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Lab Course Name: Principles of
Database Management Systems

Lab Slot: L29+L30

EXERCISE 5

Aim: To understand the concept of Sub queries and logical tables in oracle

Question: Execute the following queries based on the schema specified in exercise 1

```

1 create table Suppliers(SupplNo NUMBER(10) PRIMARY KEY,Suppname VARCHAR(20),Status NUMBER(10),City VARCHAR(20));
2 create table Items(ItemNo NUMBER(10) PRIMARY KEY,Itemname VARCHAR(20),SupplNo NUMBER(10),Price NUMBER(10),CONSTRAINT fk_Suppliers FOREIGN KEY(SupplNo) REFERENCES Suppliers(SupplNo) );
3 create table Shipments(ItemNo NUMBER(10),Qty NUMBER(10),Manufacturedt DATE,CONSTRAINT fk_Items FOREIGN KEY(ItemNo) REFERENCES Items(ItemNo));
4 insert into Suppliers values(1,'Britannia',10,'Delhi');
5 insert into Suppliers values(2,'New Bakers',30,'Mumbai');
6 insert into Suppliers values(3,'Mother Dairy',10,'Delhi');
7 insert into Suppliers values(4,'Cookz',50,'Bangalore');
8 insert into Suppliers values(5,'Haldiram',40,'Jaipur');
9 insert into Suppliers values(6,'Nestle',70,'Kanpur');
10 insert into Suppliers values(7,'Cake wala',20,'Tirupati');
11 insert into Suppliers values(8,'Bakers love',30,'Chennai');
12 insert into Suppliers values(9,'Cooling shop',10,'Shimla');
13 insert into Items values(11,'Milk',1,15);
14 insert into Items values(13,'Cake',2,5);
15 insert into Items values(17,'Bread',3,9);
16 insert into Items values(27,'Milk Bread',4,14);
17 insert into Items values(45,'Plain Biscuit',5,6);
18 insert into Items values(34,'Cream Biscuit',6,10);
19 insert into Items values(29,'Ice cream',7,16);
20 insert into Items values(36,'Cold Drink',8,8);
21 insert into Items values(41,'Namkeen',9,15);
22 insert into Shipments values(13,10,'20-JUL-2020');
23 insert into Shipments values(17,20,'21-OCT-2019');
24 insert into Shipments values(34,20,'19-NOV-2019');
25 insert into Shipments values(27,20,'15-DEC-2020');
26 insert into Shipments values(45,10,'17-JAN-2021');
27 insert into Shipments values(11,10,'23-FEB-2020');
28 insert into Shipments values(29,10,'12-MAR-2021');
29 insert into Shipments values(36,30,'11-APR-2020');
30 insert into Shipments values(41,30,'29-AUG-2021');
  
```

SUPPNO	SUPPNAME	STATUS	CITY
1	Britannia	10	Delhi
2	New Bakers	30	Mumbai
3	Mother Dairy	10	Delhi
4	Cookz	50	Bangalore
5	Haldiram	40	Jaipur
6	Nestle	70	Kanpur
7	Cake wala	20	Tirupati
8	Bakers love	30	Chennai
9	Cooling shop	10	Shimla

ITEMNO	ITEMNAME	SUPPNO	PRICE
11	Milk	1	15
13	Cake	2	5
17	Bread	3	9
27	Milk Bread	4	14
45	Plain Biscuit	5	6
34	Cream Biscuit	6	10
29	Ice cream	7	16
36	Cold Drink	8	8
41	Namkeen	9	15

Live SQL

SQL Worksheet

1 select * from Shipments
2

ITEMNO	QTY	MANUFACTURED
13	10	20-JUL-20
17	20	21-OCT-19
34	20	19-NOV-19
27	20	15-DEC-20
45	10	17-JAN-21
11	10	23-FEB-20
29	10	12-MAR-21
36	30	11-APR-20
41	30	29-AUG-21

Download CSV
0 rows selected.

