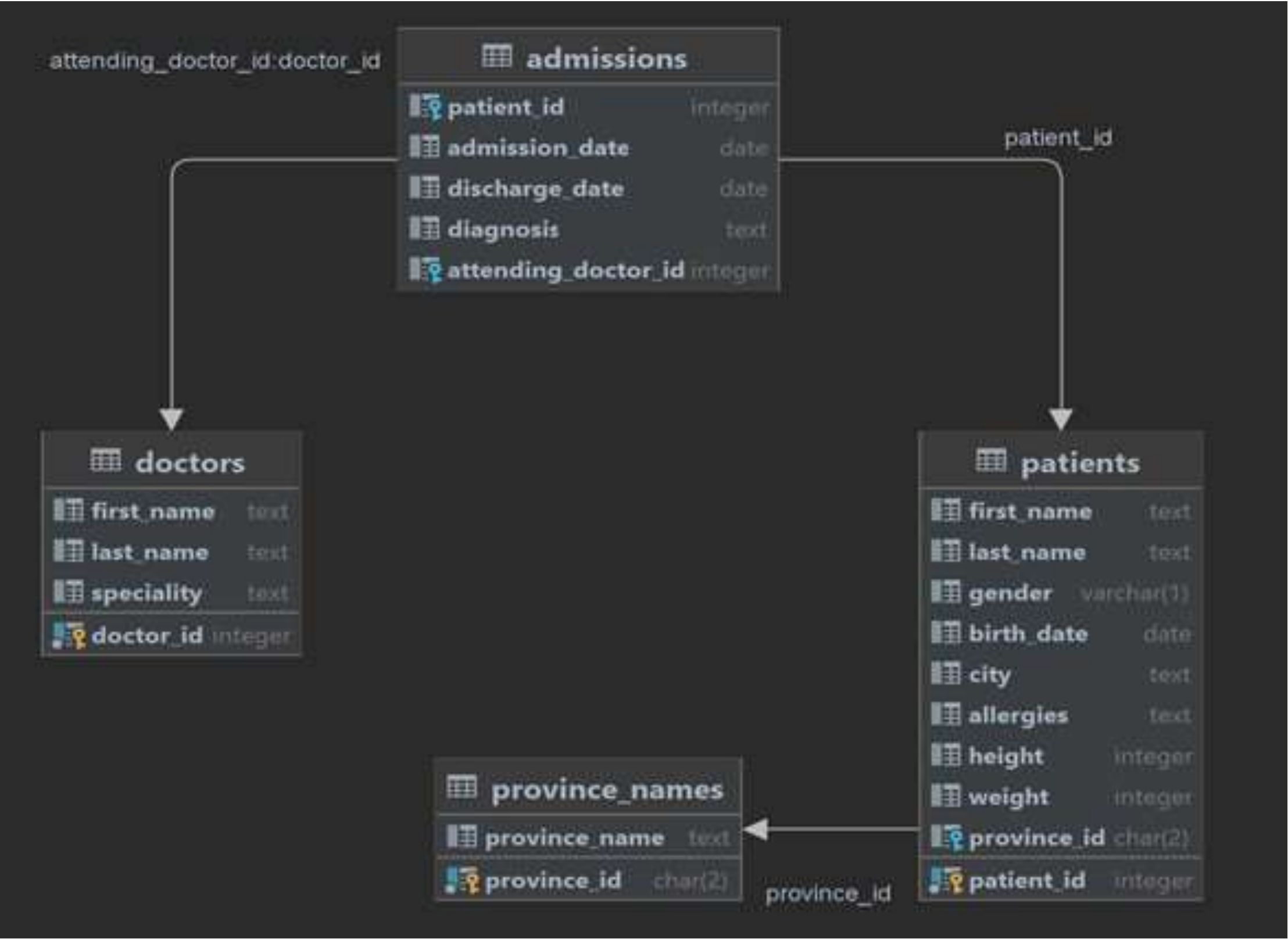# OBJECTIVE

ENHANCE PATIENT CARE

Utilize SQL to analyze patient data to identify trends and patterns that improve personalized treatment plans and healthcare outcomes.

OPTIMIZE OPERATIONS

Leverage data insights to improve resource allocation and operational efficiency, supporting informed decision-making and fostering business growth within the healthcare organization.

