数据库上机（二）：数据查询（一）

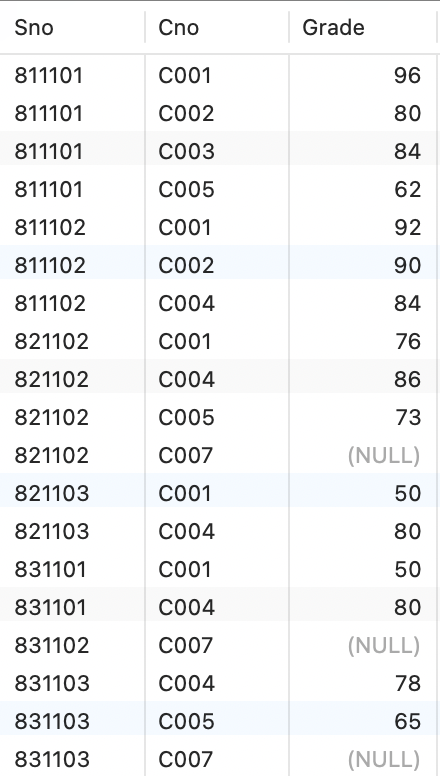
一、实验目的

掌握SQL程序设计基本规范，熟练运用SQL语言实现数据基本查询，包括单表查询、分组统计查询和连接查询等。

二、实验内容和要求

1.  查询SC表中的全部数据。

SELECT \* FROM SC



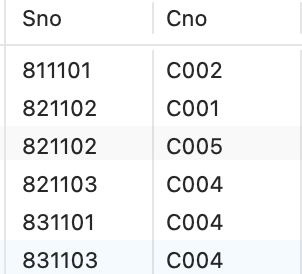
1. 查询计算机系学生的姓名和年龄。

SELECT Sname,Sage FROM Student WHERE Sdept = '计算机系'



1. 查询成绩在70～80分的学生的学号、课程号和成绩。

SELECT Sno,Cno FROM SC WHERE Grade BETWEEN 70 AND 80



1. 查询计算机系年龄在18～20岁的男生姓名和年龄。

SELECT Sname,Sage FROM Student WHERE Ssex = '男' AND Sage BETWEEN 18 AND 20



1. 查询C001课程的最高分。

SELECT MAX(Grade) AS '最高分' FROM SC WHERE Cno = 'C001'



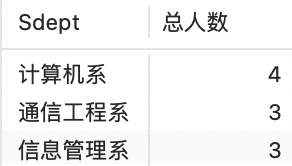
1. 查询计算机系学生的最大年龄和最小年龄。

SELECT MAX(Sage) AS '最大年龄', MIN(Sage) AS '最小年龄' FROM Student WHERE Sdept = '计算机系'



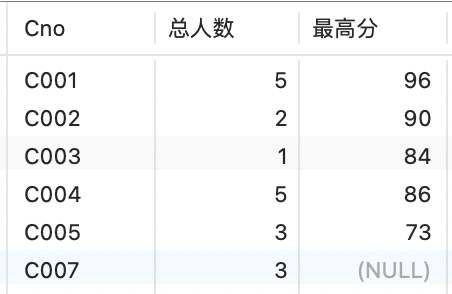
1. 统计每个系的学生人数。

SELECT Sdept, COUNT(Sno) AS '总人数' FROM Student GROUP BY Sdept



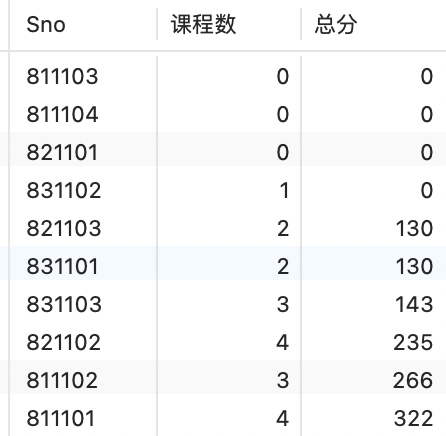
1. 统计每门课程的选课人数和最高成绩。

SELECT Cno,count(Sno) AS '总人数',MAX(Grade) AS '最高分' FROM SC GROUP BY Cno



1. 统计每个学生的选课门数和考试总成绩，并按选课门数升序显示结果。

SELECT Student.Sno,count(Cno) '课程数',sum(ISNULL(Grade, 0)) AS '总分' FROM Student LEFT JOIN SC ON Student.Sno = SC.Sno GROUP BY Student.Sno ORDER BY '总分' ASC



1. 列出总成绩超过200的学生的学号和总成绩。

SELECT Student.Sno,sum(ISNULL(Grade, 0)) AS '总分' FROM Student LEFT JOIN SC ON Student.Sno = SC.Sno GROUP BY Student.Sno HAVING sum(ISNULL(Grade, 0)) > 200



