

CSE2007 DBMS LAB

SLOT: L39+L40

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EXPERIMENT NO.-6

For 1 to 14 queries: Apply suitable revert statement, wherever applicable, to change the state of table as consistent.

1. Update the salaries of employees by 100.

Update emp SET SAL = Sal +100;

select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	900	300	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
4	7566	JONES	MANAGER	7839	02-APR-81	3075	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2950	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2550	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3100	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5100	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1200	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3100	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

2. Update the salaries of employees by 500 whose having salary greater than 2000.

Update emp SET SAL = SAL + 500 WHERE SAL>2000;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	900	300	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
4	7566	JONES	MANAGER	7839	02-APR-81	3575	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3600	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1200	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3600	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

3. Update employee data with salary=9999, commission = 1000, managerid = 7566 for the employee whose id = 7369.

Update emp SET SAL =9999,COMM=1000,MGR=7566 WHERE EMPNO=7369;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7566	17-DEC-80	9999	1000	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
4	7566	JONES	MANAGER	7839	02-APR-81	3575	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3600	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1200	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3600	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

4. Update the salaries of employees of department '20'to 4000.

Update emp SET SAL =4000 WHERE DEPTNO=20;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7566	17-DEC-80	4000	1000	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
4	7566	JONES	MANAGER	7839	02-APR-81	4000	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	4000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	4000	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	4000	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

5. Update the employee(7369) salary with max of all salaries.

Update emp SET SAL =(SELECT MAX(SAL) FROM emp) WHERE empno=7369;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7566	17-DEC-80	5600	1000	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
4	7566	JONES	MANAGER	7839	02-APR-81	4000	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	4000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	4000	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	4000	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

6. Delete the employee data whose employee id is 7369.

DELETE FROM emp WHERE EMPNO=7369;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
2	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
3	7566	JONES	MANAGER	7839	02-APR-81	4000	(null)	20
4	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
5	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
6	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
7	7788	SCOTT	ANALYST	7566	19-APR-87	4000	(null)	20
8	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
9	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
10	7876	ADAMS	CLERK	7788	23-MAY-87	4000	(null)	20
11	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
12	7902	FORD	ANALYST	7566	03-DEC-81	4000	(null)	20
13	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

7. Delete all employees data belongs to dept 20.

DELETE FROM emp WHERE DEPTNO=20;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
2	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
4	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
5	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
6	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
7	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
8	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
9	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

8. Apply truncate to delete the data and identify the difference between truncate and delete.

9. Modify the employee table to add email attribute of size 30.

ALTER TABLE EMP ADD email varchar2(30);

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	EMAIL
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30	(null)
2	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30	(null)
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30	(null)
4	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30	(null)
5	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10	(null)
6	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10	(null)
7	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30	(null)
8	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30	(null)
9	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10	(null)

10. Update few employees by adding emails to their entities.

update EMP SET email='allen@gmail.com' WHERE EMPNO IN 7499;

update EMP SET email='ward@gmail.com' WHERE EMPNO IN 7521;

update EMP SET email='blake@gmail.com' WHERE EMPNO IN 7698;

update EMP SET email='james@gmail.com' WHERE EMPNO IN 7900;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	EMAIL
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30	allen@gmail.com
2	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30	ward@gmail.com
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30	(null)
4	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30	blake@gmail.com
5	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10	(null)
6	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10	(null)
7	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30	(null)
8	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30	james@gmail.com
9	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10	(null)

11. Remove the added email attribute from the employee table.

ALTER TABLE emp drop Column email;

Select * from emp;

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30
2	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30
4	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30
5	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10
6	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10
7	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30
8	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30
9	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10

12. Modify the employee name field size to support 10 more characters.

```
ALTER TABLE emp MODIFY ename varchar2(20);
```

```
Select * from emp;
```

