DBMS LAB
ASSIGNMENT-5

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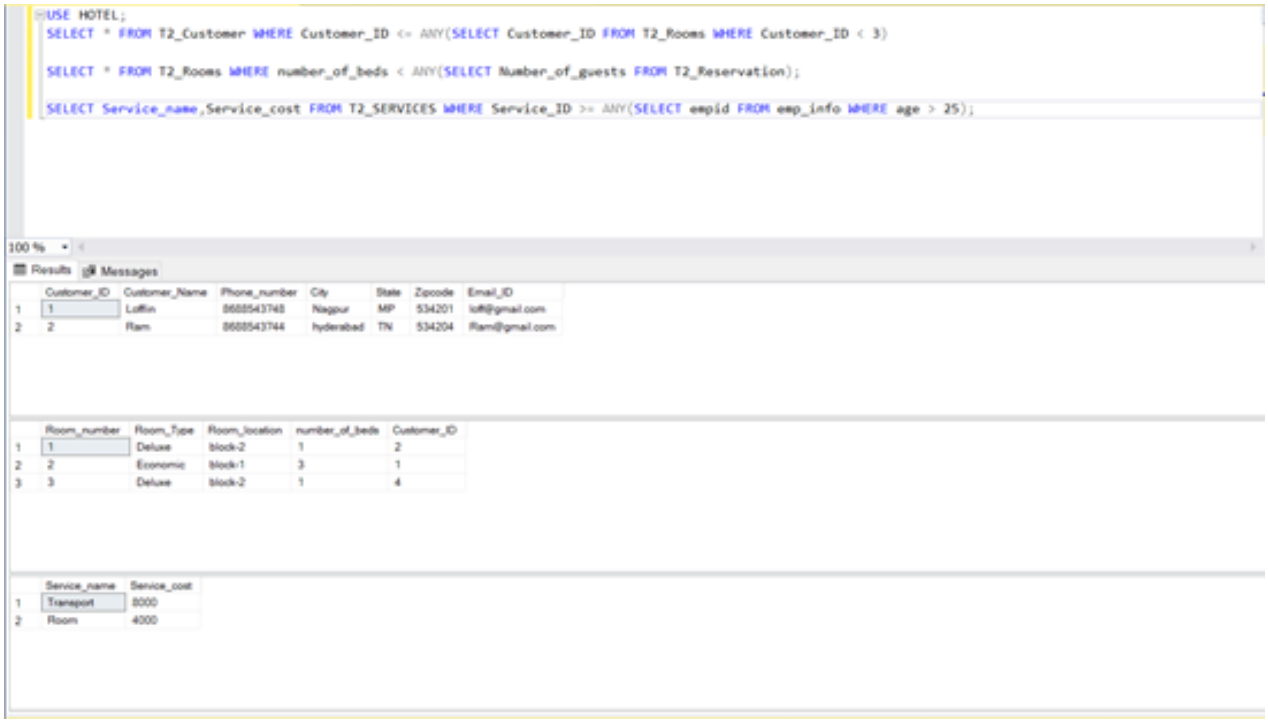
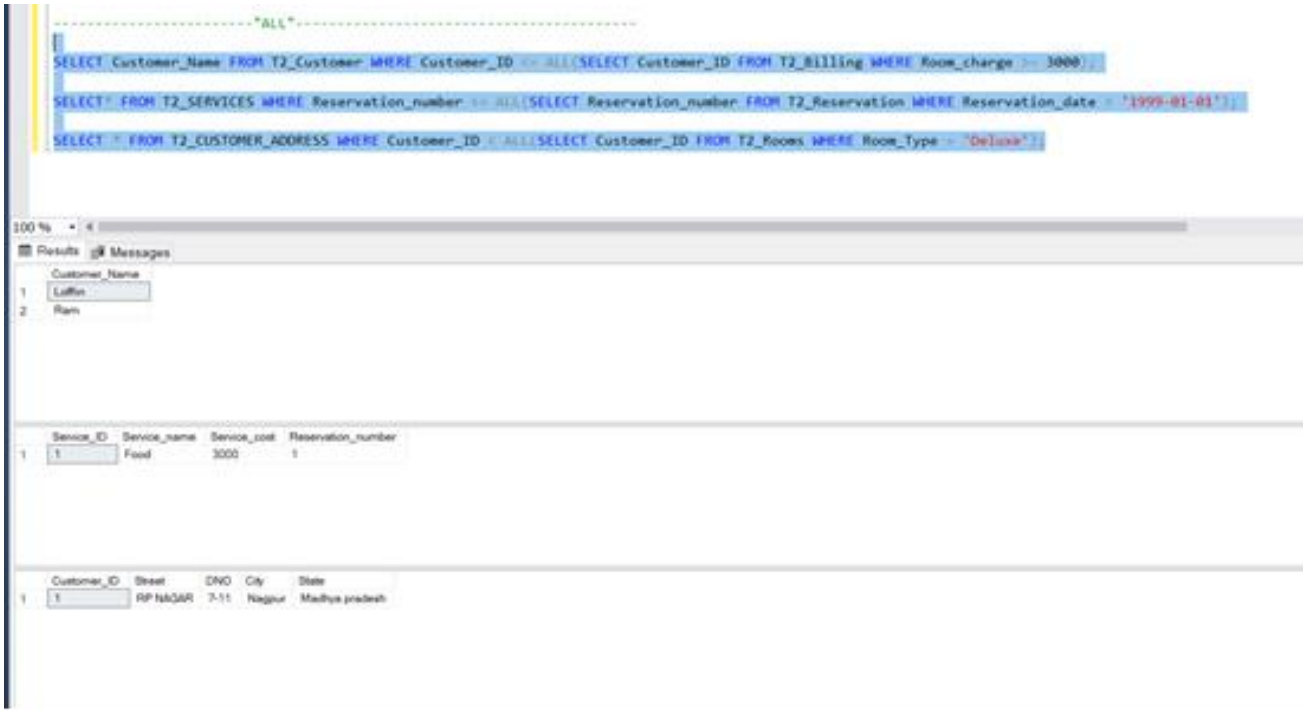
19BCS031

