

EXERCISE 5 AND 6

Subqueries, Logical Tables and Joins

LIVESQL LINKS:

Exercise 5: <https://livesql.oracle.com/apex/livesql/s/pck4bzer2qfosnxd0wdgno4m>

Exercise 6A: <https://livesql.oracle.com/apex/livesql/s/pcc1hohot0tggn6c9i109jq7k>

Exercise 6B: <https://livesql.oracle.com/apex/livesql/s/pccz5nv30lwpvuytyya4fj17c>

Exercise 5

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

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

The screenshot shows the Live SQL interface with a query: `SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY = (SELECT SALARY FROM EMPLOYEE WHERE SALARY = 55000)`. The result table has three columns: FNAME, LNAME, and SALARY. It contains one row: JAMES, BORG, 55000.

FNAME	LNAME	SALARY
JAMES	BORG	55000

The screenshot shows the Live SQL interface with a query: `SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY != (SELECT SALARY FROM EMPLOYEE WHERE SALARY = 55000)`. The result table has three columns: FNAME, LNAME, and SALARY. It contains nine rows of employee data.

FNAME	LNAME	SALARY
DOUG	GILBERT	80000
JOYCE	PAN	70000
FRANKIN	WONG	40000
JENNIFER	WALLACE	43000
JOHN	SMITH	30000
RAMESH	NARAYAN	38000
JOYCE	ENGLISH	25000
ALICIA	ZELAYA	25000
AHMAD	JABBAR	25000

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9 rows selected.

Live SQL

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Statement 26

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY >= (SELECT SALARY FROM EMPLOYEE WHERE SALARY = 55000)

FNAME	LNAME	SALARY
DOUG	GILBERT	80000
JOYCE	PAN	70000
JAMES	BORG	55000

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3 rows selected.

Live SQL

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Statement 27

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY <= (SELECT SALARY FROM EMPLOYEE WHERE SALARY = 55000)

FNAME	LNAME	SALARY
FRANKIN	WONG	40000
JENNIFER	WALLACE	43000
JOHN	SMITH	30000
RAMESH	NARAYAN	38000
JOYCE	ENGLISH	25000
JAMES	BORG	55000
ALICIA	ZELAYA	25000
AHMAD	JABBAR	25000

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8 rows selected.

Live SQL

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Statement 28

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY > (SELECT SALARY FROM EMPLOYEE WHERE SALARY = 55000)

FNAME	LNAME	SALARY
DOUG	GILBERT	80000
JOYCE	PAN	70000

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2 rows selected.

 Live SQL

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Statement 29

Edit

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY < (SELECT SALARY FROM EMPLOYEE WHERE SALARY = 55000)

FNAME	LNAME	SALARY
FRANKIN	WONG	40000
JENNIFER	WALLACE	43000
JOHN	SMITH	30000
RAMESH	NARAYAN	38000
JOYCE	ENGLISH	25000
ALICIA	ZELAYA	25000
AHMAD	JABBAR	25000

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7 rows selected.

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

Live SQL

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Statement 30

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY IN (SELECT SALARY FROM EMPLOYEE WHERE SALARY >55000)

FNAME	LNAME	SALARY
DOUG	GILBERT	80000
JOYCE	PAN	70000

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2 rows selected.

Live SQL

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Statement 31

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY NOT IN (SELECT SALARY FROM EMPLOYEE WHERE SALARY >55000)

FNAME	LNAME	SALARY
JAMES	BORG	55000
RAMESH	NARAYAN	38000
JOHN	SMITH	30000
JENNIFER	WALLACE	43000
FRANKIN	WONG	40000
JOYCE	ENGLISH	25000
ALICIA	ZELAYA	25000
AHMAD	JABBAR	25000

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8 rows selected.

Live SQL

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Statement 32

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY = ANY (SELECT SALARY FROM EMPLOYEE WHERE SALARY >55000)

FNAME	LNAME	SALARY
DOUG	GILBERT	80000
JOYCE	PAN	70000

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2 rows selected.

Live SQL

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Statement 33

SELECT FNAME, LNAME, SALARY FROM EMPLOYEE WHERE SALARY = ALL (SELECT SALARY FROM EMPLOYEE WHERE SALARY >55000)

no data found

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

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Statement 34

SELECT NAME, DEPTNUM FROM PROJECT WHERE DEPTNUM IN (SELECT NUM FROM DEPARTMENT WHERE MANAGERSTART > '01-JAN-75')

NAME	DEPTNUM
PROJECTD	4
PROJECTC	5
PROJECTE	5

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3 rows selected.

