

Amit's Hospital

Healthcare data Analysis



About the Project



This project involves analyzing a healthcare dataset with various patient details, including medical conditions, admission information, billing amounts, and treatment outcomes. The goal is to practice SQL by solving queries that would help in making informed decisions in the healthcare sector.

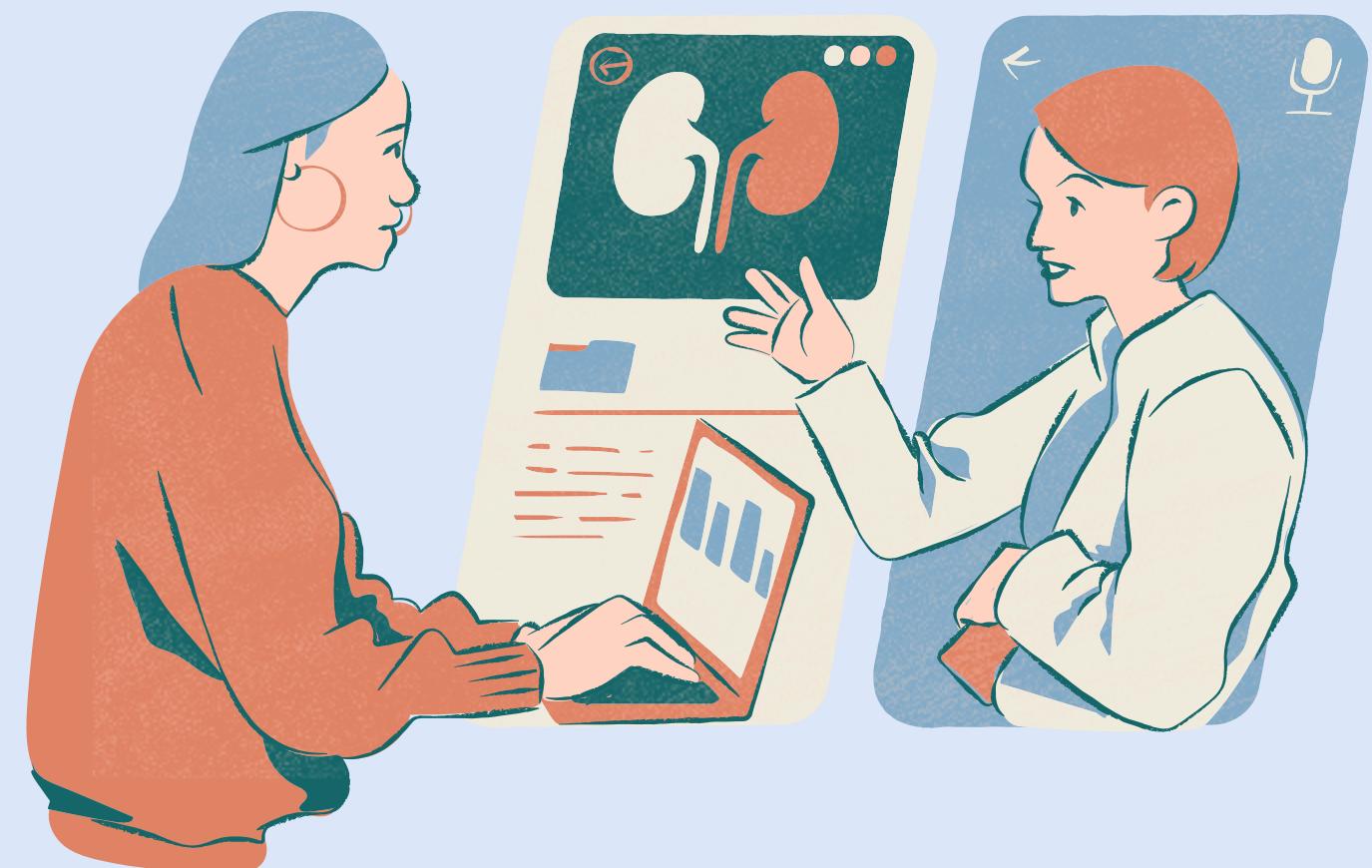
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Write a query to find patients diagnosed with "Cancer."



```
SELECT  
    Medical_Condition, name  
FROM  
    hospital data  
WHERE  
    Medical_Condition = 'Cancer'
```

