

# Discussion of questions/examples

Ex 1.5, example with  
1/4 of population in capital.

Basic algebra ops:

- Triples
- Filter
- AND  $\bowtie$
- UNION  $\cup$
- OPT  $\infty$

not the relational minus, but

↳ defined via " $\setminus$ " or here maybe "not exists"

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→ example.

Start from the filter-safe! query

Select ?XN ?XP

Where { ?X a country; name ?XN; population ?XP

(here: adapt filter-safety to "NOT EXISTS" subquery)

NOT EXISTS { ?X : hasCity ?C; population ?XP.  
?C : population ?XP.

FILTER (?CP > 0.25 \* ?XP)

then, the disjoints with X

$\pi[?XN, ?XP]$

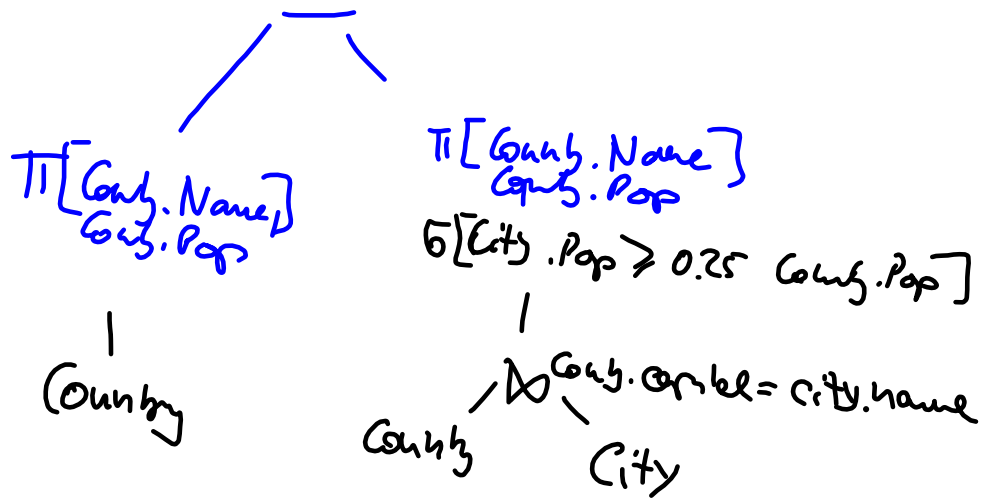
on  $\pi[?X, ?XP]$   
FILTER (?CP > 0.25 \* ?XP)

?X hasCity ?C ?(pop ?XP ?X pop XP)

?X a country ?X name ?XN ?X pop ?XP

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of Minus in rel. Algebra



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Connection to Ex. 1.4 d :

