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**Lớp: 23CTT2**

DATABASE SCHEMA:

• TEACHER(instructor\_id, name)

• SUBJECT(subject\_id, name, max\_credit\_allow)

• STUDENT (student\_id, name, entrance\_year, faculty)

• COURSE (course\_id, subject\_id, year, semester, credit, level, instructor\_id, faculty)

• REGISTER(student\_id, course\_id, grade)

1. List all ID and names of subjects which student ‘1701234’ has registered.*SQL Query*

SELECT sub.subject\_id, sub.name

FROM SUBJECT sub

JOIN COURSE crs on crs.subject\_id = sub.subject\_id

JOIN REGISTER reg on reg.course\_id = crs.course\_id

JOIN STUDENT stu on stu.student\_id = reg.student\_id

WHERE student\_id = '1701234'

Relational Algebra

1. Retrieve year and semester which only open ‘BASIC’ courses.SQL Query

SELECT year, semester

FROM COURSE

WHERE level = 'BASIC'

Relational Algebra

1. Retrieve subjects (ID, name) which has never operated as a course.SQL Query

SELECT sub.subject\_id, sub.name

FROM SUBJECT sub

LEFT JOIN COURSE crs on sub.subject\_id = crs.subject\_id

WHERE crs.subject\_id IS NULL

Relational Algebra

1. Find the ID and name of subjects which all student of faculty ‘IT’ hasparticipated.

SQL Query

SELECT sub.subject\_id, sub.name

FROM SUBJECT sub

WHERE NOT EXISTS (

    SELECT stu.student\_id

    FROM STUDENT stu

    WHERE stu.faculty = 'IT'

    EXCEPT

    SELECT reg.student\_id

    FROM REGISTER reg

    JOIN COURSE crs ON crs.course\_id = reg.course\_id

    WHERE reg.subject\_id = stu.subject\_id

)

Relational Algebra

1. Show id, names of students who has register more than 4 courses in semester2 of 2019.

SQL Query

SELECT stu.student\_id, stu.name

FROM STUDENT stu

JOIN REGISTER reg ON reg.student\_id = stu.student\_id

JOIN COURSE crs ON crs.course\_id = reg.course\_id

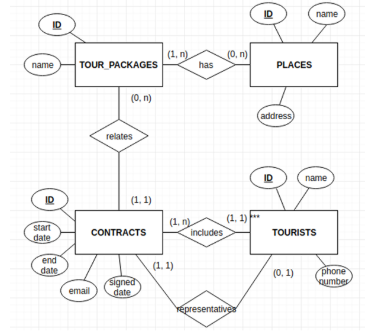
WHERE crs.year = 2019 AND crs.semester = 2

GROUP BY stu.student\_id, stu.name

HAVING count(reg.course\_id) > 4

Relational Algebra

1. **Convert following E/R diagram to relational database schema**



**TOUR\_PACKAGES**(ID, name)

**CONTRACTS**(ID, start\_date, end\_date, email, signed\_date, representative, tour\_packages\_id)

*FK: CONTRACTS(tour\_packages\_id) →TOUR\_PACKAGES(ID)*

**PLACES**(ID, name, address)

**TOUR\_PACKAGES\_DESTINATIONS**(tour\_packages\_id, places\_id)

**TOURISTS**(ID, name, phone\_number, contracts\_id)

*FK: TOURISTS(contracts\_id) →CONTRACTS(ID)*