

# Hospital Queries

## Easy Questions

Q1. Show first name, last name, and gender of patients whose gender is 'M'.

SELECT first\_name, last\_name, gender FROM patients WHERE gender = 'M';

first_name	last_name	gender
Donald	Waterfield	M
Mickey	Baasha	M
Jiji	Sharma	M

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Q2. 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;

first_name	last_name
Donald	Waterfield
Blair	Diaz
Thomas	ONeill

Showing 1 to 100 of 2059 results

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Q3. Show first name of patients that start with the letter 'C'.

SELECT first\_name FROM patients WHERE first\_name LIKE 'C%';

first_name
Charles
Cedric
Charles

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Q4. 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;

first_name	last_name
Jiji	Sharma
Blair	Diaz
Thomas	ONeill

Showing **1** to **100** of **952** results

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Q5. 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;

Rows modified: 2059
---------------------

Q6. 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;

full_name
Donald Waterfield
Mickey Baasha
Jiji Sharma

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Q7. Show first name, last name, and the **full** province name of each patient.

SELECT first\_name, last\_name, province\_name FROM patients JOIN province\_names ON province\_names.province\_id = patients.province\_id;

first_name	last_name	province_name
Donald	Waterfield	Ontario
Mickey	Baasha	Ontario
Jiji	Sharma	Ontario

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Q8. Show how many patients have a birth\_date with 2010 as the birth year.

```
SELECT COUNT(*) AS total_patients FROM patients WHERE YEAR(birth_date) = 2010;
```

**total\_patients**

55

Q9. Show the first\_name, last\_name, and height of the patient with the greatest height.

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

first_name	last_name	height
Sam	Haruko	226

Q10. 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');
```

patient_id	first_name	last_name	gender	birth_date	city	province_id	allergies	height	weight
1	Donald	Waterfield	M	1963-02-12	Barrie	ON	NULL	156	65
45	Cross	Gordon	M	2009-03-20	Ancaster	ON	NULL	125	53
534	Don	Zatara	M	2008-01-11	Timmins	ON	NULL	136	67
879	Orla	Shawn	F	1967-09-24	Sarnia	ON	Penicillin	149	65
1000	Rick	Williams	M	1975-04-13	Hamilton	ON	Penicillin	176	127

Q11. Show the total number of admissions.

```
SELECT COUNT(*) AS total_admissions FROM admissions;
```

**total\_admissions**

5067

Q12. 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;

patient_id	admission_date	discharge_date	diagnosis	attending_doc
1	2018-09-20	2018-09-20	Ineffective Breathin Pattern R/T Fluid Accumulatio	24
9	2018-12-31	2018-12-31	Ruptured Appendicitis	19
10	2018-02-27	2018-02-27	Lower Quadrant Pain	27

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Q13. Show the patient id and the total number of admissions for patient\_id 579.

SELECT patient\_id, COUNT(\*) AS total\_admission FROM admissions WHERE patient\_id = 579;

patient_id	total_admission
579	2

Q14. Based on the cities that our patients live in, show unique cities that are in province\_id 'NS'.

SELECT DISTINCT (city) FROM patients WHERE province\_id = 'NS';

city
Port Hawkesbury
Halifax
Inverness

Q.15 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;

first_name	last_name	birth_date
Mickey	Baasha	1981-05-28
Jiji	Sharma	1957-09-05
Blair	Diaz	1967-01-07

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Q16. Write a query to find list of patients first\_name, last\_name, and allergies from Hamilton where allergies are not null?

```
SELECT first_name, last_name, allergies FROM patients WHERE city = 'Hamilton' AND allergies IS NOT NULL;
```

first_name	last_name	allergies
Jiji	Sharma	Penicillin
Tom	Halliwell	Ragweed
Nino	Andrews	Peanuts

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## Medium Questions

Q1. Show unique birth years from patients and order them by ascending.

```
SELECT DISTINCT (YEAR(birth_date)) AS unique_years FROM patients ORDER BY 1;
```

unique_years
1918
1923
1925
1926
1927

Q2. Show unique first names from the patients table which only occurs once in the list.