DATABASE SCHEMA DIAGRAM

Q1 SHOW FIRST NAME, LAST NAME, AND GENDER OF PATIENTS WHO'S 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
Blair	Diaz	M
Charles	Wolfe	M
Thomas	ONeill	M
Sonny	Beckett	M

Q2 SHOW FIRST NAME AND LAST NAME OF PATIENTS WHO DOES NOT HAVE ALLERGIES.

select first_name,last_name,allergies from patients
where allergies is null;

	first_name	last_name	allergies
▶	Donald	Waterfield	NULL
	Blair	Diaz	NULL
	Thomas	ONeill	NULL
	Sonny	Beckett	NULL
	Cedric	Coltrane	NULL
	Hank	Spencer	NULL

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
Cross
Calleigh
Catherine
Caroline

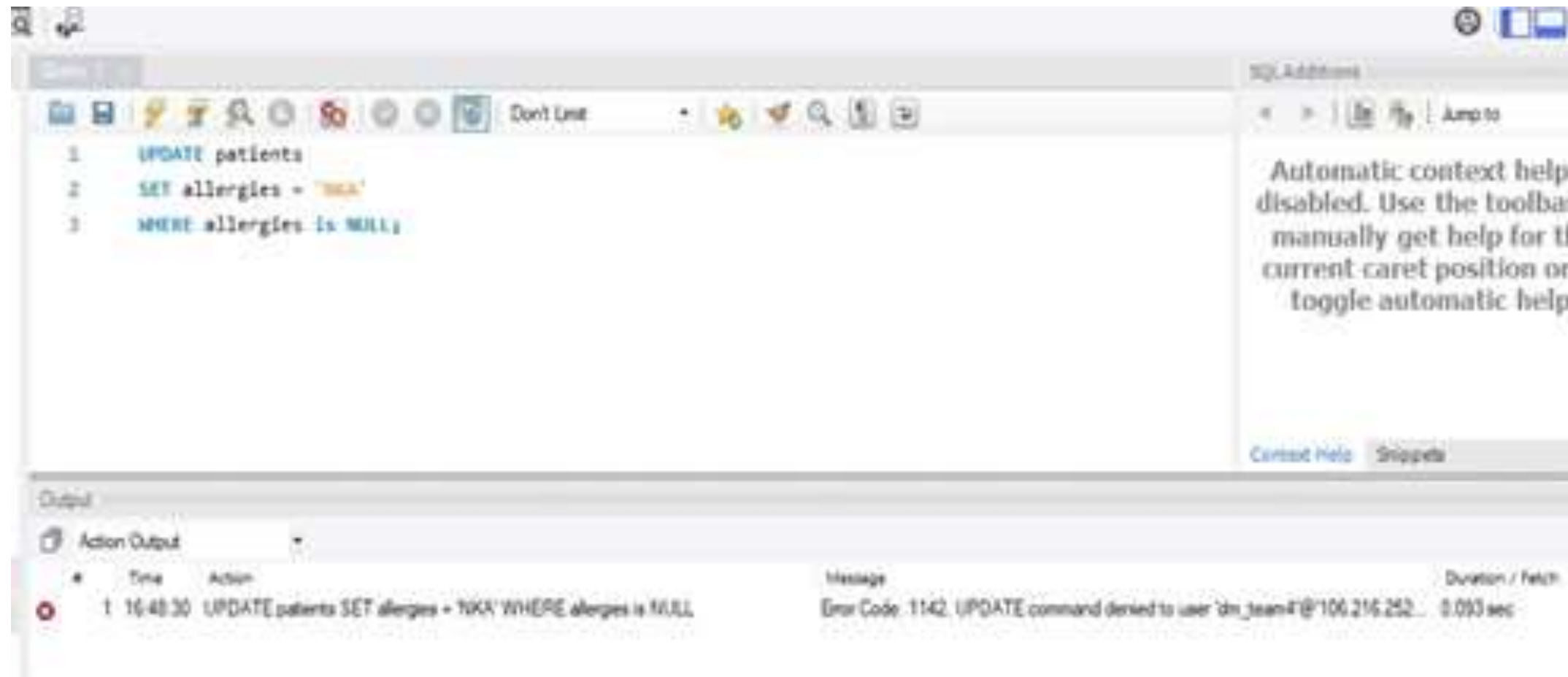**Q4   SHOW FIRST NAME AND LAST NAME OF PATIENTS THAT WEIGHT WITHIN THE RANGE OF 100 TO 120 (INCLUSIVE)**

select first_name,last_name,weight from
patients where weight between '100' and '120';

first_name	last_name
Jiji	Sharma
Blair	Diaz
Thomas	ONeill
Sonny	Beckett
Tom	Halliwell
Jon	Doggett

