

Exercise 2 - Solution

Q1

$$\pi_{\{stude\}}(\sigma_{(mark>70 \text{ AND } subj=1011)}(MARK))$$

Q2

$$\pi_{\{name,subj\}}(\sigma_{(mark>70)}(STUDENT \bowtie_{(sid=stude)} MARK))$$

Q3

$$\pi_{\{fristName,lastName\}}(author \bowtie book)$$

Q4

$$A \leftarrow \pi_{\{authorID\}}author - \pi_{\{authorID\}}book$$

$$B \leftarrow \pi_{\{firstName,lastName\}}(A \bowtie author)$$

(It's possible to have duplicate author names)

Q5

$$\pi_{\{fristName,lastName\}}(author \bowtie authorPub)$$

Q6

$$\pi_{\{fristName,lastName\}}(author \bowtie (authorPub \bowtie (\sigma_{(month='July')}(book) \bowtie pub)))$$

Q7

$$A \leftarrow \pi_{\{authorID\}}book$$

$$B \leftarrow \pi_{\{authorID\}}authorPub$$

$$C \leftarrow \pi_{\{firstName,lastName\}}((A - B) \bowtie author)$$

Q8

$$\pi_{\{name\}}(((\sigma_{(gender='female')}(Student)) \bowtie Enrolment \bowtie (\sigma_{(job='designer')}(JobRequirement))))$$

Q9

$$\begin{aligned} A &\leftarrow \pi_{\{name\}}(Student \bowtie (Enrolment \div \pi_{\{courseID\}}(\sigma_{(job='designer')}(JobRequirement)))) \\ B &\leftarrow \pi_{\{name\}}(Student \bowtie Enrolment \bowtie (\sigma_{(faculty='law')}(Course))) \\ C &\leftarrow A - B \end{aligned}$$

Q10

$$\begin{aligned} A &\leftarrow \pi_{\{courseName\}}(Course \bowtie Enrolment \bowtie (\sigma_{(gender='female')}(Student))) \\ B &\leftarrow \pi_{\{courseName\}}(Course \bowtie Enrolment \bowtie (\sigma_{(gender='male')}(Student))) \\ C &\leftarrow (A - B) \cup (B - A) \end{aligned}$$

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