Q1) Illustrate logical ANY, ALL and LIKE operator- the queries should be relevant to your respective databases 3 queries for each operator. One query explaining the difference between ANY and ALL

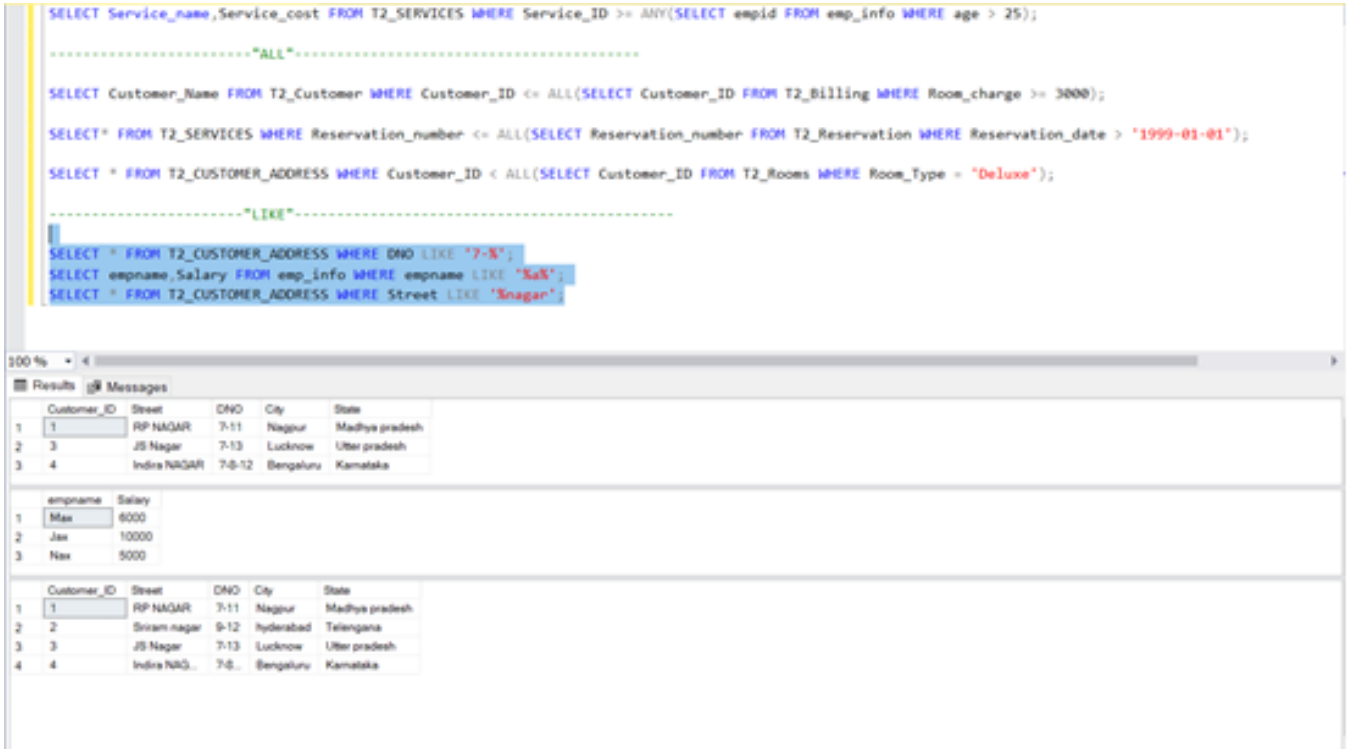
QUERIES FOR "ANY":



QUERIES FOR "All":



QUERIES FOR "Like":



Q2) One query for each Aggregate function.

The aggregate functions are MIN(), MAX(), COUNT(), AVG(), SUM()