1. Use single row subqueries by applying all the comparison operators

Live SQL

SQL Worksheet

1 SELECT Itemname,Price FROM Items WHERE Price>(SELECT AVG(Price) FROM Items WHERE Itemname like 'BK');

ITEMNAME	PRICE
Milk	15
Milk Bread	14
Cream Biscuit	10
Ice cream	16
Namkeen	15

Download CSV
5 rows selected.

Live SQL

SQL Worksheet

1 SELECT Itemname,Price FROM Items WHERE Price<(SELECT AVG(Price) FROM Items WHERE Itemname like 'BK');

ITEMNAME	PRICE
Bread	9

Download CSV

Live SQL

SQL Worksheet

1 SELECT Itemname,Price FROM Items WHERE Price=(SELECT AVG(Price) FROM Items WHERE Itemname like 'BK');

ITEMNAME	PRICE
Cake	5
Plain Biscuit	6
Cold drink	8

Download CSV
3 rows selected.

Resize Code Editor

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT Itemname,Price FROM Items WHERE Price<=(SELECT AVG(Price) FROM Items WHERE Itemname like 'B%');
```

ITEMNAME	PRICE
Cake	5
Bread	9
Plain Biscuit	6
Cold drink	8

Download CSV
4 rows selected.

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT Itemname,Price FROM Items WHERE Price>=(SELECT AVG(Price) FROM Items WHERE Itemname like 'B%');
```

ITEMNAME	PRICE
Milk	15
Bread	9
Milk Bread	14
Cream Biscuit	10
Ice cream	16
Namkeen	15

Download CSV
6 rows selected.

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT Itemname,Price FROM Items WHERE Price>=(SELECT AVG(Price) FROM Items WHERE Itemname like 'B%');
```

ITEMNAME	PRICE
Milk	15
Cake	5
Milk Bread	14
Plain Biscuit	6
Cream Biscuit	10
Ice cream	16
Cold drink	8
Namkeen	15

Download CSV
8 rows selected.

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT Itemname,Price FROM Items WHERE Price in (SELECT AVG(Qty)FROM Shipments WHERE Qty=10);
```

ITEMNAME	PRICE
Cream Biscuit	10

Download CSV

2. Use multiple row subqueries by applying all the operators (in, not in, all and any)

Live SQL

SQL Worksheet

```
1 SELECT Itemname,Price FROM Items WHERE Price not in (SELECT AVG(Qty)FROM Shipments WHERE Qty=10);
```

ITEMNAME	PRICE
Milk	15
Cake	5
Bread	9
Milk Bread	14
Plain Biscuit	6
Ice cream	16
Cold drink	8
Namkeen	15

Download CSV
8 rows selected.

Live SQL

SQL Worksheet

```
1 SELECT Itemname,Price FROM Items WHERE Itemno=ANY(SELECT Itemno FROM Shipments WHERE Qty=20);
```

ITEMNAME	PRICE
Bread	9
Milk Bread	14
Cream Biscuit	10

Download CSV
3 rows selected.

Live SQL

SQL Worksheet

```
1 SELECT Itemname FROM Items WHERE Itemno=ALL(SELECT Itemno FROM Shipments WHERE Qty=10 or Qty=20);
```

ITEMNAME
Plain Biscuit

Download CSV

3. Apply a correlated subquery on the schema and retrieve relevant values.

Live SQL

SQL Worksheet

```
1 SELECT Suppno,Suppname FROM Suppliers outer WHERE Status=(SELECT Price FROM Items WHERE Suppno = outer.Suppno);
```

SUPPNO	SUPPNAME
1	Britannia
9	Cooling shop

Download CSV
2 rows selected.

4. Create a simple view.

Live SQL

SQL Worksheet

1 create or replace view Suppliers_1 as select * from Suppliers;

View created.

Live SQL

SQL Worksheet

1 select * from Suppliers_1

SUPPNO	SUPPNAME	STATUS	CITY
1	Britannia	10	Delhi
2	New Bakers	30	Mumbai
3	Mother Dairy	10	Delhi
4	Cookz	50	Bangalore
5	Haldiram	40	Jaipur
6	Nestle	70	Kanpur
7	Cake wala	20	Tirupati
8	Bakers love	30	Chennai
9	Cooling shop	10	Shimla

Download CSV
9 rows selected.

