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# Hospital Management Analysis

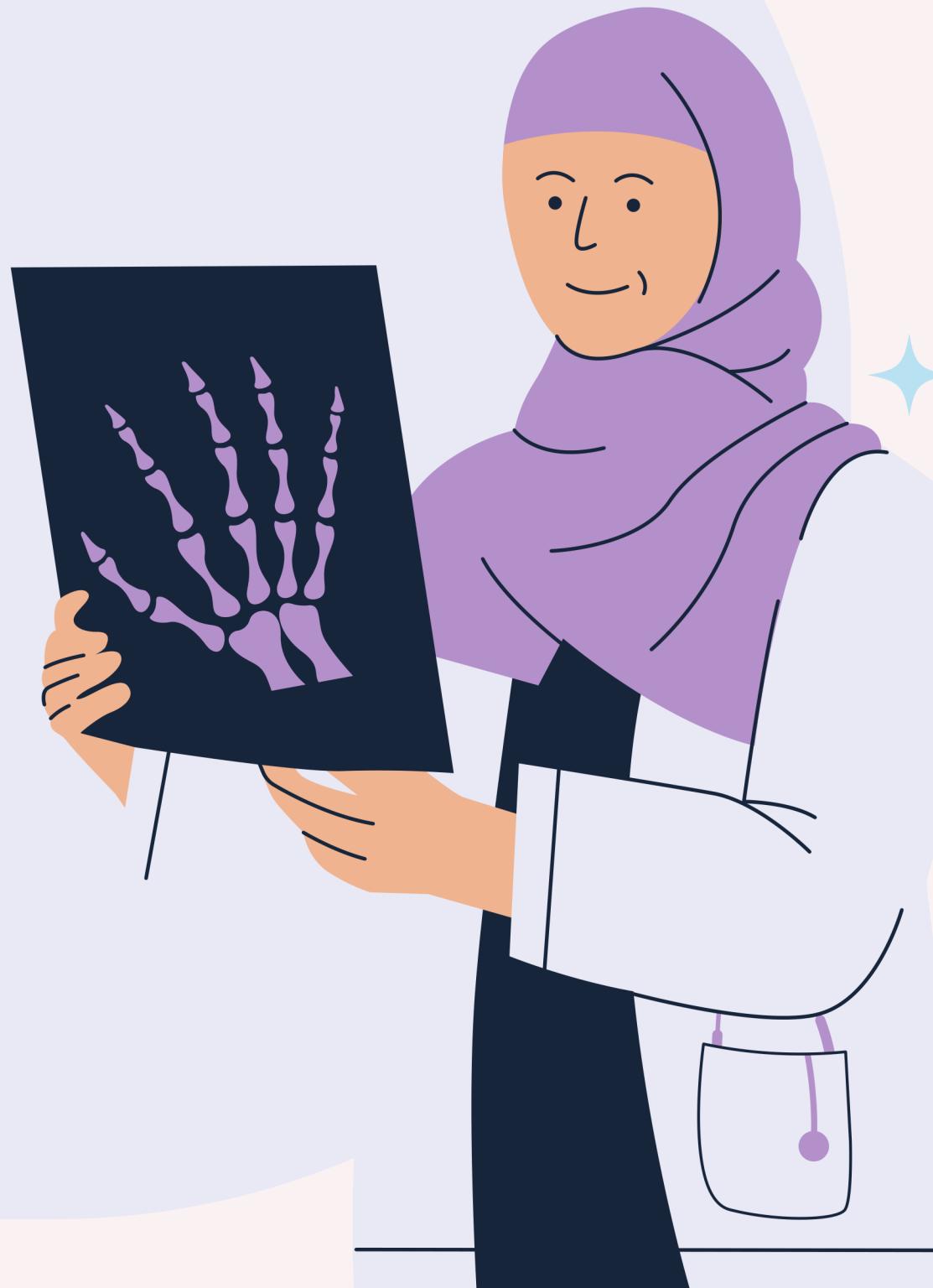


# Objective

The primary objective of this project is to develop a comprehensive and efficient Hospital Management System (HMS) using SQL to streamline and enhance the management of hospital operations.