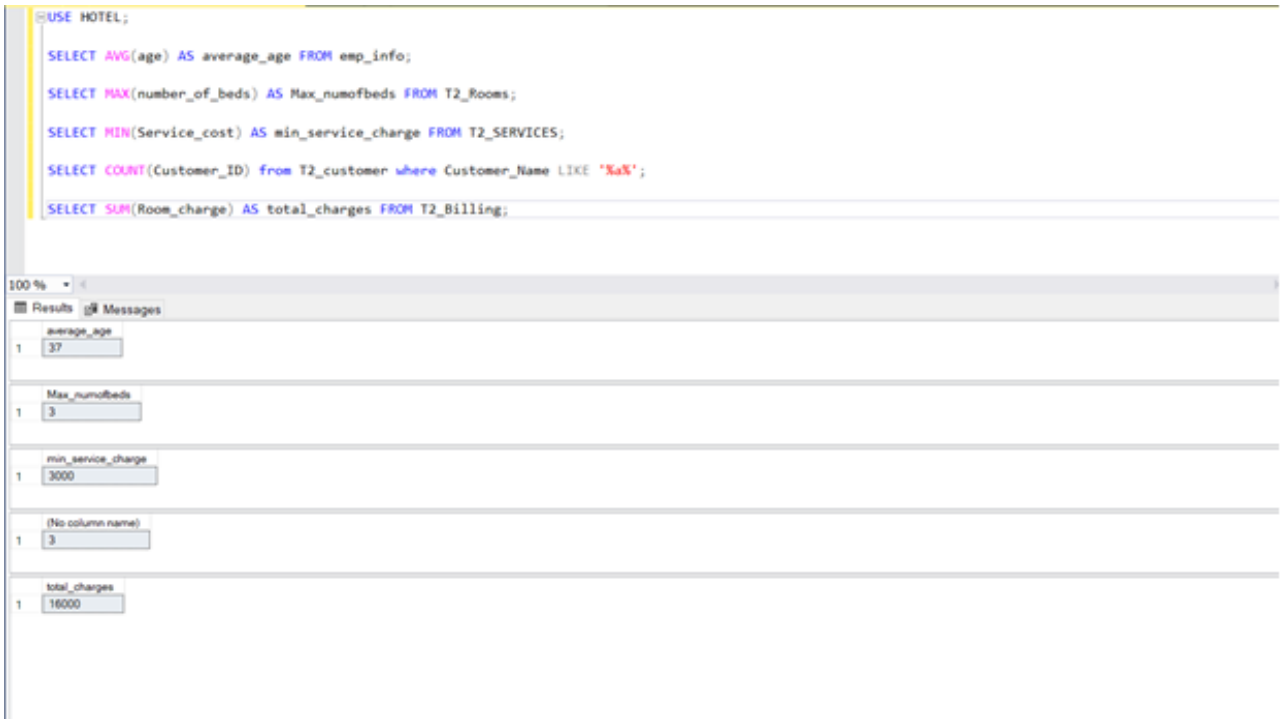
AVG() – return the average of the set

MIN() – returns the minimum value in a set

MAX() – returns the maximum value in set

SUM() – returns the sum of all distinct values of a set

COUNT() – returns the number of items in a set



Q3)Illustrate the usage of order by, group by and having clause (2 queries for each case)

ORDER BY:

```
USE HOTEL;

--------------ORDERBY--------------------

SELECT * FROM T2_Customer ORDER BY Customer_Name ASC;
SELECT * FROM emp_info ORDER BY age DESC;

--------------GROUPBY-----------------
SELECT number_of_beds, COUNT(*) AS number_of_rooms FROM T2_Rooms GROUP BY number_of_beds;
SELECT Zipcode,COUNT(*) FROM T2_Customer GROUP BY Zipcode;

-----------------HAVING--------------
SELECT COUNT(Room_number),Room_Type FROM T2_Rooms GROUP BY Room_Type HAVING COUNT(Room_number) >= 1;
SELECT COUNT(Reservation_number), LEFT(Reservation_date,4) FROM T2_Reservation GROUP BY LEFT(Reservation_date,4) HAVING COUNT(Reservation_number) >= 1;
```

Results | Messages

	Customer_ID	Customer_Name	Phone_number	City	State	Zipcode	Email_ID
1	1	Loflin	8888543748	Nagpur	MP	534201	loff@gmail.com
2	3	Mahesh	8888543746	Lucknow	UP	534205	mah@gmail.com
3	4	Prabha	8888543766	Bengaluru	Karnataka	534201	prab@gmail.com
4	2	Ram	8888543744	hyderabad	TN	534204	Ram@gmail.com

	empid	empname	dob	age	Salary
1	2	Jax	1959-04-05	62	10000
2	3	Nax	1992-07-07	29	5000
3	1	Max	1999-03-21	22	6000

GROUP BY:

```
USE HOTEL;

--------------ORDERBY--------------------

SELECT * FROM T2_Customer ORDER BY Customer_Name ASC;
SELECT * FROM emp_info ORDER BY age DESC;

--------------GROUPBY-----------------
SELECT number_of_beds, COUNT(*) AS number_of_rooms FROM T2_Rooms GROUP BY number_of_beds;
SELECT Zipcode,COUNT(*) FROM T2_Customer GROUP BY Zipcode;

-----------------HAVING--------------
SELECT COUNT(Room_number),Room_Type FROM T2_Rooms GROUP BY Room_Type HAVING COUNT(Room_number) >= 1;
SELECT COUNT(Reservation_number), LEFT(Reservation_date,4) FROM T2_Reservation GROUP BY LEFT(Reservation_date,4) HAVING COUNT(Reservation_number) >= 1;
```

Results | Messages

	number_of_beds	number_of_rooms
1	1	2
2	3	1

	Zipcode	(No column name)
1	534201	2
2	534204	1
3	534205	1

HAVING CLAUSE:

```
USE HOTEL;

----------ORDERBY----------

SELECT * FROM T2_Customer ORDER BY Customer_Name ASC;
SELECT * FROM emp_info ORDER BY age DESC;

----------GROUPBY----------
SELECT number_of_beds, COUNT(*) AS number_of_rooms FROM T2_Rooms GROUP BY number_of_beds;
SELECT Zipcode,COUNT(*) FROM T2_Customer GROUP BY Zipcode;

----------HAVING----------
SELECT COUNT(Room_number),Room_Type FROM T2_Rooms GROUP BY Room_Type HAVING COUNT(Room_number) >= 1;
SELECT COUNT(Reservation_number), LEFT(Reservation_date,4) FROM T2_Reservation GROUP BY LEFT(Reservation_date,4) HAVING COUNT(Reservation_number) >= 1;
```

100 %

Results | Messages

	(No column name)	Room_Type
1	2	Deluxe
2	1	Economic

	(No column name)	(No column name)
1	3	1999

Q4) Use Aggregate function with group by and having

AVG():

```
USE HOTEL;

SELECT AVG(number_of_beds) FROM T2_Rooms GROUP BY Room_location HAVING Room_location LIKE 'block%';

SELECT COUNT(Customer_ID) FROM T2_Reservation GROUP BY Check_in_date HAVING Check_in_date >= '1992-02-03';

SELECT MIN(Salary) FROM emp_info GROUP BY age HAVING age > 25;

SELECT MAX(Room_charge) FROM T2_Billing GROUP BY LEFT(Payment_date,7) HAVING LEFT(Payment_date,7) LIKE '2021-%';

SELECT SUM(Service_cost) FROM T2_SERVICES GROUP BY Service_cost HAVING Service_cost BETWEEN 4000 AND 6000;
```

