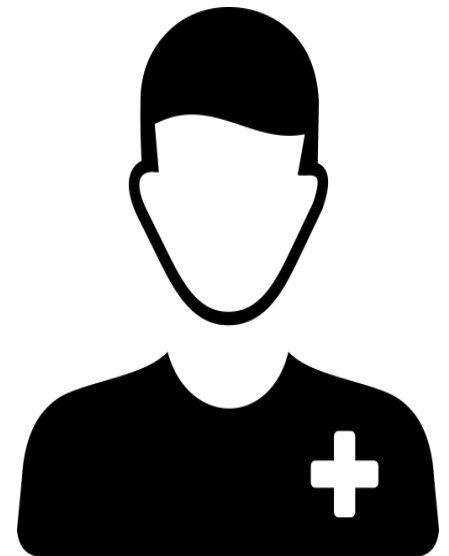
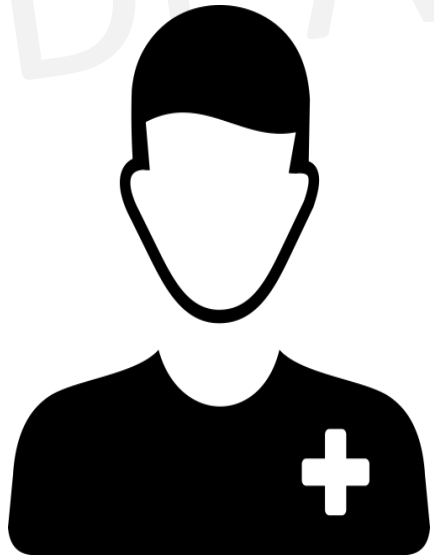


# Medical Data History SQL AD-HOC ANALYSIS



Dr Ajay Singh Chauhan

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# 1.Introduction :-

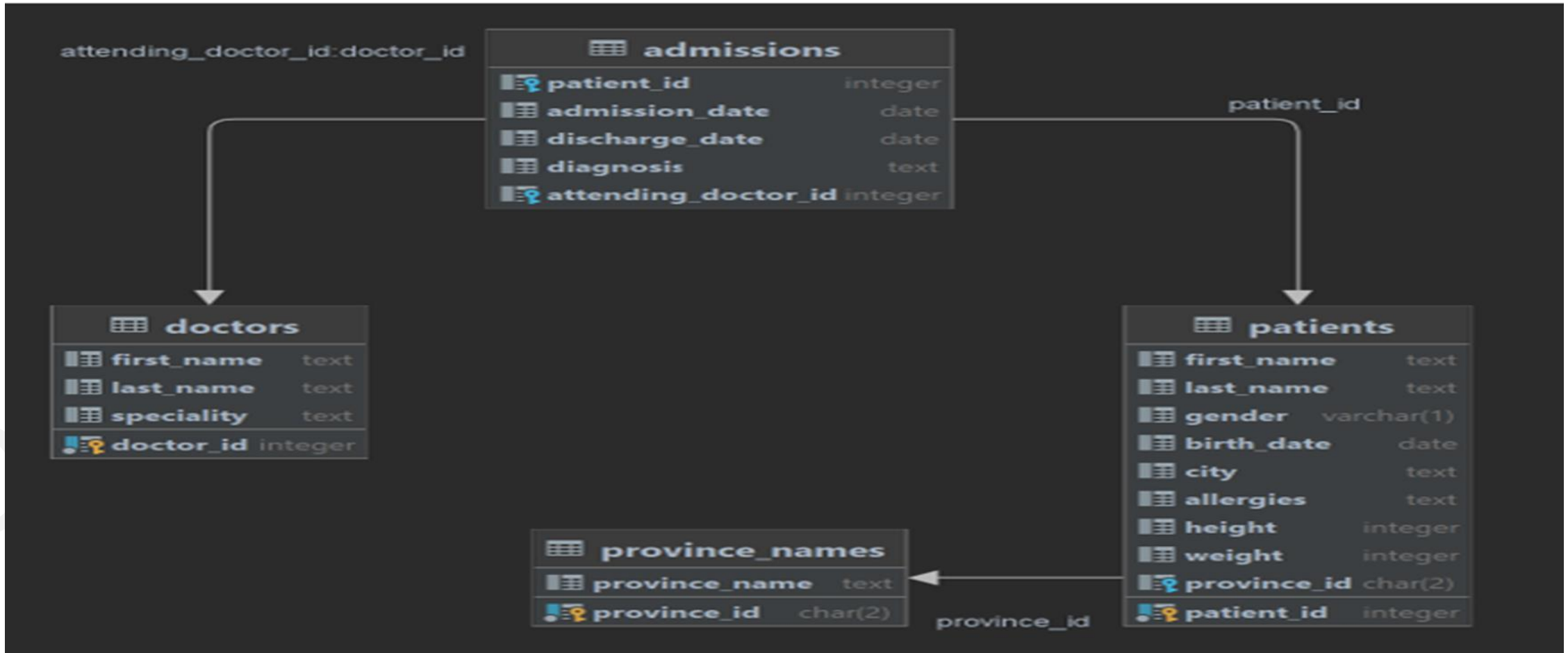
The purpose of this project was to demonstrate the ability to fetch data from a client using SQL queries and to solve some challenging problems with those queries. Today, we will walk you through the project overview, the data used, the problem queries, the results, and the insights gained from this project.

