Homework_2_ch3_2017（参考答案）

1) 查询满足下述条件的学生的学号：就读于计算机系且选修过课程名中含‘数据库’的课程；

```
select x.sno  from Student x, Study y, Session z, Course c
where x.sno = y.sno and y.ssid = z.ssid and z.cno = c.cno and
      c.name like '%数据库%' and x.dept ='计算机'
```

2) 查询满足下述条件的教师的工号和姓名：在 2012 至 2016 年（含）之间没有承担过授课任务；

```
select tno, name  from Teacher
where tno not in (select tno from Session where ssyear between 2012 and 2016)
```

3) 查询满足下述条件的课程的课程号及开课院系：只有一位老师担任过该课程的授课任务；

（参考答案1）

```
select  c.cno, c.dept
from  Course c, Session x
where  c.cno = x.cno and not exists (
   select  *  from Session y
   where  y.cno = x.cno and y.tno <> x.tno)
```

（参考答案2）

```
select  cno, dept  from Course
where  cno in (
   select  cno  from Session
   group by  cno
   having  count(distinct tno) = 1)
```

（参考答案3）

```
select  c.cno,  c.dept
from  Course c,  Session s
where  c.cno = s.cno
group by  c.cno,  c.dept
having  count(distinct s.tno) = 1
```

4) 查询满足下述条件的学生的学号和姓名：选修过数学系的所有核心课且这些核心课的成绩都及格；

```
select  sno, name  from  Student s
where  not exists (
   select  *  from  Course c
   where  c.opt ='核心' and c.dept ='数学' and not exists (
      select  *  from  Session x,  Study y
      where  x.ssid = y.ssid and x.cno = c.cno and y.sno = s.sno and y.grade >= 60)
```

5) 查询满足下述条件的学生的学号和姓名：选修过课程且成绩都及格（给出使用统计函数和不使用统计函数的两种写法）；

(参考答案1（不使用统计函数）

```
select  x.sno, x.name
from  Student x, Study y
where  x.sno = y.sno and not exists (
   select  *  from  Study w
   where  w.sno = x.sno and w.grade < 60 )
```

(参考答案2（不使用统计函数）

```
select  x.sno, x.name
from  Student x
where  60 <= ALL(
   select  y.grade  from  Study y
   where  y.sno = x.sno )
```

(参考答案3（使用统计函数）

```
select  x.sno, x.name
from  Student x, Study y
where  x.sno = y.sno
group by  x.sno, x.name
having  min(y.grade) >= 60
```

6) 查询选修人数少于 10 个人的 Session，结果返回 ssid 和课程号；

```
select  x.ssid, x.cno  from  Session x, Study y  where  x.ssid = y.ssid
group by  x.ssid, x.cno  having  count(*) < 10
```

7) 查询每一位教师在 2012 年至 2016 年（含）期间的授课情况，结果返回教师工号，授课次数及累计课时数；（注：Session 表中的一条记录表示授课 1 次，不包括在此期间没有上过课的老师）

```
select  tno, count(*), sum(times)
from  Session
where  ssyear between 2012 and 2016
group by  tno
```

8) 查询每一位老师的最后一年的授课情况，结果返回教师的工号，最后一次上课的年份及课程号；（不分春季和秋季，可能担任多个 Session 的授课任务）

```
select  x.tno, x.ssyear, x.cno
from  Session x
where  not exists(select * from Session y where y.tno = x.tno and y.ssyear > x.ssyear)
order by  x.tno, x.cno
```

9) 查询每一个同学的核心课程的修读情况，结果返回：学生的学号，姓名，就读院系，核心课程的门数和学分绩（忽略那些成绩为空的核心课程），并按照‘就读院系’的升序和核心学分绩的降序输出查询结果。

```
select  s.sno, s.name, s.dept, w.num, w.s_gpa/w.s_cred AS gpa
from  Student s,
      ( select x.sno, count(*), sum(c.credit), sum(c.credit * x.grade/20)
        from  Study x, Session y, Course c
        where x.ssid = y.ssid and y.cno = c.cno and c.opt ='核心'
        group by  x.sno)  AS  w(sno, num, s_cred, s_gpa)
where  s.sno = w.sno
order by  s.dept, gpa DESC
```