LET'S START WITH SQL :)

Database : Collection of data is called as database.
DBMS: A software application to manage our data.

LET'S START WITH SQL :)

Relational(Use tables to store data)

MySQL
Oracle
MariaDB,

Non-relational(Data is not stored in tables)

MongoDb

LET'S START WITH SQL :)

Why SQL?

We need a language to interact with databases.
So we use SQL to interact with DB, do some CRUD operations on the data.

Then what is MySQL?

MySQL is a specific Relational Database Management System (RDBMS) that uses SQL as its querying language.

LET’S START WITH SQL :)

History of SQL (Structured Query Language)

SQL originated in the 1970s from IBM's research on relational databases. It started as SEQUEL, later renamed SQL due to trademark issues.

LET'S START WITH SQL :)

SQL (Structured Query Language)

SQL is a programming language that is used to communicate and manipulate data in databases.

It helps user in performing CRUD (Create, Read, Update, Delete) operations in DB.

LET'S START WITH SQL :)

How SQL helps us ?

SQL allows users to perform a variety of tasks related to databases

- **Retrieving Data**: Extracting precise information from a database through queries.
- **Manipulating Data**: Adding, modifying, or removing records within a database.
- **Defining Data**: Creating and adjusting the structure of a database, including tables, views, and indexes.
- **Controlling Data**: Managing database access by granting or revoking permissions.

LET'S START WITH SQL :)

Installation of MySQL

MySQL Server : Database server where data is stored, managed, and accessed.

MySQL WorkBench : It is a visual tool which is used for database design, development, administration, and management.
It provides a user interface (UI) to interact with MySQL Server.

LET'S START WITH SQL :)

Lets install the Server first :

- Go to the MySQL Official website: https://www.mysql.com/
- Go to Downloads
- Select MySQL Community (GPL) Downloads at the bottom of the page.
- Choose MySQL Community Server, select the version and click on download
- Follow the instructions and set the root password. This password would be asked while creating a new connection.

LET'S START WITH SQL :)

Lets install the WorkBench :

- Go to the MySQL Official website: https://www.mysql.com/
- Go to Downloads
- Select MySQL Community (GPL) Downloads at the bottom of the page.
- Choose MySQL Workbench, select the version and click on download
- Follow the instructions .

LET'S START WITH SQL :)

Types of SQL Commands

SQL commands are divided into different categories based on their functionalities.

1. **Data Query Language (DQL) Commands**
2. **Data Manipulation Language (DML) Commands**
3. **Data Definition Language (DDL) Commands**
4. **Data Control Language (DCL) Commands**
5. **Transaction Control Language (TCL) Commands**

LET'S START WITH SQL :)

Types of SQL Commands

1.Data Query Language (DQL) Commands

DQL is used to retrieve data from the database

Commands: SELECT

2.Data Manipulation Language (DML) Commands

DML is used to manipulate data stored in the database.

Commands: INSERT, UPDATE, DELETE

LET'S START WITH SQL :)

Types of SQL Commands

3.Data Definition Language (DDL) Commands

DDL is used to define the structure and schema of the database.

Commands: CREATE, ALTER, DROP, TRUNCATE, RENAME

4.Data Control Language (DCL) Commands

DCL deals with the control and security of data within the database.

Commands: GRANT, REVOKE

LET'S START WITH SQL :)

Types of SQL Commands

5.Transaction Control Language (TCL) Commands

TCL is used to manage transactions within a database.

Commands: COMMIT, ROLLBACK, SAVEPOINT

LET'S START WITH SQL :)

Creation of Database

Lets understand database design from an example, Consider a college database.

Databse- **School**

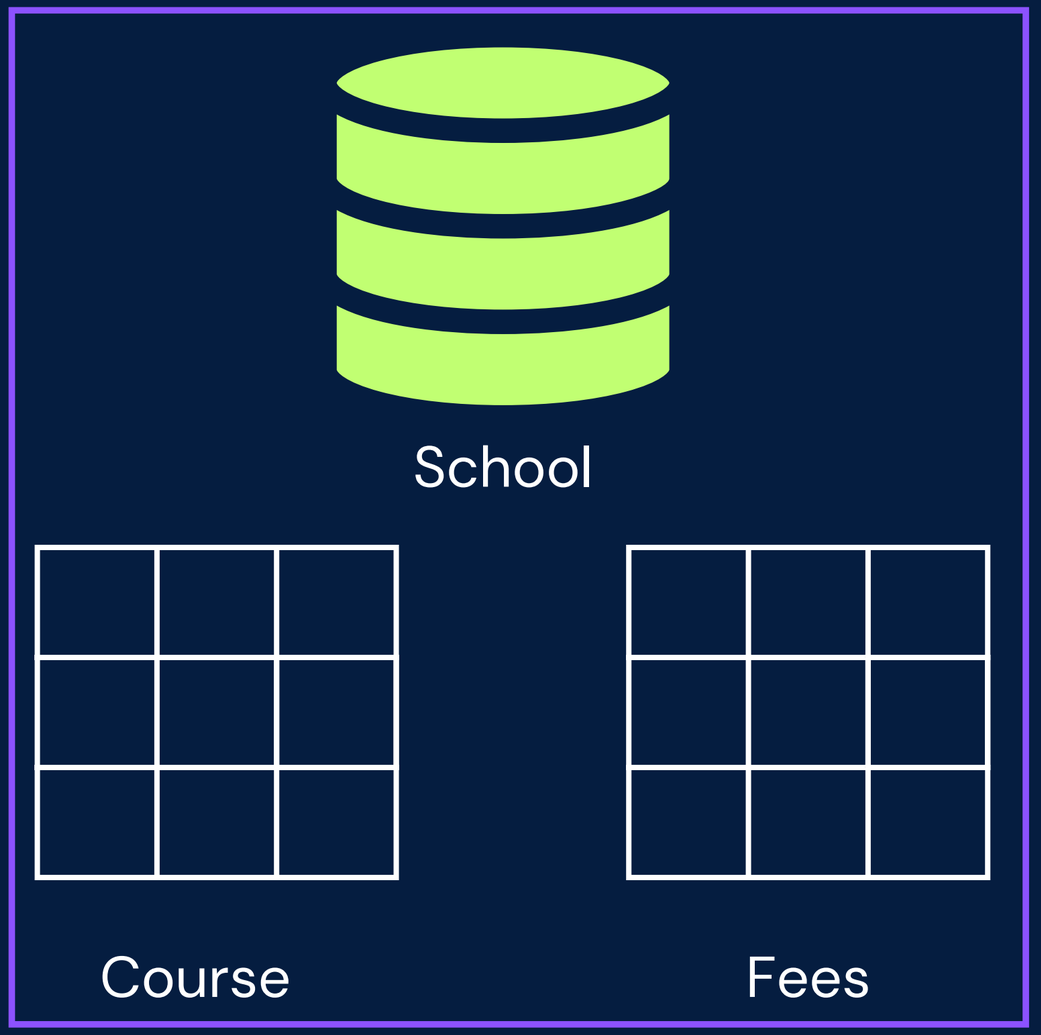
table1- **Student** (Sname, Rollno)

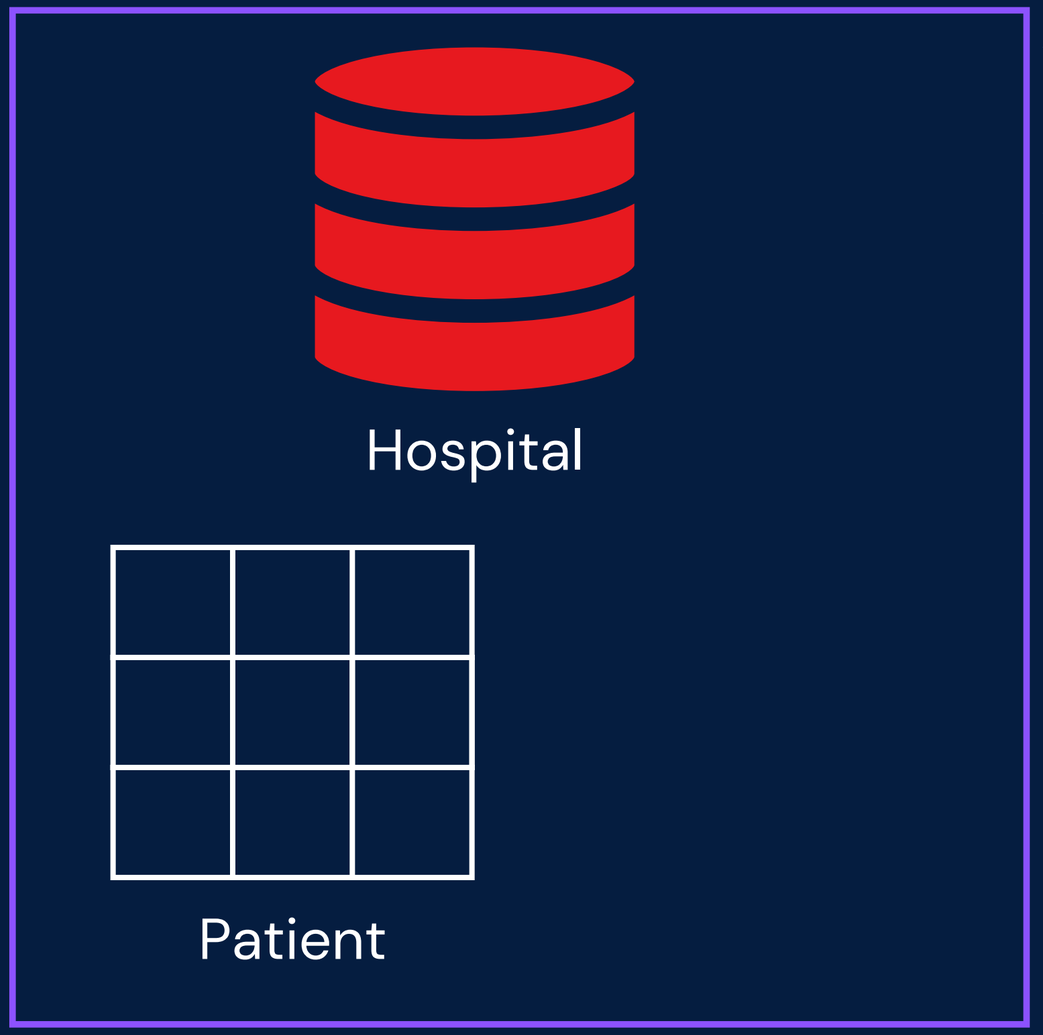
table2-**Teacher**(Tname,Tid)

