A
PROJECT REPORT
ON

"HOTEL RESERVATION MANAGEMENT"

SUBMITTED BY

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DATA ANALYTICS BATCH NO : 46

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INTRODUCTION :

In today's fast-paced world, the hospitality industry relies heavily on robust and efficient database management systems to handle the myriad of reservations, customer details, and room allocations. The Hotel Reservation System, powered by SQL, represents a sophisticated and reliable solution to manage these critical operations seamlessly.

My project, the Hotel Reservation System, is designed to streamline the reservation process, enhance customer service, and ensure optimal resource utilization within the hotel industry. By leveraging SQL, we aim to create a highly efficient and scalable database that can handle a large volume of transactions while maintaining data integrity and security.

The system will encompass various functionalities such as room availability checks, booking and cancellation processes, customer information management, and payment processing. Additionally, it will generate insightful reports that assist hotel management in making informed decisions.

Through this project, we seek to demonstrate the powerful capabilities of SQL in building a comprehensive and user-friendly hotel reservation system that meets the dynamic needs of the hospitality sector.
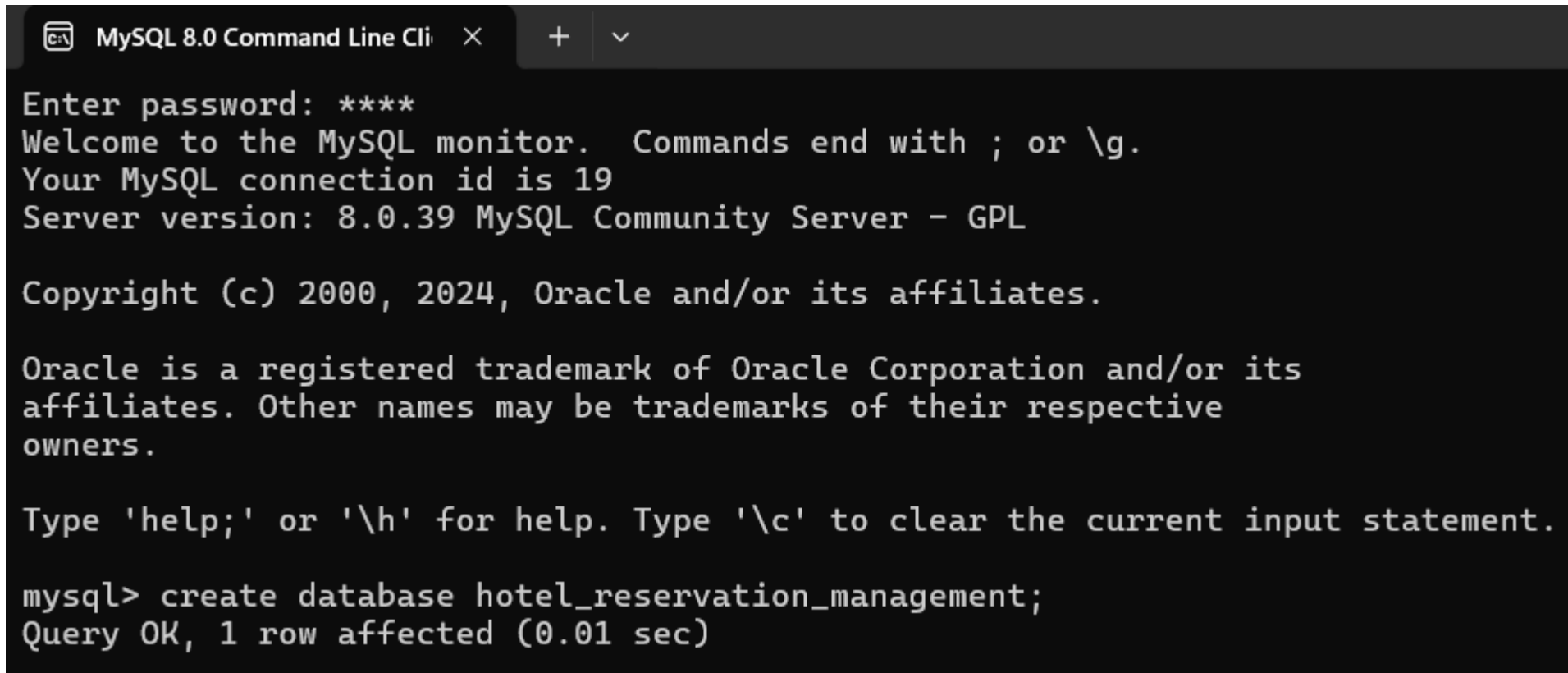
NORMALIZATION:
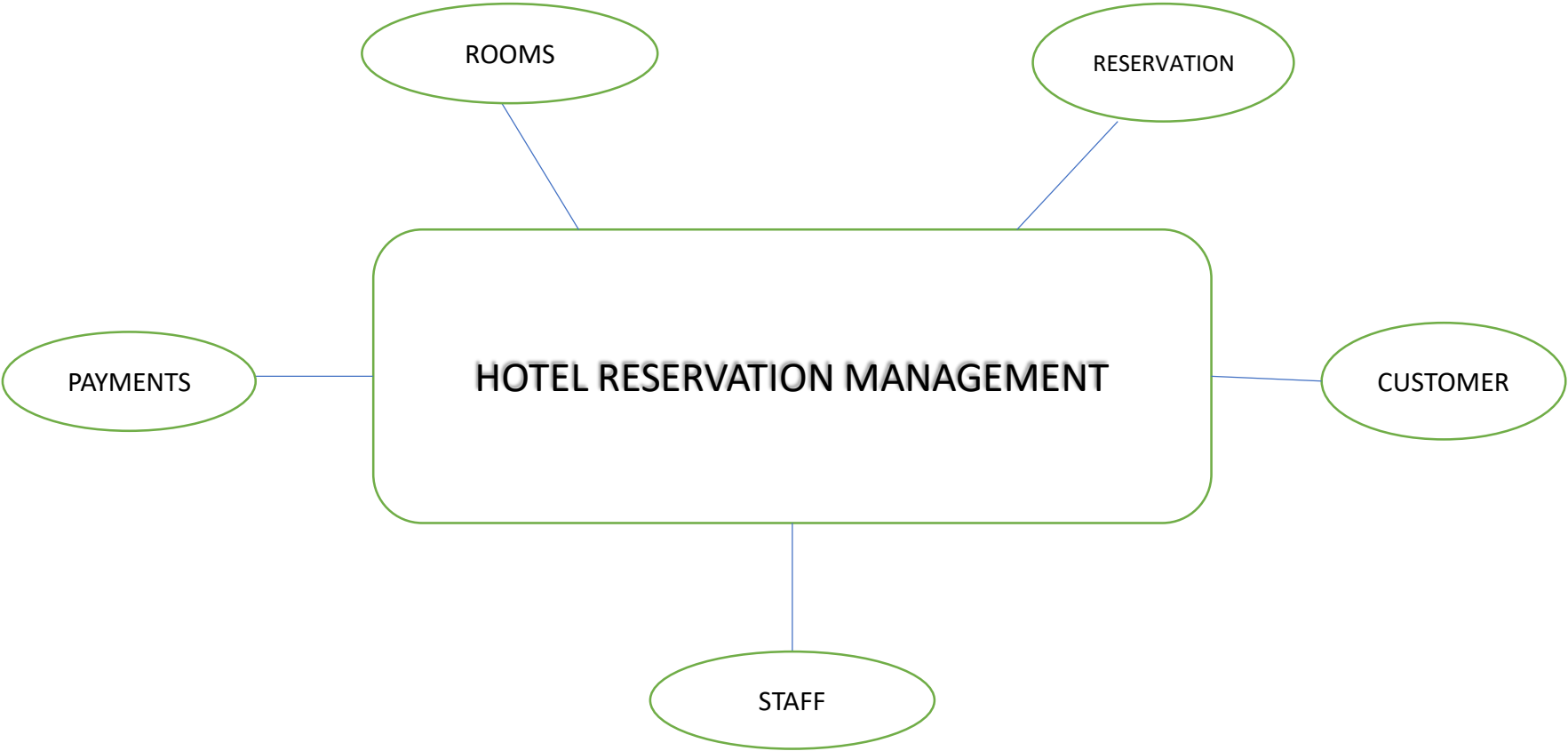
ER DIAGRAM
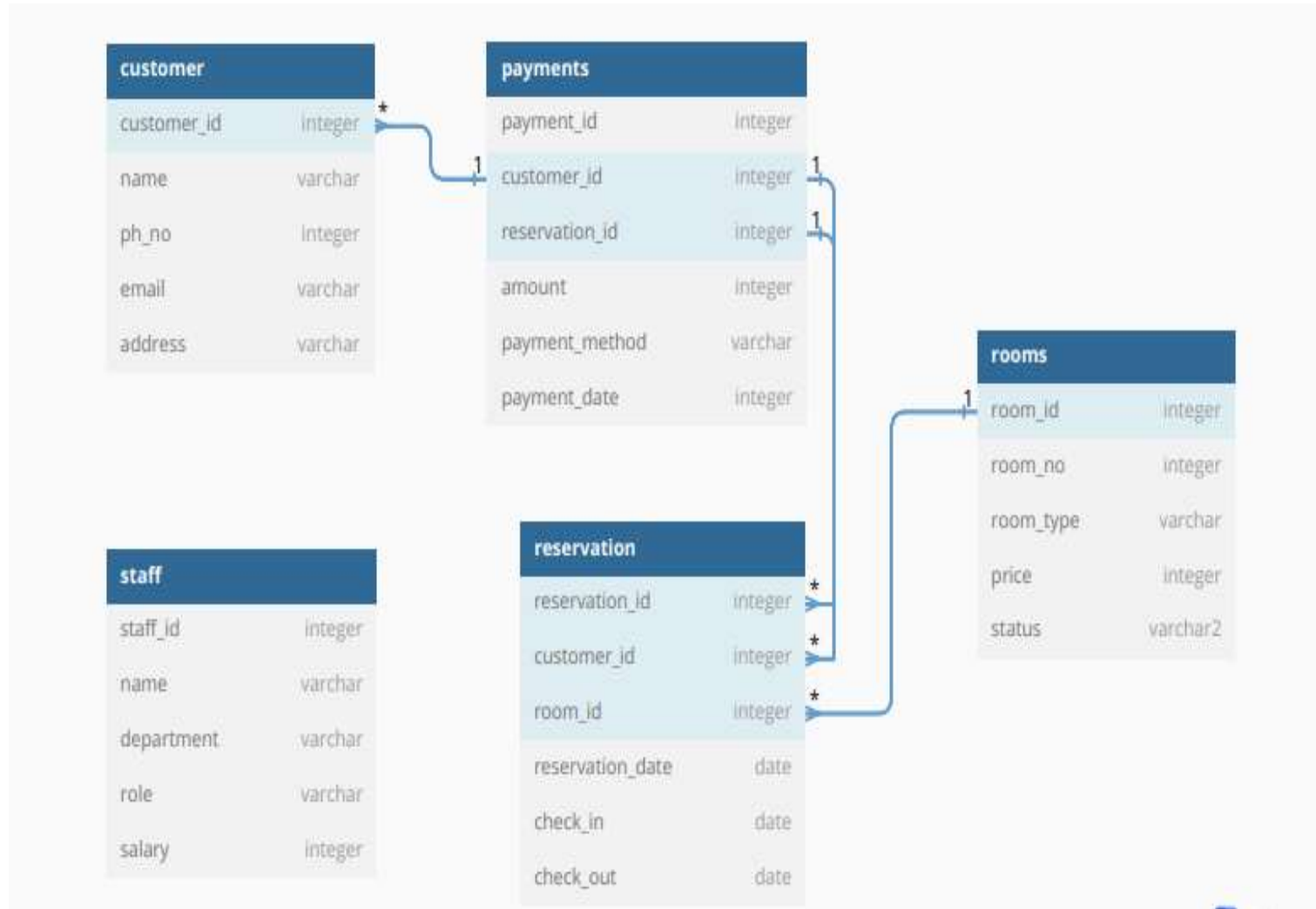
CREATING DATABASE


```
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 19
Server version: 8.0.39 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database hotel_reservation_management;
Query OK, 1 row affected (0.01 sec)
```

