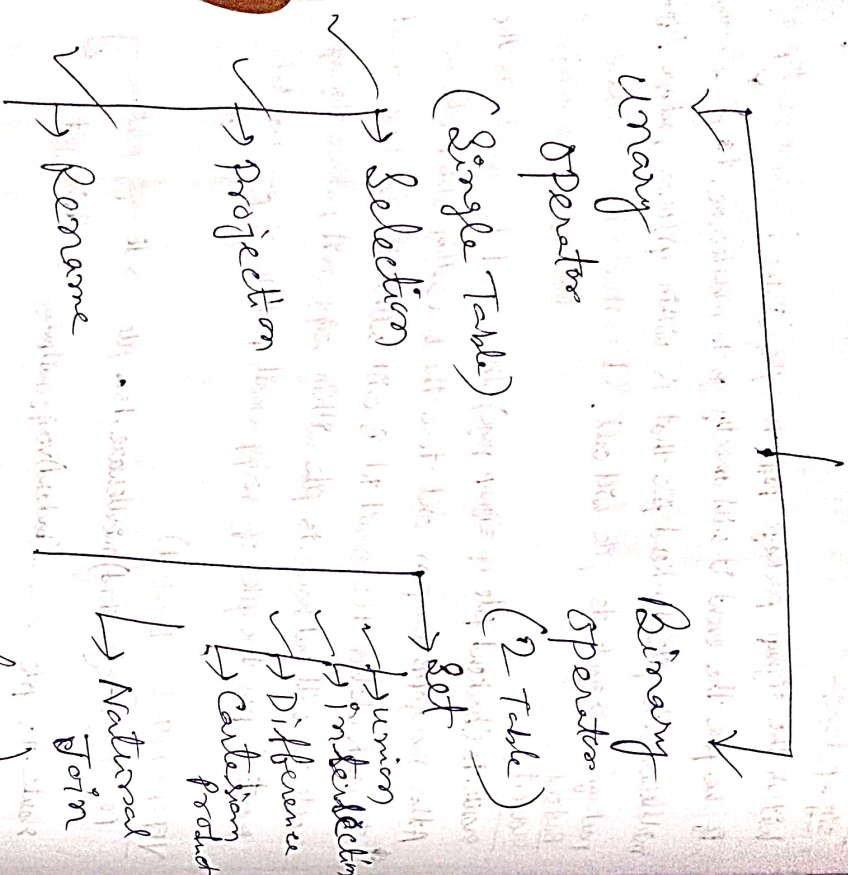


# Relational Algebra



Set Union ( $\cup$ )

Relation: - A

Roll No.	Name	Total
1	Souparni	850
3	Som	800
4	Swarup	900

Relation: - B

Roll No.	Name	Total
1	Souparni	850
2	Disha	780
4	Swarup	900

Syntax: -  $A \cup B$

Output:

Roll No.	Name	Total
1	Souparni	850
2	Disha	780
3	Som	800
4	Swarup	900

Set Intersection ( $\cap$ )

Syntax: -  $A \cap B$

Output:

Roll No.	Name	Total
1	Souparni	850
4	Swarup	900

Set Difference ( $-$ )

Syntax: -  $A - B$

Roll No.	Name	Total
3	Som	800

Syntax: -  $B - A$

Roll No.	Name	Total
2	Disha	780

# Cartesian Product (A)

Roll	FNam	Gender
1	Sayani	F
2	Som	M

Relation:- A

RollNo.	LNam	Address
1	Chandra	Keshavn
2	Mondal	Keshavn
3	Poddal	Salt Lake

Relation:- B

Syntax:-  $A \times B$

RollNo.	FNam	Gender	RollNo.	LNam	Address
1	Sayani	F	1	Chandra	Keshavn
1	"	"	2	Mondal	"
1	"	F.	3	Pand	Salt Lake
2	Som	M	1	Chandra	Keshavn
2	"	M	2	Mondal	"
2	"	M	3	Pand	Salt Lake

Natural Join (N)

- 1 Cartesian Product
- 2 Selection
- 3 Projection

# ii) Selection

Output

RollNo.	FNam	Gender	RollNo.	LNam	Address
1	Sayani	F	1	Chandra	Keshavn
2	Som	M	2	Mondal	"

## iii) Projection

Syntax:-  $A \bowtie B$

RollNo.	FNam	LNam	Gender	Address
1	Sayani	Chandra	F	Keshavn
2	Som	Mondal	M	"



## Unary operators

### Selection ( $\sigma$ )

(Sigma)

SQL uses  $\sigma$  on 1 or more columns

Example:

Relation: - Student

Roll No.	Name	Total	Degree
1	Disha	800	B.Tech
2	Rom	700	B.Sc
3	Rom	750	B.Com
4	Shib	780	B.Tech

Noted

Show all records of

Student table whose total

is more than equals to

750.

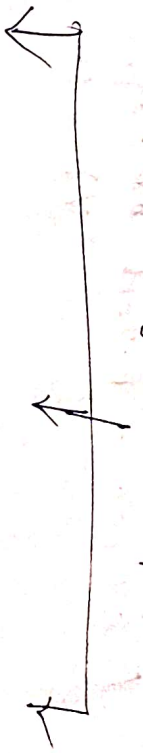
Query  $\Rightarrow$

(Student)

Output: -  $\sigma_{(Total) \geq 750}$

Roll No.	Name	Total	Degree
2	Disha	800	B.Tech
3	Rom	750	B.Com
4	Shib	780	B.Tech

## logical operators



AND

( $\wedge$ )

OR

( $\vee$ )

NOT

( $\neg$ )

Show all the records of those student whose total

is more than 750 and

Degree is 'B.Tech'

(Student)

Query: -  $\sigma_{(Total) > 750 \wedge Degree = 'B.Tech'}$

(and)

Output: -

Roll No.	Name	Total	Degree
1	Disha	800	B.Tech
4	Shib	780	B.Tech

Show all the records of

those student whose

degree is

either B.Tech or M.Tech

# Projection (IT)

Degree = 'B.Tech' Degree =  
(V) 'M.Tech'

Output:-

Roll	Name	Total	Degree
1			
4			

show all the records of those student whose

Degree is ~~not~~ B.Tech' (Student)

Degree = 'B.Tech'

Output:-

Roll	Name	Total	Degree
2			B.Sc
3			B.Com

SQL & join more SQL

column wise OR  
Relation:- Student

Roll NO.	Name	Stream	DOB
1	Sangam	BA	04/04/04
2	Sam	B.Com	05/05/05
3	Disha	B.Sc	06/06/06
4	Roopam	B.Tech	07/07/07

show Name, Stream, DOB of all students.

SQL Syntax:-  
SELECT (Name, Stream, DOB) (Student)

OR  
(Student)

SQL (2, 3, 4)  
Output:-

Name	Stream	DOB
Sangam	BA	04/04/04
Sam	B.Com	05/05/05
Disha	B.Sc	06/06/06
Roopam	B.Tech	07/07/07

## Selection with Projection

Show Name, Stream, DOB of those student whose DOB after 05/05/05  
(student)

II. (Name, Stream, DOB) < (DOB > 05/05/05)

Name	Stream	DOB
Disha	B.Sc	06/06/06
Roshan	B.Tech	07/07/07

Rename (f)

→ (sho)

(change the Name of the table or column)

## Syntax:-

f (New table name)

(old table name)

Change the Name of the table from 'Student' to 'stu' (student)

f (stu)

Change the Name of the column from Name to Full Name & Name of the table from Student

to .stu

(student)

f (stu) II (Full Name) (Name)

→