Hospital Patient Management System Analysis

1. How many patients were admitted each year?

```sql
SELECT
    YEAR(Admission_Date) AS Admission_Year,
    COUNT(*) AS Total_Patients
FROM Patients
GROUP BY YEAR(Admission_Date)
ORDER BY Admission_Year;
```

	Admission_Year	Total_Patients
1	2023	232
2	2024	264
3	2025	4

2. What is the average length of stay for patients?

```sql
SELECT
    AVG(DATEDIFF(DAY, Admission_Date, Discharge_Date)) AS
Avg_Length_of_Stay
FROM Patients
WHERE Discharge_Date IS NOT NULL;
```

	Avg_Length_of_Stay
1	170

3. Which diagnoses are most common?

```sql
SELECT
    Diagnosis,
    COUNT(*) AS Total_Patients
FROM Patients
GROUP BY Diagnosis
ORDER BY Total_Patients DESC;
```

	Diagnosis	Total_Patients
1	Asthma	96
2	Covid-19	91
3	Fracture	89
4	Cancer	88
5	Hypertension	75
6	Diabetes	61

4. Which doctor has treated the most patients?

```sql
SELECT
    d.Doctor_Name,
    COUNT(t.Treatment_ID) AS Total_Patients_Treated
FROM Doctors d
JOIN Treatments t ON d.Doctor_ID = t.Doctor_ID
GROUP BY d.Doctor_Name
ORDER BY Total_Patients_Treated DESC;
```

	Doctor_Name	Total_Patients_Treated
1	Natalie Stewart	28
2	Olivia Brennan	28
3	Alyssa James	26
4	Edward Adams	25
5	Valerie Williams	25
6	Kelli Cooper	24
7	Kristen Morton	24
8	Mrs. Melissa Wong	24
9	Bonnie Martin	24
10	Jeffrey Smith	24
11	Kristin Avery	23
12	Nicole Phillips	23
13	Samantha Rogers	23
14	Sara Bowen	22
15	Mary Jones	22
16	Kenneth Murphy	22
17	Evan Bartlett	22
18	David Davis	22
19	Chris Woods	22
20	Betty Mckenzie	21
21	Danielle Cox	21
22	Jennifer Mason	21
23	Kathleen Brooks	21
24	Scott Torres	21
25	Rick Anderson	21

5. What is the average treatment cost per doctor?

```sql
SELECT
    d.Doctor_Name,
    ROUND(AVG(t.Cost),2) AS Avg_Treatment_Cost
FROM Doctors d
JOIN Treatments t ON d.Doctor_ID = t.Doctor_ID
GROUP BY d.Doctor_Name
ORDER BY Avg_Treatment_Cost DESC;
```

	Doctor_Name	Avg_Treatment_Cost
1	Rick Anderson	6696.47
2	Natalie Stewart	6136.26
3	Mary Jones	5988.3
4	Kristin Avery	5935.58
5	Dominique Mcguire	5851.71
6	Kevin Young	5709.53
7	Susan Clark	5696.44
8	Christine Velez	5582.34
9	Danielle Cox	5512.43
10	Jasmine Montgo...	5491.14
11	Edward Adams	5486.14
12	Kenneth Murphy	5458.45
13	Danielle Andrews	5441.27
14	Jennifer Mason	5412.33
15	David Davis	5258.61
16	Shelby Gomez	5169.73
17	Samantha Rogers	5160.39
18	Jordan Simpson	5145.92
19	Robert Lee	5132.54
20	Valerie Williams	5113.99
21	Kimberly Young	5084.65
22	Taylor Bowen	5082.14
23	Olivia Brennan	5051.01
24	Nicole Phillips	5037.31
25	Chris Woods	5030.9

6. Which specialization generates the highest revenue?

```sql
SELECT
    d.Specialization,
    ROUND(SUM(t.Cost),2) AS Total_Revenue
FROM Doctors d
JOIN Treatments t ON d.Doctor_ID = t.Doctor_ID
GROUP BY d.Specialization
ORDER BY Total_Revenue DESC;
```

	Specialization	Total_Revenue
1	Neurology	1216726.03
2	Oncology	1102570.46
3	General Medicine	1025030.12
4	Cardiology	766360.24
5	Orthopedics	685558.57
6	Pediatrics	204428.39

7. What is the average treatment cost per patient?

```sql
SELECT
    p.Patient_Name,
    ROUND(AVG(t.Cost),2) AS Avg_Treatment_Cost
FROM Patients p
JOIN Treatments t ON p.Patient_ID = t.Patient_ID
GROUP BY p.Patient_Name
ORDER BY Avg_Treatment_Cost DESC;
```

	Patient_Name	Avg_Treatment_Cost
1	Robert Kim	9745.7
2	Kelli Doyle	9744.77
3	Elizabeth Fields	9661.75
4	Tara Todd	9618.54
5	Joshua Suarez	9615.73
6	Ryan Hammond	9505.68
7	Maria Burnett	9480.83
8	Erin Alexander	9448.44
9	Monique John...	9284.65
10	Kimberly Hendrix	9122.23
11	James Peterson	9078.11
12	Chase Thomas	9074.61
13	Meghan Huber	9072.41
14	Adam Moore	8998.71
15	Eric Ortega	8953.19
16	Emma Howell	8816.16
17	Ryan Mclaugh...	8794.73
18	Stephanie Ho...	8740.9
19	William James	8712.14
20	Shelley Rodrig...	8686.29
21	Kathy Fields	8668.67
22	Paula Lewis	8639.5
23	Yvonne Steve...	8618.71
24	Lindsay Stone	8536
25	Cheryl Perry	8533.52

8. How much revenue was generated each month?

```sql
SELECT
    FORMAT(Treatment_Date, 'yyyy-MM') AS Month,
    ROUND(SUM(Cost),2) AS Total_Revenue
FROM Treatments
GROUP BY FORMAT(Treatment_Date, 'yyyy-MM')
ORDER BY Month;
```

	Month	Total_Revenue
1	2023-01	124166.84
2	2023-02	142646.14
3	2023-03	281690.92
4	2023-04	200166.55
5	2023-05	158832.89
6	2023-06	243974.85
7	2023-07	262318.92
8	2023-08	213727.62
9	2023-09	233654.37
10	2023-10	189231.52
11	2023-11	137792.02
12	2023-12	260909.6
13	2024-01	150206.41
14	2024-02	192320.84
15	2024-03	188652.43
16	2024-04	234118.36
17	2024-05	207000.96
18	2024-06	212772.68
19	2024-07	220674.33
20	2024-08	207468.08
21	2024-09	177110.29
22	2024-10	195245.09
23	2024-11	247884.92
24	2024-12	248685.4
25	2025-01	69421.78

9. Which treatment type is the most expensive?

```sql
SELECT
    Treatment_Type,
    ROUND(AVG(Cost),2) AS Avg_Cost
FROM Treatments
GROUP BY Treatment_Type
ORDER BY Avg_Cost DESC;
```

	Treatment_Type	Avg_Cost
1	Therapy	5225.48
2	Consultation	5123.43
3	Medication	5017.31
4	Surgery	4649.27