CREATING TABLES

```
mysql> create table customer (
    -> customer_id int(10),
    -> name varchar(30),
    -> ph_no int(11),
    -> email varchar(30),
    -> address text);
Query OK, 0 rows affected, 2 warnings (0.04 sec)


mysql> create table rooms (
    -> room_id int(10),
    -> room_type varchar(40),
    -> price int(12),
    -> status varchar(30));
Query OK, 0 rows affected, 2 warnings (0.02 sec)
```

```
mysql> create table reservation(
    -> reservation_id int(6),
    -> customer_id int(8),
    -> room_id int(7),
    -> reservation_date date,
    -> check_in date,
    -> check_out date);
Query OK, 0 rows affected, 3 warnings (0.03 sec)

mysql> create table payments(
    -> payment_id int(7),
    -> customer_id int(8),
    -> reservation_id int(6),
    -> amount int(11),
    -> payment_method varchar(30),
    -> payment_date date);
Query OK, 0 rows affected, 4 warnings (0.03 sec)

mysql> create table staff(
    -> staff_id int(6),
    -> name varchar(30),
    -> department varchar(20),
    -> role varchar(30));
Query OK, 0 rows affected, 1 warning (0.02 sec)
```

INSERT INTO FUNCTION

DISPLAYING TABLE CUSTOMER

```
mysql> SELECT * FROM CUSTOMER;
+-------------+--------------------+----------+---------------------+------------------------------+
| customer_id | name               | ph_no    | email               | address                      |
+-------------+--------------------+----------+---------------------+------------------------------+
|           1 | HOPE MIKAELSON     | 7875740  | hopemiksn@gmail.com | French Quarters, New Orleans |
|           2 | SARA SALVATORE     | 4537626  | Sara1864@gmail.com  | Mystic Falls,Georgia         |
|           3 | JOSIE SALTZMAN     | 3452676  | josiesaltz@gmail.com| Golden Street,Texas          |
|           4 | NICKLAUS WHITMORE  | 4230988  | niklaus87@gmail.com | Town Square,Whitmore         |
|           5 | KEVIN GEORGE       | 8765454  | kevinge@gmail.com   | Chruch Gate, Mumbai          |
|           6 | ROBERT BROWN       | 8879698  | robertbwn@gmail.com | 24 Lane,Luxemburg            |
|           7 | DANNY SHANE        | 5436276  | dannyshne@gmail.com | Eden Garden                  |
|           8 | JACKSON HARRISON   | 6541233  | jacksn34@gmail.com  | Beacon Hills, California     |
|           9 | TAYLOR SMITH       | 5437682  | taylrsmt@gmail.com  | Los Angeles                  |
|          10 | FREYA TATE         | 6754324  | freyatate@gmail.com | Eden Garden                  |
|          11 | ALLISON ARGENT     | 8723452  | allisonagt@gmail.com| Washngton DC                 |
|          12 | KATE JK            | 9876534  | katejk@gmail.com    | CSMT, Mumbai                 |
|          13 | LYDIA BEAN         | 4523762  | lydia87@gmail.com   | Beacon Hills, california     |
|          14 | PETER PARKER       | 8765423  | peterprk@gmail.com  | Mexico                       |
|          15 | DISHA PAREKH       | 9087654  | dishaprh@gmail.com  | Boston                       |
|          16 | MADDISON BOBBY     | 5342686  | maddison43@gmail.com| London                       |
|          17 | DEAN WINCHESTER    | 4217852  | deanwcht@gmail.com  | Street32, Texas              |
|          18 | TIM BURTON         | 7658943  | timburton@gmail.com | Grey Housing Society, Florida|
+-------------+--------------------+----------+---------------------+------------------------------+
18 rows in set (0.00 sec)
```

