p(X) ∧ ∃Y : (q(Y) ∧ ¬r(X, Y))

p(X) ∧ ¬∃Y : (q(Y) ∧ ¬r(X, Y))

rr={X}

rr={Y}

rr={X,Y}

rr={}

rr={Y}

ok, rr={}

· the same ... for the green formula

it is also in SRNF

rr={X}

formula is in SRNF

mondial-style example:

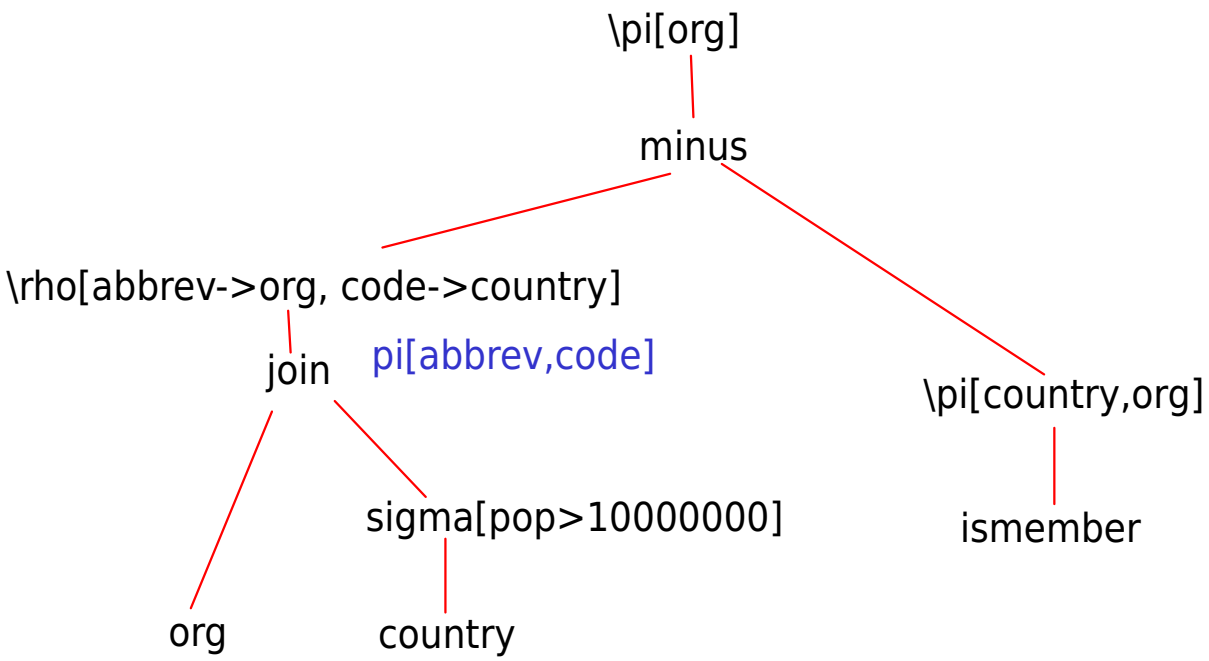
org(X) ∧ ∃Y: (country(Y) ∧ pop(Y,P) ∧ P> 10000000 ∧ ¬ ismember(Y,X))

in Datalog:

∃Y: org(X) ∧ country(Y) ∧ pop(Y,P) ∧ P> 10000000 ∧ ∀T:¬ ismember(Y,X,T)

in the relational algebra:

negation -> minus



express this in the relational algebra:

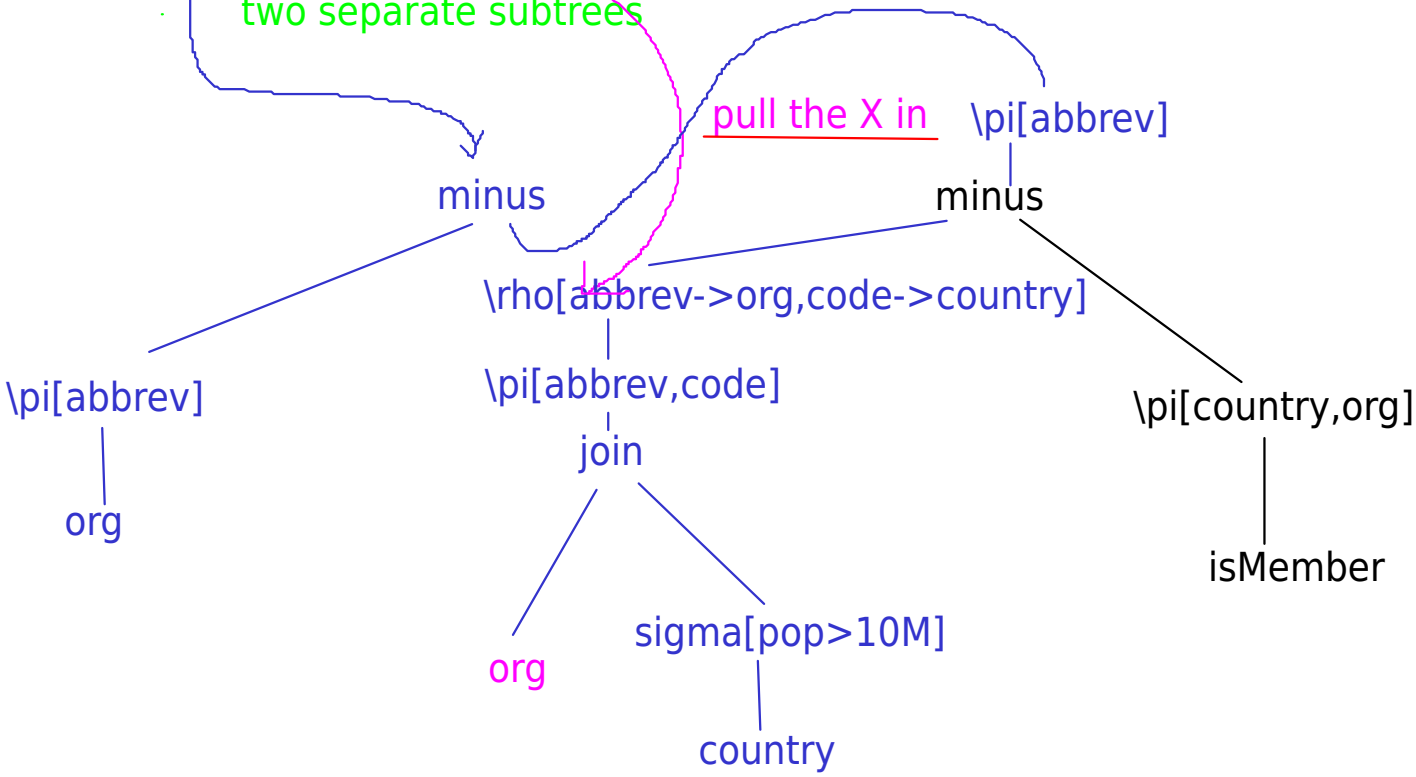
org(X) ∧ ¬(∃Y: (country(Y) ∧ pop(Y,P) ∧ P> 10000000 ∧ ¬ ismember(Y,X)))

not possible to pull out the existential quantifier

no positive occurrence of the X

two separate subtrees

pull the X in



=> make the subquery self-contained

similar case in SQL:

correlated subquery:

```
(select ...
 from ....
where ... )
```

Debugging: state the subquery alone.

=> make it correct/safe by importing one or more of the outer tables