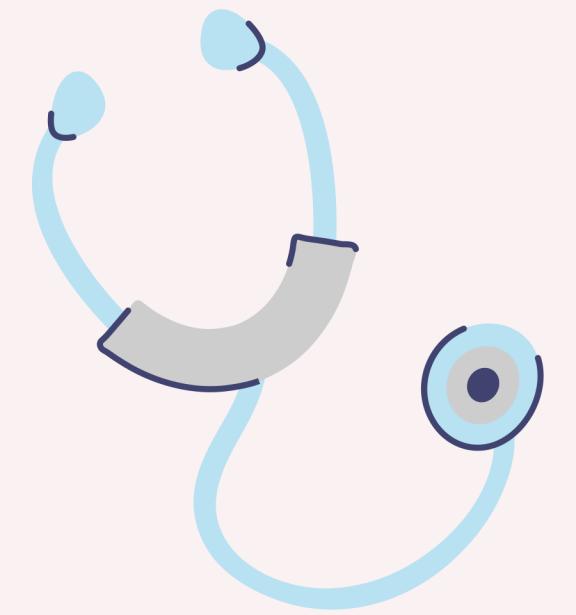
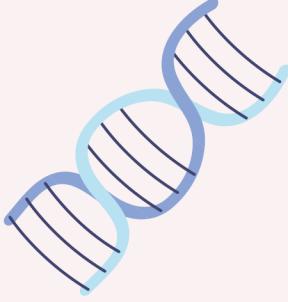
The system aims to: Enhance Data Management and Accessibility, Improve Patient Care and Experience, Streamline Administrative Processes, Ensure Data Security and Privacy, Enable Effective Reporting and Analytics.

By achieving these objectives, the project aims to enhance the overall efficiency, effectiveness, and quality of hospital management ultimately leading to improved patient satisfaction and operational excellence.



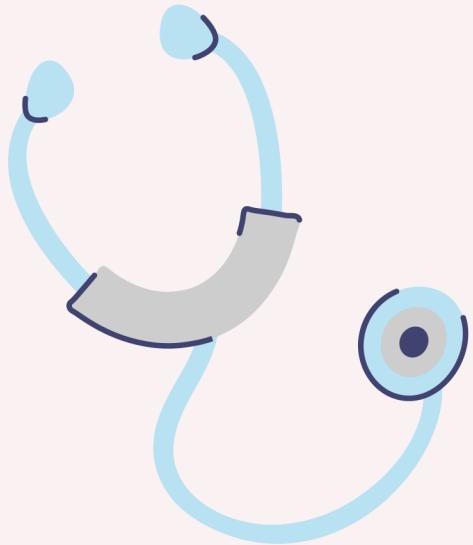
## Part -2

# Moderate Question



## Question 1.

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



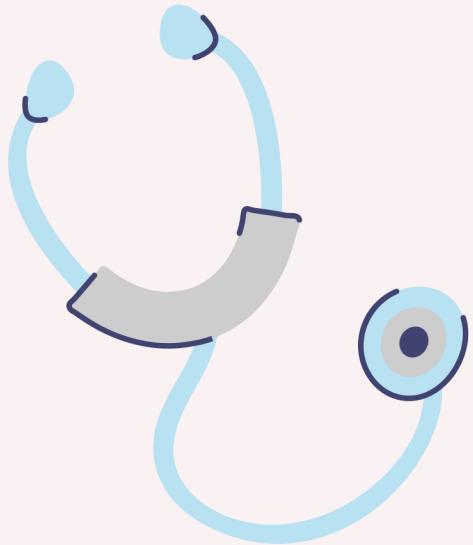
```
SELECT DISTINCT  
    YEAR(birth_date)  
FROM  
    patients  
ORDER BY YEAR(birth_date);
```



