

HW2

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Exercise 1

a.

```
[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.

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

c.

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

d.

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

Exercise 2

a.

```
practice1=# (select sum(credits * points)
practice1(# from (course natural join takes) natural join grade_points
practice1(# where ID = '12345')
practice1-# union
practice1-# (select 0
practice1(# from student
practice1(# where not exists (select * from takes where takes.ID = '12345'));
sum
-----
48.0
(1 row)
```

b.

```
practice1=# (select sum(credits * points)/ sum(credits) as gpa
practice1(# from (course natural join takes) natural join grade_points
practice1(# where ID = '12345')
practice1-# union
practice1-# (select null as gpa
practice1(# from student
practice1(# where not exists (select * from takes where takes.ID = '12345'));
gpa
-----
3.4285714285714286
(1 row)
```

c.

```
practice1=# (select ID, sum(credits * points) / sum(credits) as gpa
practice1(# from (course natural join takes) natural join grade_points
practice1(# group by ID)
practice1-# union
practice1-# (select ID, null as gpa
practice1(# from student
practice1(# where not exists (select * from takes where takes.ID = student.ID));

 id | gpa
-----+-----
23121 | 2.3000000000000000
54321 | 3.5000000000000000
98988 | 4.0000000000000000
19991 | 3.0000000000000000
12345 | 3.4285714285714286
76543 | 4.0000000000000000
76653 | 2.0000000000000000
00128 | 3.8714285714285714
98765 | 2.2571428571428571
44553 | 2.7000000000000000
70557 | 
45678 | 2.0181818181818182
55739 | 3.7000000000000000
(13 rows)
```

d.

```
[practice1=# select ID, sum(credits * points)/ sum(credits) as gpa
[practice1=# from (course natural join takes) natural join grade_points
[practice1=# group by ID
[practice1=# having sum(credits * points) / 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)
```