| Medical_Condition | name |
|-------------------|--------------------|
| Cancer | Bobby Jackson |
| Cancer | Adrienne Bell |
| Cancer | Christina Martinez |
| Cancer | Christopher Berg |
| Cancer | Michelle Daniels |
| Cancer | Brooke Brady |
| Cancer | Erin Ortega |
| Cancer | Paul Williams |
| Cancer | Lynn Martinez |
| Cancer | Stephanie Kent |



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Write a query to find patients admitted under the "Urgent" admission type.

```
SELECT  
    Admission_Type, Name  
FROM  
    hospital data  
WHERE  
    Admission_Type = 'Urgent'
```



| Admission_Type | Name |
|----------------|---------------------|
| Urgent | Bobby Jackson |
| Urgent | Adrienne Bell |
| Urgent | Emily Johnson |
| Urgent | Michelle Daniels |
| Urgent | Aaron Martinez |
| Urgent | Robert Bauer |
| Urgent | Brooke Brady |
| Urgent | Mrs. Jamie Campbell |

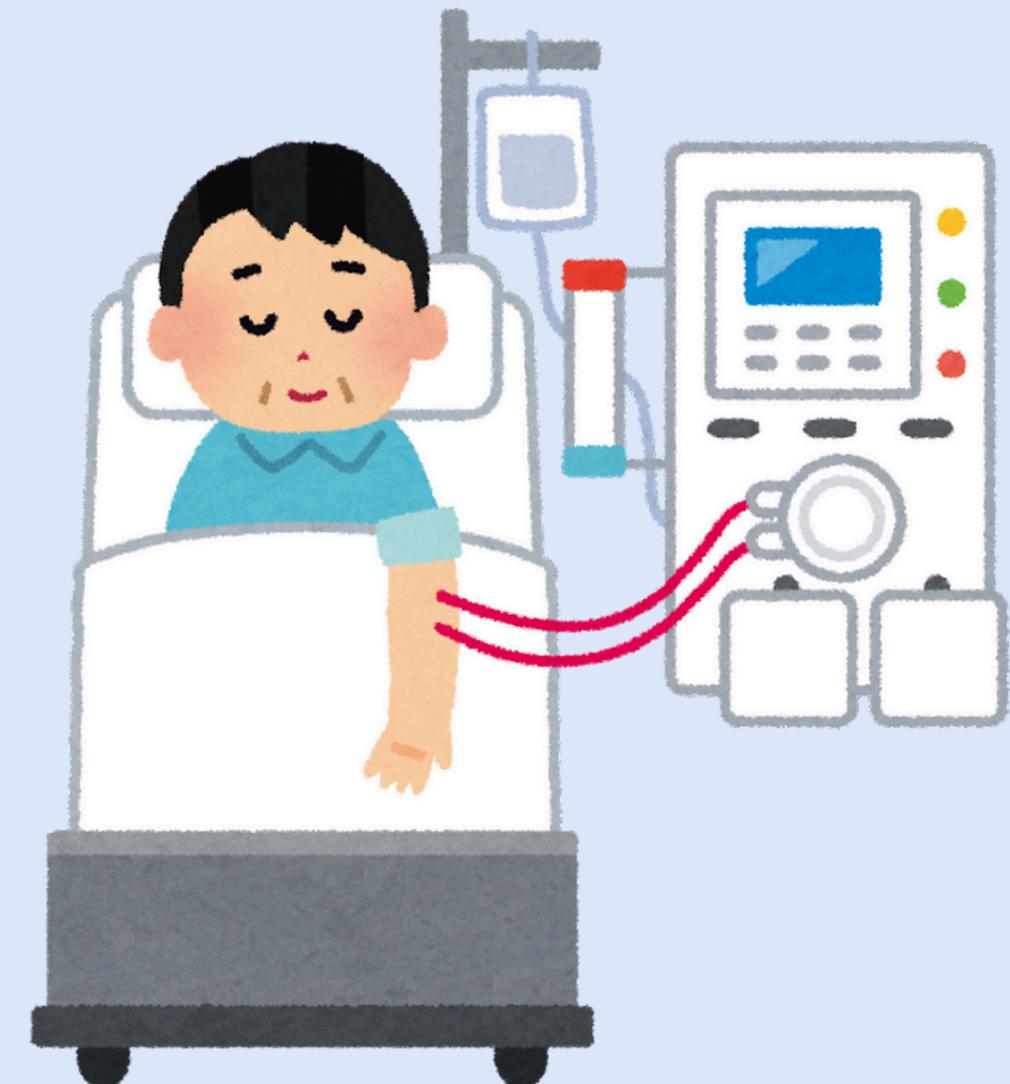


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Write a query to list all patients admitted to "Sons and Miller" hospital.

```
SELECT  
    Name, Hospital  
FROM  
    hospital data  
WHERE  
    Hospital = 'Sons and Miller'
```

| Name | Hospital |
|---------------------|-----------------|
| Bobby Jackson | Sons and Miller |
| Sarah Ruiz | Sons and Miller |
| Tina Foster | Sons and Miller |
| Crystal Miller | Sons and Miller |
| Christian Rodriguez | Sons and Miller |
| Christina Martinez | Sons and Miller |
| Tina Foster | Sons and Miller |



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Write a query to find patients admitted in the year 2024.

```
SELECT  
    name, YEAR(Date_of_Admission) AS Admission_year  
FROM  
    hospital data  
WHERE  
    YEAR(Date_of_Admission) = 2024
```

| name | Admission_year |
|---------------------|----------------|
| Bobby Jackson | 2024 |
| Michael Liu | 2024 |
