课堂作业

一、题目一

1.仅考虑授课教师，用单表查询完成

代码如下：

```sql
SELECT id,COUNT(id) AS teaches_num
FROM teaches
GROUP BY id
ORDER BY teaches_num DESC;
```

结果如下：查询结果有 31 条数据

	id	teaches_num
18	28400	2
19	81991	2
20	73623	1
21	80759	1
22	90643	1
23	4233	1
24	25946	1
25	90376	1
26	15347	1
27	50330	1
28	48507	1
29	42782	1
30	48570	1
31	65931	1

2.考虑授课和未授课教师，用 join 完成查询

代码如下：

```sql
SELECT i.id,COUNT(t.course_id) AS teaches_num
FROM instructor i
LEFT JOIN teaches t
  1<->0..n: USING(id)
GROUP BY i.id
ORDER BY teaches_num DESC;
```

结果如下：查询结果有 50 条数据

	id	teaches_num
39	57180	0
40	35579	0
41	31955	0
42	37687	0
43	16807	0
44	95030	0
45	74426	0
46	58558	0
47	59795	0
48	63395	0
49	72553	0
50	64871	0

3.考虑授课和未授课教师，用标量子查询完成
代码如下：

```sql
SELECT i.id,(SELECT COUNT(course_id) FROM teaches t WHERE i.id = t.id) AS teaches_num
FROM instructor i
ORDER BY teaches_num DESC;
```
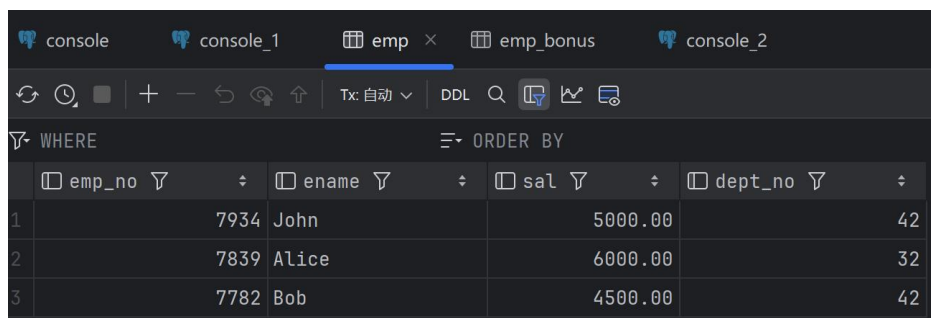
查询结果与 2 一致，有 50 条数据
4.因为用于连接两张表的列的列名相同
5.using 语句重写代码如下：

```sql
SELECT *
FROM section
JOIN classroom
    1..n<->1: USING (building,room_number);
```

二、题目二
1.创建新的数据表，并向表中添加测试数据
代码如下：

```sql
CREATE TABLE emp (
    emp_no INT,
    ename VARCHAR(50),
    sal DECIMAL(10, 2),
    dept_no INT
);
CREATE TABLE emp_bonus (
    emp_no INT,
    received DATE,
    type INT
);
INSERT INTO emp (emp_no, ename, sal, dept_no)
VALUES
    ( emp_no 7934, ename 'John', sal 5000.00, dept_no 42),
    ( emp_no 7839, ename 'Alice', sal 6000.00, dept_no 32),
    ( emp_no 7782, ename 'Bob', sal 4500.00, dept_no 42);
INSERT INTO emp_bonus (emp_no, received, type)
VALUES
    ( emp_no 7934, received '2005-03-17', type 1),
    ( emp_no 7934, received '2005-02-15', type 2),
    ( emp_no 7839, received '2005-02-15', type 3),
    ( emp_no 7782, received '2005-02-15', type 1);
```

结果如下：

emp_no	ename	sal	dept_no
7934	John	5000.00	42
7839	Alice	6000.00	32
7782	Bob	4500.00	42

	emp_no	received	type
1	7934	2005-03-17	1
2	7934	2005-02-15	2
3	7839	2005-02-15	3
4	7782	2005-02-15	1

2.列出部门编号为 42 的所有员工的总工资及其总奖金

代码如下：

```sql
SELECT e.emp_no,e.ename,e.sal+SUM(CASE
            WHEN eb.type = 1 THEN e.sal * 0.1
            WHEN eb.type = 2 THEN e.sal * 0.2
            WHEN eb.type = 3 THEN e.sal * 0.3
        END) AS total_salary,
    SUM(CASE
            WHEN eb.type = 1 THEN e.sal * 0.1
            WHEN eb.type = 2 THEN e.sal * 0.2
            WHEN eb.type = 3 THEN e.sal * 0.3
        END) AS total_bonus
FROM emp e
LEFT JOIN emp_bonus eb
    ON e.emp_no = eb.emp_no
WHERE e.dept_no = 42
GROUP BY e.emp_no, e.ename, e.sal;
```

查询结果如下：

	emp_no	ename	total_salary	total_bonus
1	7782	Bob	4950	450
2	7934	John	6500	1500