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19BCS002

DBMS Lab Assignment 5

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.

a) ANY Operator:-
```sql
Select * from Doctor
where DID = ANY(Select Asssigned_Doctor_id from Patient
where Current_Case = 'Kidney Surgery');

Select * from staff
where Assigned_doctor_id = ANY(Select DID from Doctor
where Salary > 30000)
order by Assigned_doctor_id asc;

Select * from Patient
where Asssigned_Doctor_id = ANY(Select Asssigned_Doctor_id from
staff where Assigned_Room between 202 AND 210)
order by Age desc;
```

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	5	Suresh	Rai	Kidney Surgery	1111111114	MBBS	48000
2	11	Shankar	Mahadevan	Kidney Surgery	1111111120	MBBS	38000

	SID	Assigned_doctor_id	Name	Salary	Assigned_Room
1	2005	1	Malik	1000	208
2	2001	3	Ayush	3000	200
3	2011	3	Param	1400	215
4	2008	5	Sujit	2000	212
5	2003	6	Sunny	2500	204
6	2002	11	Aak...	1100	202
7	2010	13	Priyam	1300	214
8	2009	15	Anuj	1500	213

	PID	Patient_name	Age	PPhone_number	Current_Case	Asssigned_Doctor_id
1	1005	Mahesh	36	1111111134	Brain Surgery	1
2	1011	Pawan	33	1111111140	Amnesia	14
3	1010	Sathwik	32	1111111139	Burns	13
4	1004	Mahendra	32	1111111133	Skin Surgery	16
5	1006	Rahul	31	1111111135	Bone Surgery	9
6	1001	Abhishek	30	1111111130	Heart Surgery	3
7	1003	Sundar	29	1111111132	Flu	6
8	1002	Akash	28	1111111131	Kidney Sur...	11
9	1007	Karthik	27	1111111136	Liver Surgery	12
10	1008	Surya	26	1111111137	Kidney Sur...	5
11	1009	Maurya	23	1111111138	Artherities	15

✅ Query executed successfully.   localhost (15.0 RTM)

b) ALL Operator:-

```sql
Select * from Doctor
where DID > ALL(Select Asssigned_Doctor_id from Patient
where Current_Case = 'Kidney Surgery');

Select * from Patient
where Asssigned_Doctor_id < ALL(Select DID from Doctor
where Salary = 98000)
order by Asssigned_Doctor_id  asc;

Select * from Doctor
where Salary > ALL(Select Salary from Doctor
where DID between 9 AND 13)
order by Salary asc;
```

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	12	Mithesh	Jain	Liver Surgery	1111111121	MBBS	18000
2	13	Sweta	Kumari	Burns	1111111122	MBBS	48000
3	14	Pawar		Amnesia	1111111123	MBBS	98000
4	15	Keshav	Maharaj	Artherities	1111111124	MBBS	68000
5	16	Kishore	Kumar	Skin Surgery	1111111125	MBBS	28000
6	17	Bipul	Gautam		1111111126	MBBS	38000
7	18	Ketaki			1111111127	MBBS	38000
8	19	Ravi	Sharma	Stroke	1111111128	MBBS	38000

	PID	Patient_name	Age	PPhone_number	Current_Case	Asssigned_Doctor_id
1	1005	Mahesh	36	1111111134	Brain Surgery	1
2	1001	Abhishek	30	1111111130	Heart Surgery	3
3	1008	Surya	26	1111111137	Kidney Surg...	5
4	1003	Sundar	29	1111111132	Flu	6
5	1006	Rahul	31	1111111135	Bone Surgery	9
6	1002	Akash	28	1111111131	Kidney Surg...	11
7	1007	Karthik	27	1111111136	Liver Surgery	12
8	1010	Sathwik	32	1111111139	Burns	13

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	1	Ajay	Chauhan	Brain Surgery	1111111110	MBBS	58000
2	2	Vijay	Singh	Brain Surgery	1111111111	MBBS	58000
3	15	Keshav	Maharaj	Artherities	1111111124	MBBS	68000
4	7	Mahesh	Parihar	Skin Surgery	1111111116	MBBS	88000
5	14	Pawar		Amnesia	1111111123	MBBS	98000

Query executed successfully.   localhost (15.0 RTM)

c) LIKE Operator:-

```sql
Select * from Doctor where First_Name LIKE 'R%';
Select * from Patient where Patient_name LIKE '_a%';
Select * from staff where Name LIKE '%h%';
```

