ID)
  WHERE Medication_Name = "Aspirin"
)

SELECT patients.First_Name, patients.Address, doctors.Hospital_ID
FROM asprin JOIN doctors USING(Doctor_ID)
JOIN patients USING(Patient_ID)
```

First_Name	Address	Hospital_ID
Steven	654 Pine St, Fort Worth, TX	12
Jessica	456 Cedar St, Columbus, C	13
Daniel	789 Maple St, Denver, CO	20
Shirley	987 Maple St, Cincinnati, C	24
Benjamin	123 Oak St, Detroit, MI	27
Sophia	987 Birch St, El Paso, TX	32
Jack	789 Maple St, Nashville, TI	37
Natalie	321 Maple St, Kansas City,	40
David	123 Elm St, Omaha, NE	45
Gabriel	789 Birch St, Oakland, CA	49
Henry	789 Fir St, Kansas City, MO	40
Linda	456 Spruce St, Chicago, IL	4
Victoria	321 Oak St, Nashville, TN	37

//----------16

```sql
WITH high_dosage_med_order(Prescription_ID) AS (
  SELECT DISTINCT Prescription_ID
  FROM medicationorders NATURAL JOIN medications
)

SELECT (SELECT count(DISTINCT Doctor_ID) FROM high_dosage_med_order NATURAL JOIN prescriptions)  / count(Doctor_ID)
FROM doctors
```

Message Summary Result 1

Data Info Cell Editor Data Profiling Export

(SELECT count(DISTINC
0.8083

//----------17

Objects 17-1 @database_name (hospital) - Query

Save Query Builder Beautify SQL Code Snippet

hospital database_name Run Stop Explain

```sql
WITH target_nurses(Nurse_ID) AS (
  SELECT distinct Nurse_ID
  FROM nurses JOIN admissions USING(Nurse_ID)
  WHERE admissions.Admission_Date = "2024-01-12"
)

