浙江大学 2020–2021 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*)