数据库第二次作业

（1）查询姓名中含有"科"字的学生学号和姓名

```sql
select sno,sname from Student
where sname like '%科%';
```

（2）查询学分不低于 3 分的必修课课程号和课程名

```sql
select cno,cname from Course
where type = 0 and credit >= 3;
```

（3）查询选修了公选课但是缺少成绩的学生学号和姓名

```sql
select sno,sname from Student
where sno in(
    select sno from SC
    where score is null and cno in(
        select cno from Course
        where type = 3
    )
);
```

（4）查询年龄大于 20 的学生学号、姓名和年龄

```sql
select sno,sname,timestampdiff(year,birthdate,now()) from Student
where birthdate < date_sub(now(),interval 20 year);
```

（5）查询已选必修课总学分大于 16 并且所选通识课成绩都大于 75 分的学生姓名

```sql
select sname from Student
where sno in(
    select sno from(
        select sno,sum(credit) as total_Credit from SC
        join Course on SC.cno = Course.cno
        where type = 0
        group by sno
        ) as Group_Sno_Credit
    where total_Credit > 16
)  and sno not in(
    select sno from SC join Course on SC.cno = Course.cno
    where type = 2 and score <= 75
);
```

（6）查询已经修完所有必修课且成绩合格的学生学号和姓名

```sql
select sno,sname from Student
where sno in(
    select sno from (
        select sno,count(*) as s_count from SC
        join Course on SC.cno = Course.cno
        where type = 0 and score >= 60
        group by sno
    ) as sno_count,(
        select count(*) as t_count from Course
        where type = 0
    ) as course_count
    where sno_count.s_count = course_count.t_count
);
```

（7）查询总平均成绩排名在前 50%（向上取整）的学生中必修课平均分最高的前 10 位同学，要求返回这些学生的学号、姓名、必修课平均分以及课程总平均成绩（不足 10 位时则全 部返回）

```sql
select Student.sno,sname,major_score,full_score from (
    select SC.sno, avg(score) as major_score ,Sno_fullScore.full_score from SC
    inner join Course on SC.cno = Course.cno
    inner join (
        select t.sno,t.full_score from(
            select sno,avg(score) as full_score from SC
            group by sno
        ) as t
        where t.full_score >= (
            select max(full_score) from(
                select sno,full_score from (
                    select sno,full_score from (
                        select sno,avg(score) as full_score from SC
                        group by sno
                    ) as sno_score
                    order by full_score desc
                ) as t1
                where (
                    select count(*) from (
                        select sno,avg(score) as full_score from SC
                        group by sno
                    )as t2
                    where t1.full_score > t2.full_score
                ) <= (select floor(count(*)/2) from Student)
            ) as t3
        )
    )as sno_fullScore on SC.sno = sno_fullScore.sno
    where type = 0
    group by SC.sno
) as sno_major_score
inner join Student on sno_major_score.sno = Student.sno
order by major_score desc
limit 10;
```

（8）查询每门课程的课程名、课程类型、最高成绩、最低成绩、平均成绩和不及格率，要求结 果按通识课、必修课、选修课、公选课顺序排列（提示：课程名可能有重名）

```sql
select cname,type,maxGrade,minGrade,avgGrade,notPassRate from Course
inner join(
    select cno,max(score) as maxGrade,min(score) as minGrade, avg(score) as
avgGrade , sum(1 - (score div 60)) / count(*) as notPassRate from SC
    group by cno
) as t on Course.cno = t.cno
order by field(type,2,0,1,3);
```

（9）查询存在课程重修不及格情况的学生学号、姓名以及重修不及格的课程号和课程名

```sql
select t.sno,sname,t.cno,cname from (
    select sno,cno from SC
    group by sno,cno
    having count(*) > 1
) as t
inner join Student on t.sno = Student.sno
inner join Course on t.cno = Course.cno;
```

（10）SC 表中重复的 sno 和 cno 意味着该学生重修了课程（在不同的学期里），现在我们希 望删除学生重复选课的信息，只保留最近一个学期的选课记录以及成绩，请给出相应的 SQL 语句

```sql
delete SC from SC,(
    select t1.sno,t1.cno,term from(
        select sno,cno,max(term) as term from SC
        group by sno,cno
    ) as t1
    inner join(
        select sno,cno from SC
        group by sno,cno
        having count(*) > 1
    ) as t2
    on t1.sno = t2.sno and t1.cno = t2.cno
)as t
where SC.sno = t.sno and SC.cno = t.cno and SC.term != t.term;
```