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	4	Ramesh	Pawar	Heart Surgery	1111111113	MBBS	38000
2	8	Rajesh	S	Kidney Surgery	1111111117	MBBS	18000
3	19	Ravi	Sharma	Stroke	1111111128	MBBS	38000

	PID	Patient_name	Age	PPhone_number	Current_Case	Asssigned_Doctor_id
1	1004	Mahendra	32	1111111133	Skin Surgery	16
2	1005	Mahesh	36	1111111134	Brain Surgery	1
3	1006	Rahul	31	1111111135	Bone Surgery	9
4	1007	Karthik	27	1111111136	Liver Surgery	12
5	1009	Maurya	23	1111111138	Artherities	15
6	1010	Sathwik	32	1111111139	Burns	13
7	1011	Pawan	33	1111111140	Amnesia	14

	SID	Assigned_doctor_id	Name	Salary	Assigned_Room
1	2001	3	Ayush	3000	200
2	2002	11	Aakansh	1100	202
3	2004	16	Manish	1600	206
4	2006	9	Rohit	3500	210
5	2007	12	Krishna	1200	211

✔ Query executed successfully.   localhost (15.0 RTM)

d) Difference between ANY and ALL:-

```sql
Select * from Doctor
where Salary > ANY(Select Salary from Doctor
where DID between 9 AND 13);

Select * from Doctor
where Salary > ALL(Select Salary from Doctor
where DID between 9 AND 13);
```

> ALL () means greater than every value, i.e. greater than the maximum value.

> ANY() means greater than at least one value,i.e. greater than the minimum value.

Q2) One query for each Aggregate function.

```sql
Select AVG(Salary) as Avg_Doctor_Salary from Doctor;
Select MAX(Salary) as Max_Staff_Salary from staff;
Select MIN(Salary) as Min_Doctor_Salary from Doctor;
Select COUNT(Availability) as Room_availability from room
where Availability = 'YES';
```

Results | Messages

	Avg_Doctor_Salary
1	45000

	Max_Staff_Salary
1	3500

	Min_Doctor_Salary
1	18000

	Room_availability
1	5

Q3) Illustrate the usage of order by, group by and having clause (2 queries for each case). & Q4) Use Aggregate function with group by and having.

a) Order by case:-

```
Select * from Doctor order by Salary asc;
Select * from room order by Availability desc;
```

Results | Messages

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	8	Rajesh	S	Kidney Surgery	1111111117	MBBS	18000
2	12	Mithesh	Jain	Liver Surgery	1111111121	MBBS	18000
3	16	Kishore	Kumar	Skin Surgery	1111111125	MBBS	28000
4	9	Sanjay	Dutt	Bone Surgery	1111111118	MBBS	28000
5	10	Kalpesh	Chaturvedi	Liver Surgery	1111111119	MBBS	28000
6	11	Shankar	Mahadev...	Kidney Surgery	1111111120	MBBS	38000
7	3	Jay	Shah	Heart Surgery	1111111112	MBBS	38000
8	4	Ramesh	Pawar	Heart Surgery	1111111113	MBBS	38000
9	17	Bipul	Gautam		1111111126	MBBS	38000
10	18	Ketaki			1111111127	MBBS	38000

	RID	Availability
1	201	YES
2	203	YES
3	205	YES
4	207	YES
5	209	YES
6	210	NO
7	211	NO
8	212	NO
9	213	NO
10	214	NO
11	215	NO
12	200	NO
13	208	NO

✓ Query executed successfully. | localhost (15.0 RTM)

b) Group by case:-

```
Select Current_Case, COUNT(Current_Case) as No_of_Cases from
Patient group by Current_Case order by COUNT(Current_Case) asc;
Select COUNT(Availability) as No_of_Rooms, Availability from room
group by Availability order by Availability desc;
```

	Current_Case	No_of_Cases
1	Amnesia	1
2	Artherities	1
3	Bone Surgery	1
4	Brain Surgery	1
5	Burns	1
6	Flu	1
7	Heart Surgery	1
8	Liver Surgery	1

	No_of_Rooms	Availability
1	5	YES
2	11	NO

c) Having clause:-

```
Select Current_Case, COUNT(Current_Case) as No_of_Doctors from
Doctor group by Current_Case having COUNT(Current_Case)>1 order by
COUNT(Current_Case) asc;
Select Assigned_doctor_id as Doctor_ID, COUNT(Assigned_doctor_id)
as No_of_staff from staff group by Assigned_doctor_id having
COUNT(Assigned_doctor_id)>1;
```