	YEAR(birth_date)
▶	1918
	1923
	1925
	1926
	1927
	1928
	1929
	1931
	1933
	1934
	1936
	1937
	1938
	1939
	1940

## Question 2.

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
Angel
Brodie
Anne
Gytha
Zoe
Jonny
Priestley
Mattie
Vin
Robbie
Valentin
Nina
Samus
Cary
Gwenog

### Question 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 LENGTH(first_name) >= 6;
```

	patient_id	first_name
▶	496	Spiros
	629	Spiros
	648	Stanislaus
	1273	Stanislaus
	1789	Seamus
	1926	Stanislaus
	1996	Stanislaus
	2258	Spiros
	2378	Stanislaus
	2771	Stanislaus
	3487	Stanislaus

## Question 4.

Show the total amount of male patients and the total amount of female patients in the patients table.

```
SELECT  
  (SELECT  
    COUNT(*)  
   FROM  
    patients  
  WHERE  
    gender = 'M') AS total_male,  
  (SELECT  
    COUNT(*)  
   FROM  
    patients  
  WHERE  
    gender = 'F') AS total_female;
```

	total_male	total_female
▶	2468	2062

## Question 5.

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
	924	Simon	Spellman
	1201	Irene	Murphy
	1264	Jillian	Valentine
	1402	Kathryn	Hallow
	1491	Doris	McGrew
	1585	Alex	Cantropus
	1749	Alejandro	Mellie
	1798	Sister	Trenton
	1844	Jadu	Wilson
	1938	Anthony	Anneke
	2292	Jessica	Talbot

## Question 6.

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 ASC , first_name , last_name;
```

	first_name	last_name	allergies
▶	Briareos	Hayes	Morphine
	Christine	Argyros	Morphine
	Griselda	Hopper	Morphine
	Henry	Huang	Morphine
	Janice	Redfield	Morphine
	Jesse	Guarnaccia	Morphine
	Joel	Takata	Morphine
	Jon	Guarnaccia	Morphine
	Juan	Davies	Morphine
	Kelly	Landsman	Morphine
	Kent	Jacobs	Morphine
	Mickey	Yamamoto	Morphine
	Norman	Scott	Morphine
	Patricia	Newbury	Morphine
	Patty	Brady	Morphine
	Raylan	Mallory	Morphine

## Question 7.

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
	2859	Severed Spine At C3
	3012	Appendicitis
	3367	Pyelonephritis
	3468	Congestive Heart Failure
	4083	Congestive Heart Failure
	4121	Congestive Heart Failure
	4363	Congestive Heart Failure

## Question 8.

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 ASC;
```

	city	total_patients
▶	Hamilton	1938
	Toronto	317
	Burlington	276
	Brantford	147
	Ancaster	117
	Stoney Creek	107
	Cambridge	79
	Dundas	79
	Milton	65
	Paris	58
	Grimsby	55
	Timmins	53
	Ottawa	51
	Halifax	50
	Oakville	44
	Sarnia	43

## Question 9.

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	Waterfield	Patient
	Mickey	Baasha	Patient
	Jiji	Sharma	Patient
	Blair	Diaz	Patient
	Charles	Wolfe	Patient
	Sue	Falcon	Patient
	Thomas	ONeill	Patient
	Sonny	Beckett	Patient
	Sister	Spitzer	Patient
	Cedric	Coltrane	Patient
	Hank	Spencer	Patient
	Sara	di Marco	Patient
	Daphne	Seabright	Patient
	Rick	Bennett	Patient
	Amy	Leela	Patient
	Woody	Bashir	Patient

## Question 10.

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