ALTER TABLE

To modify

```
mysql> alter table customer modify column ph_no int(11);
Query OK, 0 rows affected, 1 warning (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 1
```

To add column

```
mysql> alter table staff add salary int(9);
Query OK, 0 rows affected, 1 warning (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 1
```

ALTER TABLE

TO RENAME TABLE

```
mysql> alter table customer rename to hrm_customer;
Query OK, 0 rows affected (0.03 sec)
```

TO DROP COLUMN

```
mysql> alter table hrm_customer drop column name;
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

JOINS IN TABLE

- INNER JOIN

```
mysql> select c.customer_id,c.name,c.ph_no,c.email,c.address from customer c inner join payments p on c.customer_id = p.customer_id;
+-------------+------------------+---------+-----------------------+----------------------------+
| customer_id | name             | ph_no   | email                 | address                    |
+-------------+------------------+---------+-----------------------+----------------------------+
|           1 | HOPE MIKAELSON   | 7875740 | hopemiksn@gmail.com   | French Quarters, New Orleans |
|           2 | SARA SALVATORE   | 4537626 | Sara1864@gmail.com    | Mystic Falls,Georgia       |
|           3 | JOSIE SALTZMAN   | 3452676 | josiesaltz@gmail.com  | Golden Street,Texas        |
|           4 | NICKLAUS WHITMORE| 4230988 | niklaus87@gmail.com   | Town Square,Whitmore       |
|           5 | KEVIN GEORGE     | 8765454 | kevinge@gmail.com     | Chruch Gate, Mumbai        |
|           6 | ROBERT BROWN     | 8879698 | robertbwn@gmail.com   | 24 Lane,Luxemburg          |
|           7 | DANNY SHANE      | 5436276 | dannyshne@gmail.com   | Eden Garden                |
|           8 | JACKSON HARRISON | 6541233 | jacksn34@gmail.com    | Beacon Hills, California   |
|           9 | TAYLOR SMITH     | 5437682 | taylrsmt@gmail.com    | Los Angeles                |
|          10 | FREYA TATE       | 6754324 | freyatate@gmail.com   | Eden Garden                |
+-------------+------------------+---------+-----------------------+----------------------------+
10 rows in set (0.01 sec)
```

LEFT OUTER JOIN

```
mysql> select c.customer_id,c.name,c.ph_no,c.email,c.address,p.payment_id,p.customer_id from customer c left outer join payments p on c.customer_id = p.customer_id;
+-------------+------------------+---------+----------------------+-----------------------------+------------+-------------+
| customer_id | name             | ph_no   | email                | address                     | payment_id | customer_id |
+-------------+------------------+---------+----------------------+-----------------------------+------------+-------------+
|           1 | HOPE MIKAELSON   | 7875740 | hopemiksn@gmail.com  | French Quarters, New Orleans |        101 |           1 |
|           2 | SARA SALVATORE   | 4537626 | Sara1864@gmail.com   | Mystic Falls,Georgia        |        102 |           2 |
|           3 | JOSIE SALTZMAN   | 3452676 | josiesaltz@gmail.com | Golden Street,Texas         |        103 |           3 |
|           4 | NICKLAUS WHITMORE | 4230988 | niklaus87@gmail.com  | Town Square,Whitmore        |        104 |           4 |
|           5 | KEVIN GEORGE     | 8765454 | kevinge@gmail.com    | Chruch Gate, Mumbai         |        105 |           5 |
|           6 | ROBERT BROWN     | 8879698 | robertbwn@gmail.com  | 24 Lane,Luxemburg           |        106 |           6 |
|           7 | DANNY SHANE      | 5436276 | dannyshne@gmail.com  | Eden Garden                 |        107 |           7 |
|           8 | JACKSON HARRISON | 6541233 | jacksn34@gmail.com   | Beacon Hills, California     |        108 |           8 |
|           9 | TAYLOR SMITH     | 5437682 | taylrsmt@gmail.com   | Los Angeles                 |        109 |           9 |
|          10 | FREYA TATE       | 6754324 | freyatate@gmail.com  | Eden Garden                 |        110 |          10 |
|          11 | ALLISON ARGENT   | 8723452 | allisonagt@gmail.com | Washngton DC                |       NULL |        NULL |
|          12 | KATE JK          | 9876534 | katejk@gmail.com     | CSMT, Mumbai                |       NULL |        NULL |
|          13 | LYDIA BEAN       | 4523762 | lydia87@gmail.com    | Beacon Hills, california     |       NULL |        NULL |
|          14 | PETER PARKER     | 8765423 | peterprk@gmail.com   | Mexico                      |       NULL |        NULL |
|          15 | DISHA PAREKH     | 9087654 | dishaprh@gmail.com   | Boston                      |       NULL |        NULL |
|          16 | MADDISON BOBBY   | 5342686 | maddison43@gmail.com | London                      |       NULL |        NULL |
|          17 | DEAN WINCHESTER  | 4217852 | deanwcht@gmail.com   | Street32, Texas             |       NULL |        NULL |
|          18 | TIM BURTON       | 7658943 | timburton@gmail.com  | Grey Housing Society, Florida |     NULL |        NULL |
|          19 | RONNIE JOHNSON   | 8743524 | ronniejhn@gmail.com  | Times Square, New York      |       NULL |        NULL |
|          20 | MARY VIENNA      | 2453674 | marryvena@gmail.com  | Juvinelle Park, Hungary     |       NULL |        NULL |
+-------------+------------------+---------+----------------------+-----------------------------+------------+-------------+
20 rows in set (0.01 sec)
```

RIGHT OUTER JOIN