	Current_Case	No_of_Doctors
1	Brain Surgery	2
2	Heart Surgery	2
3	Liver Surgery	2
4	Skin Surgery	2
5	Kidney Surg...	3
6		3

	Doctor_ID	No_of_staff
1	3	2

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

```sql
Select Current_Case, COUNT(Current_Case) as No_of_Cases from
Patient group by Current_Case having COUNT(Current_Case)<2 order by
Current_Case desc;
Select Current_Case, COUNT(Current_Case) as No_of_Doctors from
Doctor group by Current_Case having COUNT(Current_Case)<3 order by
COUNT(Current_Case) asc;
Select Assigned_doctor_id as Doctor_ID, COUNT(Assigned_doctor_id)
as No_of_staff from staff group by Assigned_doctor_id having
COUNT(Assigned_doctor_id)=1;
```

Results | Messages

	Current_Case	No_of_Cases
1	Skin Surgery	1
2	Liver Surgery	1
3	Heart Surgery	1
4	Flu	1
5	Burns	1
6	Brain Surgery	1
7	Bone Surgery	1
8	Artherities	1

	Current_Case	No_of_Doctors
1	Amnesia	1
2	Artherities	1
3	Bone Surgery	1
4	Burns	1
5	Flu	1
6	Stroke	1
7	Heart Surgery	2
8	Liver Surgery	2

	Doctor_ID	No_of_staff
1	1	1
2	5	1
3	6	1
4	9	1
5	11	1
6	12	1

✓ Query executed successfully.

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

a) Except:-

```sql
Select DID as Doctor_id from Doctor
EXCEPT
Select Assigned_Doctor_id from Patient;
```

b) Exists:-

```sql
Select * from Doctor
where EXISTS(Select * from Patient
where PID>1005 and Doctor.DID = Patient.Assigned_Doctor_id);
```

c) Not Exists:-

```sql
Select * from Doctor
where NOT EXISTS(Select * from Patient
where PID>1005 and Doctor.DID = Patient.Assigned_Doctor_id);
```

d) Union:-

```sql
Select CONCAT(First_Name,' ',Last_Name) as Doctor_Name from Doctor
UNION
Select Patient_name from Patient;
```

e) Intersect:-

```sql
Select DID as Doctor_ID from Doctor
INTERSECT
Select Assigned_Doctor_id from Patient;
```

Results | Messages

	Doctor_id
1	2
2	4
3	7
4	8
5	10
6	17
7	18
8	19

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	5	Suresh	Rai	Kidney Surgery	1111111114	MBBS	48000
2	9	Sanjay	Dutt	Bone Surgery	1111111118	MBBS	28000
3	12	Mithesh	Jain	Liver Surgery	1111111121	MBBS	18000
4	13	Sweta	Kumari	Burns	1111111122	MBBS	48000
5	14	Pawar		Amnesia	1111111123	MBBS	98000
6	15	Keshav	Maharaj	Artherities	1111111124	MBBS	68000

	DID	First_Name	Last_Name	Current_Case	DPhone_Number	Qualification	Salary
1	1	Ajay	Chauhan	Brain Surgery	1111111110	MBBS	58000
2	2	Vijay	Singh	Brain Surgery	1111111111	MBBS	58000
3	3	Jay	Shah	Heart Surgery	1111111112	MBBS	38000
4	4	Ramesh	Pawar	Heart Surgery	1111111113	MBBS	38000
5	6	Shaan		Flu	1111111115	MBBS	48000
6	7	Mahesh	Parihar	Skin Surgery	1111111116	MBBS	88000
7	8	Rajesh	S	Kidney Sur...	1111111117	MBBS	18000
8	10	Kalpesh	Chaturvedi	Liver Surgery	1111111119	MBBS	28000

Query executed successfully. | localhost (15.0 RTM)

Q7) INNER JOIN, LEFT OUTER JOIN, RIGHT OUTER JOIN- 3 queries for each instance & Q8) Use all the above condition in JOIN as well.

a) INNER JOIN:-

```sql
Select Doctor.First_Name as Doctor_Name, Patient.Patient_name as
Assigned_Patient_Name
from Doctor
INNER JOIN Patient on Doctor.DID=Patient.Assigned_Doctor_id
order by Doctor_Name asc;

Select Patient.Patient_name, medicine.Med_id as Prescribed_Med_ID
from Patient
INNER JOIN medicine on Patient.PID = medicine.Patient_id
order by Patient_name asc;

Select staff.Name as Staff_Name, Doctor.First_Name as
Assigned_Doctor_Name
from staff
INNER JOIN Doctor on staff.Assigned_doctor_id = Doctor.DID
order by Name asc;
```