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;
```

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
Blair Diaz
Charles Wolfe
Sue Falcon
Thomas ONeill

Q7 SHOW FIRST NAME, LAST NAME, AND THE FULL PROVINCE NAME OF EACH PATIENT.
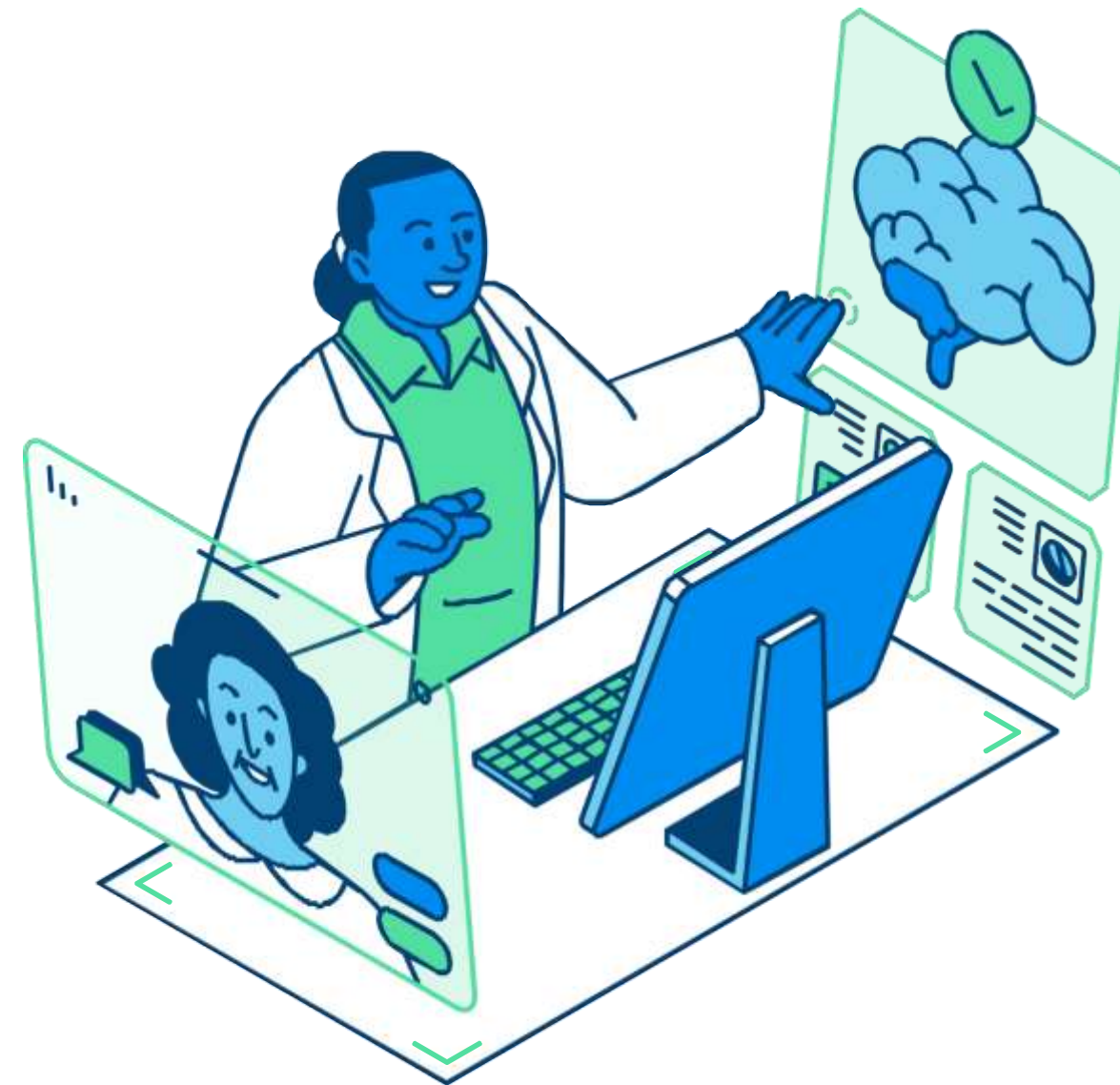
select first_name,last_name,province_name
from patients
join province_names
on patients.province_id =
province_names.province_id;

first_name	last_name	province_name
Donald	Waterfield	Ontario
Mickey	Baasha	Ontario
Jiji	Sharma	Ontario
Blair	Diaz	Ontario
Charles	Wolfe	Ontario
Sue	Falcon	Ontario
Thomas	ONeill	Ontario

Q8   SHOW HOW MANY PATIENTS HAVE A BIRTH_DATE WITH 2010 AS THE BIRTH YEAR.

