

CS 338
Lecture 06
Relational Algebra and Calculus - Part 3
Additional Slides

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Contents

Exercise

Exercise - Statement of the Problem

Consider these tables.

A

SNO	PNO	Qty
S1	P1	1
S1	P2	2
S1	P3	3
S1	P4	4
S2	P1	5
S2	P2	5
S2	P3	4

B4

PNO
P1
P2

Compute $A \div B4$.

Exercise - Setup in Text Notation

In the notation of the text, we have

$$Z = \{SNO, PNO, Qty\}$$

$$X = \{PNO\}, \text{ so that}$$

$$R(Z) = A,$$

$$S(X) = B4, \text{ and}$$

$$Y = Z - X$$

$$= \{SNO, Qty\}$$

Exercise - Step #1

With this notation, we start by computing $T1 \leftarrow \pi_Y(R)$.

$$\pi_Y(R) =$$

SNO	Qty
S1	1
S1	2
S1	3
S1	4
S2	5
S2	4

Exercise - Step #2

Next we compute $T2 \leftarrow \pi_Y ((S \times T1) - R)$.

$$S \times T1 = B4 \times T1$$

PNO	SNO	Qty
P1	S1	1
P1	S1	2
P1	S1	3
P1	S1	4
P1	S2	5
P1	S2	4
P2	S1	1
P2	S1	2
P2	S1	3
P2	S1	4
P2	S2	5
P2	S2	4

so that

Exercise - Step #2

$$(S \times T1) - R =$$

PNO	SNO	Qty
P1	S1	2
P1	S1	3
P1	S1	4
P1	S2	4
P2	S1	1
P2	S1	3
P2	S1	4
P2	S2	4

Exercise - Step #2

$$\pi_Y((S \times T1) - R) =$$

SNO	Qty
S1	2
S1	3
S1	4
S2	4
S1	1

Exercise - Step #3

Last we compute $T \leftarrow T1 - T2$.

$$T1 - T2 =$$

SNO	Qty
S2	5

Returning to the original tables, we note that $(S2, 5)$ is the only $\{SNO, Qty\}$ pair from the A table which has both of $P1$ and $P2$ PNO -values matched with it.