Sname, Rollno, Tname, Tid->attributes(characteristics)

LET'S START WITH SQL :)

Creation of Database





LET'S START WITH SQL :)

Creation of Database

Steps to create a Database :

1. Choose a DBMS(Database Management System)
2. Connect to the server using a command-line tool or a graphical user interface.
3. Create a new Database
4. Once the database is created, you can use the USE statement to create tables in the database.
5. Create Tables and Insert Data

LET'S START WITH SQL :)

Creation of Database

Creating a new Database

We use the **CREATE DATABASE** statement to create a new database
These commands are not case-sensitive.

Command: **CREATE DATABASE databaseName;**

Also to avoid errors we can use:
Command**: CREATE DATABASE IF NOT EXISTS databaseName;**

IF NOT EXISTS and IF EXISTS clauses are commonly used in conjunction with the CREATE TABLE and DROP TABLE statements to avoid errors

LET'S START WITH SQL :)

Deletion of Database

Deleting a Database

We use the **DROP DATABASE** statement to delete a database.
Dropping a database means deleting the entire database, including all tables, data, and other objects within it. DROP Is a DDL Command.
These commands are not case-sensitive.

Command: **DROP DATABASE databaseName;**

Also to avoid errors we can use:
Command : **DROP DATABASE IF EXISTS databaseName;**

LET'S START WITH SQL :)

Using a Database

Using a Database

We use the **USE DATABASE** statement to use a database
These commands are not case-sensitive.

Command: **USE databaseName;**

LET'S START WITH SQL :)

Showing all the Database

Showing a Database

We use the **SHOW DATABASES** statement to see all the databses present in a server.

Command: **SHOW DATABASES;**

LET'S START WITH SQL :)

Table

Creating a table

We use the **CREATE TABLE** statement to craete a table in DB.

Command:

```
CREATE TABLE TableName (
    Column1  DataType1 Constraint1,
    Column2 DataType2 Constraint2,
    Column3 DataType3 Constraint3,
    -- additional columns if needed
);
```

LET'S START WITH SQL :)

Creating a table

CREATE- DDL Command

Example:

```
CREATE TABLE employee (
    empId INT PRIMARY KEY,
    name VARCHAR(50),
    salary INT
);
```

employee

empId	name	salary

LET'S START WITH SQL :)

Inserting values into table

INSERT- DML Command

```
INSERT INTO tableName (Column1, Column2... ColumnN)
VALUES (value1,value2.....valuen)
```

LET'S START WITH SQL :)

Inserting values into table

INSERT- DML Command

Example:

```
INSERT INTO employee
(empId,name,salary)
VALUES
(1,"Raj",1200),
(2,"Rahul",1100),
(3,"Riti",1100);
```

employee

empId	name	salary
1	Raj	1200
2	Rahul	1100
3	Ram	1100

LET'S START WITH SQL :)

Inserting values into table

INSERT- DML Command

Example:

```
INSERT INTO employee VALUES
(1,"Raj",1200),
(2,"Rahul",1100),
(3,"Riti",1100);
```

employee

empId	name	salary
1	Raj	1200
2	Rahul	1100
3	Ram	1100

LET'S START WITH SQL :)

Seeing tables in a given Database

SHOW

Example:

SHOW TABLES;

It helps us to see all the tables in a given databse.

employee

empId	name	salary
1	Raj	1200
2	Rahul	1100
3	Ram	1100

LET'S START WITH SQL :)

To see all the values in table

SELECT

Example:

To see specific values of a column:

SELECT empId FROM employee;

To see all the values or the entire table

SELECT * FROM employee;

employee

empId	name	salary
1	Raj	1200
2	Rahul	1100
3	Ram	1100

LET'S START WITH SQL :)

Let's Create a Database for Instagram

Step 1: Create a database

```
CREATE DATABASE IF NOT EXISTS instagramDb;
```

Step 2: Use the database to create tables

```
USE instagramDb;
```

LET'S START WITH SQL :)

Step 3 : Create tables into the db

```
CREATE TABLE IF NOT EXISTS users (
userId INT PRIMARY KEY,
userName VARCHAR(50)
 email VARCHAR(100)
);

CREATE TABLE IF NOT EXISTS posts (
 postId INT PRIMARY KEY,
 userId INT,
 caption VARCHAR(100) ,
);
```

LET'S START WITH SQL :)

Step 3 : Insert Values in the tables

```
INSERT INTO users (userId, userName, email)
VALUES
(1, “riti“, “abc@gmail.com),
(1, “raj“, “xyz@gmail.com),
(1, “rahul“, “abc2@gmail.com);


INSERT INTO posts (postId, userId, caption)
VALUES
(101, 561, ”light”),
(102, 562, ”air”),
(103, 563, ”water”);
```

LET'S START WITH SQL :)

Step 4 : You can see all the tables in the db

```
USE DATABASE instagramDb;
SHOW TABLES;
```

Step 5: All the values in a specific table

```
SELECT * FROM users;
SELECT * FROM posts;
```

LET'S START WITH SQL :)

Constraints in SQL

Constraints – Constraints define rules or conditions that must be satisfied by the data in the table.
Common constraints include uniqueness, nullability, default values, etc.

- Unique constraint: Ensures values in a column are unique across the table.
- Not null constraint: Ensures a column cannot have a null value.
- Check constraint: Enforces a condition to be true for each row.
- Default constraint: Provides a default value for a column if no value is specified.
- Primary key : Enforces the uniqueness of values in one or more columns
- Foreign key: Enforces a link between two tables by referencing a column in one table that is a primary key in another table.

LET'S START WITH SQL :)

Constraints in SQL

Unique constraint:

```
CREATE TABLE example1 (
phoneNbr INT UNIQUE);
```

Not null constraint:

```
CREATE TABLE example1 (
address VARCHAR(50) NOT NULL );
```

Check constraint:

```
CREATE TABLE example1 (
age INT CHECK (age >= 18));
```

Default constraint:

```
CREATE TABLE example1 (
 enrolled VARCHAR(20) DEFAULT 'no' );
```

LET'S START WITH SQL :)

Constraints in SQL

Primary key constraint:

```
CREATE TABLE employee ( id INT PRIMARY KEY, name VARCHAR(255) );
or
CREATE TABLE employee (
    id INT ,
    name VARCHAR(255)
    PRIMARY KEY (id)
);
```

Foreign key constraint:

```
CREATE TABLE orders (
orderItemNo INT PRIMARY KEY,
custId INT,
FOREIGN KEY (custId) REFERENCES customer(custId) );
```

LET'S START WITH SQL :)

Datatypes in SQL

Data types are used to specify the type of data that a column can store.

Numeric

- INTEGER/ INT
- SMALLINT
- BIGINT
- DECIMAL
- FLOAT
- DOUBLE

Character/ String

- CHAR(n)
- VARCHAR(n)
- TEXT

Date & Time

- DATE
- TIME
- DATETIME
- TIMESTAMP

Boolean

- BOOLEAN

Binary

- BINARY(n)
- VARBINARY(n)
- BLOB

LET'S START WITH SQL :)

Datatypes

Numeric Datatypes

1. **INT** - Used for storing whole numbers without decimal points. (-2,147,483,648 to 2,147,483,647 (signed integer)

2. **BIGINT** - Used for storing large whole numbers. (-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807)

3. **FLOAT**- Used for storing decimal numbers. (4-byte)

LET'S START WITH SQL :)

Datatypes

Numeric Datatypes

3. FLOAT- Used for storing decimal numbers. (4-byte)

4. DOUBLE- Used for storing decimal numbers. (8-byte)

5. DECIMAL(p, s) - Used for exact numeric representation. p is the precision and s is the scale.

Command :

```
CREATE TABLE example1 (
 id INT
);
```

LET'S START WITH SQL :)

Datatypes

Numeric Datatypes

By default all the numeric datatypes can have negative as well as positive values. This restrict the range so if we know there is only +ve values which is stored we use UNSIGNED attribute (0-255).
for eg- salary can never be in negative or age

Command :

```
CREATE TABLE example1 (
 id INT UNSIGNED
);
```

LET'S START WITH SQL :)

Datatypes

Character Datatypes

1. **CHAR(n)**- Fixed-length character strings can be stored. (0-255)

2.**VARCHAR(n)** - Variable-length character strings can be stored.(0-255)

3.**TEXT**- Variable-length character string with no specified limit.