```
SELECT first_name FROM (SELECT first_name, COUNT(*) AS Repeated FROM patients GROUP BY first_name) WHERE Repeated = 1;
```

first_name
Abby
Adelaide
Adelia

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Q3. Show patient\_id and first\_name from patients where their first\_name start and ends with 's' and is at least 6 characters long.

-- Method 1

```
SELECT patient_id, first_name FROM patients WHERE first_name LIKE 'S%S' AND  
LEN(first_name) >= 6;
```

-- Method 2

```
SELECT patient_id, first_name FROM patients WHERE first_name LIKE 'S____S';
```

patient_id	first_name
496	Spiros
629	Spiros
648	Stanislaus
1273	Stanislaus
1780	Samuel

Q4. Show patient\_id, first\_name, last\_name from patients whos diagnosis is 'Dementia'.

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

patient_id	first_name	last_name
160	Miranda	Delacour
178	David	Bustamonte
207	Matt	Celine
613	Jaki	Granger
836	Montana	Vimes

Q5. 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;
```

first_name
AI
AI
AI

Showing 1 to 100 of 4530 results

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Q6. 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(Gender = 'M') AS male\_count, SUM(Gender = 'F') AS female\_count FROM patients;

male_count	female_count
2468	2062

Q7. 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 = 'Penicillin' OR allergies = 'Morphine' ORDER BY allergies , first\_name , last\_name;

first_name	last_name	allergies
Briareos	Hayes	Morphine
Christine	Argyros	Morphine
Griselda	Hopper	Morphine

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Q8. 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(\*) > 1;

patient_id	diagnosis
137	Pregnancy
320	Pneumonia
1577	Congestive Heart Failure
2004	Left Shoulder Rotator Cuff Repair
2850	Severed Spine At C3

Q9. 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 total\_patients FROM patients GROUP BY city ORDER BY total\_patients DESC , city;

city	total_patients
Hamilton	1938
Toronto	317
Burlington	276
Brantford	147
Amesbury	117

Q10. 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' FROM doctors;

first_name	last_name	role
Donald	Waterfield	Patient
Mickey	Baasha	Patient
Jiji	Sharma	Patient

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Q11. Show all allergies ordered by popularity. Remove NULL values from query.

SELECT allergies, COUNT(\*) Popularity FROM patients WHERE allergies IS NOT NULL GROUP BY 1 ORDER BY 2 DESC;



allergies	Popularity
Penicillin	1082
Codeine	305
Sulfa	157
ASA	99
Sulfa Drugs	74

Q12. 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 3;
```

first_name	last_name	birth_date
Frances	Kobayakawa	1970-01-02
Sunny	Burrell	1970-01-07
Penelope	Beckett	1970-01-14

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Q13. 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 new_name_format
FROM patients ORDER BY first_name DESC;
```

new_name_format
MILLER,zoe
CORBIE,ziva
KOBAYAKAWA,zenigata

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Q14. 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.

-- Method 1

```
SELECT * FROM (SELECT province_id, SUM(height) AS Height FROM patients GROUP BY province_id) WHERE Height >= 7000;
```

-- Method 2

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

province_id	Height
BC	7720
NS	9765
ON	678037

Q15. Show the difference between the largest weight and smallest weight for patients with the last name 'Maroni'.

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

difference
71

Q16. 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 days, COUNT(*) AS admission FROM admissions GROUP BY 1 ORDER BY 2 DESC;
```

days	admission
11	184
4	184
9	183
2	180
12	170

Q17. 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;
```

patient_id	admission_date	discharge_date	diagnosis	attending_doctor_id
542	2019-04-06	2019-04-09	Abdominal Pain	14

Q18. 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 <> 0 AND attending_doctor_id IN ('1', '5', '19')) OR (attending_doctor_id LIKE '%2%'
AND LEN(patient_id) = 3);
```

patient_id	attending_doctor_id	diagnosis
9	19	Ruptured Appendicitis
13	1	Renal Failure
15	5	Hiatal Hernia

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Q19. Show first\_name, last\_name, and the total number of admissions attended for each doctor.

Every admission has been attended by a doctor.

```
SELECT first_name, last_name, COUNT(*) AS total_admission FROM admissions JOIN
doctors ON admissions.attending_doctor_id = doctors.doctor_id GROUP BY 1, 2;
```

first_name	last_name	total_admission
Angelica	Noe	209
Bobbi	Estrada	176
Claude	Walls	214
Donna	Greenwood	203
Douglas	Brooks	201

Q20. For each doctor, display their id, full name, and the first and last admission date they attended.

```
SELECT admissions.attending_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 doctors JOIN admissions ON admissions.attending_doctor_id =
doctors.doctor_id GROUP BY 1;
```

attending_doctor_id	full_name	first_admission_date	last_admission_date
1	Claude Walls	2018-06-10	2019-06-03
2	Joshua Green	2018-06-06	2019-06-03
3	Miriam Tregre	2018-06-06	2019-06-03
4	James Russo	2018-06-10	2019-06-04
5	Scott Hill	2018-06-06	2019-06-05

Q21. Display the total amount of patients for each province. Order by descending.