4. Create a simple view.

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Statement 35

CREATE VIEW EMP_NAMES AS SELECT FNAME, MIDNAME, LNAME FROM EMPLOYEE

View created.

Statement 36


SELECT * FROM EMP_NAMES

FNAME	MIDNAME	LNAME
DOUG	E	GILBERT
JOYCE	-	PAN
FRANKIN	T	WONG
JENNIFER	S	WALLACE
JOHN	B	SMITH
RAMESH	K	NARAYAN
JOYCE	A	ENGLISH
JAMES	E	BORG
ALICIA	J	ZELAYA
AHMAD	V	JABBAR

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10 rows selected.

5. Create a view using subquery.

 Live SQL

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Statement 37

CREATE VIEW SALARY_ABOVE_AVG AS SELECT SSN, FNAME, MIDNAME, LNAME FROM EMPLOYEE WHERE SALARY > (SELECT AVG(SALARY) FROM EMPLOYEE)

View created.

Statement 38

SELECT * FROM SALARY_ABOVE_AVG

SSN	FNAME	MIDNAME	LNAME
554433221	DOUG	E	GILBERT
543216789	JOYCE	-	PAN
888665555	JAMES	E	BORG

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3 rows selected.

Exercise 6A

Aim: To understand types of function in SQL

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

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Statement 24

SELECT EMPLOYEE.LNAME, EMPLOYEE.FNAME, EMPLOYEE.DEPTNUM, DEPARTMENT.NAME FROM EMPLOYEE INNER JOIN DEPARTMENT ON EMPLOYEE.DEPTNUM = DEPARTMENT.NUM

LNAME	FNAME	DEPTNUM	NAME
GILBERT	DOUG	3	HEADQUARTER
PAN	JOYCE	2	ADMINISTRATION
WONG	FRANKIN	5	RESEARCH
WALLACE	JENNIFER	4	FINANCE
SMITH	JOHN	5	RESEARCH
NARAYAN	RAMESH	5	RESEARCH
ENGLISH	JOYCE	5	RESEARCH
BORG	JAMES	1	MANUFACTURE
ZELAYA	ALICIA	4	FINANCE
JABBAR	AHMAD	4	FINANCE

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10 rows selected.

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Statement 25

SELECT E1.FNAME, E1.LNAME, E2.FNAME, E2.LNAME FROM EMPLOYEE E1 JOIN EMPLOYEE E2 ON E1.SUPERVISORSSN = E2.SSN

FNAME	LNAME	FNAME	LNAME
FRANKIN	WONG	DOUG	GILBERT
JENNIFER	WALLACE	DOUG	GILBERT
JAMES	BORG	JOYCE	PAN
JOHN	SMITH	FRANKIN	WONG
RAMESH	NARAYAN	FRANKIN	WONG
JOYCE	ENGLISH	FRANKIN	WONG
ALICIA	ZELAYA	JENNIFER	WALLACE
AHMAD	JABBAR	JENNIFER	WALLACE

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8 rows selected.

Live SQL

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Statement 29

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SELECT EMPLOYEE.SSN, EMPLOYEE.DEPTNUM, DEPARTMENT.NAME FROM EMPLOYEE CROSS JOIN DEPARTMENT WHERE DEPARTMENT.NUM = 5

SSN	DEPTNUM	NAME
554433221	3	RESEARCH
543216789	2	RESEARCH
333445555	5	RESEARCH
987654321	4	RESEARCH
123456789	5	RESEARCH
666884444	5	RESEARCH
453453453	5	RESEARCH
888665555	1	RESEARCH
999887777	4	RESEARCH
987987987	4	RESEARCH

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10 rows selected.

2. Retrieve values using natural join.

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Statement 30

SELECT DISTINCT(SSN), DEPTNUM FROM EMPLOYEE NATURAL JOIN DEPARTMENT WHERE DEPTNUM = 5

SSN	DEPTNUM
333445555	5
666884444	5
123456789	5
453453453	5

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4 rows selected.

