

S Q L

Structure

Query

Language



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SQL Hospital Data Analytics for Operational Efficiency

BASIC LEVEL

Que.1 Show first name, last name, and gender of patients whose gender is 'M'?

```
SELECT first_name,last_name,gender  
FROM patients  
WHERE gender="M";
```

Que.2 Show first name and last name of patients who does not have allergies. (null)?

```
SELECT first_name,last_name  
FROM patients  
WHERE allergies is null;
```

Que.3 Show first name of patients that start with the letter 'C'?

```
SELECT first_name  
FROM patients  
WHERE first_name like 'C%';
```

Que.4 Show first name and last name of patients that weight within the range of 100 to 120 (inclusive)?

```
SELECT first_name, last_name  
FROM patients  
WHERE Weight between 100 and 120;
```

Que.5 Update the patients table for the allergies column. If the patient's allergies is null then replace it with 'NKA'?

```
UPDATE patients  
SET allergies = 'NKA'  
WHERE allergies is null;
```

Que.6 Show first name and last name concatenated into one column to show their full name?

```
SELECT CONCAT(first_name," "last_name) As full_name  
FROM patients;
```

Que.7 Show first name, last name, and the full province name of each Patient? (Example: 'Ontario' instead of 'ON')

```
SELECT first_name,last_name ,province_name  
FROM patients  
join province_names on patients.province_id =  
province_names.province_id;
```

Que.8 Show how many patients have a birth_date with 2010 as the birth year?

```
SELECT count(birth_date)from patients  
WHERE birth_date like'2010%';
```

Que.9 Show the first_name, last_name, and height of the patient with the greatest height?

```
SELECT first_name, last_name,MAX(height)  
FROM patients;
```

Que.10 Show all columns for patients who have one of the following patient_ids:1,45,534,879,1000?

```
SELECT * from patients  
WHERE patient_id in (1, 45,534,879,1000);
```

Que.11 Show the total number of admissions?

```
SELECT count(*) as Total admissions  
FROM admissions;
```

Que.12 Show all the columns from admissions where the patient was admitted and discharged on the same day?

```
SELECT * from admissions
WHERE admission_date =discharge_date;
```

Que.12 Show the patient id and the total number of admissions for patient_id 579?

```
SELECT patient_id ,count(admission_date) as total_admission
FROM admissions
WHERE patient_id = '579';
```

Que.13 Based on the cities that our patients live in, show unique cities that are in province_id 'NS'.

```
SELECT DISTINCT(city)AS unique_cities
FROM patients
JOIN province_names ON patients.province_id=
province_names.province_id
WHERE province_names.province_id ='NS';
```

Que.14 Write a query to find the first_name, last name and birth date of patients who has height greater than 160 and weight greater than 70?

```
SELECT first_name, last_name, birth_date
FROM patients
WHERE height>'160'and weight>'70'
```

Que.15 Write a query to find list of patients first_name, last_name, and allergies where allergies are not null and are from the city of 'Hamilton'?

```
SELECT first_name,last_name,allergies
FROM patients
WHERE allergies is not null and city= 'Hamilton';
```

MEDIUM

Que.1 Show unique birth years from patients and order them by ascending?

```
SELECT DISTINCT year(birth_date) as birth_year  
FROM patients  
ORDER BY birth_year ASC;
```

Que.2 Show unique first names from the patients table which only occurs once in the list.

(For example, if two or more people are named 'John' in the first_name column then don't include their name in the output list. If only 1 person is named 'Leo' then include them in the output.)

```
SELECT DISTINCT(first_name)  
FROM patients  
GROUP BY first_name  
HAVING count(first_name) = 1;
```

Que.3 Show patient_id and first_name from patients where their first_name start and ends with 's' and is at least 6 characters long?

```
SELECT patient_id,first_name  
FROM patients  
WHERE first_name like 's____s'  
AND LEN(first_name)>= 6;
```

Que.4 Show patient_id, first_name, last_name from patients whos diagnosis is 'Dementia'?(Primary diagnosis is stored in the admissions table).

```
SELECT p.patient_id,p.first_name,p.last_name  
FROM patients p  
JOIN admissions a on p.patient_id = a.patient_id  
WHERE a.diagnosis ='Dementia';
```

Que.5 Display every patient's first_name.

Order the list by the length of each name and then by alphabetically?

```
SELECT first_name  
FROM patients  
ORDER BY LEN(first_name ),first_name;
```

Que.6 Show the total amount of male patients and the total amount of female patients in the patients table. Display the two results in the same row?

```
SELECT  
SUM(case when gender='M' Then 1 else 0 end ) AS male_count,  
SUM(case when gender='F' Then 1 Else 0 en    0d ) As female_count  
FROM patients;
```

Que.7 Show first and last name, allergies from patients which have allergies to either 'Penicillin' or 'Morphine'. Show results ordered ascending by allergies then by first_name then by last_name?

```
SELECT first_name,last_name,allergies  
FROM patients  
WHERE allergies in('Penicillin', 'Morphine')  
ORDER BY allergies,first_name,last_name;
```

Que.8 Show patient_id, diagnosis from admissions. Find patients admitted multiple times for the same diagnosis.

```
SELECT patient_id, diagnosis  
FROM admissions  
GROUP BY patient_id,diagnosis  
HAVING COUNT(patient_id) >1;
```

Que.9 Show the city and the total number of patients in the city. Order from most to least patients and then by city name ascending?

```
SELECT City, count (*) as num_patients
```

```
FROM patients
GROUP BY city
ORDER BY num_patients DESC ,city ASC;
```

Que.10 Show first name, last name and role of every person that is either patient or doctor?