5. Create a view using subquery.

How can we create a MySQL view? x Oracle Live SQL - SQL Worksheet x

livesql.oracle.com/apex/f?p=590:1:8888079169711::NO:RP::

Live SQL

SQL Worksheet

1 Create view Items_1 AS SELECT Itemname,Price FROM Items WHERE Price > (SELECT AVG(Price) FROM Items);
2 select * from Items_1;

ITEMNAME	PRICE
Milk	15
Milk Bread	14
Ice cream	16
Nankhen	15

Download CSV
4 rows selected.

EXERCISE 6

Aim: To understand about retrieving data across multiple tables.

Question: Execute the following queries based on the schema specified in exercise 1

```
1 create table Suppliers(Supplno NUMBER(10) PRIMARY KEY,Suppname VARCHAR(20),Status NUMBER(10),City VARCHAR(20));
2 create table Items(Itemno NUMBER(10) PRIMARY KEY,Itemname VARCHAR(20),Supplno NUMBER(10),Price NUMBER(10),CONSTRAINT fk_Suppliers FOREIGN KEY(Supplno) REFERENCES Suppliers(Supplno) );
3 create table Shipments(Itemno NUMBER(10),Qty NUMBER(10),manufacturedt DATE,CONSTRAINT fk_Items FOREIGN KEY(Itemno) REFERENCES Items(Itemno));
4 insert into Suppliers values(1,'Britannia',10,'Delhi');
5 insert into Suppliers values(2,'New Bakers',30,'Mumbai');
6 insert into Suppliers values(3,'Mother Dairy',10,'Delhi');
7 insert into Suppliers values(4,'Cookz',50,'Bangalore');
8 insert into Suppliers values(5,'Haldiram',40,'Jaipur');
9 insert into Suppliers values(6,'Nestle',70,'Kanpur');
10 insert into Suppliers values(7,'Cake wala',20,'Tirupati');
11 insert into Suppliers values(8,'Bakers love',30,'Chennai');
12 insert into Suppliers values(9,'Cooling shop',10,'Shimla');
13 insert into Items values(11,'Milk',1,15);
14 insert into Items values(13,'Cake',2,5);
15 insert into Items values(17,'Bread',3,9);
16 insert into Items values(27,'Milk Bread',4,14);
17 insert into Items values(45,'Plain Biscuit',5,6);
18 insert into Items values(34,'Cream Biscuit',6,10);
19 insert into Items values(29,'Ice cream',7,16);
20 insert into Items values(36,'Cold Drink',8,8);
21 insert into Items values(41,'Namkeen',9,15);
22 insert into Shipments values(11,10,'20-JUL-2020');
23 insert into Shipments values(17,20,'21-OCT-2019');
24 insert into Shipments values(34,20,'19-NOV-2019');
25 insert into Shipments values(27,20,'15-DEC-2020');
26 insert into Shipments values(45,10,'17-JAN-2021');
27 insert into Shipments values(11,10,'23-FEB-2020');
28 insert into Shipments values(29,10,'12-MAR-2021');
29 insert into Shipments values(36,30,'11-APR-2020');
30 insert into Shipments values(41,30,'29-AUG-2021');
```

SQL Worksheet

```
1 select * from Suppliers;
```

SUPPNO	SUPPNAME	STATUS	CITY
1	Britannia	10	Delhi
2	New Bakers	30	Mumbai
3	Mother Dairy	10	Delhi
4	Cookz	50	Bangalore
5	Haldiram	40	Jaipur
6	Nestle	70	Kanpur
7	Cake wala	20	Tirupati
8	Bakers love	30	Chennai
9	Cooling shop	10	Shimla

SQL Worksheet

```
1 select * from Items;
```

ITEMNO	ITEMNAME	SUPPNO	PRICE
11	Milk	1	15
13	Cake	2	5
17	Bread	3	9
27	Milk Bread	4	14
45	Plain Biscuit	5	6
34	Cream Biscuit	6	10
29	Ice cream	7	16
36	Cold Drink	8	8
41	Namkeen	9	15

Live SQL

SQL Worksheet

1 select * from Shipments
2

ITEMNO	QTY	MANUFACTURED
13	10	20-JUL-20
17	20	21-OCT-19
34	20	19-NOV-19
27	20	15-DEC-20
45	10	17-JAN-21
11	10	23-FEB-20
29	10	12-MAR-21
36	30	11-APR-20
41	30	29-AUG-21

Download CSV
0 rows selected.

