Chapter 3 - Lab
2015150220 이윤수

SQL Practice1
Exercise 1

A. Find the titles of courses in the Comp.Sci. Department that have 3 credits.

```
practice1=# select title
practice1-# from course
practice1-# where dept_name = 'Comp. Sci.' and credits = 3;
          title
--------------------------
 Robotics
 Image Processing
 Database System Concepts
(3 rows)
```

B. Find the IDs of all students who were taught by an instruct named Srinimasan; make sure there are no duplicates in the result.

```
practice1=# select distinct takes.ID
from takes, teaches, instructor
where (takes.course_id, takes.sec_id, takes.semester, takes.year) =
(teaches.course_id, teaches.sec_id, teaches.semester, teaches.year)
and teaches.id = instructor.id and instructor.name = 'Srinivasan'
;
  id
-------
 00128
 12345
 45678
 54321
 76543
 98765
(6 rows)
```

C. Find the highest salary of any instructor.

```
practice1=# select max(salary)
practice1-# from instructor;
   max
----------
 95000.00
(1 row)
```

D. Find the enrollment (i.e. the number of students) for each section that was offered in Fall 2017.
• “course_id, section_id, number of students” must be displayed

```
practice1=# select section.course_id, section.sec_id, count(distinct takes.ID) as number_of_students
from section, takes, student
where (takes.course_id, takes.sec_id, takes.semester, takes.year) = (section.course_id, section.sec_id,
section.semester, section.year)
and takes.id = student.id and section.semester = 'Fall' and section.year = 2017
group by section.course_id, section.sec_id;
 course_id | sec_id | number_of_students
-----------+--------+--------------------
 CS-101    | 1      |                  6
 CS-347    | 1      |                  2
 PHY-101   | 1      |                  1
(3 rows)
```

Exercise 2

A. Find the total grade-points earned by the student with ID 12345, across all courses taken by the student.

```
practice1=# select sum(points*credits) as total_grade_points
practice1-# from course, takes, grade_points
practice1-# where takes.id = '12345' and takes.course_id = course.course_id and takes.grade = grade_points.grade;
 total_grade_points
--------------------
               48.0
(1 row)
```

B. Find the grade-point average (GPA) for the above student, that is, the total grade-points divided by the total credits for the associated courses.

```
practice1=# select sum(points*credits) / sum(credits) as GPA
practice1-# from takes, course, grade_points
practice1-# where takes.id = '12345' and takes.course_id = course.course_id and takes.grade = grade_points.grade;
        gpa
--------------------
 3.4285714285714286
(1 row)
```

C. Find the ID and the grade-points average of every student.

```
practice1=# select takes.id, sum(points*credits)/sum(credits) as gpa
practice1-# from takes, course, grade_points
practice1-# where takes.course_id = course.course_id and takes.grade = grade_points.grade
practice1-# group by takes.id;
  id   |        gpa
-------+--------------------
 76653 | 2.0000000000000000
 19991 | 3.0000000000000000
 76543 | 4.0000000000000000
 54321 | 3.5000000000000000
 44553 | 2.7000000000000000
 55739 | 3.7000000000000000
 45678 | 2.0181818181818182
 12345 | 3.4285714285714286
 98988 | 4.0000000000000000
 98765 | 2.2571428571428571
 00128 | 3.8714285714285714
 23121 | 2.3000000000000000
(12 rows)
```

D. Find the ID and the grade-points average of students whose GPA is greater than 3.0.

```
practice1=# select takes.id, sum(points*credits)/sum(credits) as gpa
from takes, course, grade_points
where takes.course_id = course.course_id and takes.grade = grade_points.grade
group by takes.id
having sum(points*credits)/sum(credits) > 3.0;
  id   |        gpa
-------+--------------------
 76543 | 4.0000000000000000
 54321 | 3.5000000000000000
 55739 | 3.7000000000000000
 12345 | 3.4285714285714286
 98988 | 4.0000000000000000
 00128 | 3.8714285714285714
(6 rows)
```