Command :

```
CREATE TABLE example1 (
 name VARCHAR(50)
);
```

LET'S START WITH SQL :)

Datatypes

Date & Time Datatypes

1. DATE- Used for storing date values. (YYYY-MM-DD)

2.TIME - Used for storing time values. (hh:mm:ss)

3.DATETIME/TIMESTAMP- Used for storing date and time values. (yyyy-mm-dd hh:mm:ss)

Command :

```
CREATE TABLE example1 (
createdTs TIMESTAMP
);
```

LET'S START WITH SQL :)

Datatypes

Boolean Datatypes

1. BOOLEAN- Used to store a true or false value.

Command :

```
CREATE TABLE example1 (
isActive BOOLEAN
);
```

LET'S START WITH SQL :)

Datatypes

Binary Datatypes

1. BINARY(n)- Used for fixed-length binary data.

2.VARBINARY(n)- Used for storing variable-length binary data.

3.BLOB (Binary Large Object)- Used for storing large amounts of binary data.(var len)

Command :

```
CREATE TABLE document (
data BLOB
);
```

LET'S START WITH SQL :)

Keys in SQL

Primary key- A primary key is a unique identifier for each record in the table. It ensures that each row can be uniquely identified and accessed within the table.

Foreign key-A foreign key is a field in a table that refers to the primary key of another table. It establishes relationships between tables.

LET'S START WITH SQL :)

Primary Key : A primary key is a key which uniquely identifies each record in a table. It ensures that each tuple or record can be uniquely identified within the table.
It is always **Unique+ Not null**

ID	Name	Hometown
123	Rahul	KOLKATA
245	Raj	KOLKATA
434	Riti	DELHI

LET'S START WITH SQL :)

Foreign Key : A foreign key is a field in a table that refers to the primary key in another table. It establishes a relationship between two tables.

Student
(Base/referenced table)

Roll no	Name	Hometown
1	Rahul	KOLKATA
2	Raj	KOLKATA
3	Riti	DELHI

Primary key

Subject
(referencing table)

Roll no	Name	subject
1	Rahul	Maths
2	Raj	SST
3	Riti	Science

Foreign key

LET'S START WITH SQL :)

Referenced table - Table having primary key (pk)
Referencing table- Table having foreign key(fk)

Student
(Base/referenced table)

Roll no	Name	Hometown
1	Rahul	KOLKATA
2	Raj	KOLKATA
3	Riti	DELHI

Primary key

Subject
(referencing table)

Roll no	subject id	subject
1	s1	Maths
2	s2	SST
3	s3	Science

Foreign key

LET'S START WITH SQL :)

Foreign Key

id	Name	course_id
1	Rahul	100
2	Raj	101
3	Riti	102

course_id	name	teacher	id
100	Hindi	Ram	1
101	Maths	Mohan	2
102	English	Priya	3

Student

Base/referenced/parent table

Course

Refrencing/child table

LET'S START WITH SQL :)

Foreign Key

Foreign key helps to perform operations related to the parent table, such as joining tables or ensuring referential integrity.

Query :

```
CREATE TABLE childtableName (
childId INT PRIMARY KEY,
baseId INT,
FOREIGN KEY (baseId) REFERENCES baseTableName(baseId)
 );
```

LET'S START WITH SQL :)

Cascading in Foreign Key

Cascading are a set of rules which dictate what actions should be taken automatically when a referenced row in the parent table is modified or deleted.

1.**CASCADE**: If a row in the parent table is updated or deleted, all related rows in the child table will be automatically updated or deleted.

2.**SET NULL**: If a row in the parent table is updated or deleted, all corresponding foreign key values in the child table will be set to NULL.

3.**RESTRICT or NO ACTION**: Blocks the modification or deletion of a referenced row in the parent table if related rows exist in the child table, thus maintaining referential integrity.

LET'S START WITH SQL :)

Cascading in Foreign Key

These cascading actions help maintain the integrity of the data across related tables in the database.

1.ON DELETE CASCADE
2.ON UPDATE CASCADE

LET'S START WITH SQL :)

Cascading in Foreign Key

1.**ON DELETE CASCADE** : The ON DELETE CASCADE clause indicates that if a row in the parent table (parent_table) is deleted, all corresponding rows in the child table (child_table) will be automatically deleted as well.

QUERY:

```
CREATE TABLE childtableName (
childId INT PRIMARY KEY,
baseId INT,
FOREIGN KEY (baseId) REFERENCES baseTableName(baseId)
ON DELETE CASCADE
 );
```

LET'S START WITH SQL :)

Cascading in Foreign Key

2.**ON UPDATE CASCADE** : The ON UPDATE CASCADE clause indicates that if a row in the parent table (parent_table) is updated, all corresponding rows in the child table (child_table) will be automatically updated as well.

QUERY :

```
CREATE TABLE childtableName (
childId INT PRIMARY KEY,
baseId INT,
FOREIGN KEY (baseId) REFERENCES parenttableName(childId)
ON UPDATE CASCADE
 );
```

LET'S START WITH SQL :)

Lets make a database for all SQL commands

Let's make a Database for a Company

Requirements :

1. Make a database for a company xyz

```
CREATE DATABASE xyz;
```

2.Make an employee table in the xyz database.

```
CREATE TABLE employee(
id INT PRIMARY KEY,
name VARCHAR(50),
age INT,
department VARCHAR(50)
city VARCHAR(50),
salary INT);
```

LET'S START WITH SQL :)

Retrieving data from table

3. Fill details in the table

```
INSERT INTO employee(id,name,age,department,city,salary)
VALUES
(1, "rahul" , 25 ,  "IT" , "Mumbai", 1500),
(2, "afsara" , 26 , "HR" , "Pune, 2000),
(3,  "abhimanyu" , 27 , "IT" , "Mumbai" , 2500),
(4,  "aditya" , 25 , "Marketing" ,  "Surat" , 2400),
(5,  "raj" , 24, "Finance" , "Indore", 1500);
```

4. See all the data in the table

LET'S START WITH SQL :)

UPDATE Command

The UPDATE command in SQL is used to modify existing records in a table.
If you get a safe mode error while executing queries run this query

QUERY: **SET SQL_SAFE_UPDATES=0;**

QUERY :

```
UPDATE table_name
SET columnName1= value1(to be set) , columnName2 =value2(to be set)
WHERE condition;
```

LET'S START WITH SQL :)

UPDATE Command (Practice Question)

1.Write a query to update the salary for all employees in the 'HR' department to 50000.

QUERY :

```
UPDATE employee
SET salary = 50000
WHERE department = "HR";
```

LET'S START WITH SQL :)

UPDATE Command (Practice Question)

2. Write a query to update the name of an employee from raaj to raj .

QUERY :

```
UPDATE employee
SET name = “raj”
WHERE name = “raaj”;
```

LET'S START WITH SQL :)

DELETE Command

The DELETE command in SQL is used to remove records from a table.

QUERY:

```
DELETE FROM table_name
WHERE condition;
```

LET'S START WITH SQL :)

DELETE Command

The DELETE command in SQL is used to remove records from a table.

QUERY:

```
DELETE FROM table_name
WHERE condition;
```

LET'S START WITH SQL :)

DELETE Command (Practice Question)

1. Write a query to DELETE all records from the employee table where the department is 'HR'

QUERY :

```
DELETE FROM employee
WHERE department = “HR”;
```

LET'S START WITH SQL :)

DELETE Command (Practice Question)

2. Write a query to DELETE the record of an employee having name as raj

QUERY :

```
DELETE FROM employee
WHERE name = “raj”;
```

LET'S START WITH SQL :)

Retrieving data from table

SELECT command - Select is a DQL(Data Query Language) Command. It is used to retrieve data from a database.

We can provide specific columns from which we can retrive data.

SELECT colmn1 , colmn2 FROM tableName; -> to retrieve data present in specific column in a table

SELECT * FROM tableName; -> to retrieve all the data present in table

LET'S START WITH SQL :)

Filtering data using the WHERE clause

WHERE clause - It filters the rows based on specified conditions.

QUERY : **SELECT col1 col2 FROM tableName WHERE condition;**

ex : **SELECT * FROM employee WHERE age > 20;**

LET'S START WITH SQL :)

SQL Commands

DQL

SELECT

DML

INSERT
UPDATE
DELETE

DDL

CREATE
ALTER
DROP
TRUNCATE
RENAME

LET'S START WITH SQL :)

ALTER Command

ALTER command – ALTER is a DDL command used to modify(change) existing database objects, such as tables, indexes, or constraints(schema)

Let's see all the things ALTER can help us to do. So mostly it is used to modify the schema, so we will mostly see how it can help in modification of columns like – addition of new column, deletion of column, modification of column and much more

LET'S START WITH SQL :)

ALTER Command

1. ADD a column

Query :

```
ALTER TABLE tableName
ADD columnName  datatype constraint ;
```

2. Drop a column

Query :

```
ALTER TABLE tableName
DROP COLUMN columnName  ;
```

LET'S START WITH SQL :)

ALTER Command

3. Modify the data type of an existing column

MODIFY clause : The MODIFY clause is oftenly used within an ALTER TABLE statement in SQL. It allows us to change the definition or properties of an existing column in a table.