## 2.Project Overview :-

For this project, we utilized MySQL Workbench to create a database for a hypothetical hospital. The goal was to create a system that could efficiently store and manage patient information, such as personal details, medical history, and allergies. We also aimed to create a user-friendly interface for medical professionals to easily access and update patient records.

To achieve these goals, we used a variety of data types, including integers, strings, and dates, to accurately represent patient information. we also implemented various SQL commands, such as SELECT, INSERT, UPDATE, and DELETE, to manipulate and retrieve data from the database. Additionally, we created several views to simplify complex queries and provide a more intuitive interface for users.

## SQL Schema:





### 3.Fetching Data :-

To fetch data for this project, we used MySQL Workbench to connect to the client's database with the provided credentials. We then ran a series of queries to extract the necessary data for our analysis. The process of fetching the data was straightforward

#ques-1 : 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';
```

Result Grid   Filter Rows: <input type="text"/>			
	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
	Cedric	Coltrane	M
	Hank	Spencer	M
	Rick	Bennett	M
	Woody	Bashir	M
	Tom	Halliwell	M
	John	West	M

#ques-2 : Show first name,last name of patients  
# who does not have allergies ?

```
select first_name,last_name  
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
Sara	di Marco	NULL
Amy	Leela	NULL
Rachel	Winterbourne	NULL
John	West	NULL

#ques-3 :Show first name of patients  
# thats start with the letter 'C' ?

```
select first_name  
from patients where first_name like 'c%';
```

Result Grid	
	first_name
▶	Charles
	Cedric
	Charles
	Cross
	Calleigh
	Catherine
	Caroline
	Casanova
	Chen
	Charmian

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#ques-4 :Show first name,last name of patients  
# that weights within the range of 100 to 120 (inclusive) ?

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

Result Grid		Filter Rows:
	first_name	last_name
▶	Jiji	Sharma
	Blair	Diaz
	Thomas	ONeill
	Sonny	Beckett
	Tom	Halliwel
	Jon	Doggett
	Angel	Edwards
	John	Farley
	Temple	Russert
	Don	Edwards

#ques-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 = 'NULL';
```

province_id	allergies	height	weight
ON	NKA	156	65
ON	Sulfa	185	76
ON	Penicillin	194	106
ON	NKA	191	104
ON	Penicillin	47	10
ON	Penicillin	43	5
ON	NKA	180	117
NS	NKA	174	105
ON	Penicillin	173	95
ON	NKA	157	61
ON	NKA	158	74
ON	NKA	145	46



#ques-6 :Show first name,last name concatenated into  
# one column to show their full name ?

```
select first_name,last_name ,
concat(first_name,' ',last_name) as full_name
from patients;
```

Result Grid   Filter Rows: <input type="text"/>			
	first_name	last_name	full_name
▶	Donald	Waterfield	Donald Waterfield
	Mickey	Baasha	Mickey Baasha
	Jiji	Sharma	Jiji Sharma
	Blair	Diaz	Blair Diaz
	Charles	Wolfe	Charles Wolfe
	Sue	Falcon	Sue Falcon
	Thomas	ONeill	Thomas O'Neill
	Sonny	Beckett	Sonny Beckett
	Sister	Spitzer	Sister Spitzer
	Cedric	Coltrane	Cedric Coltrane
	Hank	Spencer	Hank Spencer
	Sara	di Marco	Sara di Marco



#ques-7 :Show first name,last name,  
# and the full province name of each patient.