100 %

Results | Messages

	(No column name)
1	3
2	1

COUNT () :

```
USE HOTEL;

SELECT AVG(number_of_beds) FROM T2_Rooms GROUP BY Room_location HAVING Room_location LIKE 'block%';

SELECT COUNT(Customer_ID) FROM T2_Reservation GROUP BY Check_in_date HAVING Check_in_date >= '1992-02-03';

SELECT MIN(Salary) FROM emp_info GROUP BY age HAVING age > 25;

SELECT MAX(Room_charge) FROM T2_Billing GROUP BY LEFT(Payment_date,7) HAVING LEFT(Payment_date,7) LIKE '2021-%';

SELECT SUM(Service_cost) FROM T2_SERVICES GROUP BY Service_cost HAVING Service_cost BETWEEN 4000 AND 6000;
```

100 %

Results | Messages

	(No column name)
1	2
2	1

MIN () :

```
USE HOTEL;

SELECT AVG(number_of_beds) FROM T2_Rooms GROUP BY Room_location HAVING Room_location LIKE 'block%';

SELECT COUNT(Customer_ID) FROM T2_Reservation GROUP BY Check_in_date HAVING Check_in_date >= '1992-02-03';

SELECT MIN(Salary) FROM emp_info GROUP BY age HAVING age > 25;

SELECT MAX(Room_charge) FROM T2_Billing GROUP BY LEFT(Payment_date,7) HAVING LEFT(Payment_date,7) LIKE '2021-%';

SELECT SUM(Service_cost) FROM T2_SERVICES GROUP BY Service_cost HAVING Service_cost BETWEEN 4000 AND 6000;
```

100 %

Results | Messages

	(No column name)
1	5000
2	10000
3	10000

MAX () :

```
USE HOTEL;

SELECT AVG(number_of_beds) FROM T2_Rooms GROUP BY Room_location HAVING Room_location LIKE 'block%';

SELECT COUNT(Customer_ID) FROM T2_Reservation GROUP BY Check_in_date HAVING Check_in_date >= '1992-02-03';

SELECT MIN(Salary) FROM emp_info GROUP BY age HAVING age > 25;

SELECT MAX(Room_charge) FROM T2_Billing GROUP BY LEFT(Payment_date,7) HAVING LEFT(Payment_date,7) LIKE '2021-%';

SELECT SUM(Service_cost) FROM T2_SERVICES GROUP BY Service_cost HAVING Service_cost BETWEEN 4000 AND 6000;
```

100 %

Results | Messages

	(No column name)
1	5000
2	6000
3	3000

SUM():

```
USE HOTEL;

SELECT AVG(number_of_beds) FROM T2_Rooms GROUP BY Room_location HAVING Room_location LIKE 'block%';

SELECT COUNT(Customer_ID) FROM T2_Reservation GROUP BY Check_in_date HAVING Check_in_date >= '1992-02-03';

SELECT MIN(Salary) FROM emp_info GROUP BY age HAVING age > 25;

SELECT MAX(Room_charge) FROM T2_Billing GROUP BY LEFT(Payment_date,7) HAVING LEFT(Payment_date,7) LIKE '2021-%';

SELECT SUM(Service_cost) FROM T2_SERVICES GROUP BY Service_cost HAVING Service_cost BETWEEN 4000 AND 6000;
```

100 %

Results | Messages

	(No column name)
1	4000

Q5) Write at least 3 nested queries using order by, group by and having clause.

QUERY:

```
SELECT Customer_Name,COUNT(*) FROM T2_Customer
WHERE Customer_ID = ANY(
                        SELECT Customer_ID from T2_Reservation
                        WHERE Reservation_number = ANY(
                                                SELECT Reservation_number FROM T2_SERVICES
                                                WHERE Service_cost >= 4000
                                                )
                        )
GROUP BY Customer_Name HAVING Customer_Name LIKE '%a%'
ORDER BY Customer_Name desc;
```

100 %

Results | Messages

	Customer_Name	(No column name)
1	Prabha	1

Q6) Illustrate the Usage of Except, Exists, Not Exists, Union, Intersection

EXCEPT():

```
----------EXCEPT--------------
SELECT Customer_ID FROM T2_Customer
EXCEPT
SELECT Customer_ID FROM T2_Reservation;
----------EXISTS--------------
SELECT Customer_ID FROM T2_Rooms
WHERE EXISTS
(SELECT Customer_ID FROM T2_Billing)
ORDER BY Customer_ID ASC;
---------NOT EXISTS--------------
SELECT * FROM T2_Customer
WHERE NOT EXISTS
(SELECT Customer_ID FROM T2_Reservation);
---------UNION--------------
SELECT City FROM T2_CUSTOMER_ADDRESS
UNION
SELECT City FROM T2_Customer;
--------INTERSECTION----------
SELECT Room_charge FROM T2_Billing
INTERSECT
SELECT Service_cost FROM T2_SERVICES;
```

100 %

Results | Messages

	Customer_ID
1	3

EXISTS():

```
----------EXCEPT--------------
SELECT Customer_ID FROM T2_Customer
EXCEPT
SELECT Customer_ID FROM T2_Reservation;
----------EXISTS--------------
SELECT Customer_ID FROM T2_Rooms
WHERE EXISTS
(SELECT Customer_ID FROM T2_Billing)
ORDER BY Customer_ID ASC;
---------NOT EXISTS--------------
SELECT * FROM T2_Customer
WHERE NOT EXISTS
(SELECT Customer_ID FROM T2_Reservation);
---------UNION--------------
SELECT City FROM T2_CUSTOMER_ADDRESS
UNION
SELECT City FROM T2_Customer;
--------INTERSECTION----------
SELECT Room_charge FROM T2_Billing
INTERSECT
SELECT Service_cost FROM T2_SERVICES;
```

100 %

Results | Messages

	Customer_ID
1	1
2	2
3	4

NOT EXISTS():

```
----------EXCEPT--------------
SELECT Customer_ID FROM T2_Customer
EXCEPT
SELECT Customer_ID FROM T2_Reservation;
----------EXISTS--------------
SELECT Customer_ID FROM T2_Rooms
WHERE EXISTS
(SELECT Customer_ID FROM T2_Billing)
ORDER BY Customer_ID ASC;
---------NOT EXISTS-------------
SELECT * FROM T2_Customer
WHERE NOT EXISTS
(SELECT Customer_ID FROM T2_Reservation);
---------UNION-------------
SELECT City FROM T2_CUSTOMER_ADDRESS
UNION
SELECT City FROM T2_Customer;
--------INTERSECTION---------
SELECT Room_charge FROM T2_Billing
INTERSECT
SELECT Service_cost FROM T2_SERVICES;
```