Query :

```
ALTER TABLE tableName
MODIFY  columnName  newdatatype ;
```

The above command modifies columnName to a new dataType.

LET'S START WITH SQL :)

ALTER Command

4. Change the name of an existing columng

CHANGE : The CHANGE command is oftenly used within an ALTER TABLE statement in SQL. It helps to change the name or data type of a column within a table.

Query :

```
ALTER TABLE tableName
 CHANGE oldcolumnName newcolumnName newdatatype;
```

The above command changes the oldcolumnName to newcolumnName and also its datatype

LET'S START WITH SQL :)

ALTER Command

4. Rename the name of an existing columng

RENAME COMMAND : RENAME command is used to change the name of an existing database object, such as a table, column, index, or constraint.

Query :

```
ALTER TABLE tableName
 RENAME COLUMN oldcolumnName TO newcolumnName ;
```

The above command renames the oldcolumnN th to newcolumnName

LET'S START WITH SQL :)

RENAME Command

RENAME : RENAME command is used to change the name of an existing database object, such as a table, column, index, or constraint.

Query (Table Renaming) :

```
RENAME TABLE oldTableName TO newTableName ;
```

The above command renames the oldTableName to newTableName

LET'S START WITH SQL :)

RENAME Command

Query (Column Renaming) :

```
ALTER TABLE tablename
RENAME COLUMN oldcolumnname TO newcolumnname;
```

The above command renames the oldcolumnName to newcolumnName

Query (Database Renaming) :

```
RENAME DATABASE olddatabasename TO newdatabasename;
```

LET'S START WITH SQL :)

TRUNCATE Command

TRUNCATE command - This command removes all rows from the given table, leaving the table empty but preserving its structure,

QUERY :

TRUNCATE TABLE tableName;

LET'S START WITH SQL :)

Difference Between TRUNCATE, DELETE and DROP

TRUNCATE	DELETE	DROP
remove all rows from a table	Used to remove specific rows from a table based on a condition	Used to completely remove table
TRUNCATE TABLE tablename;	DELETE FROM tablename WHERE condition;	DROP TABLE tablename;

LET'S START WITH SQL :)

Using DISTINCT to retrieve unique values

DISTINCT - DISTINCT keyword is used within the SELECT statement to retrieve unique values from a column or combination of columns.

Query :

```
SELECT DISTINCT col1
FROM tableName;
```

-> retrieve a list of unique values for col1

```
SELECT DISTINCT col1, col2
FROM tableName;
```

->return unique combinations of col1 & col2

LET'S START WITH SQL :)

Operators in SQL

To perform operations on data in SQL we use operators.
QUERY : **SELECT col1 col2 FROM tableName WHERE condition(use operator);**

Types of operators in SQL:

- **Arithmetic Operators :** addition (+) ,subtraction (-), multiplication (*), division (/) , modulus (%)

QUERY : **SELECT * FROM employee WHERE age+1 =60;**

LET'S START WITH SQL :)

Operators in SQL

- **Comparison Operators** : equal to (=) , not equal to (<> or !=) , greater than (>) less than (<), greater than or equal to (>=), less than or equal to (<=)

QUERY : **SELECT * FROM employee WHERE age > 20;**

LET'S START WITH SQL :)

Operators in SQL

- **Logical Operators**

1. **AND** : It combines two conditions and returns true if both are true

QUERY: **SELECT * FROM employee WHERE city= 'Pune' AND age > 18;**

2. **OR** : It combines two conditions and returns true if either is true

QUERY: **SELECT * FROM employee WHERE city= 'Pune' OR age > 18;**

3. **NOT**: It reverses the result of a condition, returns true if the condition is false

QUERY: **SELECT * FROM employee WHERE department NOT IN ('IT', 'HR');**

LET'S START WITH SQL :)

Operators in SQL

- **IN Operator :** IN(Checks if a value matches in a list of values)

QUERY : **SELECT * FROM employee WHERE department IN ('IT', 'HR');**

- **IS NULL / IS NOT NULL Operators :** IS NULL (checks for null values) , IS NOT NULL(checks for not null values)

QUERY : **SELECT * FROM employee WHERE department IS NOT NULL;**

- **Bitwise Operators:** AND(&), OR(|)

LET'S START WITH SQL :)

Operators in SQL

- **LIKE & Wildcard Operators :** LIKE operator is used to search for a specified pattern in a column. It uses wildcard operators for matching patterns.

1. % (percent sign): It matches for any sequence of zero or more characters.

QUERY : **SELECT * FROM employee WHERE name LIKE 'A%';**

2. _ (underscore): It matches for any single character.

QUERY : **SELECT * FROM employee WHERE name LIKE '_A%';**

LET'S START WITH SQL :)

Operators in SQL

- **BETWEEN Operator :** Checks if a value is within a range of values.

QUERY : **SELECT * FROM employee WHERE salary BETWEEN 1200 AND 1500;**

LET'S START WITH SQL :)

Clauses in SQL

Clauses are like tools/conditions that helps us to make queries more specific or decide what data to fetch.

Ex- **WHERE, GROUP BY, HAVING , ORDER BY, LIMIT**

QUERY : SELECT col1 ,col2
FROM tableName
clause condition;

LET'S START WITH SQL :)

WHERE clause

WHERE clause - It filters the rows based on specified conditions.

QUERY : **SELECT col1 ,col2**
FROM tableName
WHERE condition;

ex : **SELECT * FROM employee WHERE age > 20;**

LET'S START WITH SQL :)

LIMIT CLAUSE

LIMIT clause – The LIMIT clause in SQL is used to restrict the number of rows returned by a query.

This query retrieves the first n rows from the table.

QUERY :

```
SELECT col1 , col2 FROM tableName
 LIMIT noOfRows;
```

ex : **SELECT * FROM employee LIMIT 2;**

LET'S START WITH SQL :)

Sorting data with the ORDER BY clause.

ORDER BY clause – It is used to sort the results in ascending or descending order. By default it returns the result in ascending order

This query retrieves the first n rows from the table.

QUERY :
SELECT col1 , col2 FROM tableName
ORDER BY col1 (ASC/DESC), col2 (ASC/DESC)

ex : **SELECT * FROM employee ORDER BY salary DESC;**

LET'S START WITH SQL :)

Practice question

Write a SQL Query to fetch the details of employees having id as 1

QUERY :

```
SELECT * FROM employee
WHERE id=1;
```

LET'S START WITH SQL :)

Practice question

Write a SQL Query to fetch the details of employees having id as 1 and city as MUMBAI

QUERY :

```
SELECT * FROM employee
WHERE id=1 AND city = "MUMBAI";
```

LET'S START WITH SQL :)

Practice question

Write a SQL Query to fetch the details of employees having salary greater than 1200 and city as MUMBA a.

QUERY :

```
SELECT * FROM employee
WHERE salary>1200 AND city = "MUMBAI";
```

LET'S START WITH SQL :)

Practice question

Write a SQL Query to fetch the details of employees who are not from MUMBAI.

QUERY :

```
SELECT * FROM employee
WHERE city NOT IN ( "MUMBAI");
```

LET'S START WITH SQL :)

Practice question

Write a SQL Query to fetch the details of employees having the maximum salary.

QUERY :

```
SELECT * FROM employee
ORDER BY salary DESC;
```

LET'S START WITH SQL :)

Practice question

Write a SQL Query to fetch the details of 2 employees having the maximum salary.

QUERY :

```
SELECT * FROM employee
ORDER BY salary DESC
LIMIT 2;
```

LET'S START WITH SQL :)

Aggregate Functions

Aggregate functions performs some operations on a set of rows and then returns a single value summarizing the data. These are used with SELECT statements to perform calculations

Types of **Aggregate functions** :

- **COUNT()**
- **SUM()**
- **AVG()**
- **MIN()**
- **MAX()**
- **GROUP_CONCAT()**

LET'S START WITH SQL :)

Aggregate Functions

COUNT() - It counts the number of rows in a table or the number of non-null values in a column.
This counts how many things are in a list or a group.

Query : SELECT count(name) FROM employee ; -> this will tell the number of employees in a company

LET'S START WITH SQL :)

Aggregate Functions

SUM() – It calculates the sum of all values in a numeric column.
This adds up all the numbers in a list.

Query : SELECT SUM(salary) FROM employee ; –> this willl tell the total amount company is paying to its employees

LET'S START WITH SQL :)

Aggregate Functions

AVG() - It computes the average of all values in a numeric column.
It finds the average, or the "middle" number, of all the numbers in a list.

Query : SELECT AVG(salary) FROM employee ; -> this willl tell the avg amount company is paying to its employees

LET'S START WITH SQL :)

Aggregate Functions

MIN() - It helps to find the smallest number in a list.

Query : SELECT MIN(salary) FROM employee ; -> this willl tell the minimumn salary company is paying to its employees

LET'S START WITH SQL :)

Aggregate Functions

MAX() - It finds the maximum value in a column.

Query : SELECT MAX(salary) FROM employee ; -> this willl tell the max salary company is paying to its employees

LET'S START WITH SQL :)

Grouping data with the GROUP BY clause.