```sql
select count(*) as total_patients
from patients
where year(birth_date) = '2010';
```

patient_count
55

Q9 SHOW THE FIRST_NAME, LAST_NAME, AND HEIGHT OF THE PATIENT WITH THE GREATEST HEIGHT.

```
select first_name,last_name,height
from patients
where height =(select max(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

SHOW THE TOTAL NUMBER OF ADMISSIONS.

select count(*) as total_admissions
from admissions;

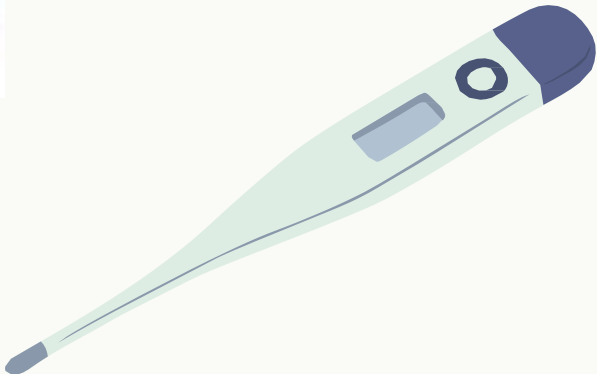| total_admissions |
| --- |
| 5067 |

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_doctor_id
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	2019-02-27	2019-02-27	Lower Quadrant Pain	27
17	2019-03-04	2019-03-04	Diabetes Mellitus	9
28	2019-03-30	2019-03-30	Cancer Of The Stomach	26
31	2018-09-26	2018-09-26	Cardiovascular Disease	19
53	2018-10-24	2018-10-24	Urinary Tract Infection	8

Q13 SHOW THE TOTAL NUMBER OF ADMISSIONS FOR PATIENT_ID 579.

```
select patient_id,count(patient_id) as
total_admissions
from  admissions
where patient_id =579;
```
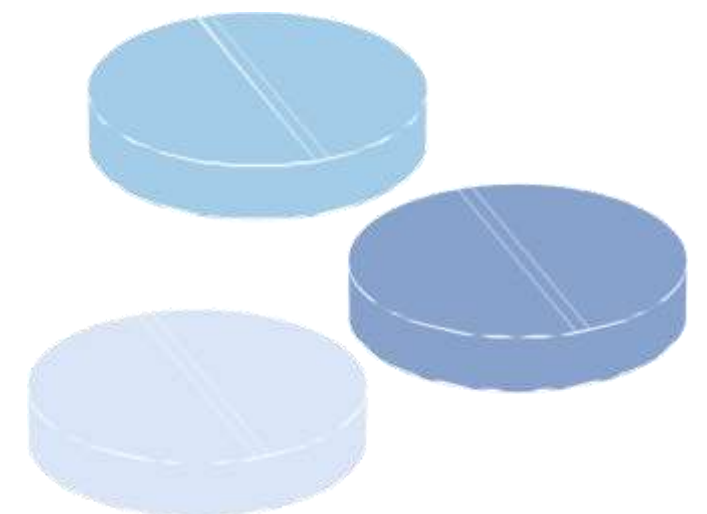
patient_id	total_admissions
579	2

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

Q15 WRITE A QUERY TO FIND THE FIRST_NAME, LAST NAME AND BIRTH DATE OF PATIENTS WHO HAVE HEIGHT MORE THAN 160 AND WEIGHT MORE THAN 70

select first_name,last_name,birth_date,height,weight
FROM patients
WHERE height >160 AND weight >70;

first_name	last_name	birth_date	height	weight
Mickey	Baasha	1981-05-28	185	76
Jiji	Sharma	1957-09-05	194	106
Blair	Diaz	1967-01-07	191	104
Thomas	ONeill	1993-01-31	180	117
Sonny	Beckett	1952-12-11	174	105
Sister	Spitzer	1966-10-15	173	95
Rick	Bennett	1977-01-27	220	95