SELECT DISTINCT departments.Department_Name, departments.Create_Year, departments.Budget
FROM departments JOIN nurses USING(Department_ID)
WHERE nurses.Nurse_ID in (SELECT Nurse_ID FROM target_nurses);
```

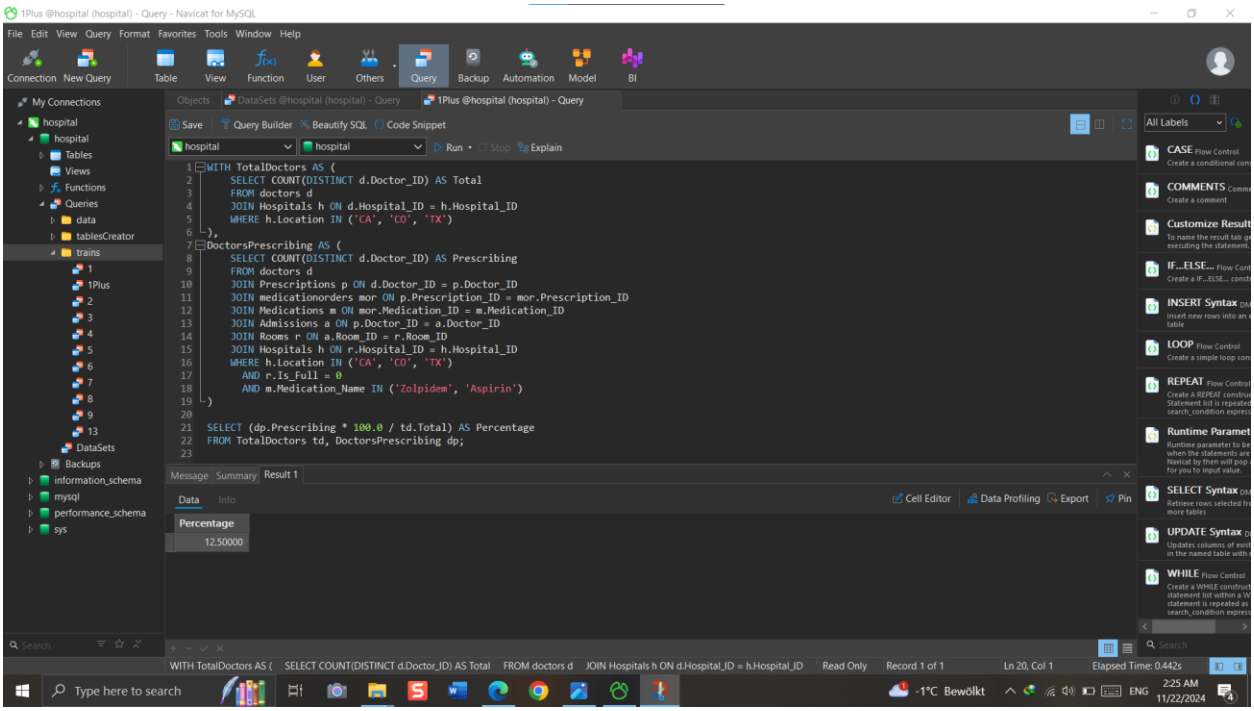
Message Summary Result 1

Data Info Cell Editor Data Profiling Export

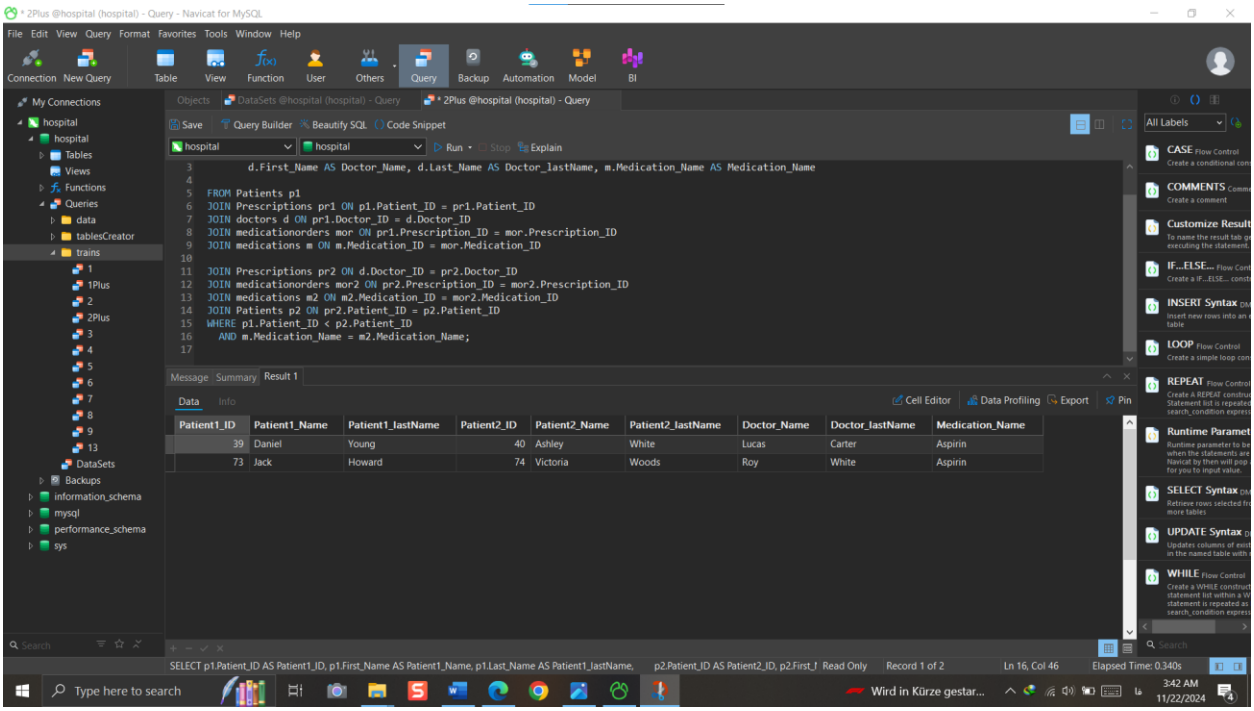
Department_Name	Create_Year	Budget
