

## HW2

1.

```
Create table students(  
    sid varchar(11),  
    name varchar(50),  
    age int,  
    gpa float,  
    primary key (sid))
```

```
Create table courses(  
    cid varchar(11),  
    deptid varchar(15),  
    name varchar(50),  
    primary key (cid))
```

```
Create table professors(  
    ssn int,  
    name varchar(50),  
    address varchar(50),  
    phone varchar(15),  
    deptid varchar(15),  
    primary key (ssn))
```

```
Create table enrollment(  
    sid varchar(11),  
    cid varchar(11),  
    section int,  
    grade varchar(2),  
    primary key (sid, cid),  
    foreign key (sid) references students,  
    foreign key (cid) references courses,  
    foreign key (cid,section) references teaches)
```

```
Create table teaches(  
    cid varchar(10),  
    section int,  
    ssn int,  
    primary key (cid, section),  
    foreign key (cid) references courses,  
    foreign key (ssn) references professors)
```

2.

```
select name  
from professors  
where deptid = 'cs';
```

3.

```
select s.sid
from students s,
      enrollment e,
      courses c
where s.sid = e.sid
      and e.cid = c.cid
      and c.deptid = 'cs';
```

4.

```
select p.ssn,
       p.name
from professors p,
      teaches t,
      courses c
where p.ssn = t.ssn
      and t.cid = c.cid
      and p.ssn not in(
          select p.ssn,
          from professors p,
                teaches t,
                courses c
          where p.ssn = t.ssn
                and t.cid = c.cid
                and c.deptid = 'cs');
```

5.

```
select deptid,
       count(cid)
from courses
group by deptid;
```

6.

```
select deptid,
       count(cid)
from courses
group by deptid
having count(cid) > 10;
```

7.

```
select distinct s.name
from students s,
     enrollment e,
     teaches t,
     professors p
where s.sid = e.sid
     and e.cid = t.cid
     and p.ssn = t.ssn
     and p.name like 'M%';
```

8.

```
select c.deptid,
       count(sid) < 30 as 'Small',
       count(sid) >= 30 and count(sid) < 80 as 'Medium',
       count(sid) >= 80 as 'Large'
from enrollment e,
     courses c,
where e.cid = c.cid,
group by e.section,
       c.cid;
```

9.

```
select p.name
from professors p,
     courses c,
     teaches t,
where p.deptid = c.deptid,
group by p.name
having count(p.name) > 20
     and 'Large' > 'Small' + 'Medium' in (
       select c.deptid,
              count(sid) < 30 as 'Small',
              count(sid) >= 30 and count(sid) < 80 as 'Medium',
              count(sid) >= 80 as 'Large'
       from enrollment e,
            courses c,
       where e.cid = c.cid,
       group by e.section,
              c.cid);
```

10.  
select section,  
    ((count(grade) / (select count(\*) \* 100)  
    from enrollment  
    where e.grade = 'D'  
        or e.grade = 'F') as Failed Percentage  
from enrollment e,  
group by section;

11.  
select distinct p.name  
from professors p,  
    teaches t,  
    enrollment e  
where p.ssn = t.ssn,  
    and t.cid = e.cid,  
    and Failed Percentage = (select max(Failed Percentage)  
                                from enrollment);

12.  
select ((count(grade) / (select count(\*))  
    from enrollment  
    where e.grade = 'D'  
        or e.grade = 'F')  
from enrollment e;

13.  
select section  
from enrollment e,  
where grade in('F','D')  
group by section  
having count(grade) > (select avg(grade)  
                        from enrollment);

14.

```
select c.deptid,  
       e.section,  
       e.grade  
       if(e.grade = 'A', '%A',  
         if(e.grade = 'B', '%B',  
           if(e.grade = 'C', '%C',  
             if(e.grade = 'D', '%D',  
               if(e.grade = 'F', '%F', 0))))))  
from enrollment e,  
     courses c  
where e.cid = c.cid  
group by c.deptid;
```