100 %

Results | Messages

Customer_ID	Customer_Name	Phone_number	City	State	Zipcode	Email_ID

UNION() :

```
----------EXCEPT--------------
SELECT Customer_ID FROM T2_Customer
EXCEPT
SELECT Customer_ID FROM T2_Reservation;
----------EXISTS--------------
SELECT Customer_ID FROM T2_Rooms
WHERE EXISTS
(SELECT Customer_ID FROM T2_Billing)
ORDER BY Customer_ID ASC;
---------NOT EXISTS-------------
SELECT * FROM T2_Customer
WHERE NOT EXISTS
(SELECT Customer_ID FROM T2_Reservation);
---------UNION-------------
SELECT City FROM T2_CUSTOMER_ADDRESS
UNION
SELECT City FROM T2_Customer;
--------INTERSECTION---------
SELECT Room_charge FROM T2_Billing
INTERSECT
SELECT Service_cost FROM T2_SERVICES;
```

00 %

Results | Messages

	City
1	Bengaluru
2	hyderabad
3	Lucknow
4	Nagpur

INTERSECT:

```
----------EXCEPT--------------
SELECT Customer_ID FROM T2_Customer
EXCEPT
SELECT Customer_ID FROM T2_Reservation;
----------EXISTS--------------
SELECT Customer_ID FROM T2_Rooms
WHERE EXISTS
(SELECT Customer_ID FROM T2_Billing)
ORDER BY Customer_ID ASC;
---------NOT EXISTS-----------
SELECT * FROM T2_Customer
WHERE NOT EXISTS
(SELECT Customer_ID FROM T2_Reservation);
---------UNION-------------
SELECT City FROM T2_CUSTOMER_ADDRESS
UNION
SELECT City FROM T2_Customer;
--------INTERSECTION----------
SELECT Room_charge FROM T2_Billing
INTERSECT
SELECT Service_cost FROM T2_SERVICES;
```

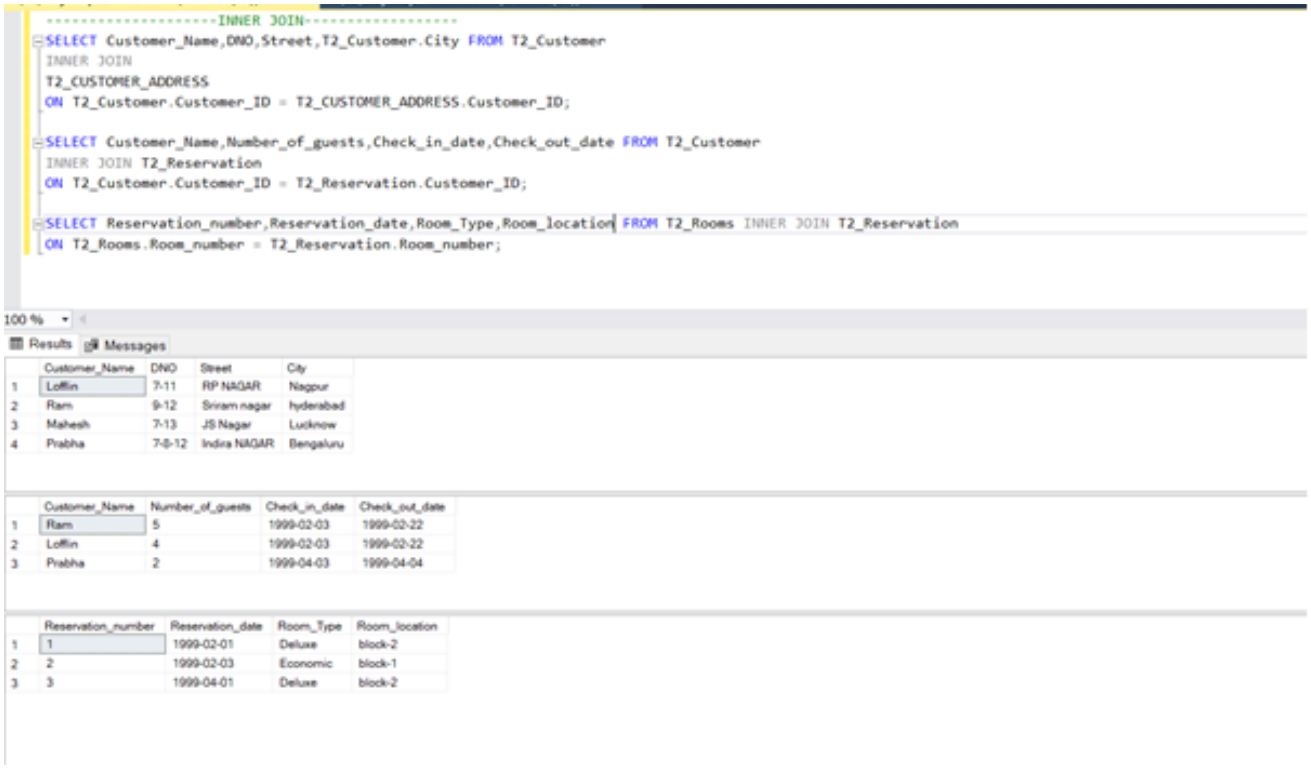
100 %

Results | Messages

	Room_charge
1	3000

Q7) INNER JOIN, LEFT OUTER JOIN, RIGHT OUTER JOIN- 3 queries for each instance

INNER JOIN:



```
----------INNER JOIN----------
SELECT Customer_Name,DNO,Street,T2_Customer.City FROM T2_Customer
INNER JOIN
T2_CUSTOMER_ADDRESS
ON T2_Customer.Customer_ID = T2_CUSTOMER_ADDRESS.Customer_ID;

SELECT Customer_Name,Number_of_guests,Check_in_date,Check_out_date FROM T2_Customer
INNER JOIN T2_Reservation
ON T2_Customer.Customer_ID = T2_Reservation.Customer_ID;

SELECT Reservation_number,Reservation_date,Room_Type,Room_location FROM T2_Rooms INNER JOIN T2_Reservation
ON T2_Rooms.Room_number = T2_Reservation.Room_number;
```

