**Starting date SQL;06-04-2024** **class -01**

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**What are SQL clauses????????**

Having, group by, where, distinct, from all are SQL clauses, belongs to SQL.

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**Shortcut to print the query??**

Ctrl + enter

**What is DBA??**

Data base administrator

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My oracle live account

[https://livesql.oracle.com/apex/f?p=590:1:113715287212769:::RP::#](https://livesql.oracle.com/apex/f?p=590:1:113715287212769:::RP::)

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My free data base account , Hello data base account , free account my.

<https://www.freesqldatabase.com/account/>

data base link

data base email. [Babaraliengineer2468@gmail.com](mailto:Babaraliengineer2468@gmail.com)

data base password; pakistaN32!@#

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**Why we store data in data base???**

* Security
* Easy to handle
* Easy to organize
* Easy backup

**Why we store data in data base instead of excel file???**

* Because excel files can not store too much data in a single file or loading data from excel file take too much time,
* Second reason is security issue. Any one can open excel file and access data

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**Why do we need java language??**

We need java to communicate with computer, similarly to communicate with data base we need SQL.

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**What is SQL (structured query (inquiry, sawal) language) ??**

is a software/standard/language which is used to communicate with database. Sql is use to Maintain, manipulate, manage the data base. 3 M’s

**What is data??** data is information, it can be word, number, description, observation which describes that thing.

**What is data base?**

Data base is a special software which is used to store, manage and retrieve the data.

**What is data base management system DBMS?**

Is a software which is used to communicate with data base?

**Types of DBMS?**

**1. relational data base**

**2. non relational data base**

**What is relational data base???**

Data base which store the data in the form of tables containing rows and column is called relational data base.

Examples of software.

Mysql , postgresql, oracle, Microsoft sql server

**Non-relational data base???**

Data base which does not store data in the form of table, it store the data in the form of **Key-Value Stores**

