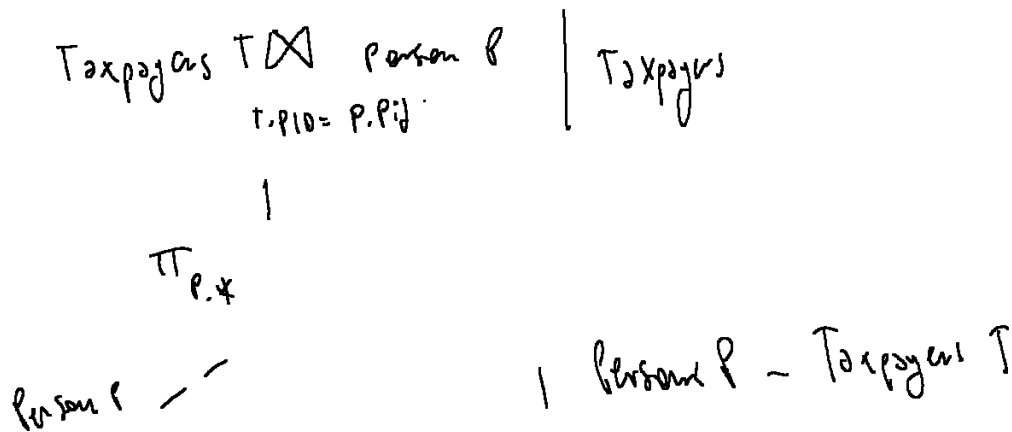
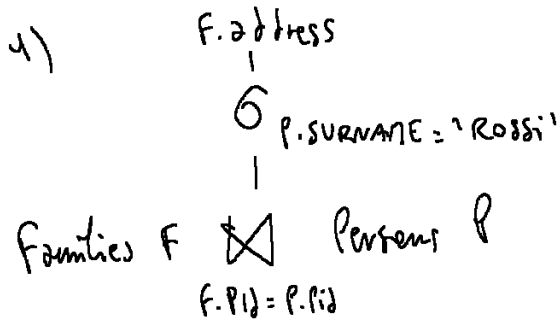


RELATIONAL ALGEBRA (examples of queries)

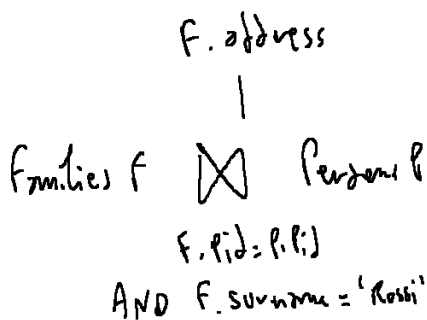
•



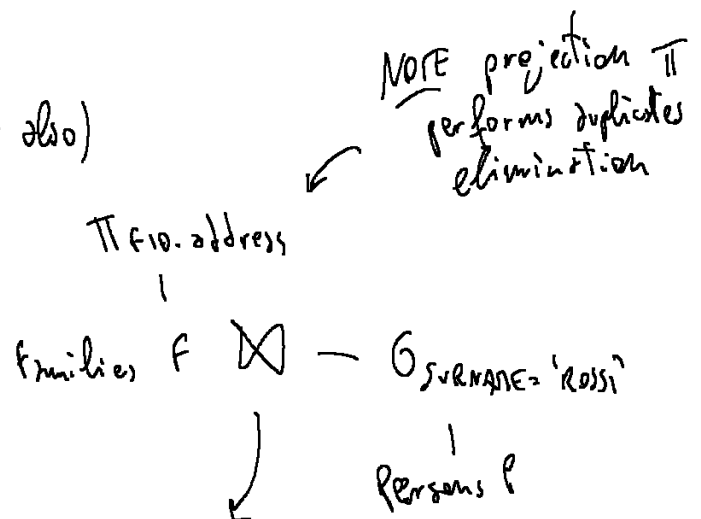
• Address of families where at least one member has surname = 'Rossi'



2) (or differently)



3) (or also)



You can use also a "semi join" \ltimes meaning that I just want to filter out it is basically a join followed by a projection

• Families where no families live

$$1) \neg \exists p \in F. p.\text{surname} = \text{'Rossi'}$$

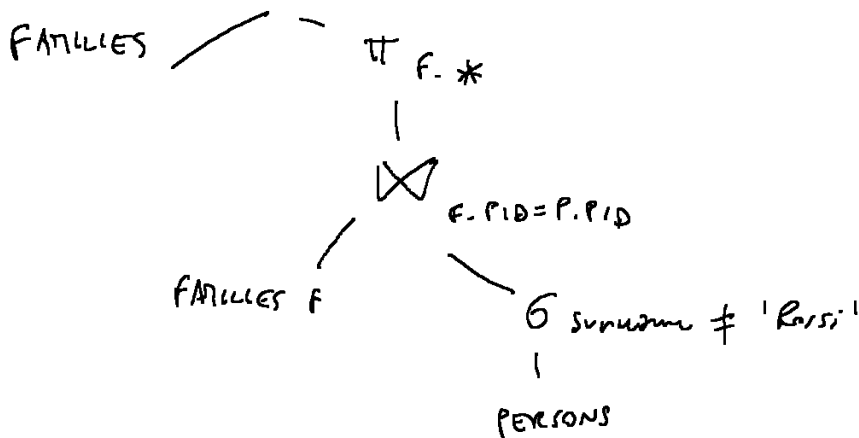
$$2) \exists p \in F. p.\text{surname} \neq \text{'Rossi'}$$

are not the same

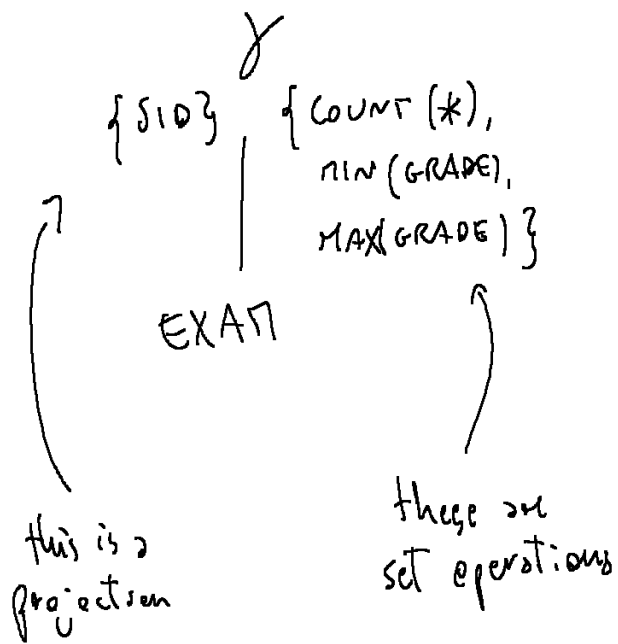
← this is a universal condition
 \forall and $\neg \exists$

← this is an existential condition
 $\neg \forall$ and \exists

• How to find $\{F \mid \neg \exists p \in F. p.\text{surname} = \text{'Rossi'}\}$
which is the same as $\{F \mid \forall p \in F. p.\text{surname} \neq \text{'Rossi'}\}$



GROUP BY



We apply GROUP BY to exam.

We read "for each student in Exam apply count, min-grade, max-grade"

Grouping is a more complex projection to where we can also compute additional