GROUP BY clause – This is used to group rows that have the same values into together. It helps to organize data into groups so that you can do calculations, like finding totals or averages, for each group

This query retrieves the first n rows from the table.

QUERY :

```
SELECT col1, aggregateFun(col2)
FROM tableName
GROUP BY col1 ;
```

ex: `SELECT department, AVG(salary) AS avgsal FROM employee GROUP BY department;`

LET'S START WITH SQL :)

HAVING clause.

HAVING clause – The HAVING clause is just like clause but the main difference is it works on aggregated data. It is used with the GROUP BY clause. It helps to filter groups based on given con conditions.ditions.

QUERY :

```
SELECT col1, col2 aggregateFun(col3)
FROM tableName
GROUP BY col1 col2
HAVING condition;
```

ex :

```
SELECT department,  AVG(salary) AS avgsal
 FROM employe
GROUP BY department
HAVING avgsal>1500;
```

LET'S START WITH SQL :)

GROUP BY and HAVING clause.

These queries demonstrate how to use

a. GROUP BY to categorize data and

b. HAVING to filter grouped data based on specific conditions in SQL.

LET'S START WITH SQL :)

Practice Questions

1. **Write a query to find the maximum number of employees in each city**

Query :

```
Select  city, max(id)
FROM employee
GROUP BY city;
```

LET'S START WITH SQL :)

Practice Questions

2. Write a query to find the maximum salary of employees in each city in descending order

Query :

```
Select  city, max(salary)
FROM employee
GROUP BY city
ORDER BY DESC;
```

LET'S START WITH SQL :)

Practice Questions

3. Write a query to display the department names alongside the total count of employees in each department, sorting the results by the total number of employees in descending order.

Query :

```
SELECT department, COUNT(id) AS totalemployees
FROM employee
GROUP BY department
ORDER BY totalemployees DESC;
```

LET'S START WITH SQL :)

Practice Questions

4. Write a query to list the departments where the average salary is greater than 1200, also display the department name and the average salary.

Query :

```
SELECT department, AVG(salary) AS avgsalary
FROM employee
GROUP BY department
HAVING AVG(salary) > 50000;
```

LET'S START WITH SQL :)

The general order of SQL commands

Sno	**Command**	**Usecase**
1.	SELECT	Retrieve from the database
2.	FROM	Identify the table
3.	WHERE	Filter rows based on some conditions
4.	GROUP BY	Group rows that have the same values
5.	HAVING	Filter groups based on some conditions
6.	ORDER BY	Sort the result set either aesc/desc
7.	LIMIT	Limit the number of rows returned

LET'S START WITH SQL :)

Difference Between WHERE and HAVING Clause

WHERE	HAVING
used to filter rows from the result based on condition applied to a row before the aggregation	used to filter rows from the result based on condition applied to a row after the aggregation
It is used with **SELECT**, **UPDATE**, or **DELETE commands**	It is used with **GROUP BY and aggregate functions**
SELECT * FROM tableName WHERE condition;	SELECT col1, col2 aggregateFun(col3) FROM tableName GROUP BY col1 col2 HAVING condition;

LET'S START WITH SQL :)

Practice Questions

1. Write a query to find the total number of employees in each city

Query :

```
Select  city, COUNT(name) AS no_of_emp
FROM employee
GROUP BY city;
```

LET'S START WITH SQL :)

Practice Questions

2. Write a query to find the maximum salary of employees in each city in descending order

Query :

```
Select  city, max(salary) AS max_salary
FROM employee
GROUP BY city
ORDER BY DESC;
```

LET'S START WITH SQL :)

Practice Questions

3. Write a query to display the department names alongside the total count of employees in each department, sorting the results by the total number of employees in descending order.

Query :

```
SELECT department, COUNT(id) AS totalemployees
FROM employee
GROUP BY department
ORDER BY totalemployees DESC;
```

LET'S START WITH SQL :)

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HAVING AVG(salary) > 50000;
```

LET'S START WITH SQL :)

The general order of SQL commands

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4.	GROUP BY	Group rows that have the same values
5.	HAVING	Filter groups based on some conditions
6.	ORDER BY	Sort the result set either aesc/desc
7.	LIMIT	Limit the number of rows returned

LET'S START WITH SQL :)

Joins in SQL

Joins are used to combine rows from two or more tables based on a related or shared or common column between them. There are commonly 4 types of joins including **INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN, SELF JOIN , CROSS JOIN.**

id	Name	Age
1	Riya	17
2	Rahul	18
3	Ram	17

Student

id	course_id	course_name
1	101	Eng
2	102	Hin
3	103	PhE

Course

LET'S START WITH SQL :)

Joins in SQL

Q. Is Foreign Key important for performing joins?

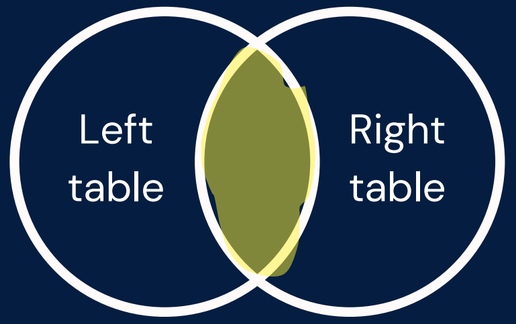
->Joins can be performed based on any columns that establish a relationship between tables, not just FK constraints, so its not necessary.

LET'S START WITH SQL :)

Joins in SQL

Types of Joins in SQL

1. Inner Join



rollno	name
1	Ram
2	Rahul
3	Riti

Student

rollno	**c_name**
2	Hindi
3	Eng
4	Maths

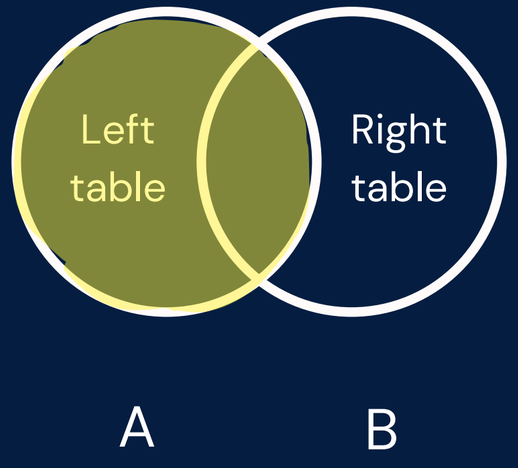
Course

LET'S START WITH SQL :)

Joins in SQL

Types of Joins in SQL

2. Left Join/Left Outer Join



rollno	name
1	Ram
2	Rahul
3	Riti

Student

rollno	c_name
2	Hindi
3	Eng
4	Maths

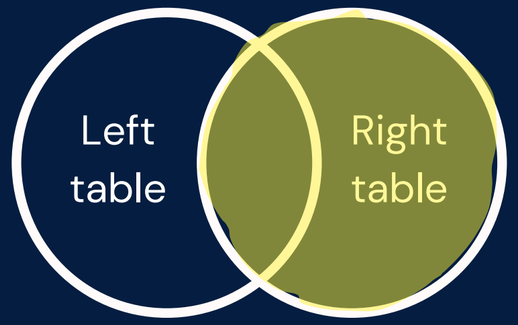
Course

LET'S START WITH SQL :)

Joins in SQL

Types of Joins in SQL

3. Right Join/ Right Outer Join



rollno	name
1	Ram
2	Rahul
3	Riti

Student

rollno	c_name
2	Hindi
3	Eng
4	Maths

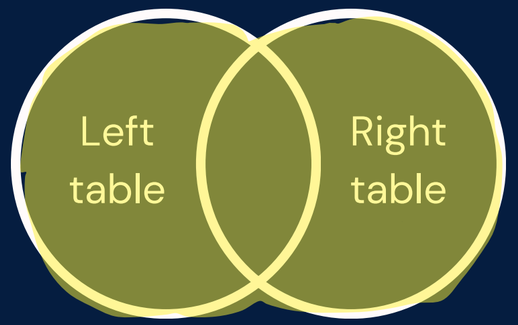
Course

LET'S START WITH SQL :)

Joins in SQL

Types of Joins in SQL

4. Full Join/Full Outer Join



A B

rollno	name
1	Ram
2	Rahul
3	Riti

Student

rollno	c_name
2	Hindi
3	Eng
4	Maths

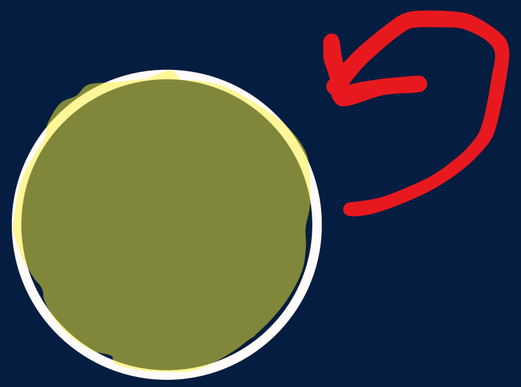
Course

LET'S START WITH SQL :)

Joins in SQL

Types of Joins in SQL

5. Self Join



A

rollno	name
1	Ram
2	Rahul
3	Riti

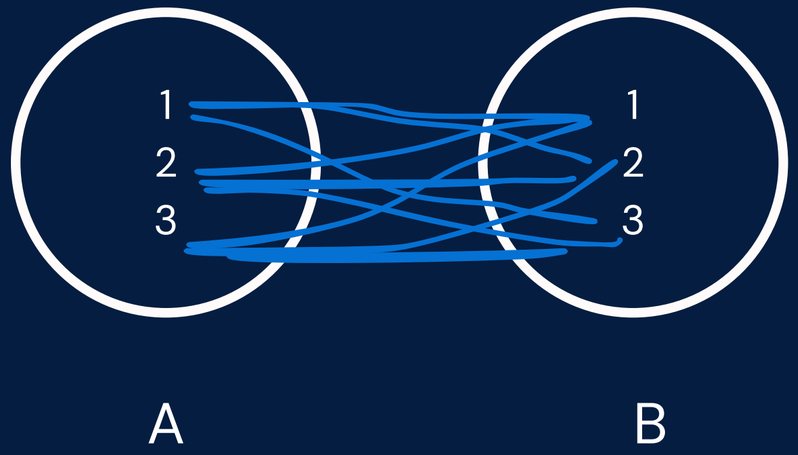
Student

LET'S START WITH SQL :)

Joins in SQL

Types of Joins in SQL

6. Cross Join



rollno	name
1	Ram
2	Rahul
3	Riti

Student

rollno	c_name
2	Hindi
3	Eng
4	Maths

Course

LET'S START WITH SQL :)

Joins in SQL

1. Inner Join : It helps us in getting the rows that have matching values in both tables, according to the given join condition.

Query:

```
SELECT columns
FROM table1
INNER JOIN table2
ON table1.colName = table2.colName;
```

id	name
101	Ram
102	Rahul
103	Riti

Customer

id	o_name
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Joins in SQL

Query: It only returns rows where there is a matching id in both tables

```
SELECT *
FROM customer
INNER JOIN order
ON customer.id = order.id;
```

id	name	id	o_name
102	Rahul	102	Fruit
103	Riti	103	Ball

id	name
101	Ram
102	Rahul
103	Riti

customer

id	o_name
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Joins in SQL

4. Full Join/Full Outer Join: It returns the matching rows of both left and right table and also includes all rows from both tables even if they don't have matching rows.

If there is no match, NULL values are returned for the columns of the missing table.

In MySQL, the syntax for a full join is different compared to other SQL databases like PostgreSQL or SQL Server.

MySQL does not support the FULL JOIN keyword directly. So we use a combination of LEFT JOIN, RIGHT JOIN, and UNION to achieve the result.

LET'S START WITH SQL :)

Joins in SQL

4. Full Join/Full Outer Join:

Query:

```
SELECT columns
FROM table1
LEFT JOIN table2
ON table1.colName = table2.colName;

UNION

SELECT columns
FROM table1
RIGHT JOIN table2
ON table1.colName = table2.colName;
```

LET'S START WITH SQL :)

Joins in SQL

Query:

```
SELECT *
FROM customer
LEFT JOIN order
ON customer.id = order.id;
UNION
SELECT *
FROM customer
RIGHT JOIN order
ON customer.id = order.id;
```

id	name
101	Ram
102	Rahul
103	Riti

customer

id	**o_name**
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Joins in SQL

Result :

id	**name**	**id**	**o_name**
101	Ram	null	null
102	Rahul	102	Fruit
103	Riti	103	Ball
null	null	104	Utensils

LET'S START WITH SQL :)

Joins in SQL

2. Left Join/Left Outer Join : It is used to fetch all the records from the left table along with matched records from the right table.
If there are no matching records in the right table, NULL values are returned for the columns of the right table.

Query:

```
SELECT columns
FROM table1
LEFT JOIN table2
ON table1.colName = table2.colName;
```

Left table : the table specified before the LEFT JOIN keyword
Right table : the table specified after the LEFT JOIN keyword

LET'S START WITH SQL :)

Joins in SQL

Query:

```
SELECT *
FROM customer
LEFT JOIN order
ON customer.id = order.id;
```

id	name	id	o_name
101	**Ram**	**null**	**null**
102	Rahul	102	Fruit
103	Riti	103	Ball

id	name
101	Ram
102	Rahul
103	Riti

customer

id	**o_name**
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Joins in SQL

3. Right Join/ Right Outer Join : It is used to fetch all the records from the right table along with matched records from the left table.
If there are no matching records in the left table, NULL values are returned for the columns of the left table.

Query:

```
SELECT columns
FROM table1
RIGHT JOIN table2
ON table1.colName = table2.colName;
```

Left table : the table specified before the RIGHT JOIN keyword
Right table : the table specified after the RIGHT JOIN keyword

LET'S START WITH SQL :)

Joins in SQL

Query:

```
SELECT *
FROM customer
RIGHT JOIN order
ON customer.id = order.id;
```

id	o_name	id	name
102	Fruit	102	Rahul
103	Ball	103	Riti
104	utensils	null	null

id	name
101	Ram
102	Rahul
103	Riti

customer

id	o_name
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Joins in SQL

5. Self Join: A self join in SQL is a type of join where a table is joined with itself.
It is a type of inner join.

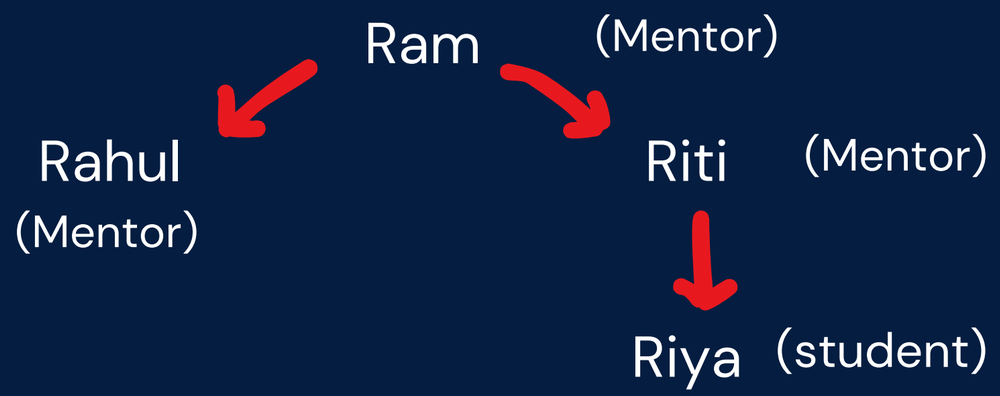
Query:

```
SELECT columns
FROM table as t1
JOIN table as t2
ON t1.colName = t2.colName
```

t1 and t2 are aliases for the table, used to distinguish between the order rows.

LET'S START WITH SQL :)

Joins in SQL



s_id	**name**	**mentor_id**
1	Ram	null
2	Rahul	1
3	Riti	1
4	Riya	3

Query :

```
SELECT s1.name as mentor_name, s2.name
as name
FROM student as s1
JOIN student as s2
WHERE s1.s_id=s2.mentor_id
```

LET'S START WITH SQL :)

Joins in SQL

Result :

mentor_name	**name**
Ram	Riti
Ram	Rahul
Riti	Riya

LET'S START WITH SQL :)

Joins in SQL

6. CrossJoin: It combines each row of the first table with every row of the second table.

Query:

```
SELECT *
FROM table1
CROSS JOIN table2;
```

id	name
101	Ram
102	Rahul

o_id	o_name
1	Fruit
2	Ball

Combines Every row of the 1st and 2nd table

Customer Order

It results in a new table where the number of rows is equal to the product of the number of rows in each table. (m*n)

LET'S START WITH SQL :)

Joins in SQL

Result :

id	name	o_id	o_name
101	Ram	1	Fruit
101	Ram	2	Ball
102	Rahul	1	Fruit
102	Rahu	2	Ball

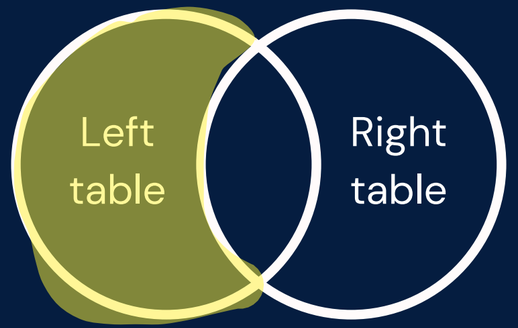
LET'S START WITH SQL :)

Exclusive Joins in SQL

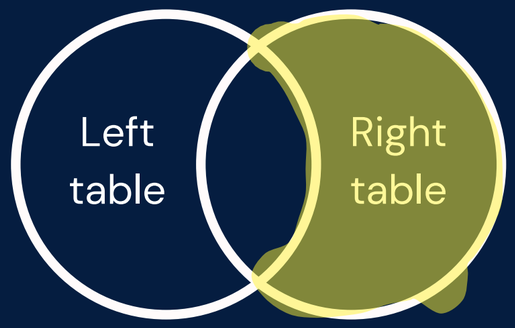
Exclusive joins are used when we want to retrieve data from two tables excluding matched rows. They are a part of outer joins or full outer join.

Types :

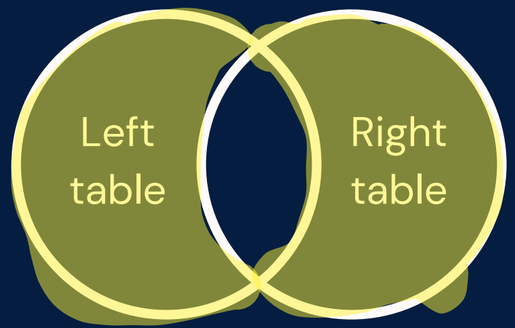
1.Left Exclusive JOIN



2.Right Exclusive JOIN



3.Full Exclusive JOIN



LET'S START WITH SQL :)

Exclusive Joins in SQL

Left Exclusive JOIN: When we retrive records from the left table excluding the ones matching in both left and right table .

Query:

```
SELECT columns
FROM table1
LEFT JOIN table2
ON table1.colName = table2.colName;
WHERE table2.colName IS NULL;
```

id	name
101	Ram
102	Rahul
103	Riti

customer

id	**o_name**
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Exclusive Joins in SQL

Right Exclusive JOIN: When we retrive records from the right table excluding the ones matching in both left and right table .

Query:

```
SELECT columns
FROM table1
RIGHT JOIN table2
ON table1.colName = table2.colName;
WHERE table1.colName IS NULL;
```

id	name
101	Ram
102	Rahul
103	Riti

customer

id	**o_name**
102	Fruit
103	Ball
104	Utensils

Order

LET'S START WITH SQL :)

Exclusive Joins in SQL

Full Exclusive JOIN: When we retrive records from the right table and left table excluding the ones matching in both left and right table .

Query:

```
SELECT columns
FROM table1
LEFT JOIN table2
ON table1.colName = table2.colName;
WHERE table2.colName IS NULL;
UNION
SELECT columns
FROM table1
RIGHT JOIN table2
ON table1.colName = table2.colName;
WHERE table1.colName IS NULL;
```

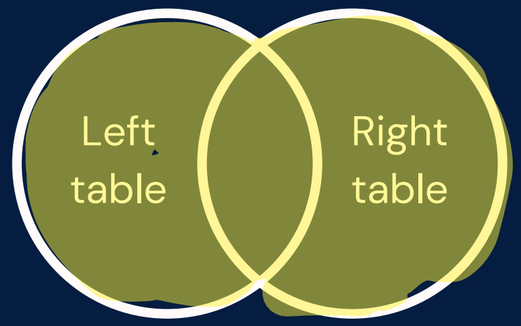
LET'S START WITH SQL :)

UNION Operator in SQL

UNION: UNION operator in SQL is used to combine the results of two or more SELECT queries into a single result set and gives unique rows by removing duplicate rows.

Things to keep in mind:

1. Each SELECT command within the UNION must retrieve the same number of columns.
2. The data types of columns in corresponding positions across SELECT statements should match.
3. Columns should be listed in the same order across all SELECT statements.

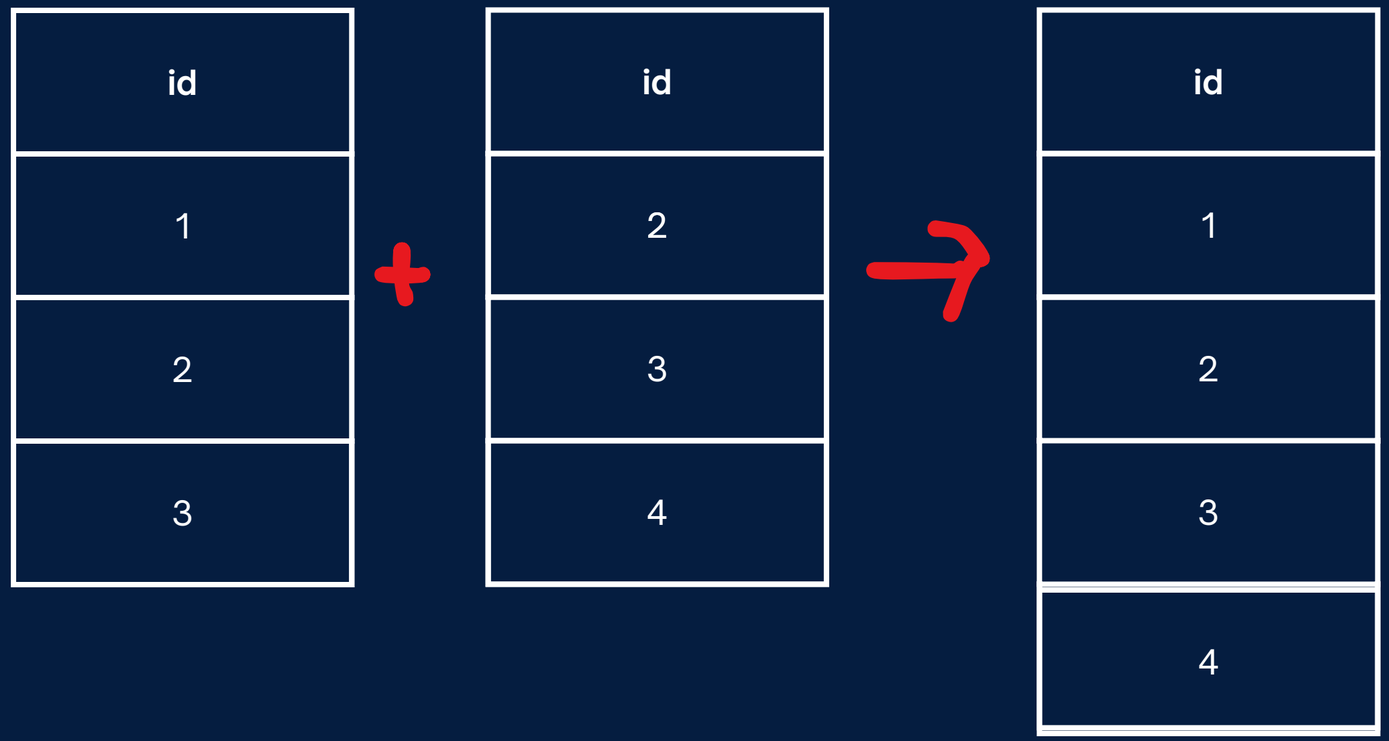


LET'S START WITH SQL :)

UNION Operator in SQL

QUERY:

```
SELECT columns
FROM table1
UNION
SELECT columns
FROM table2;
```



LET'S START WITH SQL :)

UNION ALL Operator in SQL

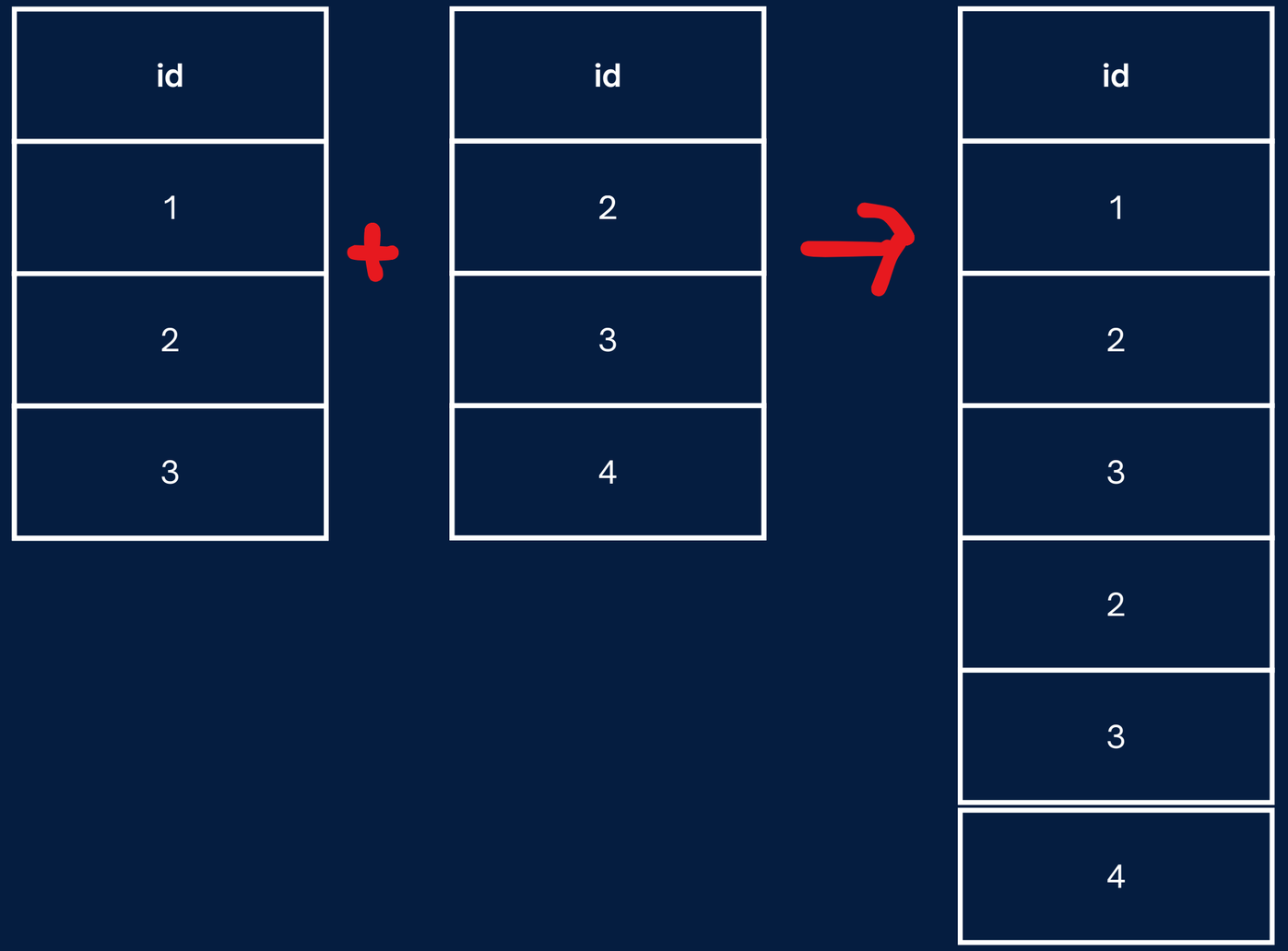
UNION ALL: UNION operator in SQL is used to combine the results of two or more SELECT queries into a single result set and gives all rows by not removing duplicate rows.

QUERY:

```
SELECT columns
FROM table1
UNION ALL
SELECT columns
FROM table2;
```

LET'S START WITH SQL :)

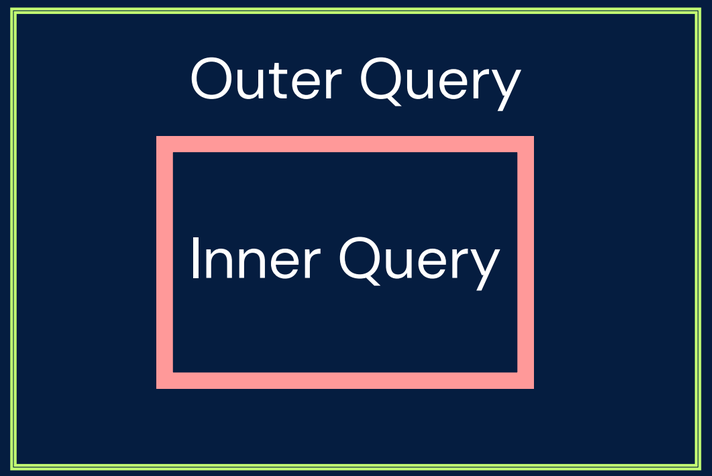
UNION ALL Operator in SQL



LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Subqueries/Inner Queries/Nested Queries: SQL subquery is a query nested within another SQL statement. Whenever we want to retrieve data based on the result of another query we use nested queries.



LET'S START WITH SQL :)

SQL Subqueries/Nested queries

How can we use Subqueries?

Subqueries can be used in multiple ways :

- Subqueries can be used with clauses such as **SELECT**, **INSERT**, **UPDATE**, or **DELETE** to perform complex data retrieval.

QUERY:

```
SELECT columns, (subquery)
FROM tableName;
```

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

How can we use Subqueries?

Subqueries can be used in multiple ways :

- Subqueries can be used with **WHERE** clause to filter data based on conditions.

  QUERY:

```
SELECT *
FROM tableName
WHERE column name operator (subquery);
```

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

How can we use Subqueries?

Subqueries can be used in multiple ways :

- Subqueries can also be used in the **FROM** clause.

  QUERY:

```
SELECT *
FROM subquery AS altName ;
```

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in WHERE:

1. Find all the employees who have salary greater than the min salary

- Find the min salary
- Find employee having salary greater than min salary

id	name	age	departmen	city	salary
1	Rahul	25	'IT'	'Mumbai'	1500
2	Afsara	26	'HR'	'Pune'	2000
3	Abhimanyu	27	'IT'	'Mumbai'	2500
4	Aditya	25	'Marketing'	'Surat'	2400
5	Raj	24	'Finance'	'Indore'	1500

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in WHERE:

- To find the min salary

QUERY:

```
SELECT AVG(salary) FROM employee
```

- To find all the employees having salary greater than min salary

QUERY:

```
SELECT name, salary
FROM employee
WHERE salary > (subquery)
```

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in WHERE:

2. Find the employees with the minimum age

- Find the min age
- Find employee having the min age

id	name	age	departmen	city	salary
1	Rahul	25	'IT'	'Mumbai'	1500
2	Afsara	26	'HR'	'Pune'	2000
3	Abhimanyu	27	'IT'	'Mumbai'	2500
4	Aditya	25	'Marketing'	'Surat'	2400
5	Raj	24	'Finance'	'Indore'	1500

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in WHERE:

- To find the min age

QUERY:

```
SELECT MIN(age) FROM employee
```

- To find all the employees having min age

QUERY:

```
SELECT name, age
FROM employee
WHERE age =(subquery);
```

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in FROM:

1. Find the employees who is having age greater than min_age

- Find the min age
- Find employee having age> min age

id	name	age	departmen	city	salary
1	Rahul	25	'IT'	'Mumbai'	1500
2	Afsara	26	'HR'	'Pune'	2000
3	Abhimanyu	27	'IT'	'Mumbai'	2500
4	Aditya	25	'Marketing'	'Surat'	2400
5	Raj	24	'Finance'	'Indore'	1500

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in WHERE:

- To Find the min age

QUERY:

```
SELECT min(age) AS min_age FROM employee;
```

- Find employee having age> min age

QUERY:

```
SELECT emp.name
FROM employee emp, (subquery) AS subquery
WHERE emp.age > subquery.min_age;
```

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in SELECT:

1. Print the employees with the average age and age of employees

- Find the avg age
- Print the employee age and avg_age

id	name	age	departmen	city	salary
1	Rahul	25	'IT'	'Mumbai'	1500
2	Afsara	26	'HR'	'Pune'	2000
3	Abhimanyu	27	'IT'	'Mumbai'	2500
4	Aditya	25	'Marketing'	'Surat'	2400
5	Raj	24	'Finance'	'Indore'	1500

LET'S START WITH SQL :)

SQL Subqueries/Nested queries

Let's understand from example of using subqueries in SELECT:

- Find the avg age

QUERY:

```
SELECT AVG(age) FROM employee
```

- Print the employee age and avg_age

QUERY:

```
SELECT (subquery)AS avg_age , age
FROM employee;
```

LET'S START WITH SQL :)

Nth Highest Salary

Q. Find the nth highest salary in a given dataset.

Steps to find the nth highest salary:

Step 1: Select the column which you want to show the final result i.e salary.

Step 2: Order the salary in descending order so that you have the max at the first.

Step 3: Now the value of n could 1,2,3....till n, so we have to make the query in such a way so that whatever be the value of n it can provide the result.

Step 4: So at the end of the query we will provide a LIMIT so that on the data set which we have got after ordering the salary in descending order, we can fetch the nth highest one.

LET'S START WITH SQL :)

Nth Highest Salary

Q. Find the nth highest salary in a given dataset.

LIMIT- LIMIT clause is used to restrict the number of rows returned by a query.

- **LIMIT n** - It helps to retrieve a maximum of n rows from the beginning of the result set.

- **LIMIT m, n**- It helps to retrieve a specific range of rows where

  m- number of rows to skip from the beginning
  n- number of rows to fetch after skipping

LET'S START WITH SQL :)

Nth Highest Salary

Q. Find the nth highest salary in a given dataset.

QUERY:

```
SELECT DISTINCT Salary
FROM tableName
ORDER BY Salary DESC
LIMIT n-1, 1;
```

LET'S START WITH SQL :)

Stored Procedures

Stored Procedure- These are programs that can perform specific tasks based on the stored query. It is basically a collection of pre-written SQL statements grouped together under a specific name.

Query: (to create a procedure)

```
CREATE PROCEDURE procedureName()
BEGIN
Query
END;
```

Query: (to call the procedure)

```
CALL procedureName();
```

LET'S START WITH SQL :)

Stored Procedures

Examples: Stored procedure without params

Query 1:

```
CREATE PROCEDURE getAllOrderDetails()
BEGIN
Select * from orders;
END;
```

Query: (to call the procedure)

```
CALL getAllOrderDetails();
```

LET'S START WITH SQL :)

Stored Procedures

Sometimes we encounter an issue in SQL workbench so we use delimiter there

Query 1:

```
DELIMITER /
CREATE PROCEDURE getAllOrderDetails()
BEGIN
SELECT * FROM orders;
END/
DELIMITER ;
```

Query: (to call the procedure)

```
CALL getAllOrderDetails();
```

LET'S START WITH SQL :)

Stored Procedures

Examples: Return the details of the order by id (Stored procedure with params)

Query 2:

```
CREATE PROCEDURE getAllOrderDetailsById(IN id int)
BEGIN
SELECT *FROM Orders WHERE id = id;
END;
```

Query: (to call the procedure)

```
CALL getAllOrderDetailsById(2);
```

LET'S START WITH SQL :)

Views In SQL

A view is a virtual table in SQL. It helps in providing a filtered view of data for security purposes.

QUERY:

CREATE VIEW viewName AS
SELECT columns FROM baseTableName; (Specify the columns to be included in the view)

It helps in Data Abstraction, Security and simplify complex queries.

LET'S START WITH SQL :)

Views In SQL

- To see all the data in view

QUERY:

```
SELECT * FROM viewName ;
```

- To drop a view

QUERY:

```
DROP VIEW IF EXISTS viewName;
```