Cardiology	2019-01-01	300000
Ophthalmology	2016-01-01	700000
Ophthalmology	2018-01-01	300000
Neurology	2019-01-01	300000
Gastroenterology	2021-01-01	300000
Oncology	2016-01-01	450000
Pediatrics	2016-01-01	500000
Neurology	2018-01-01	450000
Dermatology	2020-01-01	400000

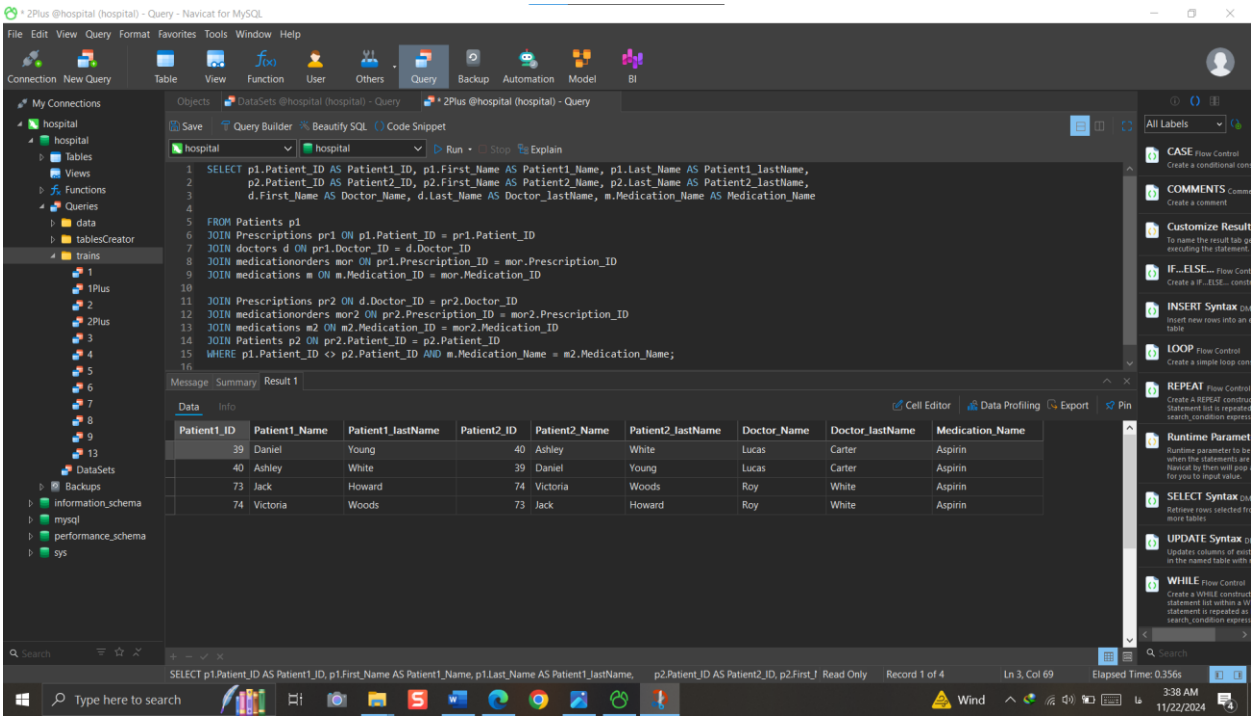
امتیازی‌ها:

//----------1Plus



//----------2Plus

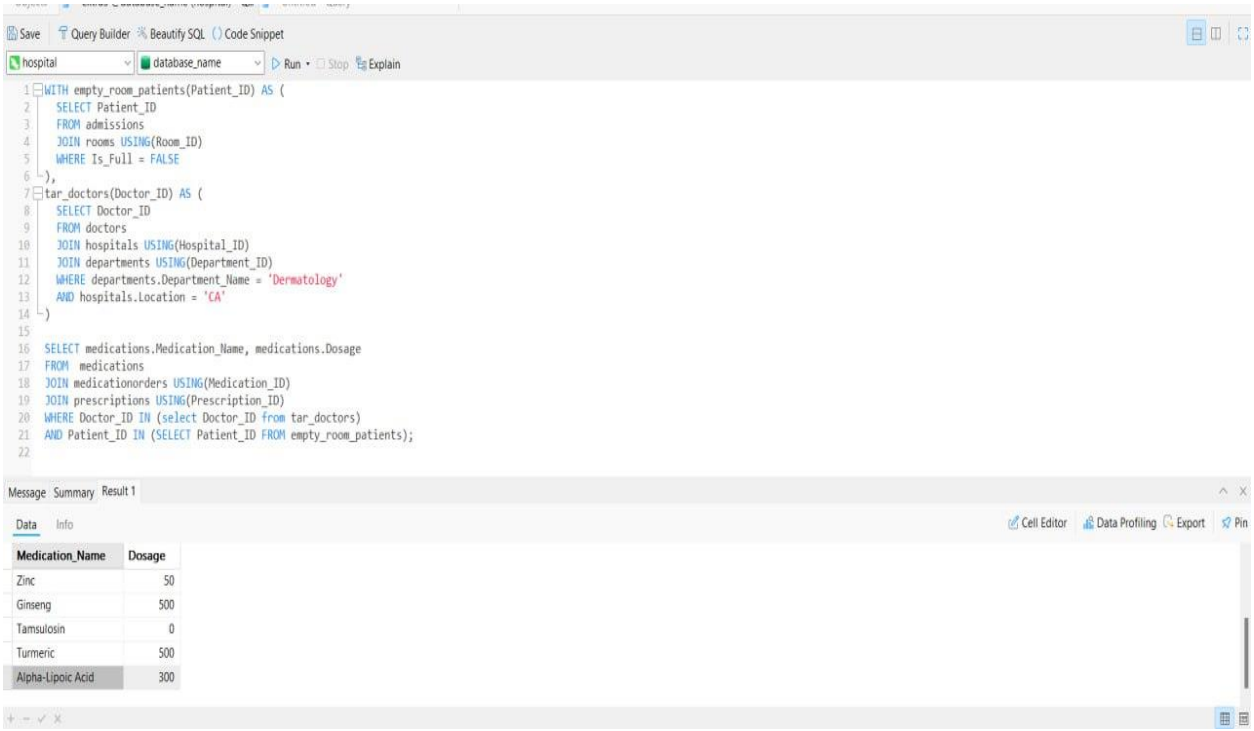




