Assignment 3 of CISC 3000

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4.2

a

```
select      ID,count(sec_id) as number_of_sections
from        instructor natural left outer join teaches
group by    ID
```

b

```
select  ID, (
        select count(*) as number_of_sections
        from teaches T where T.ID=I.ID
    )
from instructor I
```

c

```
select  course_id, sec_id, ID,
        decode  (name,null,'-',name) as name
from    (section natural left outer join teaches)
        natural left outer join instructor
where   semester='Spring' and year=2018
```

d

```
select      dept_name, count(ID)
from        department natural left outer join instructor
group by    dept_name
```

4.3

a

```
select  *
from    student natural join takes
union   select  ID, name, dept_name, tot_cred,
                null, null, null, null, null
        from    student S
        where   not exists(
                    select  ID
                    from    take T
                    where   T.ID=S.ID
                )
```

b

```
select  *
from    student natural join takes
union   select  ID, name, dept_name, tot_cred,
                null, null, null, null, null
        from    student S
        where   not exists(
                    select  ID
                    from    take T
                    where   T.ID=S.ID
                )
union   select  ID, null, null, null, course_id,
                sec_id, semester, year, grade
        from    takes T
        where   not exists(
                    select  ID
                    from    student S
                    where   T.ID=S.ID
                )
```