

Example 8.10 + Exercise

$$1) F(x,y,z) = \underbrace{p(x,y)}_{\pi = \{x,y\}} \wedge \left( \underbrace{q(y)}_{\pi = \{y\}} \vee \underbrace{r(z)}_{\pi = \{z\}} \right)$$

$\pi = \emptyset$

$z$  fehlt  $\Rightarrow$  nicht in SRNF  
 nur  $\pi = \{x,y\}$  in SQL übersehbar  
 da nicht domain-independent!

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2)  $F(x,y) = p(x,y) \wedge (q(y) \vee r(x))$   
 $\pi = \{x,y\}$  wie in (1)  
 ist in SRNF  $\rightarrow$  domain-independent

select ~~A,B~~ \$1, \$2  
 from P  
 where P.\$2 in select \* from q  
 or P.\$1 in select \* from r

Plan:

$\Rightarrow$  ist in SRNF in:

$$p(x,y) \wedge \left( \underbrace{p(x,y) \wedge q(y)}_{\pi = \{x,y\}} \vee \underbrace{p(x,y) \wedge r(x)}_{\pi = \{x,y\}} \right)$$

reduzieren  $\pi = \{x,y\}$   $\rightarrow$  SRNF

alternativ:

$$p(x,y) \wedge \left( \text{atom}(x) \wedge q(y) \vee r(x) \wedge \text{atom}(y) \right)$$

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3)  $F(x) = p(x) \wedge \exists y : (q(y) \wedge \neg r(x,y))$

$\pi = \{x\}$        $\pi = \{y\}$        $\pi = \{x, y\}$        $\pi = \emptyset$

$\pi = \{x, y\}$        $\pi = \emptyset$

$\pi = \{x, y\}$        $\pi = \emptyset$

S&L:  $\pi = \{x, y\}$  **SRNFV**

Select  $\$1$   
 From  $p$   
 Where exists (select  $\$1$  from  $q$  where  $(p(\$1, y)$  not in  $r$ )

sidefber:  $p(\$1, y)$  (select  $x$  from  $r$ )

Algebra:  $\text{not}(\dots) \rightarrow \text{MINUS}$   $\rightarrow$  bracket eine linke Seite

$\$1 \equiv x$

~~addm x addm~~

$\pi[\$1]$

$p \times q$        $r$

$\exists y: p(x) \wedge q(y) \wedge \neg r(x,y)$

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4)  $F(x) = p(x) \wedge \neg \exists y : (q(y) \wedge \neg r(x,y))$

$\hat{=}$   $oq(x) \wedge \neg \exists c : \text{cont}(y) \wedge \neg \text{hasMember}(o, \text{cont}(x, c))$

select  $*$   
 from  $oq$   
 where not exists (select  $*$  from  $\text{cont}$  that  $c$  where not ( $o.\text{id}, c.\text{id}$ ) in (select  $*$  from  $oq$  on  $\text{cont}$ ))

Algebra

$oq$  on  $\text{cont} \div \text{cont}$

$\pi[\$1]$        $EU, \dots$

$\times$        $oq$        $\text{cont}$        $oq$  on  $\text{cont}$

fehlerden Paare ( $EU, \text{Anstalt}$ )

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5)  $F(x,y) = p(x,y) \wedge \neg \exists z: r(y,z)$

$\underbrace{p(x,y)}_{\pi = \{x,y\}}$       $\underbrace{\exists z: r(y,z)}_{\pi = \{y,z\}}$   
 $\underbrace{\hspace{10em}}_{\pi = \{y\}}$   
 $\underbrace{\hspace{15em}}_{\pi = \emptyset}$   
 $\underbrace{\hspace{20em}}_{\pi = \{x,y\}}$  **SRNTV**

select p.s1, r.t2  
 from p  
 where not p.s2 in select r.s1 from r

anti-join p.s2 = r.s1 (Vgl. SPARQL-  
 Algebra.....)  
 ... doch mit MINUS:  
~~P  
 |  
 p.s2 = r.s1  
 |  
 join  
 |  
 P  
 |  
 r  
 |  
 r.s1~~