The roles are either "Patient" or "Doctor"

```
SELECT first_name,last_name ,'patient' AS role
FROM patients
UNION ALL
SELECT first_name,last_name ,'Doctor' AS role
FROM doctors;
```

Que.11 Show all allergies ordered by popularity. Remove NULL values from query?

```
SELECT allergies , Count(*) as Total_dignosis
FROM patients
WHERE allergies is not null
GROUP BY allergies
ORDER BY Total_dignosis DESC;
```

Que.12 Show all patient's first_name, last_name, and birth_date who were born in the 1970s decade. Sort the list starting from the earliest birth_date?

```
SELECT first_name,last_name,birth_date
FROM patients
WHERE year(birth_date) BETWEEN 1970 AND 1979
ORDER BY birth_date ASC;
```

Que.13 We want to display each patient's full name in a single column. Their last_name in all upper letters must appear first, then first_name in all lower case letters. Separate the last_name and first_name with a

comma. Order the list by the first_name in descending order

EX: SMITH,jane

```
SELECT CONCAT(upper(last_name),' ' lower(first_name)) as full_name  
FROM patients  
ORDER BY first_name DESC;
```

Que.14 Show the province_id(s), sum of height; where the total sum of its patient's height is greater than or equal to 7,000?

```
SELECT province_id, SUM(height) as sum_height  
FROM patients  
GROUP BY province_id  
HAVING sum_height >=7000
```

Que.15 Show the difference between the largest weight and smallest weight for patients with the last name 'Maroni'?

```
SELECT MAX(weight)-MIN(weight) AS weight_delta  
FROM patients  
WHERE last_name ="Maroni";
```

Que.15 Show all of the days of the month (1-31) and how many admission_dates occurred on that day. Sort by the day with most admissions to least admissions?

```
SELECT Day(admission_date) AS Day_number,  
COUNT(*) As No_of_admissions  
FROM admissions  
GROUP BY Day_number  
ORDER BY No_of_admissions DESC;
```

Que.15 Show all columns for patient_id 542's most recent admission_date?

```
SELECT *  
FROM admissions  
WHERE patient_id = 542
```


ORDER BY admission_date DESC

LIMIT 1;

Que.16 Show patient_id, attending_doctor_id, and diagnosis for admissions that match one of the two criteria:

1. patient_id is an odd number and attending_doctor_id is either 1, 5, or 19.
2. attending_doctor_id contains a 2 and the length of patient_id is 3 characters?

SELECT patient_id, attending_doctor_id, diagnosis

FROM admissions

WHERE(patient_id % 2 = 1 AND attending_doctor_id IN (1,5,19))

OR (attending_doctor_id like "%2%" AND LEN(patient_id) = 3);

Que.17 Show first_name, last_name, and the total number of admissions attended for each doctor.(Every admission has been attended by a doctor)

SELECT d.first_name,d.last_name, count(a.attending_doctor_id) as admission_total

FROM admissions a

JOIN doctors d on d.doctor_id = a.attending_doctor_id

GROUP BY d.first_name,d.last_name;

Que.18 For each doctor, display their id, full name, and the first and last admission date they attended?

SELECT doctor_id,

CONCAT(first_name," " last_name) as full_name,

MIN(admission_date) as first_admission_date,

MAX(admission_date) as last_admission_date FROM admissions a

JOIN doctors d on a.attending_doctor_id = d.doctor_id

GROUP BY doctor_id;

Que.19 Display the total amount of patients for each province. Order by descending ?

```
SELECT province_name ,count(patient_id) as patient_count
FROM patients p
JOIN province_names pr ON p.province_id = pr.province_id
GROUP BY province_name
ORDER BY patient_count DESC;
```

Que.20 For every admission, display the patient's full name, their admission diagnosis, and their doctor's full name who diagnosed their problem?

```
SELECT CONCAT(p.first_name, " ",p.last_name) AS patient_name ,
a.diagnosis,
CONCAT(d.first_name, " ",d.last_name) AS doctor_name
FROM patients p
JOIN admissions a ON p.patient_id = a.patient_id
JOIN doctors d ON a.attending_doctor_id = d.doctor_id;
```

Que.21 Display the first name, last name and number of duplicate patients based on their first name and last name.

Ex: A patient with an identical name can be considered a duplicate?

```
SELECT first_name , last_name, count(*) as num_of_duplicates
FROM patients
GROUP BY first_name ,last_name
HAVING count(*) > 1;
```

Que.22 Display patient's full name,height in the units feet rounded to 1 decimal,weight in the unit pounds rounded to 0 decimals,birth_date,gender non abbreviated?

(Convert CM to feet by dividing by 30.48.
Convert KG to pounds by multiplying by 2.205)

```
SELECT
CONCAT(first_name," ",last_name),
ROUND(height/30.48,1),
ROUND(weight*2.205,0),birth_date,
CASE WHEN gender = 'M' THEN 'Male'
      WHEN gender = 'F' THEN 'Female'
      else 'Female'
end as 'Gender_type'
FROM patients;
```

Que.22 Show patient_id, first_name, last_name from patients whose does not have any records in the admissions table? (Their patient_id does not exist in any admissions.patient_id rows.)

```
SELECT p.patient_id, p.first_name, p.last_name
FROM patients p
LEFT JOIN admissions a ON p.patient_id = a.patient_id
WHERE a.patient_id IS NULL;
```