| Kim Scott | 2024 |
| Michael Miller | 2024 |
| Timothy Myers | 2024 |
| Anne Thompson | 2024 |
| Dwayne Davis | 2024 |
| James Ross | 2024 |
| Leah Cross Dds | 2024 |
| April Valencia | 2024 |
| Rita Archer | 2024 |
| Jacqueline Marshall | 2024 |



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Write a query to count the number of patients by admission type.

```
SELECT  
    Admission_Type, COUNT(Name) AS total_patients  
FROM  
    hospital data  
GROUP BY Admission_Type  
ORDER BY total_patients DESC
```

| Admission_Type | total_patients |
|----------------|----------------|
| Elective | 18655 |
| Urgent | 18576 |
| Emergency | 18269 |

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Write a query to calculate the total billing amount for all patients.

```
SELECT  
    name, ROUND(SUM(Billing_Amount), 0) AS total_billing_amount  
FROM  
    hospital data  
GROUP BY Name  
ORDER BY total_billing_amount DESC
```

| name | total_billing_amount |
|-------------------|----------------------|
| Michael Smith | 660173 |
| Robert Smith | 573408 |
| Michael Williams | 555241 |
| James Williams | 471240 |
| James Smith | 468220 |
| David Johnson | 457290 |
| James Brown | 452411 |
| Christopher Smith | 400333 |



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Write a query to count the number of patients treated by each doctor.

```
SELECT  
    Doctor, COUNT(Name) AS total_patients_treated  
FROM  
    hospital data  
GROUP BY Doctor  
ORDER BY total_patients_treated DESC
```

| Doctor | total_patients_treated |
|------------------|------------------------|
| Michael Smith | 27 |
| Robert Smith | 22 |
| John Smith | 22 |
| James Smith | 20 |
| Michael Johnson | 20 |
| David Smith | 19 |
| Robert Johnson | 19 |
| Michael Williams | 18 |



Write a query to count the number of patients diagnosed with each medical condition.