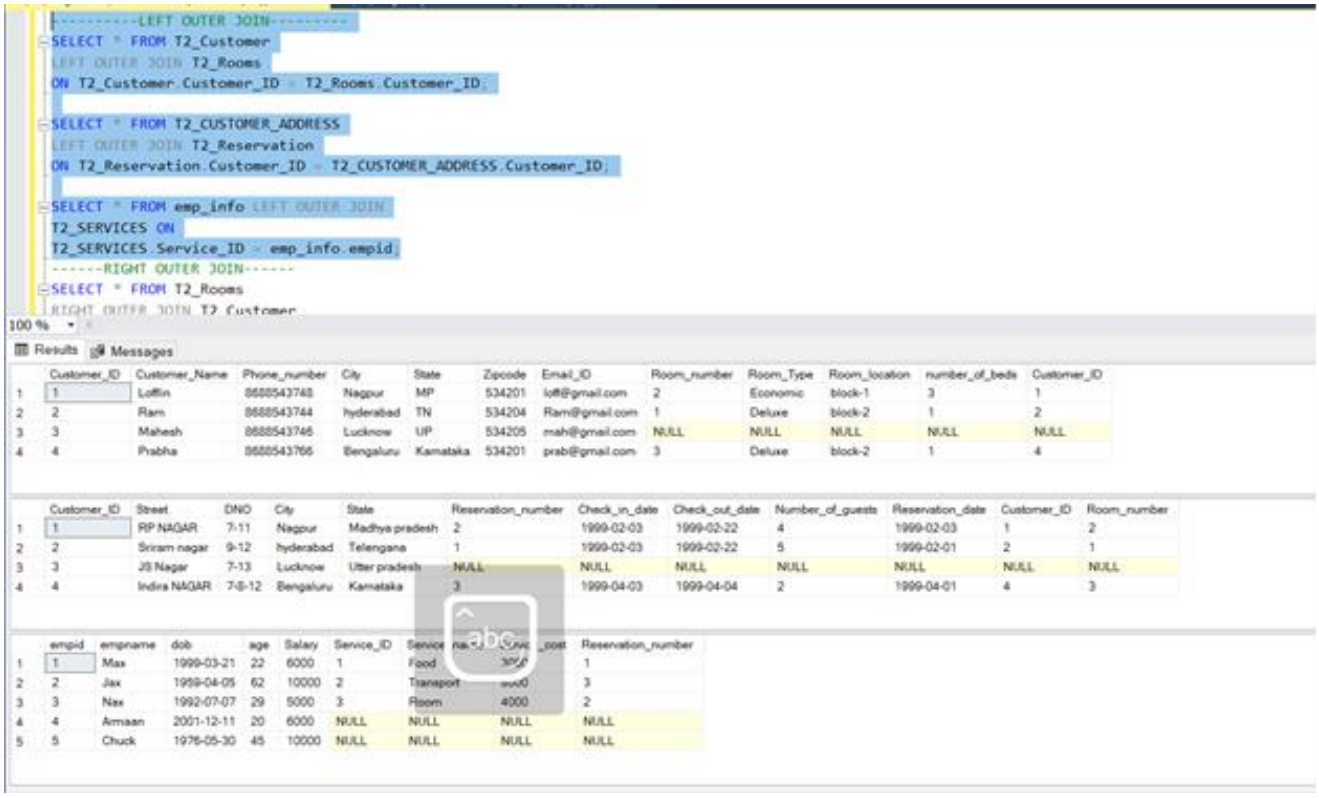
Results Messages

	Customer_Name	DNO	Street	City
1	Loffin	7-11	RP NAGAR	Nagpur
2	Ram	9-12	Sriram nagar	hyderabad
3	Mahesh	7-13	JS Nagar	Lucknow
4	Prabha	7-8-12	Indira NAGAR	Bengaluru

	Customer_Name	Number_of_guests	Check_in_date	Check_out_date
1	Ram	5	1999-02-03	1999-02-22
2	Loffin	4	1999-02-03	1999-02-22
3	Prabha	2	1999-04-03	1999-04-04

	Reservation_number	Reservation_date	Room_Type	Room_location
1	1	1999-02-01	Deluxe	block-2
2	2	1999-02-03	Economic	block-1
3	3	1999-04-01	Deluxe	block-2

LEFT OUTER JOIN:



```
---------LEFT OUTER JOIN---------
SELECT * FROM T2_Customer
LEFT OUTER JOIN T2_Rooms
ON T2_Customer.Customer_ID = T2_Rooms.Customer_ID;

SELECT * FROM T2_CUSTOMER_ADDRESS
LEFT OUTER JOIN T2_Reservation
ON T2_Reservation.Customer_ID = T2_CUSTOMER_ADDRESS.Customer_ID;

SELECT * FROM emp_info LEFT OUTER JOIN
T2_SERVICES ON
T2_SERVICES.Service_ID = emp_info.empid;
------RIGHT OUTER JOIN------
SELECT * FROM T2_Rooms
RIGHT OUTER JOIN T2_Customer
```