13. Add the following columns years, months, days to refer the experience in the company. Calculate the experience of each employee, and update these three fields for each employee. Display the employee data.

```
ALTER TABLE emp ADD (YEARS INT, MONTHS INT, DAYS INT);
```

```
UPDATE emp SET
```

```
YEARS = EXTRACT(YEAR FROM SYSDATE) - EXTRACT(YEAR FROM HIREDATE),
```

```
MONTHS = EXTRACT(MONTH FROM SYSDATE) - EXTRACT(MONTH FROM HIREDATE),
```

```
DAYS = EXTRACT(DAY FROM SYSDATE) - EXTRACT(DAY FROM HIREDATE);
```

```
SELECT * FROM emp;
```

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	YEARS	MONTHS	DAYS
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1700	500	30	43	1	-14
2	7521	WARD	SALESMAN	7698	22-FEB-81	1350	(null)	30	43	1	-16
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1350	1400	30	43	-6	-22
4	7698	BLAKE	MANAGER	7839	01-MAY-81	3450	(null)	30	43	-2	5
5	7782	CLARK	MANAGER	7839	09-JUN-81	3050	(null)	10	43	-3	-3
6	7839	KING	PRESIDENT	(null)	17-NOV-81	5600	(null)	10	43	-8	-11
7	7844	TURNER	SALESMAN	7698	08-SEP-81	1600	0	30	43	-6	-2
8	7900	JAMES	CLERK	7698	03-DEC-81	1050	(null)	30	43	-9	3
9	7934	MILLER	CLERK	7782	23-JAN-82	1400	(null)	10	42	2	-17

Help:

```

create table t ( end_date date, start_date date );
insert into t values ( '27-MAR-1996','28-FEB-1994' );
insert into t values ( '28-MAR-1996','28-FEB-1994' );
insert into t values ( '29-MAR-1996','28-FEB-1994' );
insert into t values ( '30-MAR-1996','28-FEB-1994' );
insert into t values ( '31-MAR-1996','28-FEB-1994' );

```

and here are the results:

```

SQL> select end_date, start_date ,
2         trunc( months_between( end_date, start_date ) /12 ) Years,
3         mod( trunc( months_between( end_date, start_date ) ), 12 ) months,
4         end_date - add_months(start_date,trunc( months_between(end_date,start_date
5         ) )) days
6   from t
7   /

```

END_DATE	START_DATE	YEARS	MONTHS	DAYS
27-mar-1996	28-feb-1994	2	0	27
28-mar-1996	28-feb-1994	2	1	-3
29-mar-1996	28-feb-1994	2	1	-2
30-mar-1996	28-feb-1994	2	1	-1
31-mar-1996	28-feb-1994	2	1	0

14. Drop the above three columns from the employees table. Consider the following relations (Data is attached as files in the assignment. No Duplicate records in the output):

ALTER TABLE employees

DROP COLUMN years,

DROP COLUMN months,

DROP COLUMN days;

15. Find the names of all Juniors (level = JR) who are enrolled in a class taught by I. Teach.

SELECT s.sname

FROM student s

JOIN enrolled e ON s.snum = e.snum

JOIN class c ON e.cname = c.name

JOIN faculty f ON c.fid = f.fid

WHERE s.standing = 'JR' AND f.fname = 'I. Teach';

16. Find the age of the oldest student who is either a History major or enrolled in a course taught by I. Teach.

SELECT MAX(age)

FROM student s

```

WHERE s.major = 'History' OR

s.snum IN (

SELECT e.snum

FROM enrolled e

JOIN class c ON e.cname = c.name

JOIN faculty f ON c.fid = f.fid

WHERE f.fname = 'I. Teach'

);

```

MAX(AGE)
1 20

17. Find the names of all classes that either meet in room R128 or have five or more students enrolled.

```

SELECT c.name FROM class c WHERE c.room = 'R128' OR

(SELECT COUNT(*) FROM enrolled e WHERE e.cname = c.name) >= 5;

```

NAME
1 Data Structures
2 Database Systems
3 Operating System Design
4 Archaeology of the Incas
5 Patent Law
6 Dairy Herd Management
7 Introduction to Math