```
SELECT
    allergies, COUNT(*) AS popularity
FROM
    patients
GROUP BY allergies
HAVING allergies IS NOT NULL
ORDER BY popularity DESC;
```

Result Grid | Filter

	allergies	popularity
▶	Penicillin	1082
	Codeine	305
	Sulfa	157
	ASA	99
	Sulfa Drugs	71
	Peanuts	52
	Iodine	48
	Tylenol	42
	Bee Stings	40
	Valporic Acid	38
	Tetracycline	34
	Wheat	33
	Peanut Butter	29
	Micropore T...	27
	Hay Fever	25
	Strawberries	25

## Question 11.

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, YEAR(birth_date)  
FROM  
    patients  
WHERE  
    YEAR(birth_date) BETWEEN 1970 AND 1979  
ORDER BY birth_date ASC;
```

	first_name	last_name	YEAR(birth_date)
▶	Frances	Kobayakawa	1970
	Sunny	Burrell	1970
	Penelope	Beckett	1970
	Deborah	Stewart	1970
	Augusta	Decker	1970
	Sookie	Bearly	1970
	Temple	Wylie	1970
	Deanna	Spano	1970
	Jadu	Principal	1970
	Betty	Stephens	1970
	Jo	Sahid	1970
	Santino	Hawker	1970
	Andy	Guarnaccia	1970
	Richard	Arroway	1970
	Alan	Davis	1970
	Cameron	Spellman	1970

## Question 12.

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.

```
SELECT  
    CONCAT(UPPER(last_name),  
           ' , ',  
           LOWER(first_name)) AS full_name  
  
FROM  
    patients  
  
ORDER BY first_name DESC;
```

Result Grid	
	full_name
▶	MILLER , zoe
	CORBIE , ziva
	OVERSTREET , zenigata
	KOBAYAKAWA , zenigata
	BENNETT , zen
	MORRIS , zelda
	MEPHESTO , zelda
	FLUTE , zefram
	THOMAS , zefram
	MARONEY , zatanna
	TYRELL , zatanna
	WONG , zane
	CHE , zane
	DREW , zack
	BAKSHI , zachary
	PRESTON , yusuke