```
mysql> select c.customer_id,c.name,c.ph_no,c.email,c.address,p.payment_id,p.customer_id from customer c right outer join payments p on c.customer_id = p.cus
tomer_id;
+-------------+------------------+----------+------------------------+---------------------------+------------+-------------+
| customer_id | name             | ph_no    | email                  | address                   | payment_id | customer_id |
+-------------+------------------+----------+------------------------+---------------------------+------------+-------------+
|           1 | HOPE MIKAELSON   | 7875740  | hopemiksn@gmail.com    | French Quarters, New Orleans |       101 |           1 |
|           2 | SARA SALVATORE   | 4537626  | Sara1864@gmail.com     | Mystic Falls,Georgia      |        102 |           2 |
|           3 | JOSIE SALTZMAN   | 3452676  | josiesaltz@gmail.com   | Golden Street,Texas       |        103 |           3 |
|           4 | NICKLAUS WHITMORE| 4230988  | niklaus87@gmail.com    | Town Square,Whitmore      |        104 |           4 |
|           5 | KEVIN GEORGE     | 8765454  | kevinge@gmail.com      | Chruch Gate, Mumbai       |        105 |           5 |
|           6 | ROBERT BROWN     | 8879698  | robertbwn@gmail.com    | 24 Lane,Luxemburg         |        106 |           6 |
|           7 | DANNY SHANE      | 5436276  | dannyshne@gmail.com    | Eden Garden               |        107 |           7 |
|           8 | JACKSON HARRISON | 6541233  | jacksn34@gmail.com     | Beacon Hills, California  |        108 |           8 |
|           9 | TAYLOR SMITH     | 5437682  | taylrsmt@gmail.com     | Los Angeles               |        109 |           9 |
|          10 | FREYA TATE       | 6754324  | freyatate@gmail.com    | Eden Garden               |        110 |          10 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        200 |          22 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        226 |          26 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        300 |          30 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        320 |          32 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        370 |          37 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        350 |          35 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        400 |          40 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        430 |          43 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        440 |          44 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        460 |          46 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        490 |          49 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        500 |          50 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        510 |          51 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        540 |          54 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        580 |          58 |
|        NULL | NULL             |    NULL  | NULL                   | NULL                      |        610 |          61 |
+-------------+------------------+----------+------------------------+---------------------------+------------+-------------+
26 rows in set (0.00 sec)
```

FULL OUTER JOIN

```
mysql> select c.customer_id,c.name,c.ph_no,c.email,c.address,p.payment_id,p.customer_id from customer c left outer join payments p on c.customer_id = p.cust
omer_id
    ->
    -> union
    ->
    -> select c.customer_id,c.name,c.ph_no,c.email,c.address,p.payment_id,p.customer_id from customer c right outer join payments p on c.customer_id = p.cus
tomer_id;
```

customer_id	name	ph_no	email	address	payment_id	customer_id
1	HOPE MIKAELSON	7875740	hopemiksn@gmail.com	French Quarters, New Orleans	101	1
2	SARA SALVATORE	4537626	Sara1864@gmail.com	Mystic Falls,Georgia	102	2
3	JOSIE SALTZMAN	3452676	josiesaltz@gmail.com	Golden Street,Texas	103	3
4	NICKLAUS WHITMORE	4230988	niklaus87@gmail.com	Town Square,Whitmore	104	4
5	KEVIN GEORGE	8765454	kevinge@gmail.com	Chruch Gate, Mumbai	105	5
6	ROBERT BROWN	8879698	robertbwn@gmail.com	24 Lane,Luxemburg	106	6
7	DANNY SHANE	5436276	dannyshne@gmail.com	Eden Garden	107	7
8	JACKSON HARRISON	6541233	jacksn34@gmail.com	Beacon Hills, California	108	8
9	TAYLOR SMITH	5437682	taylrsmt@gmail.com	Los Angeles	109	9
10	FREYA TATE	6754324	freyatate@gmail.com	Eden Garden	110	10
11	ALLISON ARGENT	8723452	allisonagt@gmail.com	Washngton DC	NULL	NULL
12	KATE JK	9876534	katejk@gmail.com	CSMT, Mumbai	NULL	NULL
13	LYDIA BEAN	4523762	lydia87@gmail.com	Beacon Hills, california	NULL	NULL
14	PETER PARKER	8765423	peterprk@gmail.com	Mexico	NULL	NULL
15	DISHA PAREKH	9087654	dishaprh@gmail.com	Boston	NULL	NULL
16	MADDISON BOBBY	5342686	maddison43@gmail.com	London	NULL	NULL
17	DEAN WINCHESTER	4217852	deanwcht@gmail.com	Street32, Texas	NULL	NULL
18	TIM BURTON	7658943	timburton@gmail.com	Grey Housing Society, Florida	NULL	NULL
19	RONNIE JOHNSON	8743524	ronniejhn@gmail.com	Times Square, New York	NULL	NULL
20	MARY VIENNA	2453674	marryvena@gmail.com	Juvinelle Park, Hungary	NULL	NULL
NULL	NULL	NULL	NULL	NULL	200	22
NULL	NULL	NULL	NULL	NULL	226	26
NULL	NULL	NULL	NULL	NULL	300	30
NULL	NULL	NULL	NULL	NULL	320	32
NULL	NULL	NULL	NULL	NULL	370	37
NULL	NULL	NULL	NULL	NULL	350	35
NULL	NULL	NULL	NULL	NULL	400	40
NULL	NULL	NULL	NULL	NULL	430	43
NULL	NULL	NULL	NULL	NULL	440	44
NULL	NULL	NULL	NULL	NULL	460	46
NULL	NULL	NULL	NULL	NULL	490	49

SUBQUERIES:
A) Connecting 2 tables