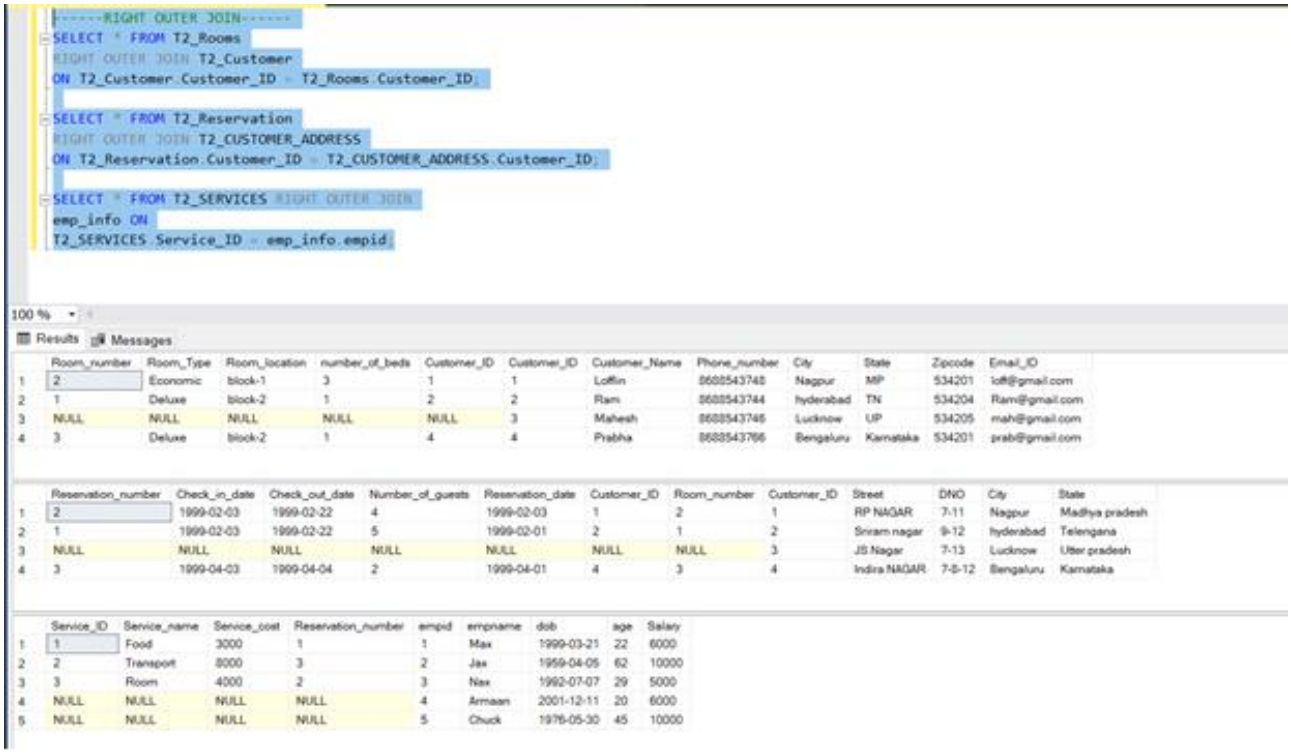
Results Messages

	Customer_ID	Customer_Name	Phone_number	City	State	Zipcode	Email_ID	Room_number	Room_Type	Room_location	number_of_beds	Customer_ID
1	1	Loffin	8888543748	Nagpur	MP	534201	loff@gmail.com	2	Economic	block-1	3	1
2	2	Ram	8888543744	hyderabad	TN	534204	Ram@gmail.com	1	Deluxe	block-2	1	2
3	3	Mahesh	8888543746	Lucknow	UP	534205	mah@gmail.com	NULL	NULL	NULL	NULL	NULL
4	4	Prabha	8888543766	Bengaluru	Karnataka	534201	prab@gmail.com	3	Deluxe	block-2	1	4

	Customer_ID	Street	DNO	City	State	Reservation_number	Check_in_date	Check_out_date	Number_of_guests	Reservation_date	Customer_ID	Room_number
1	1	RP NAGAR	7-11	Nagpur	Madhya pradesh	2	1999-02-03	1999-02-22	4	1999-02-03	1	2
2	2	Sriram nagar	9-12	hyderabad	Telengana	1	1999-02-03	1999-02-22	5	1999-02-01	2	1
3	3	JS Nagar	7-13	Lucknow	Utter pradesh	NULL	NULL	NULL	NULL	NULL	NULL	NULL
4	4	Indira NAGAR	7-8-12	Bengaluru	Karnataka	3	1999-04-03	1999-04-04	2	1999-04-01	4	3

	empid	empname	dob	age	Salary	Service_ID	Service	na...	Q...	...cost	Reservation_number
1	1	Max	1999-03-21	22	6000	1	Food				1
2	2	Jax	1959-04-05	62	10000	2	Transport				3
3	3	Nax	1992-07-07	29	5000	3	Room			4000	2
4	4	Armaan	2001-12-11	20	6000	NULL	NULL			NULL	NULL
5	5	Chuck	1976-05-30	45	10000	NULL	NULL			NULL	NULL

RIGHT OUTER JOIN:



```
------RIGHT OUTER JOIN------
SELECT * FROM T2_Rooms
RIGHT OUTER JOIN T2_Customer
ON T2_Customer.Customer_ID = T2_Rooms.Customer_ID;

SELECT * FROM T2_Reservation
RIGHT OUTER JOIN T2_CUSTOMER_ADDRESS
ON T2_Reservation.Customer_ID = T2_CUSTOMER_ADDRESS.Customer_ID;

SELECT * FROM T2_SERVICES RIGHT OUTER JOIN
emp_info ON
T2_SERVICES.Service_ID = emp_info.empid;
```