SELECT

```
Medical_Condition, COUNT(Name) AS total_patients  
FROM  
    hospital data  
GROUP BY Medical_Condition  
ORDER BY total_patients
```

| Medical_Condition | total_patients |
|-------------------|----------------|
| Asthma | 9185 |
| Cancer | 9227 |
| Obesity | 9231 |
| Hypertension | 9245 |
| Diabetes | 9304 |
| Arthritis | 9308 |



Write a query to find patients whose billing amount is above the average billing amount.



```
SELECT
    Name, ROUND(Billing_Amount, 0) AS billing_amount
FROM
    hospital data
WHERE
    Billing_Amount > (SELECT
        ROUND(AVG(Billing_Amount), 0) AS avg_billing_amount
    FROM
        hospital data)
```

| Name | billing_amount |
|--------------------|----------------|
| Leslie Terry | 33643 |
| Danny Smith | 27955 |
| Andrew Watts | 37910 |
| Emily Johnson | 48145 |
| Christina Martinez | 45820 |
| Jasmine Aguilar | 50119 |
| Connor Hansen | 43282 |
| Robert Bauer | 33208 |
| Brooke Brady | 40702 |

Write a query to count number of patients admitted each year.

```
SELECT  
    YEAR(Date_of_Admission) AS year,  
    COUNT(name) AS total_patients  
FROM  
    hospital data  
GROUP BY YEAR(Date_of_Admission)  
ORDER BY total_patients DESC
```

| year | total_patients |
|------|----------------|
| 2020 | 11285 |
| 2023 | 11026 |
| 2022 | 11017 |
| 2021 | 10931 |
| 2019 | 7387 |
| 2024 | 3854 |



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Write a query to find the most commonly prescribed medication for patients with "Obesity."

```
SELECT  
    Medication,  
    COUNT(Medication) AS most_commonly_prescribed_medicin  
FROM  
    hospital data  
WHERE  
    Medical_Condition = 'Obesity'  
GROUP BY Medication  
ORDER BY most_commonly_prescribed_medicin DESC
```

| Medication | most_commonly_prescribed_medicin |
|-------------|----------------------------------|
| Penicillin | 1893 |
| Aspirin | 1865 |
| Ibuprofen | 1851 |
| Lipitor | 1829 |
| Paracetamol | 1793 |



Write a query to find patients with a billing amount between 20,000 and 30,000.