```
mysql> select * from customer where customer_id in (select customer_id from payments where payment_method = 'cash');
+-------------+----------------+---------+----------------------+------------------------------+
| customer_id | name           | ph_no   | email                | address                      |
+-------------+----------------+---------+----------------------+------------------------------+
|           1 | HOPE MIKAELSON | 7875740 | hopemiksn@gmail.com  | French Quarters, New Orleans |
|           7 | DANNY SHANE    | 5436276 | dannyshne@gmail.com  | Eden Garden                  |
+-------------+----------------+---------+----------------------+------------------------------+
2 rows in set (0.00 sec)
```

B) Connecting 3 tables

```
mysql> select * from customer where customer_id in(select customer_id from payments where reservation_id in (select reservation_id from reservation where ro
om_id = 222));
+-------------+----------------+---------+---------------------+----------------------+
| customer_id | name           | ph_no   | email               | address              |
+-------------+----------------+---------+---------------------+----------------------+
|           2 | SARA SALVATORE | 4537626 | Sara1864@gmail.com  | Mystic Falls,Georgia |
+-------------+----------------+---------+---------------------+----------------------+
1 row in set (0.00 sec)
```

C) Connecting 4 tables

```
mysql> select * from customer where customer_id in(select customer_id from payments where reservation_id in(select reservation_id from reservation where roo
m_id in(select room_id from rooms where room_type = 'with 2 queen size beds')));
+-------------+---------------+----------+---------------------+----------------------------+
| customer_id | name          | ph_no    | email               | address                    |
+-------------+---------------+----------+---------------------+----------------------------+
|           1 | HOPE MIKAELSON | 7875740 | hopemiksn@gmail.com | French Quarters, New Orleans |
+-------------+---------------+----------+---------------------+----------------------------+
1 row in set (0.01 sec)
```

Data Control Language

- Create User

```
mysql> create user 'hritvika'@'localhost' identified by 'hsk23';
Query OK, 0 rows affected (0.01 sec)
```

- Grant Privileges

```
mysql> grant insert on hotel_reservation_management.customer to'hritvika'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)
```

- Revoke

```
mysql> revoke insert on hotel_reservation_management.customer from 'hritvika'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)
```

- Drop User

```
mysql> drop user 'hritvika'@'localhost';
Query OK, 0 rows affected (0.01 sec)
```

Aggregate Functions : Min,Max,Average

```
mysql> select min(amount) from payments;
+-------------+
| min(amount) |
+-------------+
|        1600 |
+-------------+
1 row in set (0.01 sec)

mysql> select max(amount) from payments;
+-------------+
| max(amount) |
+-------------+
|       30000 |
+-------------+
1 row in set (0.00 sec)

mysql> select avg(amount) from payments;
+-------------+
| avg(amount) |
+-------------+
|   5157.6923 |
+-------------+
1 row in set (0.00 sec)
```

Sum Function

```
mysql> select sum(amount) from payments;
+-------------+
| sum(amount) |
+-------------+
|      134100 |
+-------------+
1 row in set (0.01 sec)
```

Count Function

```
mysql> select count(customer_id) from customer;
+--------------------+
| count(customer_id) |
+--------------------+
|                 20 |
+--------------------+
1 row in set (0.01 sec)
```

SQL Keywords

- AND keyword

```
mysql> select * from customer where address = 'beacon hills, california' and name = 'lydia bean';
+-------------+------------+---------+----------------------+--------------------------+
| customer_id | name       | ph_no   | email                | address                  |
+-------------+------------+---------+----------------------+--------------------------+
|          13 | LYDIA BEAN | 4523762 | lydia87@gmail.com    | Beacon Hills, california |
+-------------+------------+---------+----------------------+--------------------------+
1 row in set (0.00 sec)
```

UPDATE QUERY

```
mysql> update customer set customer_id = 17 where name = 'DEAN WINCHESTER';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update customer set customer_id = 18 where name = 'TIM BURTON';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

- OR keyword

```
mysql> select * from customer where address = 'london' or address = 'boston';
+-------------+----------------+---------+----------------------+---------+
| customer_id | name           | ph_no   | email                | address |
+-------------+----------------+---------+----------------------+---------+
|          15 | DISHA PAREKH   | 9087654 | dishaprh@gmail.com   | Boston  |
|          16 | MADDISON BOBBY | 5342686 | maddison43@gmail.com | London  |
+-------------+----------------+---------+----------------------+---------+
2 rows in set (0.00 sec)
```

- _Operator

```
mysql> select * from customer where name like 'F_____';
+-------------+------------+---------+----------------------+--------------+
| customer_id | name       | ph_no   | email                | address      |
+-------------+------------+---------+----------------------+--------------+
|          10 | FREYA TATE | 6754324 | freyatate@gmail.com  | Eden Garden  |
+-------------+------------+---------+----------------------+--------------+
1 row in set (0.00 sec)
```