100 %

Results | Messages

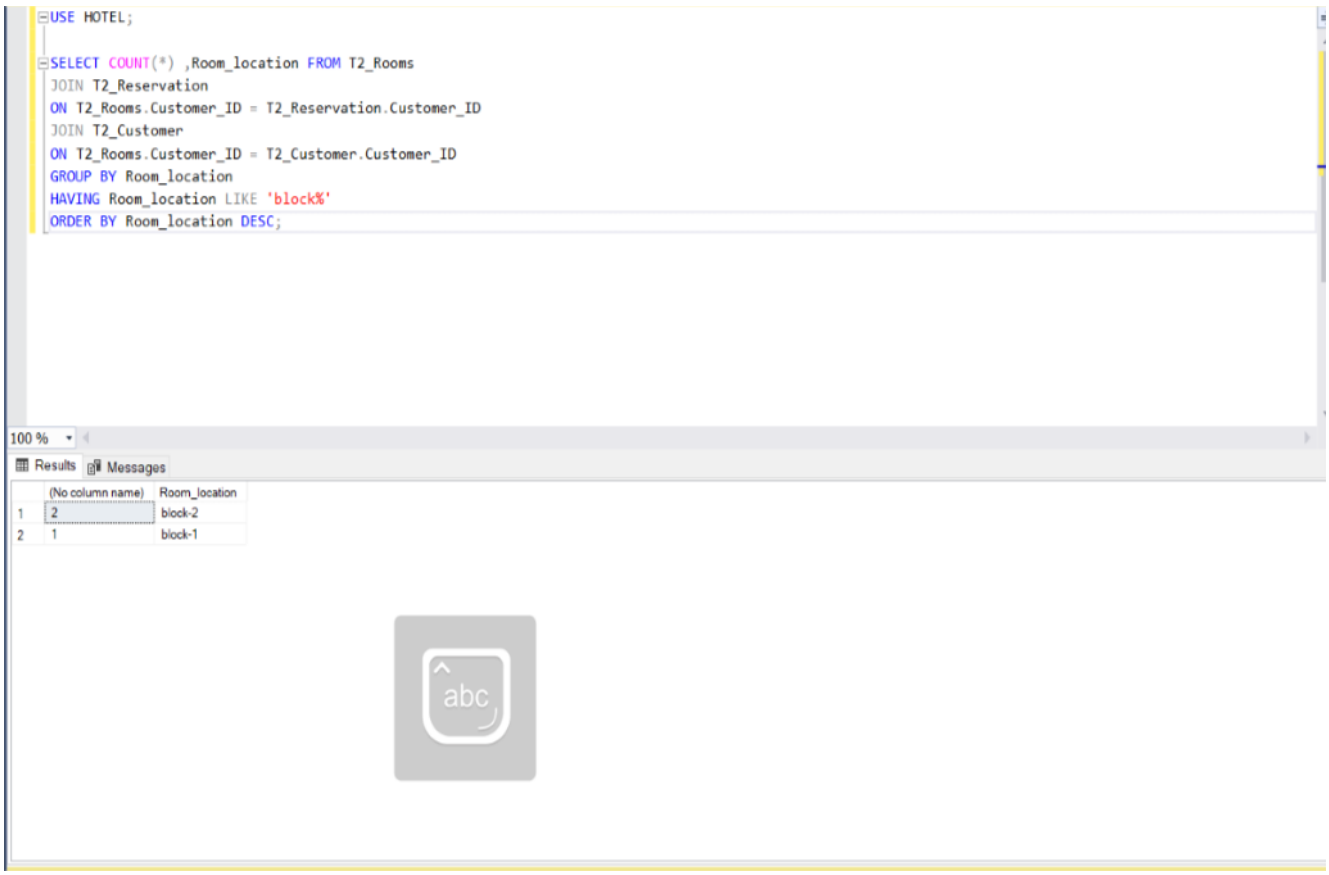
	Room_number	Room_Type	Room_location	number_of_beds	Customer_ID	Customer_ID	Customer_Name	Phone_number	City	State	Zipcode	Email_ID
1	2	Economic	block-1	3	1	1	Loffin	8688543745	Nagpur	MP	534201	loff@gmail.com
2	1	Deluxe	block-2	1	2	2	Ram	8688543744	hyderabad	TN	534204	Ram@gmail.com
3	NULL	NULL	NULL	NULL	NULL	3	Mahesh	8688543745	Lucknow	UP	534205	mah@gmail.com
4	3	Deluxe	block-2	1	4	4	Prabha	8688543766	Bengaluru	Karnataka	534201	prab@gmail.com

	Reservation_number	Check_in_date	Check_out_date	Number_of_guests	Reservation_date	Customer_ID	Room_number	Customer_ID	Street	DNO	City	State
1	2	1999-02-03	1999-02-22	4	1999-02-03	1	2	1	RP NAGAR	7-11	Nagpur	Madhya pradesh
2	1	1999-02-03	1999-02-22	5	1999-02-01	2	1	2	Sriram nagar	9-12	hyderabad	Telengana
3	NULL	NULL	NULL	NULL	NULL	NULL	NULL	3	JS Nagar	7-13	Lucknow	Utter pradesh
4	3	1999-04-03	1999-04-04	2	1999-04-01	4	3	4	Indira NAGAR	7-8-12	Bengaluru	Karnataka

	Service_ID	Service_name	Service_cost	Reservation_number	empid	empname	dob	age	Salary
1	1	Food	3000	1	1	Max	1999-03-21	22	6000
2	2	Transport	8000	3	2	Jax	1959-04-05	62	10000
3	3	Room	4000	2	3	Nax	1992-07-07	29	5000
4	NULL	NULL	NULL	NULL	4	Armaan	2001-12-11	20	6000
5	NULL	NULL	NULL	NULL	5	Chuck	1976-05-30	45	10000

Q8) Use all the above condition in JOIN as well.

QUERY:



```
USE HOTEL;

SELECT COUNT(*) ,Room_location FROM T2_Rooms
JOIN T2_Reservation
ON T2_Rooms.Customer_ID = T2_Reservation.Customer_ID
JOIN T2_Customer
ON T2_Rooms.Customer_ID = T2_Customer.Customer_ID
GROUP BY Room_location
HAVING Room_location LIKE 'block%'
ORDER BY Room_location DESC;
```

100 %

Results | Messages

	(No column name)	Room_location
1	2	block-2
2	1	block-1