**Graph Databases,**

**column family**

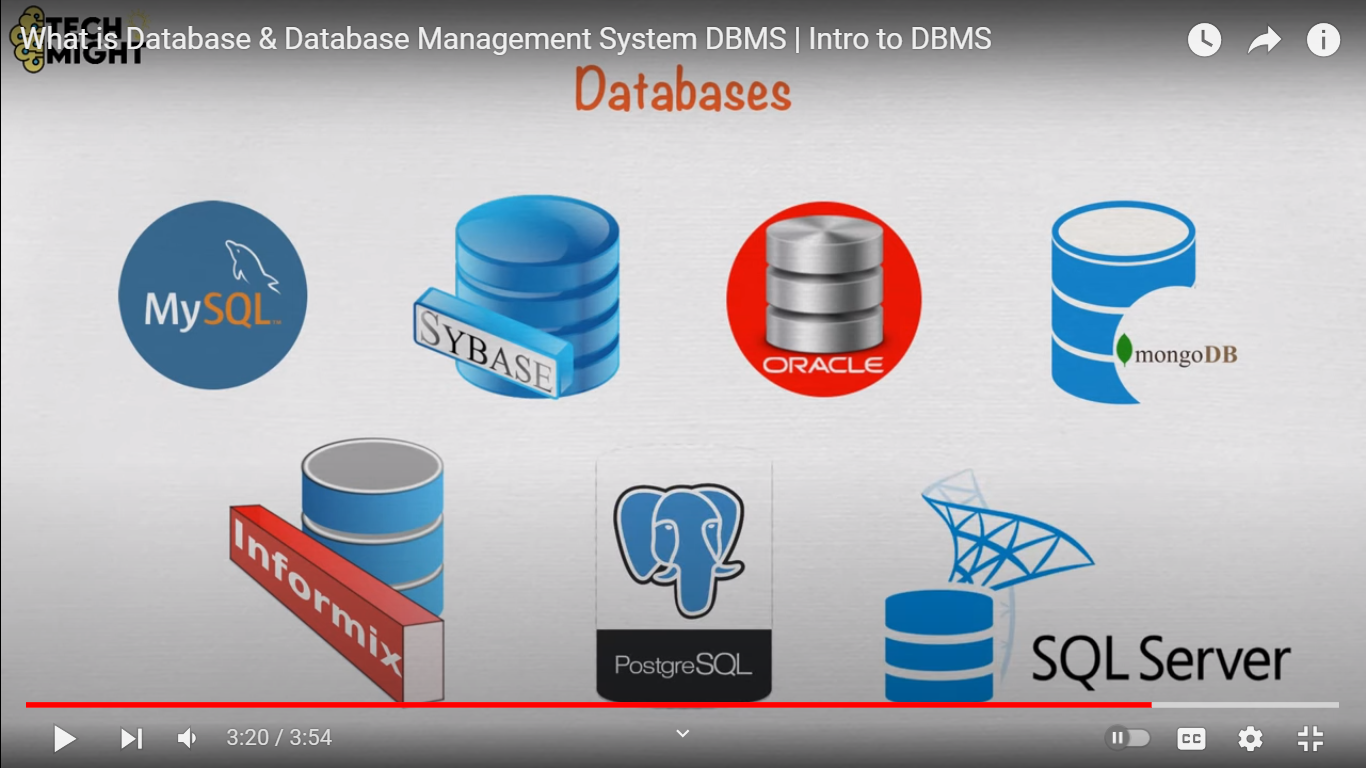
**Fire base data base**

**Real time data base**

**What is schema?**

Schema is a is visual / graphical representation of tables and their relationship with each other inside database.

How tables are represented in data base is called schema.



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**What is select keyword??????**

**Is used to filter the columns.**

SELECT \* FROM employees;

**Select**; is used to **print columns** from a specify table.

**Asterisk** **\*** is used for all , mean all data/all columns.

**FROM** keyword is used for which table you want print all data.

**SELECT \* FROM ---- >> select mean print columns, \* mean all, from mean from which table name that table. Semi colon ; is used to end the query.**

**-----------------------------------------------------------------------------------------------------------------**

**What is distinct keyword???**

SELECT distinct last name FROM person;

**Distinct**---- is used to remove duplicate values from the column.

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**What is limit keyword???**

**Limit is used how many rows you want to print from the column.**

SELECT last name from employees limit 2;

----------------------------------------------------------------------------------------

**What is where clause???**

Where---- key word is used to filter the rows.

SELECT \* FROM person WHERE empId='120';

Print all the columns from person table , only those lines of all columns in which empid column rows has value 120.

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**Relational operator in SQL??**

* ----- > greater
* ---- < lesser
* ---- <= lesser or equal
* ----- >= greater or equal
* ------ ! = not equal to
* ------ <> this is also for ! operator. not is actually logical operator, it invert the true value to false.

Basically it is used to negate the result.

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**What are data types in MY SQL???**

There are many data types in SQL some important are given.

**Numeric Types:**

**INT or INTEGER:** -2,147,483,648 signed to 2,147,483,647 unsigned

* Example: **INT (10)**

**-----------------------------------------------------------------**

**DECIMAL**

Example: DECIMAL (10, 2) (10 digits with 2 after the decimal point)

1. **FLOAT:** Example: **FLOAT (8, 2)**
2. **DOUBLE:** Example: **DOUBLE (15, 4)**

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**String Types:**

1. **CHAR:** Fixed-length character strings.
   * Example: **CHAR (10)**
   * For example, if you have a **CHAR (10)** column and you insert the string 'ABC', which is only 3 characters long, the remaining 7 characters will be filled with padding (spaces) characters, typically spaces.
2. **VARCHAR:** Variable-length character strings.
   * Example: **VARCHAR (255)**
   * VARCHAR: Stores variable-length strings. It only uses as much storage as needed to store the actual data. If you define a VARCHAR (10), it will only occupy the necessary amount of storage for the specific data. Rest space will be free.
   * Example: VARCHAR (10) with the value 'ABC' will be stored as 'ABC' (no padding).

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**Date and Time Types:**

DATE: Date values in 'YYYY-MM-DD' format.

TIME: Time values in 'HH:MM:SS' format.

DATETIME: Combined date and time values in 'YYYY-MM-DD HH:MM:SS' format.

Column in a database table can accept only **ONE Data Type**.

It is very strict rule.

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**What are logical operators??**

Logical operators are used to filter the rows after the where clause.

**And**

**Or**

**Not**

**--------------------------------------------------------------------------------------------------------**

**What is order by keyword???**

Order by ---- is used to print the column data ascending/desc order.

Id data type is var char that’s why it is not ascending order.

If you want to order by two columns, if first name column has ABC three time, then it will sort data on last name column.

**How convert one data type into other???.**

**Convert (‘id’, decimal)** ---- this converts the data type from varchar to decimal.

**Id data is varchar.**

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**What is oracle data base???**

**To communicate with data base there is another oracle data base**

**What is difference in oracle and my SQL data base??**

* My SQL do not support INITCAP keyword—first name letter in upper case example, Farhan, but oracle support INITCAP keyword.
* Oracle is case sensitive for values in quotes. But my SQL is case in-sensitive
* Oracle does not support **<>** double angle bracket for not! operator
* Oracle is paid, MY SQL is open-source free data base.
* Oracle is used for large business
* My SQL is used for small to medium size business.