```
SELECT p1.Patient_ID AS Patient1_ID, p1.First_Name AS Patient1_Name, p1.Last_Name AS Patient1_lastName,
       p2.Patient_ID AS Patient2_ID, p2.First_Name AS Patient2_Name, p2.Last_Name AS Patient2_lastName,
       d.First_Name AS Doctor_Name, d.Last_Name AS Doctor_lastName, m.Medication_Name AS Medication_Name

FROM Patients p1
JOIN Prescriptions pr1 ON p1.Patient_ID = pr1.Patient_ID
JOIN doctors d ON pr1.Doctor_ID = d.Doctor_ID
JOIN medicationorders mor ON pr1.Prescription_ID = mor.Prescription_ID
JOIN medications m ON m.Medication_ID = mor.Medication_ID

JOIN Prescriptions pr2 ON d.Doctor_ID = pr2.Doctor_ID
JOIN medicationorders mor2 ON pr2.Prescription_ID = mor2.Prescription_ID
JOIN medications m2 ON m2.Medication_ID = mor2.Medication_ID
JOIN Patients p2 ON pr2.Patient_ID = p2.Patient_ID
WHERE p1.Patient_ID <> p2.Patient_ID AND m.Medication_Name = m2.Medication_Name;
```

Patient1_ID	Patient1_Name	Patient1_lastName	Patient2_ID	Patient2_Name	Patient2_lastName	Doctor_Name	Doctor_lastName	Medication_Name
39	Daniel	Young	40	Ashley	White	Lucas	Carter	Aspirin
40	Ashley	White	39	Daniel	Young	Lucas	Carter	Aspirin
73	Jack	Howard	74	Victoria	Woods	Roy	White	Aspirin
74	Victoria	Woods	73	Jack	Howard	Roy	White	Aspirin

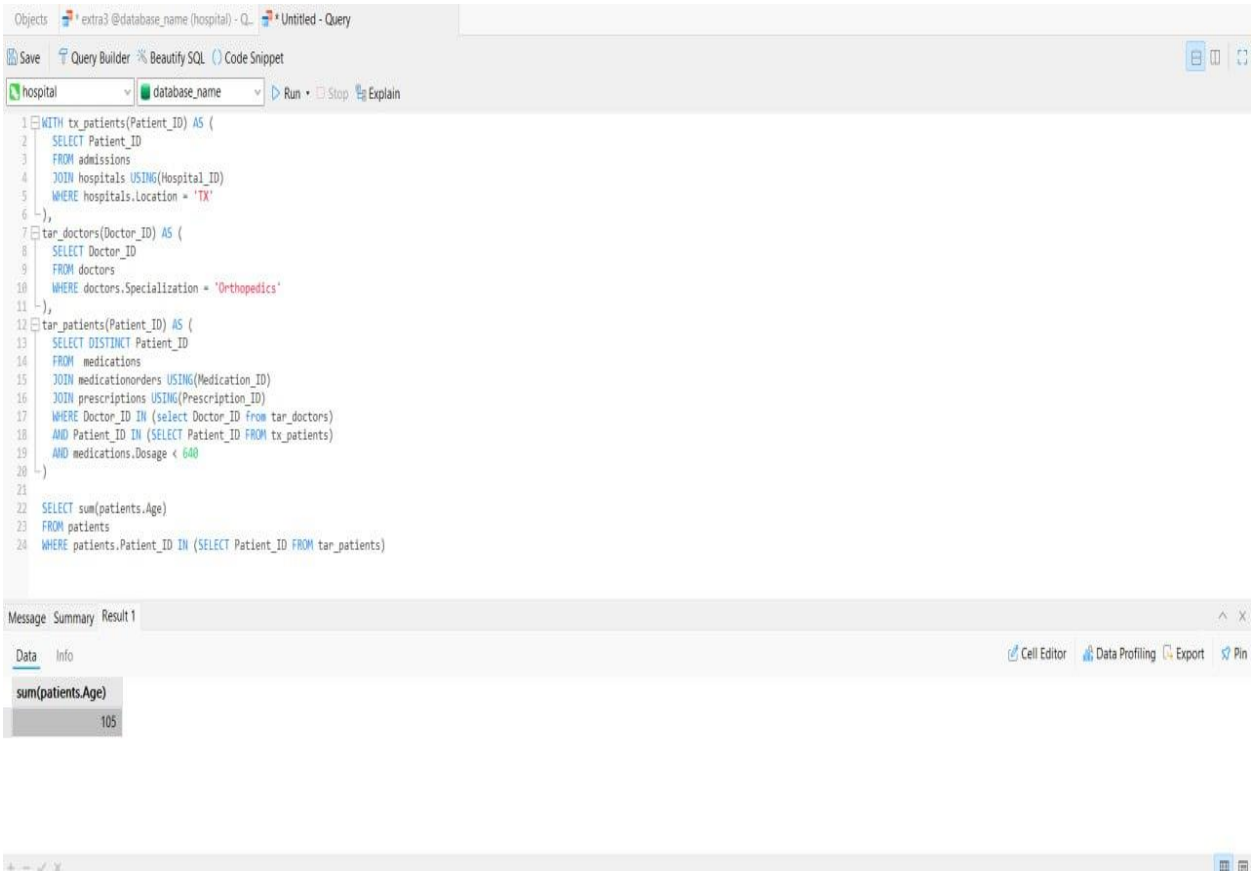
//----------3Plus