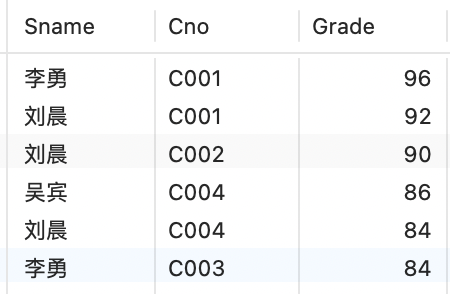
1. 查询选了C002课程的学生姓名和所在系。

SELECT Sname,Sdept FROM Student WHERE Sno in (SELECT Sno FROM SC WHERE Cno = 'C002')



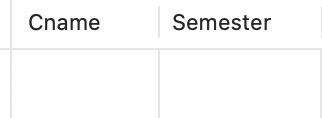
1. 查询考试成绩80分以上的学生姓名、课程号和成绩，并按成绩降序排列结果。

SELECT Sname,Cno,Grade FROM Student,SC WHERE Student.Sno = SC.Sno AND Grade > 80 ORDER BY Grade DESC



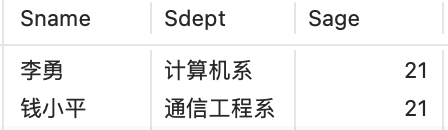
1. 查询与VB在同一学期开设的课程的课程名和开课学期。

SELECT Cname,Semester FROM Course C1 WHERE Semester = (SELECT Semester FROM Course C2 WHERE Cname = 'VB ' AND C1.Cno != C2.Cno )



1. 查询与李勇年龄相同的学生的姓名、所在系和年龄。

SELECT Sname,Sdept,Sage FROM Student WHERE Sage = (SELECT Sage FROM Student WHERE Sname = '李勇')



1. 查询哪些课程没有学生选修，列出课程号和课程名。

SELECT Cno,Cname FROM Course WHERE Cno NOT IN (SELECT DISTINCT Cno FROM SC)



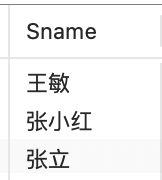
1. 查询每个学生的选课情况，包括未选课的学生，列出学生的学号、姓名、选的课程号。

SELECT Student.Sno,Sname,SC.Cno FROM Student LEFT JOIN SC ON Student.Sno = SC.Sno



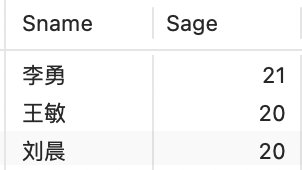
1. 查询计算机系哪些学生没有选课，列出学生姓名。

SELECT Sname FROM Student WHERE Sno NOT IN (SELECT DISTINCT Sno FROM SC)



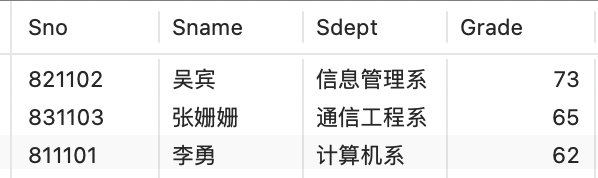
1. 查询计算机系年龄最大的三个学生的姓名和年龄。top 3

SELECT TOP 3 Sname,Sage FROM Student WHERE Sdept = '计算机系' ORDER BY Sage DESC



1. 列出“VB”课程考试成绩前三名的学生的学号、姓名、所在系和VB成绩。top3

SELECT TOP 3 Student.Sno,Sname,Sdept,Grade FROM Student,SC,Course WHERE Student.Sno = SC.Sno AND Course.Cno = SC.Cno AND Course.Cname = 'VB' ORDER BY Grade DESC



1. 查询选课门数最多的前2位学生，列出学号和选课门数。 top 2

SELECT TOP 2 Student.Sno,COUNT(Cno) AS '课程门数' FROM Student,SC WHERE Student.Sno = SC.Sno GROUP BY Student.Sno ORDER BY COUNT(Cno) DESC

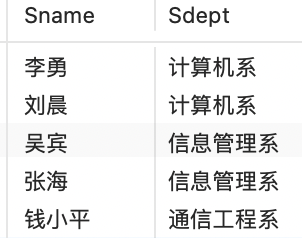


提示：查询排名前几的方法，select语句中的输出项为top关键字。

21.  用子查询实现如下查询：

（1）查询选了“C001”课程的学生姓名和所在系。

SELECT Sname,Sdept FROM Student WHERE Sno in (SELECT Sno FROM SC WHERE Cno = 'C001')



