

浙江大学 2023–2024 学年春夏季学期

《数据库系统》课程课堂测试二

(Quiz 2 for Database Systems)

考生姓名: _____ 学号: _____ 专业: _____ 得分: _____

Consider the following relation schemas and then answer the subsequent problems. Note that the key attributes in the relation schemas are underlined.

Student(Sid, Name, Age)

Project(ProjectName, Sid, Score)

Problem 1. Relational algebra

(1) Find the names of students who are in the project with project name 'MiniSQL'.

$\Pi_{name}((student) \bowtie (\sigma_{projectName='MiniSQL'}(project)))$

(2) Find the Sid of students who have not been in any project team yet.

$\Pi_{sid}(student) - \Pi_{sid}(project)$

(3) Find the names of students who are the youngest.

Method 1: $\Pi_{name}(student) - \Pi_{name}(\sigma_{student.age > st2.age}(student \times (\rho_{st2}(student))))$

Method 2: $Temp \leftarrow g_{min(Age)}(student);$

$\Pi_{name}(\sigma_{age=minage}(student \times (\rho_T(minage)(Temp))))$

Problem 2. Write SQL statement for the following queries.

(1) Find the names of students who get score more than 85 in the project.

SELECT Name
FROM Student S, Project P
WHERE S.Sid = P.Sid and Score > 85

(2) Find the names of students who get the maximum score in each project.

Method 1: SELECT Name
FROM Student S, Project P
WHERE S.Sid = P.Sid and Score = (SELECT max(Score)
FROM Project
WHERE ProjectName = P.ProjectName)

Method 2: *SELECT Name*
FROM Student
WHERE Sid in (SELECT Sid
FROM Project P
WHERE Score >= ALL (SELECT Score
FROM Project
WHERE ProjectName = P.ProjectName))

Method 3: *SELECT Name*
FROM Student S, Project P
WHERE S.Sid = P.Sid and (ProjectName, Score) in (SELECT ProjectName,
max(Score)
FROM Project
GROUP BY ProjectName)