Q16 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;
```
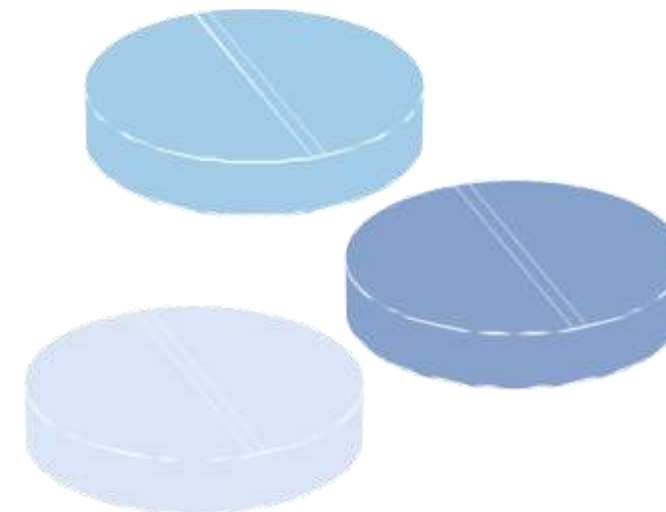
birth_year
1918
1923
1925
1926
1927
1928
1929

Q17 SHOW UNIQUE FIRST NAMES FROM THE PATIENTS TABLE WHICH ONLY OCCURS ONCE IN THE LIST.

```
select first_name from patients
group by first_name
having COUNT(first_name) = 1;
```

first_name
Abby
Adelaide
Adelia
Akira
Albert
Aldo
Alec

Q18 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';
```

patient_id	first_name
496	Spiros
629	Spiros
648	Stanislaus
1273	Stanislaus
1789	Seamus
1926	Stanislaus
1996	Stanislaus

Q19 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 diagnosis = 'Dementia';
```

patient_id	first_name	last_name
160	Miranda	Delacour
178	David	Bustamonte
207	Matt	Celine
613	Jaki	Granger
836	Montana	Vimes
924	Simon	Spellman
1201	Irene	Murphy

Q20 DISPLAY EVERY PATIENT'S FIRST_NAME. ORDER THE LIST BY THE LENGTH OF EACH NAME AND THEN BY ALPHBETICALLY.

```
select first_name
from patients
order by length(first_name), first_name;
```

	first_name
▶	Al
	Al
	Al
	Al
	Al
	Al
	Al

patients 10 ✕

Q21   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

Q22 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.

```sql
select sum(gender ='M') as male_count, sum(gender ='F') as female_count
from patients;
```

	male_count	female_count
▶	2468	2062

Q23 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(diagnosis) > 1;
```

	patient_id	diagnosis
▶	137	Pregnancy
	320	Pneumonia
	1577	Congestive Heart Failure
	2004	Left Shoulder Rotator Cuff Repair
	2859	Severed Spine At C3
	3012	Appendicitis
	3367	Pyelonephritis

Q24 SHOW THE CITY AND THE TOTAL NUMBER OF PATIENTS IN THE CITY. ORDER FROM MOST TO LEAST PATIENTS AND THEN BY CITY NAME ASCENDING.

```sql
select city, COUNT(*) as number_of_patients
from patients
group by city
order by number_of_patients desc, city asc;
```

city	number_of_patients
Hamilton	1938
Toronto	317
Burlington	276
Brantford	147
Ancaster	117
Stoney Creek	107
Cambridge	79

Q25   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;
```

first_name	last_name	role
Donald (Dona...aterfield)		Patient
Mickey	Baasha	Patient
Jiji	Sharma	Patient
Blair	Diaz	Patient
Charles	Wolfe	Patient
Sue	Falcon	Patient
Thomas	ONeill	Patient

Q26   SHOW ALL ALLERGIES ORDERED BY POPULARITY. REMOVE NULL VALUES FROM QUERY.

select allergies, count(*) as total_diagnosis
from patients
where allergies is not null
group by allergies
order by total_diagnosis DESC;

allergies	total_diagnosis
Penicillin	1082
Codeine	305
Sulfa	157
ASA	99
Sulfa Drugs	71
Peanuts	52
Iodine	48

Q27 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 ;

first_name	last_name	birth_date
Frances	Kobayakawa	1970-01-02
Sunny	Burrell	1970-01-07
Penelope	Beckett	1970-01-14
Deborah	Stewart	1970-01-14
Augusta	Decker	1970-01-22
Sookie	Brearly	1970-02-01
Temple	Wylie	1970-02-10

Q28   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 DECENDING ORDER.