1. Retrieve values from 2 tables using a single join condition.

Live SQL

SQL Worksheet

1 SELECT * FROM Suppliers INNER JOIN Items ON Suppliers.Suppno=Items.Suppno;

SUPPNO	SUPPNAME	STATUS	CITY	ITEMNO	ITEMNAME	SUPPNO	PRICE
1	Britannia	10	Delhi	11	Milk	1	15
2	New Bakers	30	Mumbai	13	Cake	2	5
3	Mother Dairy	10	Delhi	17	Bread	3	9
4	Cookz	50	Bangalore	27	Milk Bread	4	14
5	Haldiram	40	Jaipur	45	Plain Biscuit	5	6
6	Nestle	70	Kanpur	34	Cream Biscuit	6	10
7	Cake wala	20	Tirupati	29	Ice cream	7	16
8	Bakers love	30	Chennai	36	Cold drink	8	8
9	Cooling shop	10	Shimla	41	Hamkeen	9	15

Download CSV
9 rows selected.

2. Retrieve values using natural join.

Live SQL

SQL Worksheet

1 SELECT * FROM Suppliers Natural JOIN Items;

SUPPNO	SUPPNAME	STATUS	CITY	ITEMNO	ITEMNAME	PRICE
1	Britannia	10	Delhi	11	Milk	15
2	New Bakers	30	Mumbai	13	Cake	5
3	Mother Dairy	10	Delhi	17	Bread	9
4	Cookz	50	Bangalore	27	Milk Bread	14
5	Haldiram	40	Jaipur	45	Plain Biscuit	6
6	Nestle	70	Kanpur	34	Cream Biscuit	10
7	Cake wala	20	Tirupati	29	Ice cream	16
8	Bakers love	30	Chennai	36	Cold drink	8
9	Cooling shop	10	Shimla	41	Hamkeen	15

Download CSV
9 rows selected.

3. Fetch data from two or more tables using left outer join.

Live SQL

SQL Worksheet

```
1 SELECT * FROM Items LEFT OUTER JOIN Shipments ON Items.ItemNo=Shipments.ItemNo;
```

ITEMNO	ITEMNAME	SUPPNO	PRICE	ITEMNO	QTY	MANUFACTURED
13	Cake	2	5	13	10	20-JUL-20
17	Bread	3	9	17	20	21-OCT-19
34	Cream Biscuit	6	10	34	20	19-NOV-19
13	Cake	2	5	13	10	20-JUL-20
27	Milk Bread	4	14	27	20	15-DEC-20
45	Plain Biscuit	5	6	45	10	17-JAN-21
11	Milk	1	15	11	10	23-FEB-20
29	Ice cream	7	16	29	10	12-MAR-21
36	Cold drink	8	8	36	30	11-APR-20
41	Namkeen	9	15	41	30	29-AUG-21

Download CSV

4. Fetch data from tables using right outer join.

Live SQL

SQL Worksheet

```
1 SELECT * FROM Items RIGHT OUTER JOIN Shipments ON Items.ItemNo=Shipments.ItemNo;
```

ITEMNO	ITEMNAME	SUPPNO	PRICE	ITEMNO	QTY	MANUFACTURED
11	Milk	1	15	11	10	23-FEB-20
13	Cake	2	5	13	10	20-JUL-20
13	Cake	2	5	13	10	20-JUL-20
17	Bread	3	9	17	20	21-OCT-19
27	Milk Bread	4	14	27	20	15-DEC-20
45	Plain Biscuit	5	6	45	10	17-JAN-21
34	Cream Biscuit	6	10	34	20	19-NOV-19
29	Ice cream	7	16	29	10	12-MAR-21
36	Cold drink	8	8	36	30	11-APR-20
41	Namkeen	9	15	41	30	29-AUG-21