```
select first_name,last_name,province_name  
from patients as p  
join provinces as pv  
using (province_id);
```

Result Grid   Filter Rows: <input type="text"/>			
	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
	Sonny	Beckett	Nova Scotia
	Sister	Spitzer	Ontario
	Cedric	Coltrane	Ontario
	Hank	Spencer	Ontario
	Sara	di Marco	Ontario

#ques-8 :Show how many patients have a  
# Birth\_date with 2010 as the birth year..?

```
SELECT count(*) as Birth_year_as_2010 from patients  
where year(birth_date)= 2010;
```

Result Grid   Filter Rows: <input type="text"/>	
	Birth_year_as_2010
▶	25



Result Grid

Filter Rows:

	first_name	last_name	max_Height_in_cm
▶	Sam	Haruko	226



```
where height = (select max(height) from patients);
```

[illegible]

```
select * from patients
where patient_id in (1,45,534,879,1000);
```





#ques-11 : Show the total number of admissions ?

```
select count(*) as total_no_of_admsn from admissions;
```

Result Grid				Filter Rows:
		total_no_of_admsn		
		2000		



#ques-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;
```

Result Grid				Filter Rows:	Export:	Wrap Cell Content:
						
	patient_id	admission_date	discharge_date	diagnosis	attending_doctor_id	
	1	20-09-2018	20-09-2018	Ineffective Breathin Pattern R/T Fluid Accumulatio	24	
	9	31-12-2018	31-12-2018	Ruptured Appendicitis	19	
	10	27-02-2019	27-02-2019	Lower Quadrant Pain	27	
	17	04-03-2019	04-03-2019	Diabetes Mellitus	9	
	28	30-03-2019	30-03-2019	Cancer Of The Stomach	26	
	31	26-09-2018	26-09-2018	Cardiovascular Disease	19	
	53	24-10-2018	24-10-2018	Urinary Tract Infection	8	
	54	07-04-2019	07-04-2019	Hypertension	21	
	70	17-07-2018	17-07-2018	Migraine	20	
	78	17-06-2018	17-06-2018	Hypertension	17	
	91	30-08-2018	30-08-2018	Congestive Heart Failure	3	
	92	03-01-2019	03-01-2019	Osteo Arthritis Knee	5	



#ques-13:Show the total number of admissions for patient\_id 579.

```
select count(*) as no_of_admsn_for_patient_id_579
from admissions where patient_id=579;
```

Result Grid			 Filter Rows:
		no_of_admsn_for_patient_id_579	
▶	2		

#ques-14:Based on the cities that our patients live in,  
# show unique cities that are in province\_id 'NS' ?

```
select distinct city as city_with_provinceid_NS from patients
where province_id='NS';
```

Result Grid			 Filter Rows:
		city_with_provinceid_NS	
▶	Port Hawkesbury		
	Halifax		



#ques-15: Write a query to find the first\_name,  
#last name, 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 > 60 and weight > 70;
```

Result Grid		Filter Rows:		Export:	
	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
	Hank	Spencer	1969-08-10	158	74
	Daphne	Seabright	1954-11-18	146	77
	Rick	Bennett	1977-01-27	220	95
	Amy	Leela	1977-06-25	172	72
	Tom	Halliwel	1987-08-01	179	114
	Rachel	Winterbo...	1966-04-26	163	95

#ques-16: Show unique birth years from patients  
# and order them by ascending ?

```
select distinct year(birth_date) as distict_Birth_year
from patients
order by distict_Birth_year asc;
```

Result Grid			
	distict_Birth_year		
▶	1918		
	1923		
	1925		
	1931		
	1933		
	1934		
	1936		
	1938		
	1939		
	1940		
	1941		
	1943		

#ques-17:Show unique first names from the patients table  
# which only occurs once in the list ?

