

Which students have enrolled in two or more papers?

ENROLMENT

ID	paper
101	CO102
101	CO103
102	CO102
103	MA101

 we first rename paper to paper' and join the resulting relation with Enrolment, hence

$$X := ENROLMENT * \delta_{paper \rightarrow paper'}$$
 (ENROLMENT)

ID	paper	paper'
101	CO102	CO102
101	CO102	CO103
101	CO103	CO102
101	CO103	CO103
102	CO102	CO102
103	MA101	MA101



Database Design Quality

- This gives us for each student every pair of papers he or she has enrolled in
- We are not interested in pairs which have same entries but the ones with different entries for the pair

$$Y := \sigma_{paper_{\neq}paper'}(X)$$

IDk	paper	Paper'
101	CO102	CO103
101	CO103	CO102

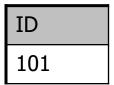
SWEN304/SWEN439 1



Relational Algebra Example

We get the student ID that have enrolled in two or more courses

$$\pi_{ID}(Y)$$



represented in one query

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\pi_{\text{ID}}(\sigma_{\text{paper}_{\neq}\text{paper}'}(\text{ENROLMENT} * \delta_{\text{paper} \rightarrow \text{paper}'} (\text{ENROLMENT})))
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