Download CSV

5. Fetch data from tables using full outer join.

Live SQL

SQL Worksheet

```
1 SELECT * FROM Items FULL OUTER JOIN Shipments ON Items.ItemNo=Shipments.ItemNo;
```

ITEMNO	ITEMNAME	SUPPNO	PRICE	ITEMNO	QTY	MANUFACTURED
13	Cake	2	5	13	10	20-JUL-20
17	Bread	3	9	17	20	21-OCT-19
34	Cream Biscuit	6	10	34	20	19-NOV-19
13	Cake	2	5	13	10	20-JUL-20
27	Milk Bread	4	14	27	20	15-DEC-20
45	Plain Biscuit	5	6	45	10	17-JAN-21
11	Milk	1	15	11	10	23-FEB-20
29	Ice cream	7	16	29	10	12-MAR-21
36	Cold drink	8	8	36	30	11-APR-20
41	Namkeen	9	15	41	30	29-AUG-21

Download CSV

Question: Create the below tables and insert values.

Doctor (Doctor Id, Name, department, experience)

Patient (Patient Id, Name, Doc Id, Admitted date, discharge date, disease)

Use SQL to answer the below queries.

Live SQL

SQL Worksheet

```
1 create table Doctor(Docor_ID NUMBER(10) PRIMARY KEY,Doc_Name VARCHAR(20),department VARCHAR(20),experience NUMBER(10));
2 create table Patient(Patient_ID NUMBER(10) PRIMARY KEY,Pat_Name VARCHAR(20),Doc_ID NUMBER(10),Admitted_date DATE,Discharge_date DATE,disease VARCHAR(20),CONSTRAINT fk_Doctor FOREIGN KEY(Doc_ID) REFERENCES Doctor(Docor_ID));
3
```

Table created.

Table created.

Live SQL

SQL Worksheet

```
1 insert into Doctor values(15,'Sri Gouri','Cardiology',5);
2 insert into Doctor values(18,'Ram','Osteology',7);
3 insert into Doctor values(7,'Keerthi','Neurology',2);
4 insert into Doctor values(11,'Radha','Cardiology',32);
5 insert into Doctor values(12,'Hohan','Pediatrician',7);
6 insert into Doctor values(17,'Narayan','Ophthalmology',12);
7 insert into Doctor values(21,'Lakshmi','Ophthalmology',3);
8 insert into Patient values(25,'Shikshayath',17,'08-APR-2021','29-MAY-2021','long sight');
9 insert into Patient values(35,'Vikari',17,'13-JULY-2021','20-AUG-2021','Short sight');
10 insert into Patient values(29,'Raj',21,'13-JUNE-2021','20-AUG-2021','Eye sight');
11 insert into Patient values(21,'Rishi',18,'23-JAN-2021','28-JAN-2021','Bone damage');
12 insert into Patient values(12,'Durai',18,'18-APR-2021','29-MAY-2021','Bone fracture');
13 insert into Patient values(16,'Vikari',7,'13-JUNE-2021','20-JUNE-2021','Nerve pain');
14 insert into Patient values(18,'Dhukh',18,'10-AUG-2021','19-OCT-2021','Bone fracture');
15 insert into Patient values(19,'Dvash',12,'28-SEP-2021','02-NOV-2021','Fever');
16 insert into Patient values(22,'Abankari',12,'08-SEP-2021','10-SEP-2021','Womiting');
17 insert into Patient values(31,'Hema',21,'13-JAN-2021','18-FEB-2021','Myopia');
18 insert into Patient values(40,'Hemanth',21,'13-OCT-2021','17-OCT-2021','hyperMetropia');
19
```

1 row(s) inserted.

1 row(s) inserted.