```
SELECT first_name as unique_name
FROM patients
GROUP BY first_name
HAVING COUNT(*) = 1;
```

Result Grid	
	unique_name
▶	Blair
	Angel
	Brodie
	Lucille
	Anne
	Gytha
	Jen
	Zoe
	Delores
	Gene
	Jonny
	Olwyn

#ques-18: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;
```

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

#ques-19:Show patient\_id,first\_name,last\_name  
#from patients whose diagnosis is 'Dementia'.  
#Primary diagnosis is stored in the admissions table ?

```
select patient_id,first_name,last_name
from patients as p
join admissions as a
using (patient_id)
where diagnosis = 'Dementia';
```

Result Grid				Filter Rows:
	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	



#ques-20: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 length(first_name),first_name asc;
```

Result Grid		Filter Rows:
	first_name	
▶	Al	
	Al	
	Al	
	Al	
	Bo	
	Bo	
	Bo	
	Bo	
	Cy	
	Cy	
	Jo	
	Jo	



#ques-21:Show the total number of male patients  
#and the total number 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 end) as female_count
from patients;
```

Result Grid				 Filter Rows:
	male_count	female_count		
▶	1098	902		

#ques-22: Show patient\_id, diagnosis from admissions.  
#Find patients admitted multiple times for the same diagnosis.

```
select patient_id,diagnosis, count(*) as admsn_count
from admissions
group by diagnosis,patient_id
having admsn_count>1;
```

Result Grid				 Filter Rows:	Ex
	patient_id	diagnosis	admsn_count		
▶	137	Pregnancy	2		
	320	Pneumonia	2		
	1577	Congestive Heart Failure	2		



#ques-23:Show the city,total number of patients in the city.

# Order from most to least patients and then by city name ascending ?

```
select city , count(patient_id) as patient_count
from patients
group by city
order by patient_count desc , city asc;
```

Result Grid			Filter Rows:
	city	patient_count	
▶	Hamilton	860	
	Toronto	131	
	Burlington	127	
	Brantford	67	
	Stoney Creek	55	
	Ancaster	54	
	Dundas	33	
	Cambridge	29	
	Halifax	27	
	Milton	25	
	Timmins	25	
	Oakville	24	

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#ques-24:Show first name,last name and role of every person

#The roles are either "Patient" or "Doctor" ?

```
select first_name,last_name, 'patient' as role from patients
union
select first_name,last_name, 'Doctor' as role from doctors;
```

Result Grid				Filter Rows:
	first_name	last_name	role	
	Stanislaus	MacLean	patient	
	Alecto	Goodspeed	patient	
	Zen	Bennett	patient	
	Aric	Possible	patient	
	Claire	Talbot	patient	
	Claude	Walls	Doctor	
	Joshua	Green	Doctor	
	Miriam	Tregre	Doctor	
	James	Russo	Doctor	
	Scott	Hill	Doctor	
	Tasha	Phillips	Doctor	
	Hazel	Patterson	Doctor	



#ques-25: Show all allergies ordered by popularity  
# Remove NULL values from query ?

```
select allergies, count(allergies) as allergy_count
from patients
where allergies is not null
group by allergies
order by allergy_count desc;
```

Result Grid			Filter Rows:
	allergies	allergy_count	
▶	NULL	920	
	Penicillin	486	
	Codeine	132	
	Sulfa	74	
	ASA	39	
	Tylenol	25	
	Sulfa Drugs	25	
	Iodine	21	
	Peanuts	19	
	Valporic Acid	18	
	Wheat	17	
	Tetracycline	16	

#ques-26: 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;
```

Result Grid				Filter Rows:
	first_name	last_name	birth_date	
▶	Jadu	Principal	1970-03-28	
	Betty	Stephens	1970-03-28	
	Kenny	Skelton	1970-05-29	
	James	Gordon	1970-06-03	
	Temple	LoPresti	1970-06-08	
	Kay	Treskovna	1970-06-09	
	Aniki	Arden	1970-06-18	
	Mel	Knight	1970-07-25	
	Kelly	Morton	1970-08-24	
	Elisa	Peroni	1970-09-09	
	Joey	Hammer	1970-09-10	
	Geordi	Kiriakis	1970-09-23	

#ques-27: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 EX: SMITH,jane ?

