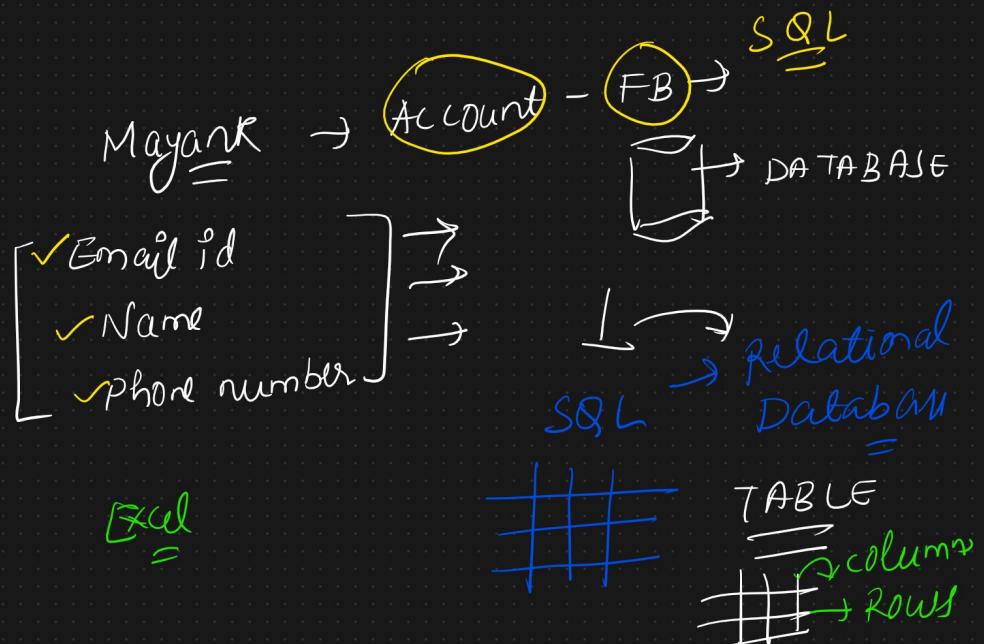


# SQL Notes



Database: collection of data in a format  
that can easily accessed



12/02/2000  
12/02/2002  
update

Add, Modify,

Delete

→ A software application used

to manage our DB → DBMS

Database Management System

## Type of Database:

1) Relational



→ SQL

Data stored in tables (SQL)

2) Non-relational (NoSQL) → Not only SQL

Data not stored in tables



+ text  
+ image  
+ video

SQL → Structured Query Language



Prog. lang

DBA

SQL is a programming language used to interact with relational database.

## → SQL

SQL → ( )

(Excl) → limit

l abby



CRUD → CREATE

Read

AK

UPDATE

Delete

Data Types: → store characters → fixed length

① CHAR → string → A-Z → a-z

② VARCHAR → string → A-Z → a-z

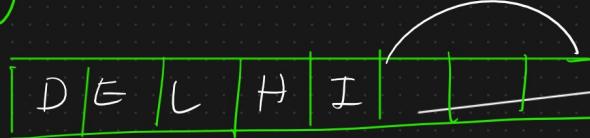
→ store character up to given length



CHAR →

city CHAR (50)

(50)



$$50 - 5 = 45$$

VARCHAR →



city VARCHAR(50)



VARCHAR  
=====

③ INT → Integer → -ve + ve

④ Float → decimal number

⑤ Boolean → Bool → 0, 1

⑥ DATE

⑦ YEAR

## Types of SQL commands

① DDL → Data Definition language

create, alter, rename, truncate  
and DROP

② Data Query language (DQL)