```
SELECT province_name, COUNT(*) AS total_patients FROM patients JOIN
province_names ON patients.province_id = province_names.province_id GROUP BY 1
ORDER BY 2 DESC;
```

province_name	total_patients
Ontario	4298
Nova Scotia	60
British Columbia	49
Alberta	47
Manitoba	31

Q22. For every admission, display the patient's full name, their admission diagnosis, and their doctor's full name who diagnosed their problem.

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

patient_name	diagnosis	doctor_name
Donald Waterfield	Ovarian Dermoid-Cyct	Lisa Cuddy
Donald Waterfield	Ineffective Breathin Pattern R/T Fluid Accumulatio	Jenny Pulaski
Jiji Sharma	Cardiac Arrest	Joshua Green

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Q23. Display the number of duplicate patients based on their first\_name and last\_name.

```
SELECT first_name, last_name, COUNT(*) AS Num_of_duplicates FROM patients GROUP BY 1, 2 HAVING Num_of_duplicates > 1;
```

first_name	last_name	Num_of_duplicates
Alexandra	Holroyd	2
Avon	Travis	2
Belladonna	Thomas	2
Chris	Johnson	2
Dol	Forelli	2
Emil	Owens	2
Jack	Bennett	2
Jack	McArthur	2

Q24. 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) AS 'patient_name', ROUND(height / 30.48, 1) AS 'height "Feet"', ROUND(weight * 2.205, 0) AS 'weight "Pounds"', birth_date, CASE WHEN gender = 'M' THEN 'MALE' ELSE 'FEMALE' END AS 'gender_type' FROM patient;
```

patient_name	height "Feet"	weight "Pounds"	birth_date	gender_type
Donald Waterfield	5.1	143	1963-02-12	MALE
Mickey Baasha	6.1	168	1981-05-28	MALE
Jiji Sharma	6.4	234	1957-09-05	MALE
Blair Diaz	6.3	229	1967-01-07	MALE
Charles Wolfe	1.5	22	2017-11-19	MALE
Sue Falcon	1.4	11	2017-09-30	FEMALE

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Q25. 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 patient\_id, first\_name, last\_name FROM patients WHERE patients.patient\_id NOT IN (SELECT admissions.patient\_id FROM admissions);

patient_id	first_name	last_name
2	Mickey	Baasha
4	Blair	Diaz
5	Charles	Wolfe
14	Rick	Bennett
19	John	West
25	John	Farley

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## Hard Questions

Q1. Show all of the patients grouped into weight groups.

Show the total amount of patients in each weight group.

Order the list by the weight group descending.

For example, if they weight 100 to 109 they are placed in the 100 weight group, 110-119 = 110 weight group, etc.

SELECT COUNT(\*) AS patients\_in\_group, FLOOR(weight / 10) \* 10 AS weight\_group  
FROM patients GROUP BY weight\_group ORDER BY weight\_group DESC;

patients_in_group	weight_group
6	140
59	130
191	120
426	110
507	100
403	90
478	80
633	70

Q2. Show patient\_id, weight, height, isObese from the patients table.

Display isObese as a boolean 0 or 1.

Obese is defined as  $\text{weight}(\text{kg}) / (\text{height}(\text{m})^2) \geq 30$ .

weight is in units kg.

height is in units cm.

```
SELECT patient_id, weight, height, (CASE WHEN weight / (POWER(height / 100.0, 2)) >= 30 THEN 1 ELSE 0 END) AS isObese FROM patients;
```

patient_id	weight	height	isobese
1	65	156	0
2	76	185	0
3	106	194	0
4	104	191	0
5	10	47	1
6	5	43	0

Showing 1 to 100 of 4530 results

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Q3. Show patient\_id, first\_name, last\_name, and attending doctor's specialty.

Show only the patients who has a diagnosis as 'Epilepsy' and the doctor's first name is 'Lisa'.

```
SELECT p.patient_id, p.first_name, p.last_name, specialty FROM patients p JOIN admissions a ON p.patient_id = a.patient_id JOIN doctors d ON a.attending_doctor_id = d.doctor_id WHERE diagnosis = 'Epilepsy' AND d.first_name = 'Lisa'
```

patient_id	first_name	last_name	specialty
468	Frank	Anderson	Obstetrician/Gynecologist
701	Precious	Ashton	Obstetrician/Gynecologist

Q4 .All patients who have gone through admissions, can see their medical documents on our site. Those patients are given a temporary password after their first admission. Show the patient\_id and temp\_password.

