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SAT3210
Homework 3
29 October, 2021

1. Create a view CSinstructors, showing all information about instructors from the Comp. Sci. department.

```
create view CSinstructors AS
Select * from instructor
where instructor.dept_name = 'Comp. Sci.'

Select * from CSinstructors;
```

ID	name	dept_name	salary
3335	Bourrier	Comp. Sci.	80797.83
34175	Bondi	Comp. Sci.	115469.11

2. Find all students who have 4 or more A+ grades as per the takes relation, and output their names, IDs along with the A+ grades.

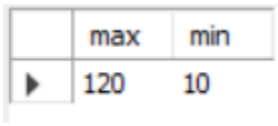
```
select id, grade, count(id)
from takes
where takes.grade = 'A+'
group by id
having count(id) > 3;
```

id	grade	count
10481	A+	5
107	A+	4
11055	A+	4
11152	A+	5
12069	A+	4
1232	A+	4
1367	A+	5
13757	A+	4
14182	A+	4
14829	A+	4
14874	A+	5
15249	A+	4
1533	A+	4
15487	A+	4
15613	A+	4
16528	A+	4
16543	A+	4
16885	A+	6
17607	A+	4
1922	A+	6
19220	A+	5
19293	A+	4
19321	A+	4
19536	A+	5
21126	A+	6
23311	A+	5
23475	A+	4
24374	A+	4

These are just a handful of the rows in the table

3. Find the maximum and minimum enrollment across all sections.

   select max(capacity) AS max, min(capacity) AS min
   from classroom



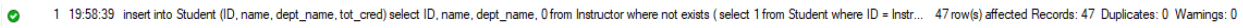
	max	min
▶	120	10

4. Update the salary of each instructor to 10000 times the number of course sections they have taught.

   update ignore instructor
   set salary = 10000 * (select count(distinct sec_id, semester, year)
   From teaches where instructor.ID = teaches.ID);

5. Insert each instructor as a student, with tot_creds = 0, in the same department.

   select ID, name, dept_name, 0 from Instructor
   where not exists (select 1 from Student where ID = Instructor.ID)



1 19:58:39 insert into Student (ID, name, dept_name, tot_cred) select ID, name, dept_name, 0 from Instructor where not exists (select 1 from Student where ID = Instr... 47 row(s) affected Records: 47 Duplicates: 0 Warnings: 0

   This query didn't return a table, but here is the output confirming the query worked.

6. Select name, title from instructor natural join teaches natural join section natural join course where semester = 'Spring' and year = 2017
   What is wrong with this query?

   Since dept_name is an attribute in course and instructor, the result will only show when a professor teaches a class in their own department.

7. Write an SQL query using the university schema to find the ID of each student who has never taken a course at the university. Do this using no subqueries and no set operations (use an outer join).

```
Select distinct student.id
FROM student LEFT OUTER JOIN course
ON student.id != course.course_id
```

	id
▶	10838
	1087
	11377
	12236
	12683
	14365
	14829
	15249
	16311
	16528
	16907
	16993
	20002
	20084
	2133
	21692
	22260
	22620
	23457
	2423
	25143
	25331
	25780
	259
	26473
	28952
	29803
	30222

There were a lot more rows, but this is the first handful of them.

8. Express the following query in SQL using no subqueries and no set operations.
select ID from student except select s_id from advisor where i_ID is not null

```
SELECT s.id FROM student AS s, advisor AS a
WHERE s.id=a.s_id
AND a.i_id IS NULL
```

9. For the database of Figure 4.12, write a query to find the ID of each employee with no manager. Note that an employee may simply have no manager listed or

may have a null manager. Write your query using an outer join and then write it again using no outer join at all.

```
SELECT employee.ID
FROM employee LEFT OUTER JOIN manages
ON employee.id = manages.id
WHERE manages.manager_id is null
```

Or

```
SELECT employee.id FROM employee
WHERE employee.id NOT IN (SELECT manages.id FROM manges)
OR employee.ID IN
(SELECT mangages.id FROM manages
WHERE manages.manager_id IS NULL)
```

10. Show how to define a view tot credits (year, num credits), giving the total number of credits taken in each year.

```
create view tot_credits (year, num_credits)
as (select year, sum(course.credits) from takes natural join course
        group by year)

Select * from tot_credits;
```

year	num_credits
2009	8984
2002	13438
2008	10686
2007	12194
2006	13873
2010	10728
2003	12953
2005	8805
2004	7085
2001	4530