↳ select

③ DML → Data Manipulation

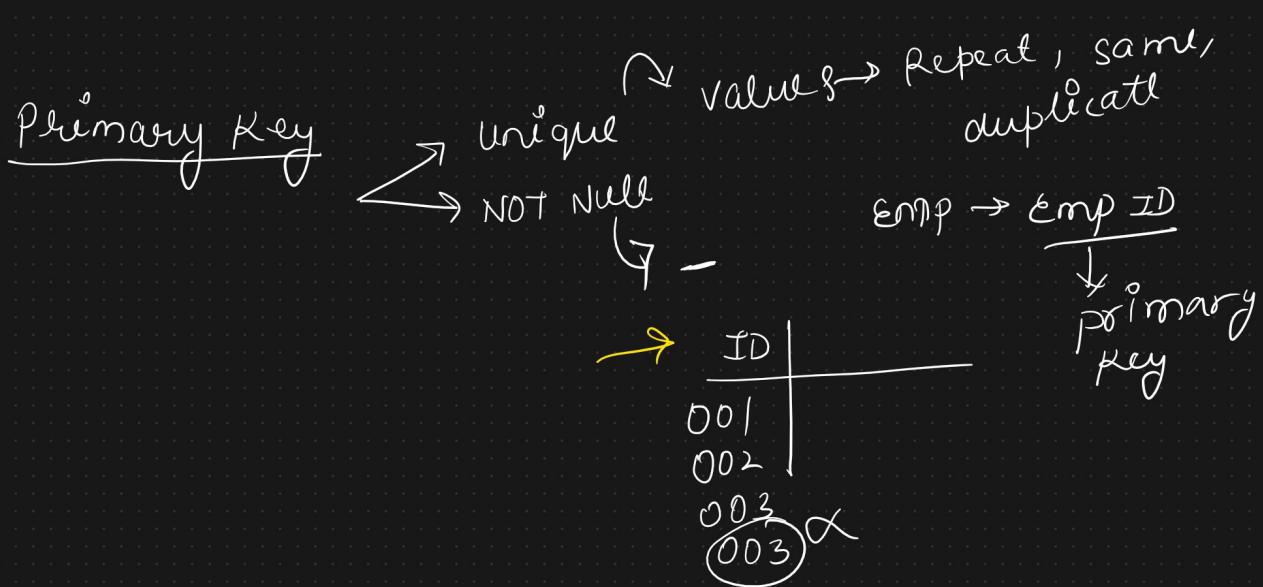
language  
+ select, insert, update and  
delete

④ DCL → Data Control language

→ grant and revoke permission to  
user

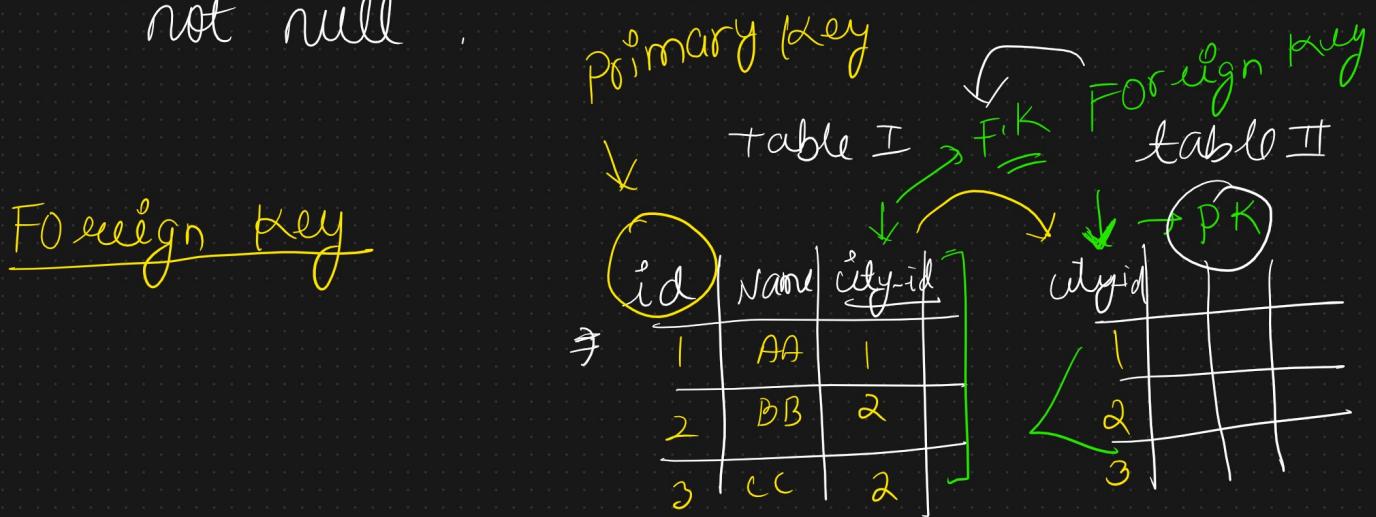
⑤ TCL → Transaction Control language

commit, rollback, start  
transaction



→ It is a column (or set of columns) in a table that uniquely identifies each row (or a unique id)

→ There is only 1 PK and it should be not null.