```
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
OVERSTREET,zenigata
BENNETT,zen
MEPHESTO,zelda
MORRIS,zelda

Q29   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 pr.province_id, sum(pa.height) as sum_height
from province_names pr
join patients pa on pr.province_id =pa.province_id
group by pr.province_id
having sum(pa.height) >=7000;
```

province_id	sum_height
BC	7720
NS	9765
ON	678037

Q30   SHOW THE DIFFERENCE BETWEEN THE LARGEST WEIGHT AND SMALLEST WEIGHT FOR PATIENTS WITH THE LAST NAME 'MARONI'.

```
select (max(weight) - min(weight)) as weight_diff
from patients
where last_name ='Maroni';
```

weight_diff
▶ 71

Q31   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.
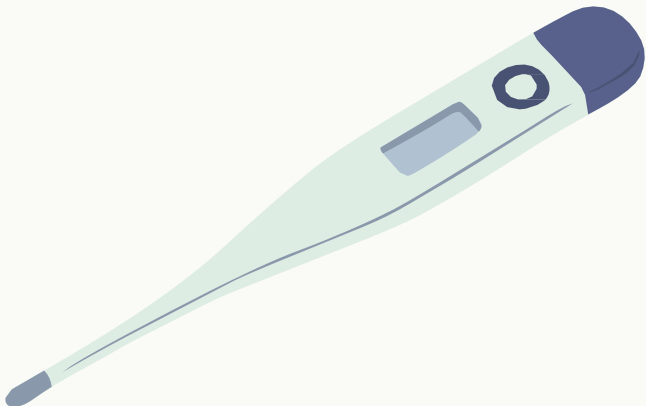
select day(admission_date) as day_no,
count(patient_id) as no_of_admissions
from admissions
group by day_no
order by no_of_admissions desc;

day_no	no_of_admissions
11	184
4	184
9	183
2	180
12	179
6	179
16	177

Q32 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 DECENDING. E.G. IF THEY WEIGHT 100 TO 109 THEY ARE PLACED IN THE 100 WEIGHT GROUP, 110-119 =110 WEIGHT GROUP, ETC.

```
select floor(weight / 10) * 10 as weight_group,
count(*) as total_patients
from patients
group by weight_group
order by weight_group desc;
```

patients_in_group	weight_group
3	150
50	140
184	130
391	120
509	110
426	100
444	90

Q33 SHOW PATIENT_ID, WEIGHT, HEIGHT, ISOBESE FROM THE PATIENTS TABLE. DISPLAY ISOBESE AS A BOOLEAN 0 OR 1 OBESE IS DEFINED AS WEIGHT(KG)/(HEIGHT(M). WEIGHT IS IN UNITS KG. HEIGHT IS IN UNITS CM.

```
select patient_id,weight,height,
case
    when weight /power(height / 100.00, 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
7	117	180	1

Q34   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'. CHECK PATIENTS, ADMISSIONS, AND DOCTORS TABLES FOR REQUIRED INFORMATION.

```
select p.patient_id, p.first_name, p.last_name,d.specialty
from patients p
inner join admissions a on p.patient_id =a.patient_id
inner join doctors d on a.attending_doctor_id =d.doctor_id
where a.diagnosis ='Epilepsy'and d.first_name ='Lisa';
```

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

Q35   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:
- PATIENT_ID
- THE NUMERICAL LENGTH OF PATIENT'S LAST_NAME
- YEAR OF PATIENT'S BIRTH_DATE

```sql
select distinct p.patient_id, concat(a.patient_id,
length(p.last_name), year(p.birth_date)) as temp_password
from patients p
inner join admissions a on p.patient_id =a.patient_id;
```

patient_id	temp_password
1	1101963
3	361957
6	662017
7	761993
8	871952
9	971966
10	1081961

THANK YOU

https://www.linkedin.com/in/suhana-shaikh-936202290

suhanashaikh782@gmail.com

https://github.com/Suhana579