

# Join - (Relational Algebra)

①

Join can be defined as combination of a Cartesian product followed by selection process.  
on the basis of join condition it make pair of two tuples from different relations.

1) Theta ( $\theta$ ) Join Denoted by Symbol  $\theta$

Notation :-  $R_1 \bowtie_{\theta} R_2$

Suppose  $R_1$  have Attributes  $A_1, A_2 \dots A_n$   
&  $R_2$  have Attributes  $B_1, B_2 \dots B_n$   
Such that  $R_1 \cap R_2 = \phi$

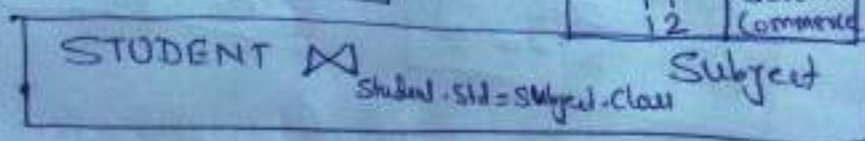
Note :- Theta Join can use all kind of Comparison Operator

Ex

Student		
Roll	Name	Std
101	Ajay	10
102	Amit	11
103	Akash	12

Subject	
Class	Subject
10	Math
10	English
11	Hindi
11	Science
12	Commerce

then



OR

Roll	Name	Std	Class	Subject
101	Ajay	10	10	Math
101	Ajay	10	10	English
102	Amit	11	11	Hindi
102	Amit	11	11	Science
103	Akash	12	12	Commerce

### Equi join

When Theta Join uses only equality Comparison operator, It is said to be equi join

Note! - above Example also comes under equi join

### Natural Join ( $\bowtie$ )

- In Natural Join we do not use any Comparison operator.
- For Natural Join there must be at least one common attribute between two relations.
- Attribute must have same Name & domain.
- It display the common attribute at one time.

Ex

Course		
Code	Name	Dept
CS 201	CCPC	CS
ME 101	Mechanics	ME

Head	
Dept	HeadName
CS	Ajay
ME	Amit

Course  $\bowtie$  Head

Dept	Code	Name	HeadName
CS	CS201	CCPC	Ajay
ME	ME101	Mechanics	Amit

Here Theta Join, Natural Join and Equi join are known as Inner Join.

## Outer Join

Note: Inner join includes only those tuples with matching attributes rest are discarded. ③  
Outer join includes all tuples from participating relations in the resulting relation.

### Outer join