1. 查询通信工程系成绩80分以上的学生的学号和姓名。

SELECT Sno,Sname FROM Student WHERE Sno IN (SELECT Sno FROM SC WHERE Grade >= 80) AND Sdept = '通信工程系'



1. 查询计算机系考试成绩最高的学生的姓名。

SELECT Sname From Student WHERE Sno = (SELECT Sno FROM SC WHERE Grade = (SELECT MAX(Grade) FROM SC WHERE Sno IN (SELECT Sno FROM Student WHERE Sdept = '计算机系')))



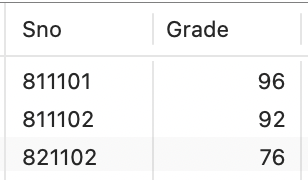
（4）查询年龄最大的男生的姓名、所在系和年龄。

SELECT Sname,Sdept,Sage FROM Student WHERE Sage IN (SELECT MAX(Sage) FROM Student)



22.  查询C001课程的考试成绩高于该课程平均成绩的学生的学号和成绩。

SELECT Sno,Grade FROM SC WHERE Grade > (SELECT AVG(Grade) FROM SC WHERE Cno = 'C001') AND Cno ='C001'



23.  查询计算机系学生考试成绩高于计算机系学生平均成绩的学生的姓名、考试的课程名和考试成绩。

SELECT Student.Sno,Course.Cname,SC.Grade FROM Student,Course,SC WHERE Student.Sno = SC.Sno AND Course.Cno = SC.Cno AND Student.Sdept = '计算机系' AND Grade > (SELECT AVG(Grade) FROM SC,Student WHERE SC.Sno = Student.Sno AND Student.Sdept = '计算机系' )



1. 查询VB课程考试成绩高于VB平均成绩的学生姓名和VB成绩。

SELECT Student.Sname,Grade AS VBGrade FROM Student,SC WHERE Student.Sno = SC.Sno AND SC.Cno = (SELECT Cno FROM Course WHERE Cname = 'VB' ) AND Grade > (SELECT AVG(Grade) FROM SC WHERE SC.Cno = (SELECT Cno FROM Course WHERE Cname = 'VB'))



1. 查询没选VB的学生姓名和所在系。

SELECT Sname,Sdept FROM Student WHERE Sno NOT IN (SELECT Sno FROM SC WHERE Cno = (SELECT Cno FROM Course WHERE Cname = 'VB'))



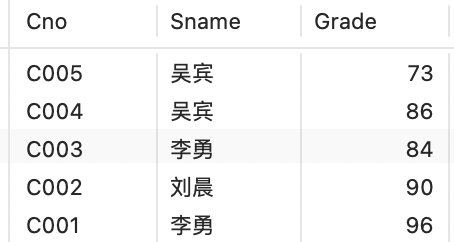
1. 查询每个学期学分最高的课程信息，列出开课学期、课程名和学分。

SELECT Semester,Cname,Credit FROM Course c1 WHERE Credit IN (SELECT MAX(Credit) FROM Course c2 WHERE c1.Semester = c2.Semester)



1. 查询每门课程考试成绩最高的学生信息，列出课程号、学生姓名和最高成绩，结果按课程号升序排序，不包括没考试的课程。

SELECT Cno,Sname,Grade FROM SC c1,Student WHERE c1.Sno = Student.Sno AND Grade IN (SELECT MAX(Grade) FROM SC c2 WHERE c1.Cno = c2.Cno)



1. 查询计算机系学生姓名、年龄和年龄情况，其中年龄情况为：如果年龄小于18，则显示“偏小”；如果年龄在18-22，则显示“合适”；如果年龄大于22，则显示“偏大”。

SELECT Sname,Sage,年龄情况 = CASE

WHEN Sage < 18 THEN '偏小'

WHEN Sage >= 18 AND Sage <= 22 THEN '合适'

ELSE '偏大'

END

FROM Student



1. 统计每门课程的选课人数，包括有人选的课程和没有人选的课程，列出课程号，选课人数及选课情况，其中选课情况为：如果此门课程的选课人数超过100人，则显示“人多”；如果此门课程的选课人数在40～100，则显示“一般”；如果此门课程的选课人数在1～39，则显示“人少”；如果此门课程没有人选，则显示“无人选”。

SELECT Cno, COUNT(Sno) , 选课情况 = CASE

WHEN COUNT(Sno) > 100 THEN '人多'

WHEN COUNT(Sno) >= 40 AND COUNT(Sno) < 100 THEN '一般'

WHEN COUNT(Sno) >=1 AND COUNT(Sno) < 40 THEN '人少'

ELSE '无人选'

END

FROM SC GROUP BY Cno



1. 实验小结

基本掌握并了解sql语句的查询，并利用了相关知识完成单表以及多表的查询，利用嵌套查询从而实现对多表的复杂查询