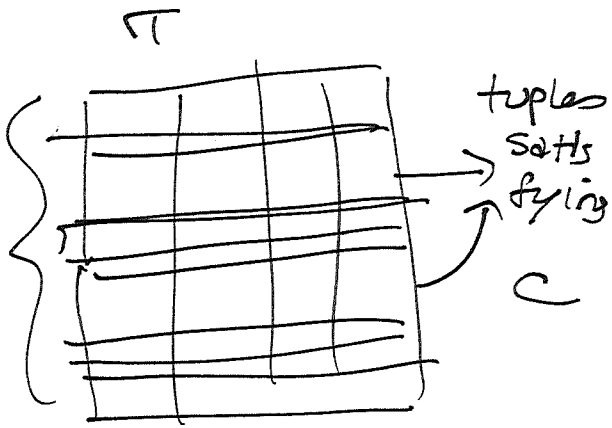
Relational Algebra Operators



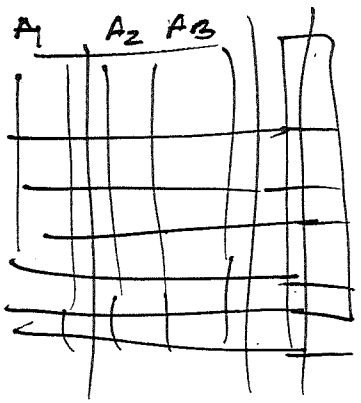
1. SELECTION $\sigma_c(R)$

SELECT_c(R)

c is a Boolean condition over the attributes of relation R

$\sigma_c(R) = \{$ ~~t ∈ R~~ tuples t in R such that ~~t~~ satisfies c $\}$

selection returns tuples with the same data model (schema) as R.



2. PROJECTION $\pi_{A_1,\ldots,A_N}(R)$

PROJECT_{A1,...,AN}(R)

$\pi_{A_1,\ldots,A_n}(R) = \{$ return all tuples in R, but only the values for attributes $A_1, \ldots, A_n$ $\}$

Heroes

hid	hname	universe	name
1	spiderman	u1	peter Parker
2	Spiderman	u2	peter parker
3	Spiderham	u3	peter parker
4	spiderman	u4	miles morales
5	ironman	u1	tony stark
6	blackwidow	u1	natasha romanoff

R1 = $\sigma_{hname = 'spiderman'}(Heroes)$

R2 = $\Pi_{hname}(Heroes)$

R3 = $\Pi_{universe}(Heroes)$

R4: $\Pi_{hname,name}(Heroes)$

hname
spiderman
Spiderham
ironman
black widow

SET OPERATIONS

Given two relations R & S that are set compatible,

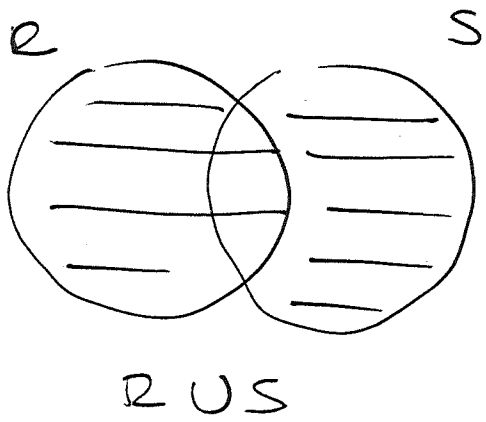
$R \cup S = \{$ tuples t such that t is in R or t is in $S\}$

R UNION S

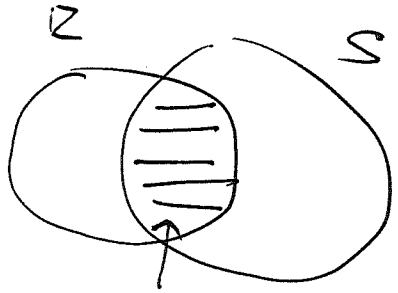
$R \cap S = \{$ tuples t such that t is in R & t is in $S\}$

R INTERSECT S

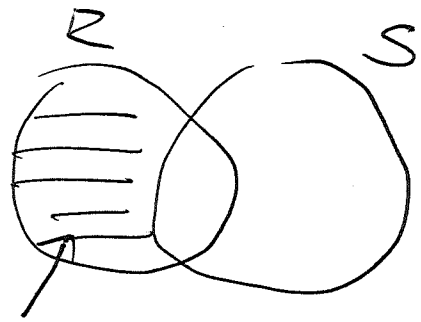
$R - S = \{$ tuples t in R that are not in $S\}$



$R \cup S$



$R \cap S$



$R - S$