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

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Statement 26

SELECT PROJECT.NAME, PROJECT.DEPTNUM, DEPARTMENT.NAME FROM PROJECT LEFT OUTER JOIN DEPARTMENT ON PROJECT.DEPTNUM = DEPARTMENT.NUM

NAME	DEPTNUM	NAME
PROJECTA	1	MANUFACTURE
PROJECTB	3	HEADQUARTER
PROJECTD	4	FINANCE
PROJECTC	5	RESEARCH
PROJECTE	5	RESEARCH

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5 rows selected.

4. Fetch data from tables using right outer join.

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Statement 27

SELECT PROJECT.NAME, PROJECT.DEPTNUM, DEPARTMENT.NAME FROM PROJECT RIGHT OUTER JOIN DEPARTMENT ON PROJECT.DEPTNUM = DEPARTMENT.NUM

NAME	DEPTNUM	NAME
PROJECTA	1	MANUFACTURE
PROJECTB	3	HEADQUARTER
PROJECTC	5	RESEARCH
PROJECTD	4	FINANCE
PROJECTE	5	RESEARCH
-	-	ADMINISTRATION

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6 rows selected.

5. Fetch data from tables using full outer join

Live SQL

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Statement 28

SELECT PROJECT.NAME, PROJECT.DEPTNUM, DEPARTMENT.NAME FROM PROJECT FULL OUTER JOIN DEPARTMENT ON PROJECT.DEPTNUM = DEPARTMENT.NUM

NAME	DEPTNUM	NAME
PROJECTA	1	MANUFACTURE
-	-	ADMINISTRATION
PROJECTB	3	HEADQUARTER
PROJECTD	4	FINANCE
PROJECTC	5	RESEARCH
PROJECTE	5	RESEARCH

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6 rows selected.

Exercise 6B

Aim: 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.

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

The screenshot shows the Live SQL interface with a SQL query executed. The query is:

```
SELECT DOCTOR.DOCTORID, DOCTOR.DNAME, DOCTOR.DEPARTMENT, DOCTOR.EXPERIENCE, PATIENT.PATIENTID, PATIENT.PNAME  
FROM DOCTOR LEFT OUTER JOIN PATIENT  
ON DOCTOR.DOCTORID = PATIENT.DOCID
```

The results are displayed in a table with 6 columns: DOCTORID, DNAME, DEPARTMENT, EXPERIENCE, PATIENTID, and PNAME. There are 13 rows in total, including doctors without patients (PATIENTID is null).

DOCTORID	DNAME	DEPARTMENT	EXPERIENCE	PATIENTID	PNAME
1	JOHN DORIAN	STAFF INTERNIST	5	1001	JOHN SMITH
2	ELLIOT REED	PHYSICIAN	3	1002	GRACE RITCHIE
1	JOHN DORIAN	STAFF INTERNIST	5	1001	JOHN SMITH
4	PERCIVAL COX	SENIOR PHYSICIAN	18	1004	DENNIS DOE
4	PERCIVAL COX	SENIOR PHYSICIAN	18	1004	DENNIS DOE
2	ELLIOT REED	PHYSICIAN	3	1003	JACKIE FERRO
2	ELLIOT REED	PHYSICIAN	3	1001	JOHN SMITH
9	MOLLY CLOCK	PSYCHIATRY	6	1004	DENNIS DOE
8	KEITH DUDEMEISTER	OPHTHALMOLOGY	5	1002	GRACE RICHIE
6	TODD QUINLAN	SURGEON	11	-	-
7	JOHN WEN	SURGEON	7	-	-
5	BOB KELSO	HEAD OF MEDICINE	22	-	-
3	CHRISTOPHER TURK	SURGEON	8	-	-

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13 rows selected.


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.





The screenshot shows the Live SQL interface with a SQL query executed. The query is:




```
SELECT PNAME, PATIENTID FROM PATIENT  
WHERE 30 <= MONTHS_BETWEEN(DISCHARGEDATE, ADMITDATE)  
AND DOCID IN (SELECT DOCTORID FROM DOCTOR WHERE DEPARTMENT = 'OPHTHALMOLOGY')
```



The results show "no data found".

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

 **Live SQL**

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Statement **23**
 

```
SELECT DOCTORID, DNAME, DEPARTMENT
FROM DOCTOR
WHERE DOCTORID IN (SELECT DOCID FROM PATIENT GROUP BY DOCID HAVING COUNT(UNIQUE(PATIENTID)) > 2)
```

DOCTORID	DNAME	DEPARTMENT
2	ELLIOT REED	PHYSICIAN

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