Live SQL

SQL Worksheet

```
1 select * from Doctor
```

DOCTOR_ID	DOC_NAME	DEPARTMENT	EXPERIENCE
15	Sri Gouri	Cardiology	5
18	Ram	Osteology	7
7	Keerthi	Neurology	2
11	Radha	Cardiology	32
12	Hohan	Pediatrician	7
17	Narayan	Ophthalmology	12
21	Lakshmi	Ophthalmology	3

Download CSV

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 select * from Patient;
```

PATIENT_ID	PAT_NAME	DOK_ID	ADMITTED_DATE	DISCHARGE_DATE	DISEASE
25	Shikhayath	17	08-APR-21	29-MAY-21	Long sight
33	Vikar1	17	13-JUL-21	28-AUG-21	Short sight
29	Raj	21	13-JUN-21	28-AUG-21	Eye sight
21	Rishi	18	23-JAN-21	28-JAN-21	Bone damage
12	Durai	18	18-APR-21	29-MAY-21	Bone fracture
16	Vikar1	7	13-JUN-21	28-JUN-21	Nerve pain
10	Dhukh	18	18-AUG-21	19-OCT-21	Bone fracture
19	Dvesh	12	28-SEP-21	02-NOV-21	Fever
22	Ahankar1	12	08-SEP-21	18-SEP-21	Vomiting
31	Hema	21	13-JAN-21	18-FEB-21	Myopia
40	Hemanth	21	13-OCT-21	17-OCT-21	hyperMetropia

Download CSV

1. Display the doctor details along with their patient details. Doctors without any patient should also be listed in the output.

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT * from Doctor LEFT OUTER JOIN Patient ON Doctor.Doctor_ID=Patient.Doc_ID
```

DOCTOR_ID	DOK_NAME	DEPARTMENT	EXPERIENCE	PATIENT_ID	PAT_NAME	DOK_ID	ADMITTED_DATE	DISCHARGE_DATE	DISEASE
17	Narayan	Ophthalmology	12	25	Shikhayath	17	08-APR-21	29-MAY-21	Long sight
17	Narayan	Ophthalmology	12	33	Vikar1	17	13-JUL-21	28-AUG-21	Short sight
21	Lakshmi	Ophthalmology	3	29	Raj	21	13-JUN-21	28-AUG-21	Eye sight
18	Ran	Osteology	7	21	Rishi	18	23-JAN-21	28-JAN-21	Bone damage
18	Ran	Osteology	7	12	Durai	18	18-APR-21	29-MAY-21	Bone fracture
7	Keerthi	Neurology	2	16	Vikar1	7	13-JUN-21	28-JUN-21	Nerve pain
18	Ran	Osteology	7	10	Dhukh	18	18-AUG-21	19-OCT-21	Bone fracture
12	Hohan	Pediatrician	7	19	Dvesh	12	28-SEP-21	02-NOV-21	Fever
12	Hohan	Pediatrician	7	22	Ahankar1	12	08-SEP-21	18-SEP-21	Vomiting
21	Lakshmi	Ophthalmology	3	31	Hema	21	13-JAN-21	18-FEB-21	Myopia
21	Lakshmi	Ophthalmology	3	40	Hemanth	21	13-OCT-21	17-OCT-21	hyperMetropia
15	Sri Gour1	Cardiology	5	-	-	-	-	-	-
11	Radha	Cardiology	32	-	-	-	-	-	-

Download CSV

2. Display the patient name and patient_id who were admitted more than a month in the hospital and serviced by a doctor in ophthalmology department.

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT Pat_Name,Patient_ID from Patient WHERE Discharge_date-Admitted_date>30 and Doc_ID= ANY(SELECT Doctor_ID from Doctor WHERE department='Ophthalmology');
```

PAT_NAME	PATIENT_ID
Shikhayath	25
Vikar1	33
Raj	29
Hema	31

Download CSV

4 rows selected.

3. Retrieve the details of doctor who have more than 2 patients

Live SQL

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SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT * from Doctor WHERE Doctor_ID = ANY (SELECT Doc_ID FROM Patient GROUP BY Doc_ID HAVING COUNT(*)>2);
2
```

DOCTOR_ID	DOC_NAME	DEPARTMENT	EXPERIENCE
18	Ran	Osteology	7
21	Lakshmi	Ophthalmology	3

Download CSV
2 rows selected.