▦ Results ▧ Messages

	Doctor_Name	Assigned_Patient_Name
1	Ajay	Mahesh
2	Jay	Abhishek
3	Keshav	Maurya
4	Kishore	Mahendra
5	Mithesh	Karthik
6	Pawar	Pawan
7	Sanjay	Rahul
8	Shaan	Sundar

	Patient_name	Prescribed_Med_ID
1	Abhishek	100
2	Akash	106
3	Karthik	103
4	Mahendra	107
5	Mahesh	102
6	Maurya	104
7	Pawan	105
8	Rahul	108

	Staff_Name	Assigned_Doctor_Name
1	Aakansh	Shankar
2	Anuj	Keshav
3	Ayush	Jay
4	Krishna	Mithesh
5	Malik	Ajay
6	Manish	Kishore

✅ Query executed successfully. | localhost (15.0 RTM)

b) LEFT OUTER JOIN:-

```sql
Select Doctor.First_Name as Doctor_Name, Patient.Patient_name as
Assigned_Patient_Name
```

```
from Doctor
LEFT OUTER JOIN Patient on Doctor.DID=Patient.Assigned_Doctor_id
order by Doctor_Name asc;

Select Patient.Patient_name, medicine.Med_id as Prescribed_Med_ID
from Patient
LEFT OUTER JOIN medicine on Patient.PID = medicine.Patient_id
order by Patient_name asc;

Select staff.Name as Staff_Name, Doctor.First_Name as
Assigned_Doctor_Name
from staff
LEFT OUTER JOIN Doctor on staff.Assigned_doctor_id = Doctor.DID
order by Name asc;
```

Results | Messages

	Doctor_Name	Assigned_Patient_Name
1	Ajay	Mahesh
2	Bipul	NULL
3	Jay	Abhishek
4	Kalpesh	NULL
5	Keshav	Maurya
6	Ketaki	NULL
7	Kishore	Mahendra
8	Mahesh	NULL

	Patient_name	Prescribed_Med_ID
1	Abhishek	100
2	Akash	106
3	Karthik	103
4	Mahendra	107
5	Mahesh	102
6	Maurya	104
7	Pawan	105
8	Rahul	108

	Staff_Name	Assigned_Doctor_Name
1	Aakansh	Shankar
2	Anuj	Keshav
3	Ayush	Jay
4	Krishna	Mithesh
5	Malik	Ajay
6	Manish	Kishore

✔ Query executed successfully.   localhost (15.0 RTM)

c) RIGHT OUTER JOIN:-

```
Select staff.Name as Staff_Name, Doctor.First_Name as
Assigned_Doctor_Name
from staff
RIGHT OUTER JOIN Doctor on staff.Assigned_doctor_id = Doctor.DID
order by Name asc;
```

```sql
Select Doctor.First_Name as Doctor_Name, Patient.Patient_name as
Assigned_Patient_Name
from Doctor
RIGHT OUTER JOIN Patient on Doctor.DID=Patient.Assigned_Doctor_id
order by Doctor_Name asc;

Select Patient.Patient_name, medicine.Med_id as Prescribed_Med_ID
from Patient
RIGHT OUTER JOIN medicine on Patient.PID = medicine.Patient_id
order by Patient_name asc;
```

Results | Messages

	Staff_Name	Assigned_Doctor_Name
1	NULL	Vijay
2	NULL	Ramesh
3	NULL	Kalpesh
4	NULL	Mahesh
5	NULL	Rajesh
6	NULL	Pawar
7	NULL	Bipul
8	NULL	Ketaki
9	NULL	Ravi
10	NULL	Mayank
11	Aakansh	Shankar
12	Anuj	Keshav
13	Ayush	Jay
14	Krishna	Mithesh

	Doctor_Name	Assigned_Patient_Name
1	Ajay	Mahesh
2	Jay	Abhishek
3	Keshav	Maurya
4	Kishore	Mahendra
5	Mithesh	Karthik
6	Pawar	Pawan
7	Sanjay	Rahul
8	Shaan	Sundar

Patient_name	Prescribed_Med_ID

✓ Query executed successfully. | localhost (15.0 RTM)