### Question 13.

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 patient_height
FROM
    patients
GROUP BY province_id
HAVING patient_height >= 7000;
```



Result Grid | Filter Rows:

	province_id	patient_height
▶	ON	678037
▶	NS	9765
▶	BC	7720





**Question 14.**  
Show the difference between the largest weight and smallest weight for patients with the last name "Maroni".



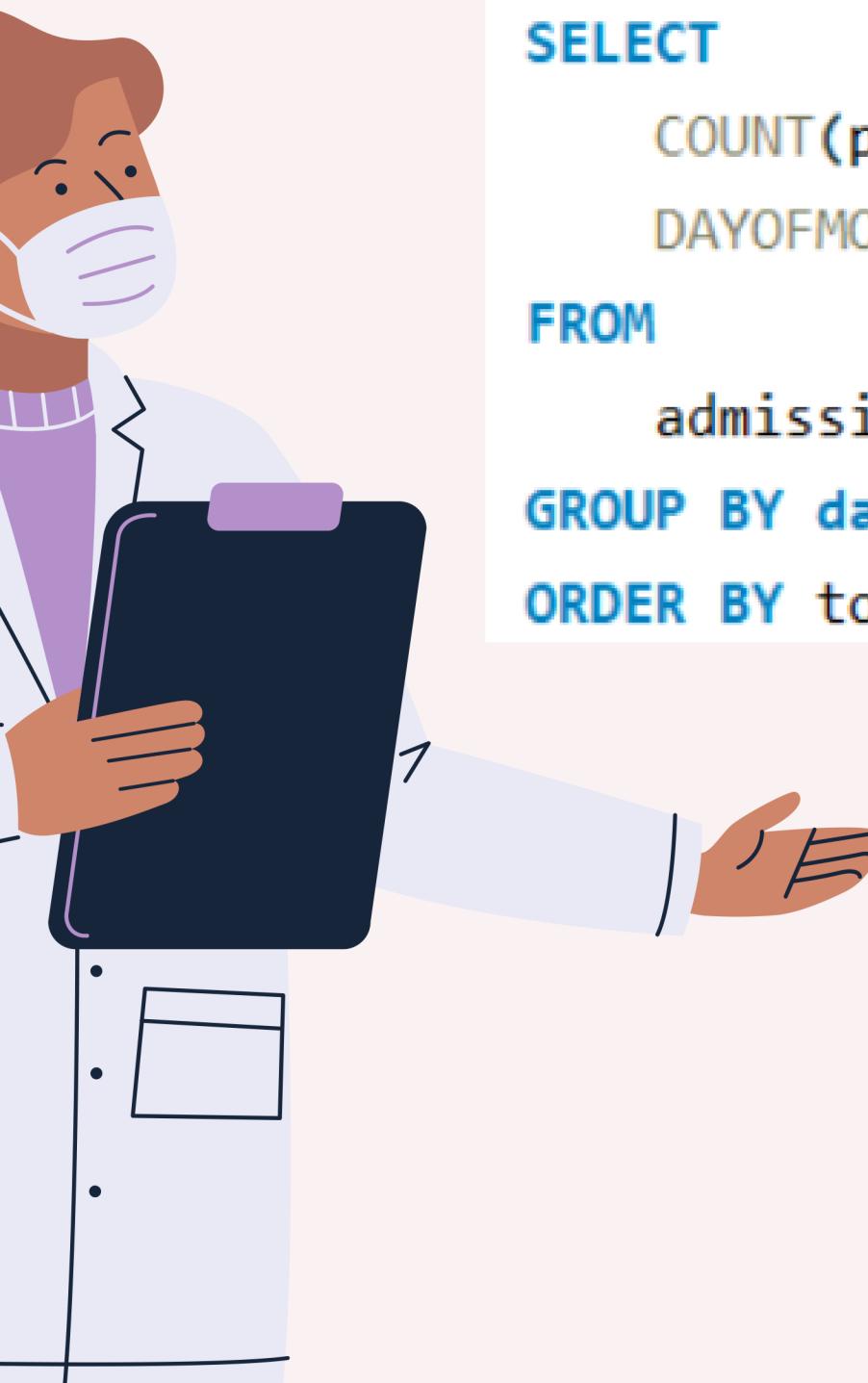
```
SELECT  
    MAX(weight) - MIN(weight) AS weight_diff  
FROM  
    patients  
WHERE  
    last_name = 'Maroni';
```



Result Grid	
	weight_diff
▶	71

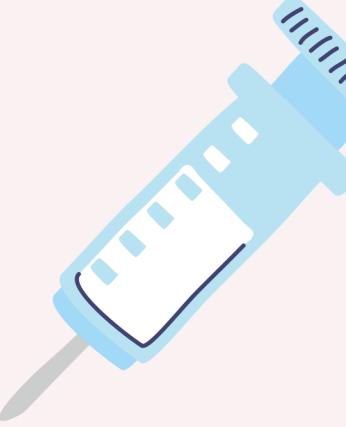
## Question 15.

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  
    COUNT(patient_id) AS total_admission,  
    DAYOFMONTH(admission_date) AS day  
FROM  
    admissions  
GROUP BY day  
ORDER BY total_admission DESC;
```

	total_admission	day
▶	184	4
	184	11
	183	9
	180	2
	179	6
	179	12
	177	16
	174	21
	173	13
	173	28
	167	7
	166	8
	166	18
	166	3
	165	20
	165	30