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Dahleq zu 4 :

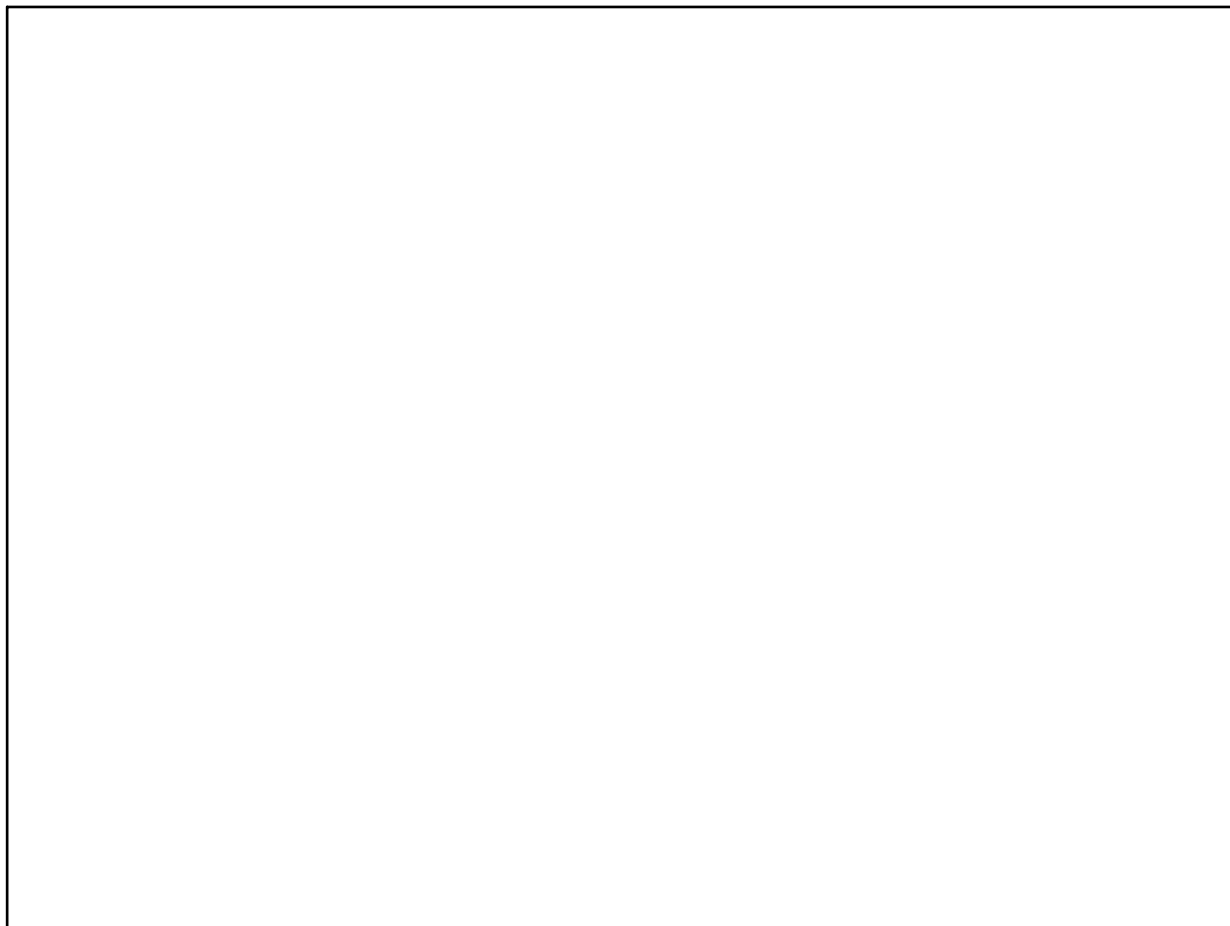
braucht ... RANF  
 + stratifizierte Negation

result(o) :- org(o), not not\_result(o).

not\_result(o) :-

alle Orgs, so dass es  
 zugeordnet ist, wo  
 org(o), cont(c), not orgcont(o, c) nicht verheiratet ist.

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