

■ 依”教務資料庫”的 Relational database schema,利用 Relational Algebra 回答下列查詢:

(以下問題是以第二頁的 Relational Schema 回答)

1. 列出 prof-name “洪炯宗”教授所開授的所有課程(course-name)及所有修課學生的名字。

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professor ←  $\sigma_{prof-name="洪炯宗"}(PROFESSOR)$ 
course_professor ← professor ⋈professor.prof-id=COURSE and PROFESSOR.prof-id (COURSE and PROFESSOR)
course ← course_professor ⋈course_professor.crs-id=COURSE.crs-id (COURSE)
course_student ← course ⋈course.crs-id=COURSE and STUDENT.crs-id (COURSE and STUDENT)
student ← course_student ⋈course_student.stud-id=STUDENT.stud-id (STUDENT)
RESULT ←  $\pi_{crs-name,stud-name}(student)$ 

```

2. 列出修課課程名稱 course-name 是 “BioDB”，而且是 dept-name 是 “生醫系”的學生的學號及名字。

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course ←  $\sigma_{crs-name="BioDB"}(COURSE)$ 
course_student ← course ⋈course.crs-id=COURSE and STUDENT.crs-id (COURSE and STUDENT)
student ← course_student ⋈course_student.stud-id=STUDENT.stud-id (STUDENT)
department ← student ⋈student.dept-id=DEPARTMENT.dept-id (DEPARTMENT)
RESULT ←  $\pi_{stud-id,stud-name}(\sigma_{dept-name="生醫系"}(department))$ 

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3. 列出學院名稱 school-name 是 “CSIE”，dept-name 是”資工系”的所有學生學號及名字。

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school ←  $\sigma_{sch-name="CSIE"}(SCHOOL)$ 
department ←  $\sigma_{dept-name="資工系"}(school \bowtie_{school.sch-id=DEPARTMENT.sch-id} (DEPARTMENT))$ 
student ← department ⋈department.dept-id=STUDENT.dept-id (STUDENT)
RESULT ←  $\pi_{stud-id,stud-name}(student)$ 

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4. 列出修課課程名稱 course-name 是 “BioDB”，而且修課成績(grade)是”A”的所有學生學號及名字。

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course ←  $\sigma_{crs-name="BioDB"}(COURSE)$ 
course_student ←  $\sigma_{grade="A"}(course \bowtie_{course.crs-id=COURSE and STUDENT.crs-id} (COURSE and STUDENT))$ 
student ← course_student ⋈course_student.stud-id=STUDENT.stud-id (STUDENT)
RESULT ←  $\pi_{stud-id,stud-name}(student)$ 

```