SELECT

Name, ROUND(Billing_Amount, 0) AS Billing_Amount

FROM

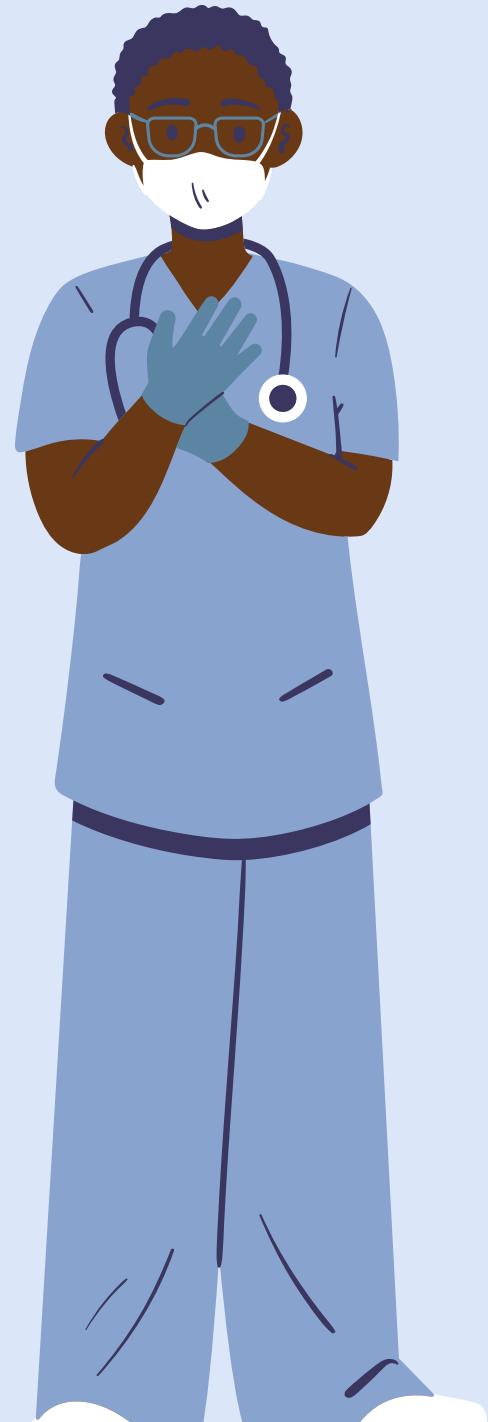
hospital data

WHERE

Billing_Amount BETWEEN 20000 AND 30000

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| Name | Billing_Amount |
|---------------------|----------------|
| Danny Smith | 27955 |
| Haley Perkins | 24500 |
| Daniel Schmidt | 23762 |
| Dr. Eileen Thompson | 25250 |
| Cathy Small | 26787 |
| James Patterson | 25835 |
| Erin Ortega | 21186 |
| Mr. Eric Lane | 25966 |
| Katherine Smith | 21784 |



Write a query to find patients whose billing amount is higher than the highest billing amount recorded in 2020.

```
SELECT  
    name, ROUND(Billing_Amount, 0) AS Billing_Amount  
FROM  
    hospital data  
WHERE  
    Billing_Amount > (SELECT  
        MAX(Billing_Amount) AS highest_billing_amount  
    FROM  
        hospital data  
    WHERE  
        YEAR(Date_of_Admission) = 2020)
```



| name | Billing_Amount |
|----------------|----------------|
| David Sandoval | 52272 |
| Karen Kline | 52373 |
| Todd Carrillo | 52764 |
| Karen Kline | 52373 |

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Write a query to rank patients by billing amount within each hospital.

```
select name,Hospital,round(Billing_Amount,0) as billing_amount,  
RANK() over(partition by Hospital order by billing_amount desc )  
from hospital data  
group by name,Hospital, Billing_Amount
```

| name | Hospital | billing_amount | rank |
|-----------------------|-------------------------------|----------------|------|
| Laura Tate | Abbott and Thompson, Sullivan | 16739 | 1 |
| Ronald Hubbard | Abbott Inc | 38052 | 1 |
| Heather Smith | Abbott Ltd | 29878 | 1 |
| Kimberly Carr | Abbott Moore and Williams, | 24800 | 1 |
| Samuel Gomez | Abbott, Peters and Hoffman | 18842 | 1 |
| Zachary Underwood Jr. | Abbott, Vazquez Bautista and | 14117 | 1 |
| James Lambert | Abbott-Castillo | 18398 | 1 |
| Michael Williams | Abbott-Coleman | 19752 | 1 |
| Jill Gonzalez | Abbott-Ferrell | 100 | 1 |



Write a query to find the top 3 most commonly prescribed medications using window function.

```
select Medication ,count(Medication) as total_time_prescribed,  
RANK() over(partition by medication  
order by Medication desc)  
from hospital data  
group by Medication  
order by total_time_prescribed desc  
limit 3 ;
```

| Medication | total_time_prescribed |
|------------|-----------------------|
| Lipitor | 11140 |
| Ibuprofen | 11127 |
| Aspirin | 11094 |