## Question 16.

Show the `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 doctors.doctor_id = admissions.attending_doctor_id
GROUP BY attending_doctor_id;
```



	first_name	last_name	total_admission
▶	Jenny	Pulaski	162
	Lisa	Cuddy	184
	Mickey	Duval	183
	Joshua	Green	187
	Miriam	Tregre	168
	Simon	Santiago	190
	Tasha	Phillips	168
	Stephanie	Cohen	182
	Tyrone	Smart	182
	Donna	Greenwood	203
	Marie	Brinkman	198
	Claude	Walls	214
	Scott	Hill	179
	Flora	Moore	194
	Jon	Nelson	181
	Monica	Singleton	191

## Question 17.

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

	doctor_id	full_name	first_admission_date	last_admission_date
▶	24	Jenny Pulaski	2018-06-06	2019-06-05
	21	Lisa Cuddy	2018-06-06	2019-06-05
	8	Mickey Duval	2018-06-10	2019-06-05
	2	Joshua Green	2018-06-06	2019-06-03
	3	Miriam Tregre	2018-06-06	2019-06-03
	22	Simon Santiago	2018-06-08	2019-06-04
	6	Tasha Phillips	2018-06-06	2019-06-02
	19	Stephanie Cohen	2018-06-06	2019-06-05
	14	Tyrone Smart	2018-06-06	2019-05-31
	27	Donna Greenwood	2018-06-06	2019-06-05
	15	Marie Brinkman	2018-06-09	2019-06-01
	1	Claude Walls	2018-06-10	2019-06-03
	5	Scott Hill	2018-06-06	2019-06-05
	12	Flora Moore	2018-06-07	2019-06-05
	9	Jon Nelson	2018-06-10	2019-06-05
	10	Monica Singleton	2018-06-09	2019-06-04

Question 18.  
Display the total amount of patients for each province.  
Order by descending.

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

	province_name	total_patients
▶	Ontario	4298
	Nova Scotia	60
	British Columbia	49
	Alberta	47
	Manitoba	31
	Quebec	23
	Saskatchewan	13
	Newfoundland and Labrador	9

## Question 19.

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 doctors.doctor_id = admissions.attending_doctor_id;
```

	patient_name	diagnosis	doctor_name
▶	Donald Waterfield	Ineffective Breathing Pattern R/T Fluid Accumulation	Jenny Pulaski
	Donald Waterfield	Ovarian Dermoid-Cyst	Lisa Cuddy
	Jiji Sharma	Congestive Heart Failure	Mickey Duval
	Jiji Sharma	Cardiac Arrest	Joshua Green
	Sue Falcon	Asthma Exacerbation	Miriam Tregre
	Sue Falcon	Uterine Fibroid	Simon Santiago
	Thomas O'Neill	Cancer	Mickey Duval
	Sonny Beckett	Amigima	Tasha Phillips
	Sister Spitzer	Ruptured Appendicitis	Stephanie Cohen
	Sister Spitzer	Osteoarthritis	Mickey Duval
	Cedric Coltrane	Zenkers Diverticulitis	Tyrone Smart
	Cedric Coltrane	Lower Quadrant Pain	Donna Greenwood
	Hank Spencer	Prostatectomy	Marie Brinkman
	Sara di Marco	Cerebral Aneurysm Rupture	Lisa Cuddy
	Daphne Seabright	Renal Failure	Claude Walls
	Amy Leela	Hiatal Hernia	Scott Hill

## Question 20.

Display the `first_name` , `last_name` and number of duplicates 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 duplicates  
FROM  
    patients  
GROUP BY first_name , last_name  
HAVING COUNT(*) > 1;
```

	first_name	last_name	duplicates
▶	Belladonna	Thomas	2
	Jack	Valentine	2
	Avon	Travis	2
	Marcus	Jackson	2
	Emil	Owens	2
	Mendy	Farrell	2
	Chris	Johnson	2
	Jackson	Kennedy	2
	Sam	Carr	2
	Jim	Grant	2
	Jack	McArthur	2
	Dol	Forelli	2
	Jack	Bennett	2
	Luanne	Matthews	2
	Samantha	Blossom	2
	Kay	Sanderson	2

# Thank you!