$$\Omega_1 \bowtie \Omega_2 =$$

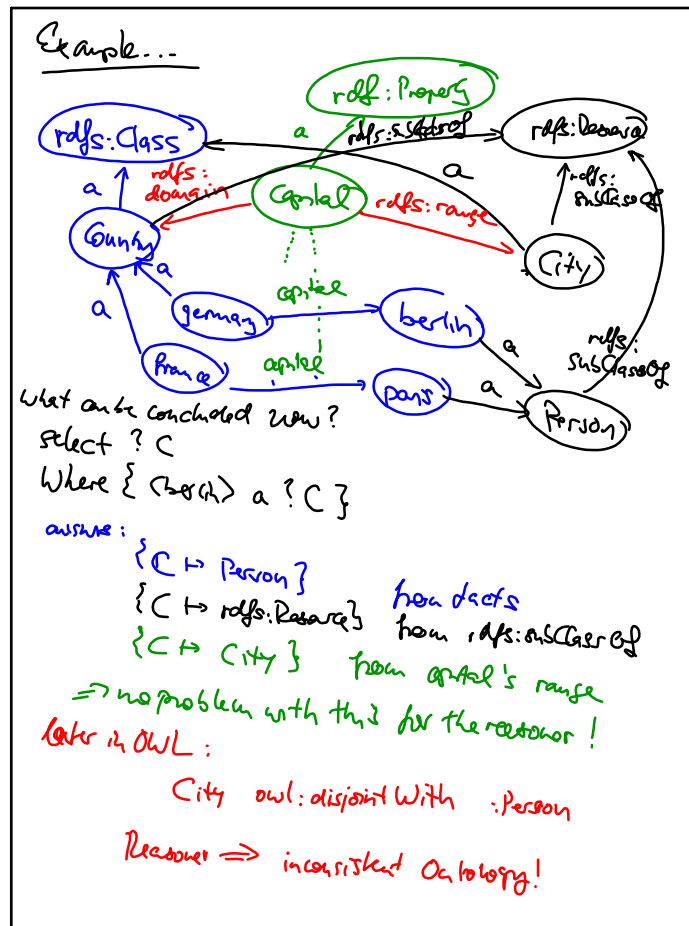
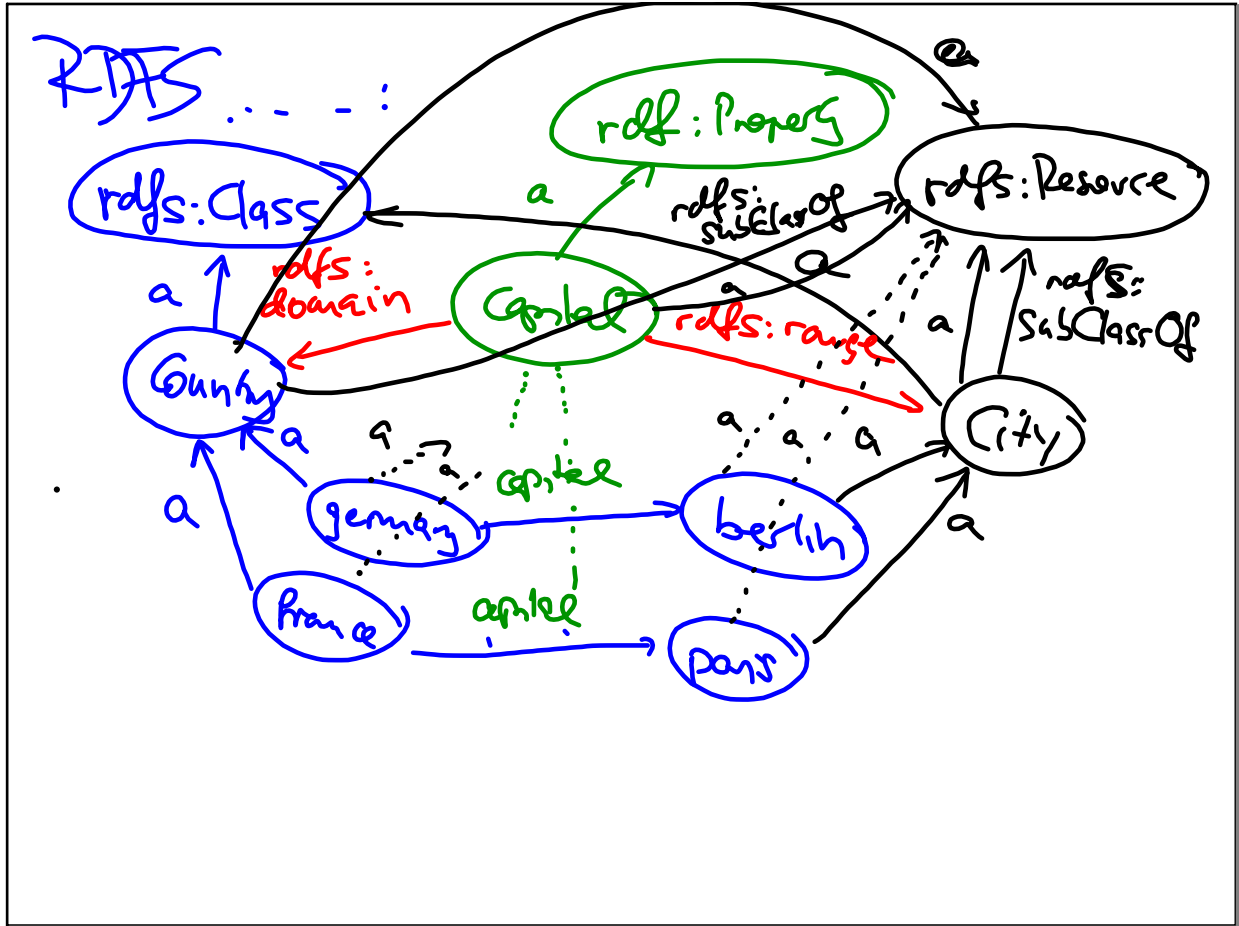
$$\Omega_1 \bowtie \Omega_2 \cup$$

$$\Omega_1 \setminus_S (\Omega_1 \bowtie \Omega_2)$$

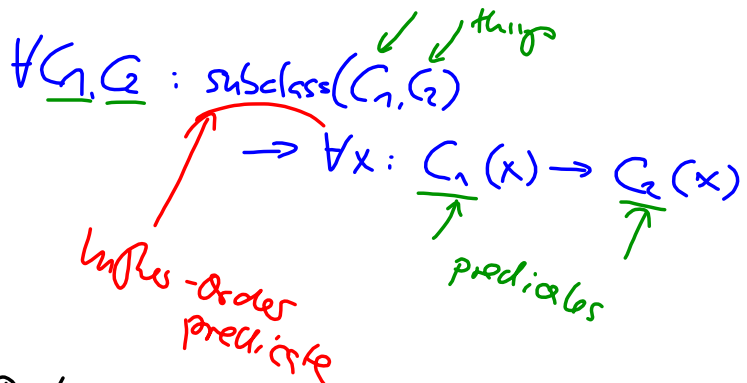
those tuples in  $\Omega_1$  that have a match in  $\Omega_2$

$\hat{=}$  To from the relational algebra def.

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Subclass in 2nd Order Logic:



problem: obj. type      Obj for Class

holds (Obj, Class)

1st      2nd