Write a query to calculate the total billing amount for each hospital, but only for patients admitted under the "Emergency" type.

```
SELECT  
    Hospital,  
    ROUND(SUM(Billing_Amount), 0) AS total_billing_amount,  
    Admission_Type  
FROM  
    hospital data  
WHERE  
    Admission_Type = 'Emergency'  
GROUP BY Hospital , Admission_Type  
ORDER BY total_billing_amount DESC
```



| Hospital | total_billing_amount | Admission_Type |
|-------------|----------------------|----------------|
| LLC Smith | 423591 | Emergency |
| Smith Ltd | 406909 | Emergency |
| Group Smith | 355790 | Emergency |
| Inc Jones | 346599 | Emergency |
| Johnson PLC | 309276 | Emergency |
| Inc Brown | 297975 | Emergency |
| Johnson Inc | 296276 | Emergency |

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Write a query to pivot the data to show the count of patients by admission type and gender.

```
SELECT  
    Admission_Type, Gender, COUNT(Name) AS total_patients  
FROM  
    hospital data  
GROUP BY Admission_Type , Gender  
ORDER BY Admission_Type
```



| Admission_Type | Gender | total_patients |
|----------------|--------|----------------|
| Elective | Female | 9374 |
| Elective | Male | 9281 |
| Emergency | Female | 9244 |
| Emergency | Male | 9025 |
| Urgent | Male | 9468 |
| Urgent | Female | 9108 |

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Write a query to find all patients whose billing amount is greater than the average billing amount for their medical condition.

```
SELECT  
    Name,  
    ROUND(Billing_Amount, 0) AS billing_amount,  
    Medical_Condition  
FROM  
    hospital data  
WHERE  
    Billing_Amount > (SELECT  
        AVG(Billing_Amount)  
    FROM  
        hospital data  
    WHERE  
        hd2.Medical_Condition = hd1.Medical_Condition)
```



| Name | billing_amount | Medical_Condition |
|--------------------|----------------|-------------------|
| Leslie Terry | 33643 | Obesity |
| Danny Smith | 27955 | Obesity |
| Andrew Watts | 37910 | Diabetes |
| Emily Johnson | 48145 | Asthma |
| Christina Martinez | 45820 | Cancer |
| Jasmine Aguilar | 50119 | Asthma |
| Connor Hansen | 43282 | Diabetes |
| Robert Bauer | 33208 | Asthma |

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Project Outcome

Enhanced SQL Proficiency

Successfully practiced and applied SQL techniques across varying levels of complexity, from basic queries to advanced functions, improving overall data manipulation and analysis skills.



Healthcare Insights

Extracted valuable insights from healthcare data, such as identifying high-cost patients, tracking medication effectiveness, and understanding patient demographics, aiding in better decision-making.

Real-World Application

Applied SQL skills to a real-world healthcare dataset, demonstrating the ability to work with actual data and derive meaningful conclusions that could impact patient care and hospital management.

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Tools Utilized in the Project

SQL Server Management Studio

Used for writing and executing SQL queries efficiently, providing a robust environment for database management and analysis.

MySQL Workbench

Employed to beautify and format SQL code

Power Query

Utilized for data transformation tasks, enabling seamless data cleaning, reshaping, and preparation for analysis within the SQL framework.

Canva

Leveraged for creating visually appealing presentations, effectively communicating project outcomes and insights in a professional manner.



A Heartfelt Thank You to the Medical Community

Thank you to all the doctors and healthcare workers who selflessly dedicate their lives to helping others. Your resilience, hard work, and care inspire us all, and this project is a small acknowledgment of the vital role you play in our society. We deeply appreciate everything you do to keep us healthy and safe, and we hope the insights from this work can aid in your ongoing efforts to provide exceptional care. 😊

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Conclusion

This project showed how SQL can be used to analyze healthcare data and find important insights about patients, costs, and medical conditions. By using tools like SSMS, MySQL Workbench, Power Query, and Canva, the project combined technical work with clear and easy-to-understand presentations. The results of this project provide a strong base for making informed decisions in healthcare and demonstrate the practical use of data analysis in real-world situations.

Thank you for
your attention