① A foreign key is a column (or set of columns) in a table that refers to the primary key in another table

$$\text{F.K} \curvearrowright \underline{\text{PK}}$$

the primary key in another table

② A Foreign key is a column used to link two or more tables together.

Constraints → Are used to specify rules for data in a table.

① Not Null → columns cannot have a null values

✓ col1 int Not Null

② Unique → makes a column unique  
↳ all values in a column are different

③ Primary Key → unique, not null

④ Foreign key → prevent actions that

would destroy link b/w tables.

Table

cust\_id int,

{ FOREIGN KEY ( cust\_id ) REFERENCES customer ( id ) }

primary key

## DEFAULT

↳ set the default value of a column

Salary INT DEFAULT 25000

check : It can limit the values

allowed in a column

CREATE TABLE city (

id int primary key,

city VARCHAR(50)

age int ;      If  $\geq 10$

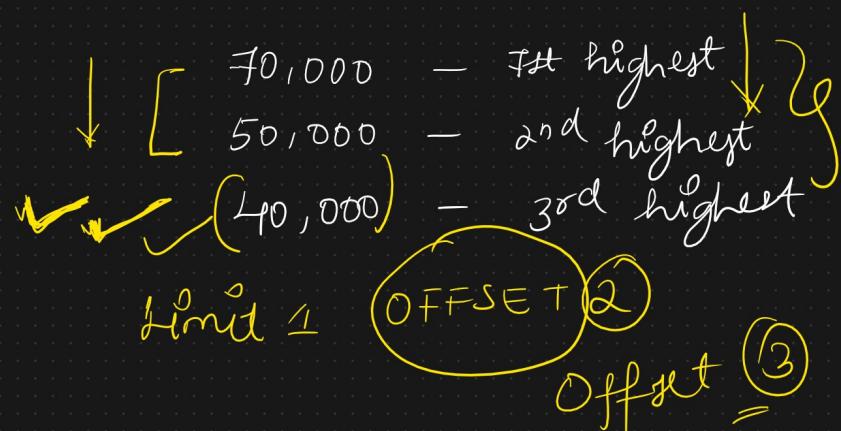
constraint age - check CHECK

( $age \geq 18$  AND  
 $=$  city = "Mumbai")

);

✓

$f.\text{seek}(10) \rightarrow \underline{\underline{10}} =$  10th highest



SQL  $\Rightarrow$  OFFSET 9  
↓ pointer  $\rightarrow$  9  
 $\underline{\underline{10}} \rightarrow \underline{\underline{\text{Read}}}$

Alter  $\rightarrow$  Existing Table  
↓ changes

table name, column name  
remove  
column, add

New column

Drop,  
=

## Joins

→ Join is used to combine rows from two or more tables, based on a related column b/w them.

### Types of Joins

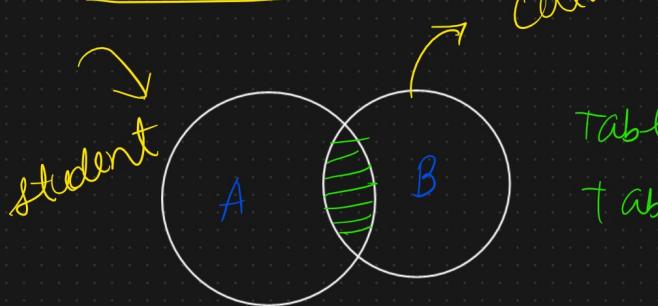
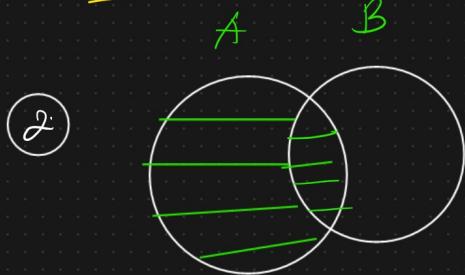


