

Introduction to Databases Problem Set #2

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Problem 2

a

Let liquor be L and sales be S .

Let $\rho(C(1 - \rightarrow \text{lid1}, 7 - \rightarrow \text{lid2}), L \times S)$ be X .

$$\text{Names} = \pi_{\text{name}}(\sigma_{\substack{\text{lid1} = \text{lid2} \\ \text{month} = \text{December} \\ \text{county} = \text{Polk} \\ \text{quantity} \geq 1}}(X)) \cap \pi_{\text{name}}(\sigma_{\substack{\text{lid1} = \text{lid2} \\ \text{month} = \text{December} \\ \text{county} = \text{Linn} \\ \text{quantity} \geq 1}}(X))$$

b

Let liquor be L and sales be S .

Let $L \bowtie S$ be X .

$$\text{Manufacturers} = \pi_{\text{manufacturer}} \sigma_{1 \neq 9}((\sigma_{\substack{\text{month} = \text{January} \\ \text{county} = \text{Polk} \\ \text{quantity} \geq 1}}(X) \bowtie_{\text{manufacturer}} \sigma_{\substack{\text{month} = \text{January} \\ \text{county} = \text{Polk} \\ \text{quantity} \geq 1}}(X)))$$

Problem 3

a

B D

x c

y a

x a

b

A	B	D	A
1	x	c	1
3	y	a	1
3	x	a	1
1	x	c	3
3	y	a	3
3	x	a	3

c

A	B	C	A	B	D
1	x	a	3	y	a
1	x	a	3	x	a

d

Since $T1 \text{ as } T1 - T2 = T1$, hence $T1 - (T1 - T2)$ results in an empty table.

e

Since $T1$ does not have a column D , there would not be a common column to natural join, hence an empty table