- "LIKE" Operator

```
mysql> select * from customer where address like'%new%';
+-------------+----------------+---------+---------------------+--------------------------+
| customer_id | name           | ph_no   | email               | address                  |
+-------------+----------------+---------+---------------------+--------------------------+
|           1 | HOPE MIKAELSON | 7875740 | hopemiksn@gmail.com | French Quarters, New Orleans |
|          19 | RONNIE JOHNSON | 8743524 | ronniejhn@gmail.com | Times Square, New York   |
+-------------+----------------+---------+---------------------+--------------------------+
2 rows in set (0.01 sec)
```

- 'IN' Keyword

```
mysql> select * from customer where address in('eden garden','mexico','los angeles');
+-------------+---------------+---------+------------------------+--------------+
| customer_id | name          | ph_no   | email                  | address      |
+-------------+---------------+---------+------------------------+--------------+
|           7 | DANNY  SHANE  | 5436276 | dannyshne@gmail.com    | Eden Garden  |
|           9 | TAYLOR SMITH  | 5437682 | taylrsmt@gmail.com     | Los Angeles  |
|          10 | FREYA TATE    | 6754324 | freyatate@gmail.com    | Eden Garden  |
|          14 | PETER PARKER  | 8765423 | peterprk@gmail.com     | Mexico       |
+-------------+---------------+---------+------------------------+--------------+
4 rows in set (0.00 sec)
```

Between Keyword

```
mysql> select * from payments where amount between 1000 and 2000;
+------------+-------------+----------------+--------+----------------+--------------+
| payment_id | customer_id | reservation_id | amount | payment_method | payment_date |
+------------+-------------+----------------+--------+----------------+--------------+
|        104 |           4 |           5002 |   1600 | Debit Card     | 2025-01-02   |
|        105 |           5 |           5003 |   1700 | Net Banking    | 2025-01-03   |
|        106 |           6 |           5004 |   1800 | UPI            | 2025-01-04   |
|        107 |           7 |           5005 |   1900 | Cash           | 2025-01-05   |
|        108 |           8 |           5006 |   2000 | Credit Card    | 2025-01-06   |
+------------+-------------+----------------+--------+----------------+--------------+
5 rows in set (0.00 sec)
```

Order By

- Ascending order


```
mysql> select * from customer order by name ASC;
+-------------+------------------+---------+----------------------+----------------------------------+
| customer_id | name             | ph_no   | email                | address                          |
+-------------+------------------+---------+----------------------+----------------------------------+
|          11 | ALLISON ARGENT   | 8723452 | allisonagt@gmail.com | Washngton DC                     |
|           7 | DANNY SHANE      | 5436276 | dannyshne@gmail.com  | Eden Garden                      |
|          17 | DEAN WINCHESTER  | 4217852 | deanwcht@gmail.com   | Street32, Texas                  |
|          15 | DISHA PAREKH     | 9087654 | dishaprh@gmail.com   | Boston                           |
|          10 | FREYA TATE       | 6754324 | freyatate@gmail.com  | Eden Garden                      |
|           1 | HOPE MIKAELSON   | 7875740 | hopemiksn@gmail.com  | French Quarters, New Orleans     |
|           8 | JACKSON HARRISON | 6541233 | jacksn34@gmail.com   | Beacon Hills, California         |
|           3 | JOSIE SALTZMAN   | 3452676 | josiesaltz@gmail.com | Golden Street,Texas              |
|          12 | KATE JK          | 9876534 | katejk@gmail.com     | CSMT, Mumbai                     |
|           5 | KEVIN GEORGE     | 8765454 | kevinge@gmail.com    | Chruch Gate, Mumbai              |
|          13 | LYDIA BEAN       | 4523762 | lydia87@gmail.com    | Beacon Hills, california         |
|          16 | MADDISON BOBBY   | 5342686 | maddison43@gmail.com | London                           |
|          20 | MARY VIENNA      | 2453674 | marryvena@gmail.com  | Juvinelle Park, Hungary          |
|           4 | NICKLAUS WHITMORE| 4230988 | niklaus87@gmail.com  | Town Square,Whitmore             |
|          14 | PETER PARKER     | 8765423 | peterprk@gmail.com   | Mexico                           |
|           6 | ROBERT BROWN     | 8879698 | robertbwn@gmail.com  | 24 Lane,Luxemburg                |
|          19 | RONNIE JOHNSON   | 8743524 | ronniejhn@gmail.com  | Times Square, New York           |
|           2 | SARA SALVATORE   | 4537626 | Sara1864@gmail.com   | Mystic Falls,Georgia             |
|           9 | TAYLOR SMITH     | 5437682 | taylrsmt@gmail.com   | Los Angeles                      |
|          18 | TIM BURTON       | 7658943 | timburton@gmail.com  | Grey Housing Society, Florida    |
+-------------+------------------+---------+----------------------+----------------------------------+
20 rows in set (0.01 sec)
```

