UCRFall2019 CS166 Lab4

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1. List the year and title of each book

$\pi_{Year,\ Title}(BOOKS)$

2. List all information about students whose major is CS

$\sigma_{Major='CS'}(STUDENTS)$

3. List all students with books they can borrow

STUDENTS x BOOKS

4. List all books published by McGraw-Hill before 1990

$\sigma_{Publisher = 'McGraw\text{-}Hill'}\ (\sigma_{Year\ <1990}(BOOKS))$

5. List the name of those authors who are living in Davis

$\pi_{AName}(\sigma_{Address\ ='Davis'}(AUTHORS))$

6. List the name of students who are older than 30 and who are not studying CS

$\pi_{StName}(Age>30(STUDENTS))$ -
$\pi_{StName}(Major='CS'(STUDENTS))$

7. Rename AName in the relation AUTHORS to Name

$\rho_{AUTHORS(Name,\ Address)}(AUTHORS)$

8. List the names of all students who have borrowed a book and who are CS majors

$\pi_{StName}(\sigma_{STUDENTS.StId=borrows.StId}\ (\sigma_{Major='CS'}(STUDENTS) \times borrows))$

9. List the title of books written by the author “Jones”

$\pi_{Title}(\sigma_{AName='Jones'}(\sigma_{has\text{-}written.DocId = BOOKS.DocId}(has\text{-}written \times BOOKS)))$

10. As previous, but not books that have the keyword “database”

$\pi_{Title}(\sigma_{Keyword\neq\text{”database”}}(BOOKS \bowtie DESCRIPTIONS))$

11. Find the name of the youngest student

$\pi_{StName}(STUDENTS) - \pi_{S1.StName}(\sigma_{S1.Age>S2.Age}(\rho_{S1}(STUDENTS) \times \rho_{S2}(STUDENTS)))$

12. Find the title of the oldest book

$\pi_{Title}(BOOKS)\ \pi_{B1.Title}(\sigma_{B1.Year>B2.Year}(\rho_{B1}(BOOKS) \times \rho_{B2}(BOOKS)))$