```
WITH empty_room_patients(Patient_ID) AS (
    SELECT Patient_ID
    FROM admissions
    JOIN rooms USING(Room_ID)
    WHERE Is_Full = FALSE
),
tar_doctors(Doctor_ID) AS (
    SELECT Doctor_ID
    FROM doctors
    JOIN hospitals USING(Hospital_ID)
    JOIN departments USING(Department_ID)
    WHERE departments.Department_Name = 'Dermatology'
    AND hospitals.Location = 'CA'
)

SELECT medications.Medication_Name, medications.Dosage
FROM  medications
JOIN medicationorders USING(Medication_ID)
JOIN prescriptions USING(Prescription_ID)
WHERE Doctor_ID IN (select Doctor_ID from tar_doctors)
AND Patient_ID IN (SELECT Patient_ID FROM empty_room_patients);
```

Medication_Name	Dosage
Zinc	50
Ginseng	500
Tamsulosin	0
Turmeric	500
Alpha-Lipoic Acid	300

//----------4Plus


Objects
extra3 @database_name (hospital) - Q...
* Untitled - Query
Save
Query Builder
Beautify SQL
Code Snippet
hospital
database_name
Run
Stop
Explain
WITH tx_patients(Patient_ID) AS (
SELECT Patient_ID
FROM admissions
JOIN hospitals USING(Hospital_ID)
WHERE hospitals.Location = 'TX'
),
tar_doctors(Doctor_ID) AS (
SELECT Doctor_ID
FROM doctors
WHERE doctors.Specialization = 'Orthopedics'
),
tar_patients(Patient_ID) AS (
SELECT DISTINCT Patient_ID
FROM medications
JOIN medicationorders USING(Medication_ID)
JOIN prescriptions USING(Prescription_ID)
WHERE Doctor_ID IN (select Doctor_ID from tar_doctors)
AND Patient_ID IN (SELECT Patient_ID FROM tx_patients)
AND medications.Dosage < 640
)
SELECT sum(patients.Age)
FROM patients
WHERE patients.Patient_ID IN (SELECT Patient_ID FROM tar_patients)
Message
Summary
Result 1
Data
Info
Cell Editor
Data Profiling
Export
Pin
sum(patients.Age)
105