18. Find the names of all students who are enrolled in two classes that meet at the same time.

```

SELECT DISTINCT s.sname

FROM student s

JOIN enrolled e1 ON s.snum = e1.snum

JOIN class c1 ON e1.cname = c1.name

JOIN enrolled e2 ON s.snum = e2.snum

JOIN class c2 ON e2.cname = c2.name

WHERE c1.meets_at = c2.meets_at AND c1.name <> c2.name;

```

SNAME

19. Find the names of faculty members who teach in every room in which some class is taught.


```

SELECT f.fname
FROM faculty f
WHERE NOT EXISTS (
  SELECT DISTINCT room
  FROM class
  WHERE room NOT IN (
    SELECT c.room
    FROM class c
    WHERE c.fid = f.fid
  )
);

```

	FNAME
1	Richard Jackson

20. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.

```

SELECT f.fname
FROM faculty f
WHERE (
  SELECT COUNT(*)
  FROM enrolled e
  JOIN class c ON e.cname = c.name
  WHERE c.fid = f.fid
) < 5;

```

	FNAME
1	James Smith
2	Mary Johnson
3	John Williams
4	Patricia Jones
5	Robert Brown
6	Michael Miller
7	Barbara Wilson
8	William Moore
9	Elizabeth Taylor
10	David Anderson
11	Jennifer Thomas
12	Richard Jackson
13	Ulysses Teach

21. Print the level and the average age of students for that level, for each level.

```
SELECT standing, AVG(age) AS avg_age
```

```
FROM student
```

```
GROUP BY standing;
```

	STANDING	AVG_AGE
1	JR	19.5
2	SR	47.71428571428571428571428571428571
3	FR	44.66666666666666666666666666666667
4	SO	18.4

22. Print the level and the average age of students for that level, for all levels except JR.

```
SELECT standing, AVG(age) AS avg_age
```

```
FROM student
```

```
WHERE standing != 'JR'
```

```
GROUP BY standing;
```

	STANDING	AVG_AGE
1	SR	47.71428571428571428571428571428571
2	FR	44.66666666666666666666666666666667
3	SO	18.4

23. For each faculty member that has taught classes only in room R128, print the facultymember's name and the total number of classes she or he has taught.

```
SELECT f.fname, COUNT(*) AS total_classes
```

```

FROM faculty f
JOIN class c ON f.fid = c.fid
WHERE c.room = 'R128'
GROUP BY f.fname

```

	FNAME	TOTAL_CLASSES
1	Elizabeth Taylor	1
2	Robert Brown	1
3	Richard Jackson	1
4	Linda Davis	1
5	Barbara Wilson	1

24. Find the names of students enrolled in the maximum number of classes.

```

SELECT s.sname
FROM student s
JOIN enrolled e ON s.snum = e.snum
GROUP BY s.sname
HAVING COUNT(DISTINCT e.cname) = (
    SELECT MAX(classes_count)
    FROM (
        SELECT COUNT(DISTINCT e2.cname) AS classes_count
        FROM enrolled e2
        GROUP BY e2.snum
    )
);

```

	SNAME
1	Ana Lopez
2	Juan Rodriguez

25. Find the names of students not enrolled in any class.

```

SELECT s.sname FROM student s WHERE NOT EXISTS (
    SELECT 1
    FROM enrolled e
    WHERE e.snum = s.snum
)

```

);

	SNAME
1	Maria White
2	Charles Harris
3	Angela Martinez
4	Thomas Robinson
5	Margaret Clark
6	Dorothy Lewis
7	Daniel Lee
8	Nancy Allen
9	Mark Young
10	Donald King
11	George Wright
12	Steven Green
13	Edward Baker

26. For each age value that appears in Students, find the level value that appears most often. For example, if there are more FR level students aged 18 than SR, JR, or SO students aged 18, you should print the pair (18, FR).

SELECT age, standing

FROM (

SELECT age, standing, COUNT(*) AS count,

ROW_NUMBER() OVER (PARTITION BY age ORDER BY COUNT(*) DESC) as rn

FROM student

GROUP BY age, standing

)

WHERE rn = 1;

	AGE	STANDING
1	17	FR
2	18	FR
3	19	SO
4	20	JR
5	21	SR
6	22	SR
7	180	FR
8	210	SR