• Descending order

```
mysql> select * from customer order by name DESC;
+-------------+-------------------+---------+---------------------+------------------------------------+
| customer_id | name              | ph_no   | email               | address                            |
+-------------+-------------------+---------+---------------------+------------------------------------+
|          18 | TIM BURTON        | 7658943 | timburton@gmail.com | Grey Housing Society, Florida      |
|           9 | TAYLOR SMITH      | 5437682 | taylrsmt@gmail.com  | Los Angeles                        |
|           2 | SARA SALVATORE    | 4537626 | Sara1864@gmail.com  | Mystic Falls,Georgia               |
|          19 | RONNIE JOHNSON    | 8743524 | ronniejhn@gmail.com | Times Square, New York             |
|           6 | ROBERT BROWN      | 8879698 | robertbwn@gmail.com | 24 Lane,Luxemburg                  |
|          14 | PETER PARKER      | 8765423 | peterprk@gmail.com  | Mexico                             |
|           4 | NICKLAUS WHITMORE | 4230988 | niklaus87@gmail.com | Town Square,Whitmore               |
|          20 | MARY VIENNA       | 2453674 | marryvena@gmail.com | Juvinelle Park, Hungary            |
|          16 | MADDISON BOBBY    | 5342686 | maddison43@gmail.com | London                            |
|          13 | LYDIA BEAN        | 4523762 | lydia87@gmail.com   | Beacon Hills, california           |
|           5 | KEVIN GEORGE      | 8765454 | kevinge@gmail.com   | Chruch Gate, Mumbai                |
|          12 | KATE JK           | 9876534 | katejk@gmail.com    | CSMT, Mumbai                       |
|           3 | JOSIE SALTZMAN    | 3452676 | josiesaltz@gmail.com | Golden Street,Texas               |
|           8 | JACKSON HARRISON  | 6541233 | jacksn34@gmail.com  | Beacon Hills, California           |
|           1 | HOPE MIKAELSON    | 7875740 | hopemiksn@gmail.com | French Quarters, New Orleans       |
|          10 | FREYA TATE        | 6754324 | freyatate@gmail.com | Eden Garden                        |
|          15 | DISHA PAREKH      | 9087654 | dishaprh@gmail.com  | Boston                             |
|          17 | DEAN WINCHESTER   | 4217852 | deanwcht@gmail.com  | Street32, Texas                    |
|           7 | DANNY SHANE       | 5436276 | dannyshne@gmail.com | Eden Garden                        |
|          11 | ALLISON ARGENT    | 8723452 | allisonagt@gmail.com | Washngton DC                      |
+-------------+-------------------+---------+---------------------+------------------------------------+
20 rows in set (0.00 sec)
```

Having Clause And Group By

• Group By

```
mysql> SELECT COUNT(CUSTOMER_ID),ADDRESS FROM CUSTOMER GROUP BY ADDRESS;
+--------------------+------------------------------+
| COUNT(CUSTOMER_ID) | ADDRESS                      |
+--------------------+------------------------------+
|                  1 | French Quarters, New Orleans |
|                  1 | Mystic Falls,Georgia         |
|                  1 | Golden Street,Texas          |
|                  1 | Town Square,Whitmore         |
|                  1 | Chruch Gate, Mumbai          |
|                  1 | 24 Lane,Luxemburg            |
|                  2 | Eden Garden                  |
|                  2 | Beacon Hills, California     |
|                  1 | Los Angeles                  |
|                  1 | Washngton DC                 |
|                  1 | CSMT, Mumbai                 |
|                  1 | Mexico                       |
|                  1 | Boston                       |
|                  1 | London                       |
|                  1 | Street32, Texas              |
|                  1 | Grey Housing Society, Florida|
|                  1 | Times Square, New York       |
|                  1 | Juvinelle Park, Hungary      |
+--------------------+------------------------------+
18 rows in set (0.01 sec)
```

- Group By and Having clause

```
mysql> SELECT * FROM CUSTOMER WHERE CUSTOMER_ID IN(SELECT P.CUSTOMER_ID FROM PAYMENTS P GROUP BY P.CUSTOMER_ID HAVING count(P.amount > 3000));
+-------------+--------------------+---------+----------------------+------------------------------+
| customer_id | name               | ph_no   | email                | address                      |
+-------------+--------------------+---------+----------------------+------------------------------+
|           1 | HOPE MIKAELSON     | 7875740 | hopemiksn@gmail.com  | French Quarters, New Orleans |
|           2 | SARA SALVATORE     | 4537626 | Sara1864@gmail.com   | Mystic Falls,Georgia         |
|           3 | JOSIE SALTZMAN     | 3452676 | josiesaltz@gmail.com | Golden Street,Texas          |
|           4 | NICKLAUS WHITMORE  | 4230988 | niklaus87@gmail.com  | Town Square,Whitmore         |
|           5 | KEVIN GEORGE       | 8765454 | kevinge@gmail.com    | Chruch Gate, Mumbai          |
|           6 | ROBERT BROWN       | 8879698 | robertbwn@gmail.com  | 24 Lane,Luxemburg            |
|           7 | DANNY SHANE        | 5436276 | dannyshne@gmail.com  | Eden Garden                  |
|           8 | JACKSON HARRISON   | 6541233 | jacksn34@gmail.com   | Beacon Hills, California     |
|           9 | TAYLOR SMITH       | 5437682 | taylrsmt@gmail.com   | Los Angeles                  |
|          10 | FREYA TATE         | 6754324 | freyatate@gmail.com  | Eden Garden                  |
+-------------+--------------------+---------+----------------------+------------------------------+
10 rows in set (0.01 sec)
```