Table A → ID  
Table B → ID  
 $\rightarrow$  = Inner join

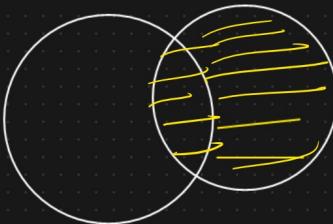
Inner join

$$\cap (A - B) \\ =$$



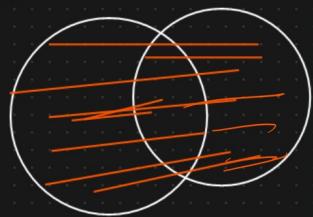
Left join

③



Right join

④



Full join  
(Union)

$$(A \cup B) \\ =$$

Intersection → common

⑤

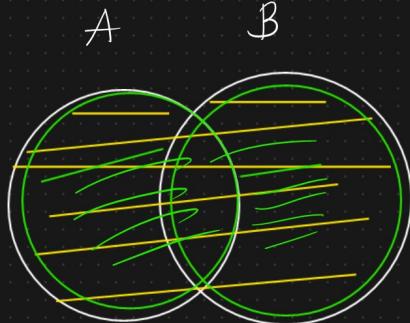
$$A \cap B = \underline{\text{common}}$$

*student* → Inner join

$$A \cap B = B \cap A$$

SELECT \*  
FROM STUDENT  
INNER JOIN course  
ON student.id = course.id;

→ dot operator =



$A - B \rightarrow$  Left join  
 $B - A \rightarrow$  Right join

U

$A \cup B \rightarrow$  Full Join

$$A = \{1, 2, 3\}$$
$$B = \{2, 4, 3\}$$

$$A \cup B = \underline{\underline{\{1, 2, 3, 4\}}}$$

Deploy your database

Use a template below or set up advanced configuration options. You can also edit these configuration options once the cluster is created.

<b>M10</b>	<b>\$0.08/hour</b>
For production applications with sophisticated workload requirements.	
STORAGE 10 GB	RAM 2 GB
vCPU 2 vCPUs	

<b>SERVERLESS</b>	<b>\$0.10/1M reads</b>
For application development and testing, or workloads with variable traffic.	
STORAGE Up to 1TB	RAM Auto-scale
vCPU Auto-scale	

<b>M0</b>	<b>FREE</b>
For learning and exploring MongoDB in a cloud environment.	
STORAGE 812 MB	RAM Shared
vCPU Shared	

Provider: AWS Google Cloud

Region: Mumbai (ap-south-1) ★ Low carbon emissions

Name: Cluster0

Tag (optional):

FREE

Create

Free forever! Your M0 cluster is ideal for experimenting in a limited sandbox. You can upgrade to a production cluster anytime.

I'll deploy my database later

Access Advanced Configuration

SQL → Relational → Tables → Rows and column

MySQL →

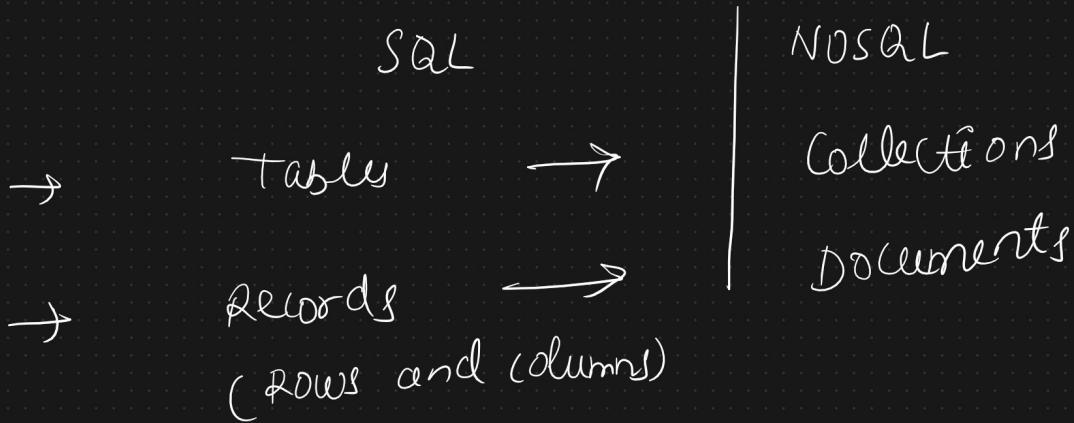
→ NO SQL → Non-Relational → Not stored in Table



Not only with SQL

MongoDB

m



Dict → Keys : Values

↳ JSON

↓

# Java script object notation

dict ≈ JSON

where  $\{ \text{id} \geq 4 \} = \{ \text{key: value} \}$

~~"\$gte"~~  
~~gte~~  
"id(>=)4"  
"4"

for i in collection ds.find({"\_id": {"\$gte": '4'}}):  
print(i)

{ "\$gt": "S" }