The password must be the following, in order:

1. patient\_id

2. the numerical length of patient's last\_name
3. year of patient's birth\_date

SELECT a.patient\_id, CONCAT(a.patient\_id, LEN(last\_name), YEAR(birth\_date)) AS password FROM patients p JOIN admissions a ON p.patient\_id = a.patient\_id GROUP BY 1;

patient_id	password
1	1101963
3	361957
6	662017
7	761993
8	871952
9	971966

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Q5. Each admission costs \$50 for patients without insurance, and \$10 for patients with insurance. All patients with an even patient\_id have insurance. Give each patient a 'Yes' if they have insurance, and a 'No' if they don't have insurance. Add up the admission\_total cost for each has\_insurance group.

SELECT 'No' AS has\_insurance, COUNT(\*) \* 50 AS cost FROM admissions WHERE patient\_id % 2 = 1 GROUP BY has\_insurance UNION SELECT 'Yes' AS has\_insurance, COUNT(\*) \* 10 AS cost FROM admissions WHERE patient\_id % 2 = 0 GROUP BY has\_insurance;

has_insurance	cost
No	127800
Yes	25110

Q6. Show the provinces that has more patients identified as 'M' than 'F'. Must only show full province\_name.

SELECT province\_name FROM province\_names JOIN patients ON patients.province\_id = province\_names.province\_id GROUP BY province\_name HAVING (SUM(gender = 'M') > SUM(gender = 'F'));



province_name
Alberta
British Columbia
Manitoba
Newfoundland and Labrador
Nova Scotia
Ontario
Saskatchewan

Q7. We are looking for a specific patient. Pull all columns for the patient who matches the following criteria:

- First\_name contains an 'r' after the first two letters.
- Identifies their gender as 'F'
- Born in February, May, or December
- Their weight would be between 60kg and 80kg
- Their patient\_id is an odd number
- They are from the city 'Kingston'

SELECT \* FROM patients WHERE first\_name LIKE '\_\_r%' AND gender = 'F' AND MONTH(birth\_date) IN (2 , 5, 12) AND weight BETWEEN 60 AND 80 AND patient\_id % 2 <> 0 AND city = 'Kingston';

patient_id	first_name	last_name	gender	birth_date	city	province_id	allergies	height	weight
1839	Chris	Cardenas	F	1969-12-02	Kingston	ON	NULL	141	71

Q8. Show the percent of patients that have 'M' as their gender. Round the answer to the nearest hundredth number and in percent form.

SELECT ROUND(AVG(gender = 'M') \* 100, 2) || '%' AS Percent\_of\_male\_patients FROM patients;

Percent_of_male_patients
54.48%

Q9. For each day display the total amount of admissions on that day. Display the amount changed from the previous date.

```
SELECT admission_date, count(admission_date) as admission_day, count(admission_date) -  
LAG(count(admission_date)) OVER(ORDER BY admission_date) AS  
admission_count_change FROM admissions group by admission_date;
```

admission_date	admission_count	admission_count_change
2018-06-06	17	NULL
2018-06-07	9	-8
2018-06-08	9	0
2018-06-09	18	9
2018-06-10	12	-6
2018-06-11	22	10

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Q10. Sort the province names in ascending order in such a way that the province 'Ontario' is always on top.

```
SELECT province_name FROM province_names ORDER BY (NOT province_name =  
'Ontario') , province_name;
```

province_name
Ontario
Alberta
British Columbia
Manitoba
New Brunswick
Newfoundland and Labrador
Northwest Territories
Nova Scotia
Nunavut
Prince Edward Island
Quebec
Saskatchewan
Yukon

Q11. We need a breakdown for the total amount of admissions each doctor has started each year. Show the doctor\_id, doctor\_full\_name, specialty, year, total\_admissions for that year.

```
SELECT d.doctor_id as doctor_id, CONCAT(d.first_name,' ', d.last_name) as doctor_name,
d.specialty, YEAR(a.admission_date) as selected_year, COUNT(*) as total_admissions
FROM doctors as d LEFT JOIN admissions as a ON d.doctor_id = a.attending_doctor_id
GROUP BY doctor_name, selected_year ORDER BY doctor_id, selected_year;
```

doctor_id	doctor_name	specialty	selected_year	total_admissions
1	Claude Walls	Internist	2018	105
1	Claude Walls	Internist	2019	109
2	Joshua Green	Cardiologist	2018	104
2	Joshua Green	Cardiologist	2019	83
3	Miriam Tregre	General Surgeon	2018	111
3	Miriam Tregre	General Surgeon	2019	57
4	James Russo	Obstetrician/Gynecologist	2018	116
4	James Russo	Obstetrician/Gynecologist	2019	81