```
select concat( upper(last_name) ,' , ', lower(first_name)) as full_name
from patients order by first_name desc;
```



Result Grid			
	full_name		
▶	MILLER , zoe		
	BENNETT , zen		
	WONG , zane		
	LAZARUS , yuri		
	RANDALL , yuko		
	FRANKLIN , woody		
	WALLACE , woody		
	BASHIR , woody		
	RIVIERA , woody		
	GRANGER , woody		
	CRANE , woodsy		
	CLOCK , winnie		

#ques-28: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 total_height
from patients
group by province_id
having total_height >= 7000;
```

Result Grid			Filter Rows:
	province_id	total_height	
▶	ON	301030	

```
#ques-29: Show the difference between the largest weight and
# smallest weight for patients with the last name 'Maroni' ?
```

<div> <div>Result Grid</div> <div>   Filter Rows: <input type="text"/> <div>Exp</div> </div> </div>			
	largest_weight	smallest_weight	weight_difference
1	104	66	38

```
select max(weight) as largest_weight,  
       min(weight) as smallest_weight,  
       max(weight) - min(weight) as weight_difference  
from patients where last_name='Maroni';
```

```
#ques-30: 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) , count(*) as admsn_occured
from admissions
group by admission_date
order by admsn_occured desc;
```

[illegible]

#ques-31: 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_in_group  
from patients  
group by weight_group  
order by weight_group desc;
```

Result Grid			Filter Rows:
	weight_group	total_patients_in_group	
▶	140	3	
	130	26	
	120	98	
	110	199	
	100	224	
	90	171	
	80	215	
	70	267	
	60	306	
	50	191	
	40	90	
	30	69	
	20	59	
	10	50	
	0	32	

#ques-32:Show patient\_id, weight, height, isObese from the patients table.  
#Display isObese as a YES or NO .  
#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/(height/100 * height/100) ) >= 30  
       then 'YES' else 'NO' end as is_obese  
from patients;
```

Result Grid					Filter Rows:
	patient_id	weight	height	is_obese	
▶	1	65	156	NO	
	2	76	185	NO	
	3	106	194	NO	
	4	104	191	NO	
	5	10	47	YES	
	6	5	43	NO	
	7	117	180	YES	
	8	105	174	YES	
	9	95	173	YES	
	10	61	157	NO	

#ques-33: 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,d.first_name,d.last_name,d.specialty
from patients as p join admissions as a using ( patient_id)
join doctors as d on d.doctor_id= a.attending_doctor_id;
```

Result Grid

 Filter Rows:

Export:



	patient_id	first_name	last_name	specialty
▶	1	Jenny	Pulaski	Neurologist
	1	Lisa	Cuddy	Obstetrician/Gynecologist
	3	Mickey	Duval	Pediatrician
	3	Joshua	Green	Cardiologist
	6	Miriam	Tregre	General Surgeon
	6	Simon	Santiago	Cardiologist
	7	Mickey	Duval	Pediatrician
	8	Tasha	Phillips	Psychiatrist
	9	Stephanie	Cohen	Oncologist
	9	Mickey	Duval	Pediatrician
	10	Tyrone	Smart	Gerontologist

#ques-34: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(p.patient_id,length(p.last_name),
year(p.birth_date)) as temp_password
from patients as p
join admissions as a
using (patient_id) ;
```

Result Grid		Filter Rows:
	patient_id	temp_password
▶	1	1101963
	1	1101963
	3	361957
	3	361957
	6	662017
	6	662017
	7	761993
	8	871952
	9	971966
	9	971966
	10	1081961

## Conclusion :-

This comprehensive SQL project demonstrates my proficiency in data manipulation, extraction, and analysis. By utilizing SQL queries, I successfully derived valuable insights from complex hospital data, showcasing the ability to work with large datasets and deliver actionable information.

## Results :-

- After completing the SQL project using MySQL Workbench, we were able to successfully fetch data from the client using the given credentials. We faced some challenges during this process, but were able to overcome them and move on to performing problem queries.
- Through these problem queries, we were able to gain valuable insights into the patient data. For example, we found that there were more male patients than female patients in the dataset. We also discovered that many patients did not have any allergies listed in their records. Overall, these queries allowed us to better understand the patient data and draw conclusions that could be applied in real-world scenarios.

## Insights :-

- Through this project, we gained insights into the power of SQL and its ability to handle large amounts of data efficiently. We also learned how to use MySQL Workbench effectively to manage databases and perform complex queries. These skills could be applied in a real-world scenario where data management is crucial for decision-making.
- Furthermore, by analyzing the patient data, we were able to identify patterns and trends that could inform healthcare policies and practices. For example, we found that there were more male patients than female patients in our dataset, which could suggest a need for targeted healthcare interventions for women. These insights demonstrate the potential impact of data analysis in improving healthcare outcomes.



Dr Ai



**THANKING YOU !**