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**What is null keyword???**

Null keyword is used to print the rows with null values.

SELECT \* FROM employees WHERE last Name is null;

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**How will print empty rows from a column???**

SELECT \* FROM person WHERE City= '' ;

-- is used to print empty values from city column.

SELECT \* FROM person WHERE City IS NULL;

-- is used to print null values from city column.

**-----------------------------------------------------------------------------------------**

**How will print zero value from row???**

SELECT \* FROM WHERE City= '0';

-- is used to print zero values from city column

----------------------------------------------------------

**How you will print not null???**

SELECT \* FROM person WHERE City IS NOT NULL;

---------------------------------------------------------

**What is Between keyword???**

**Between is alternate of and operator. It is a shorthand for AND operator**

SELECT \* FROM person ORDER BY age BETWEEN 23 AND 30**;---applicable only one column data.**

**--------------------------------------------------------------------------------------**

**What is IN keyword??????**

**In keyword is alternate of or operator.** **It is a shorthand for OR operator, applicable on for single one column not group of column.**

SELECT \* FROM person ORDER BY age IN (23,24,25); -- only one column data should be.

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**What is not operator?????**

Not operator can be used in three ways.

* SELECT \* FROM person WHERE City!='New York';
* SELECT \* FROM person WHERE age <> 20;
* SELECT \* FROM person WHERE NOT City='New York' AND NOT age=20;

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Live oracle link

[https://livesql.oracle.com/apex/f?p=590:1:113715287212769:::RP::#](https://livesql.oracle.com/apex/f?p=590:1:113715287212769:::RP::)

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**What is like operator??? Also called wild card operators. There are two, % and \_.**

Like clause is used to search for a specific pattern in a column.

It is like starts with, ends with, **contains** methods in java.

**You say that like operator is same contains method.**

**% percentage sign is used**.

**(\_)** under-score to restrict how many characters you want to print.

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**SQL CLASS 02 RAMZAN – 27 DATE; 07-APRIL-2024**

**What is primary key?????????**

a primary key is a column (or a set of columns) that uniquely identifies each row in the table.

Primary key can-not be null and can-not contain duplicate values.

**Why primary key can-not be null and duplicate???**

If primary key is null and duplicate then the purpose of primary key is finished the purpose is uniquely identifier the rows.

If it allowed to primary key have duplicate and null values, then you cannot identify the rows. null and duplicate values are not considered as unique value. Null values represent an absence of data.

**-----------------------------------------------------------------------------------------------------------------**

**What are functions in SQL???**

**Function is a set of statements that performs task.**

**What are types of functions???**

**Single row and multi row functions both are written after select keyword.**

1. **Single row/scalar function/string function –**upper, lower, substring, in-it-cap length.

The function which takes single row as input and give single row result as output.

Con cat ---this method add each row of two and make as one column

Substring --- this method give 1 to 3 or any number alphabets of name column

Add date method – is used to add date in birth column.

1. **Multi-row function/aggregate function (JAMA KRNA, MAJMOOI)**

the function which takes multiple rows as input and give single row result as output.

**Count, Sum, count, max, min, avg, group by**.

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**What is group by clause????**

Group by clause make the group of rows which has same values from a column.

This group by method is must used with multi row functions like, sum, count, avg.

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**what is difference in where clause and Having clause????;**

**WHERE** clause is used to filter individual rows, when no group clause is used.

**HAVING** clause is used to filter groups of rows after **GROUP BY** clause.

**Use same aggregate function after the having close.**

**Having always use after group by.**

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**What is sub query??**

The query inside another query which is used to give intermediate result which is difficult by other queries.

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**What is foreign key?**

Whenever a primary key of one table is present inside other table then this primary key inside another table is called foreign key.

Foreign keys used to create link between two tables.

**Primary key cannot duplicate and cannot null**

**Foreign key can be null and can be duplicate.**

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**Date; 08-04-2024 Class 03 SQL**

Alias is you can assign the table name shorter by your own choice.

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**What is sub Query????????**

**Sub Query is a Query inside an other Query -- purpose is that to get intermediate results, that are not possible by direct query.**

**Sub Query has 2 parts:**

1. Outer Query
2. Inner Query

**Result/Output of inner query will be used as an input for the outer query**

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**What is join/inner join in SQL???? Print the data which is common inside.**

**Joining all columns of multiple tables based on foreign and primary key relationship between them.**

**Inner join/join returns matching Data from Multiple Tables**

a JOIN is a clause used to combine columns of multiple tables, based on foreign and primary keys relation between them.

**Purpose;** The purpose of a JOIN is to retrieve data from multiple tables in a single query,

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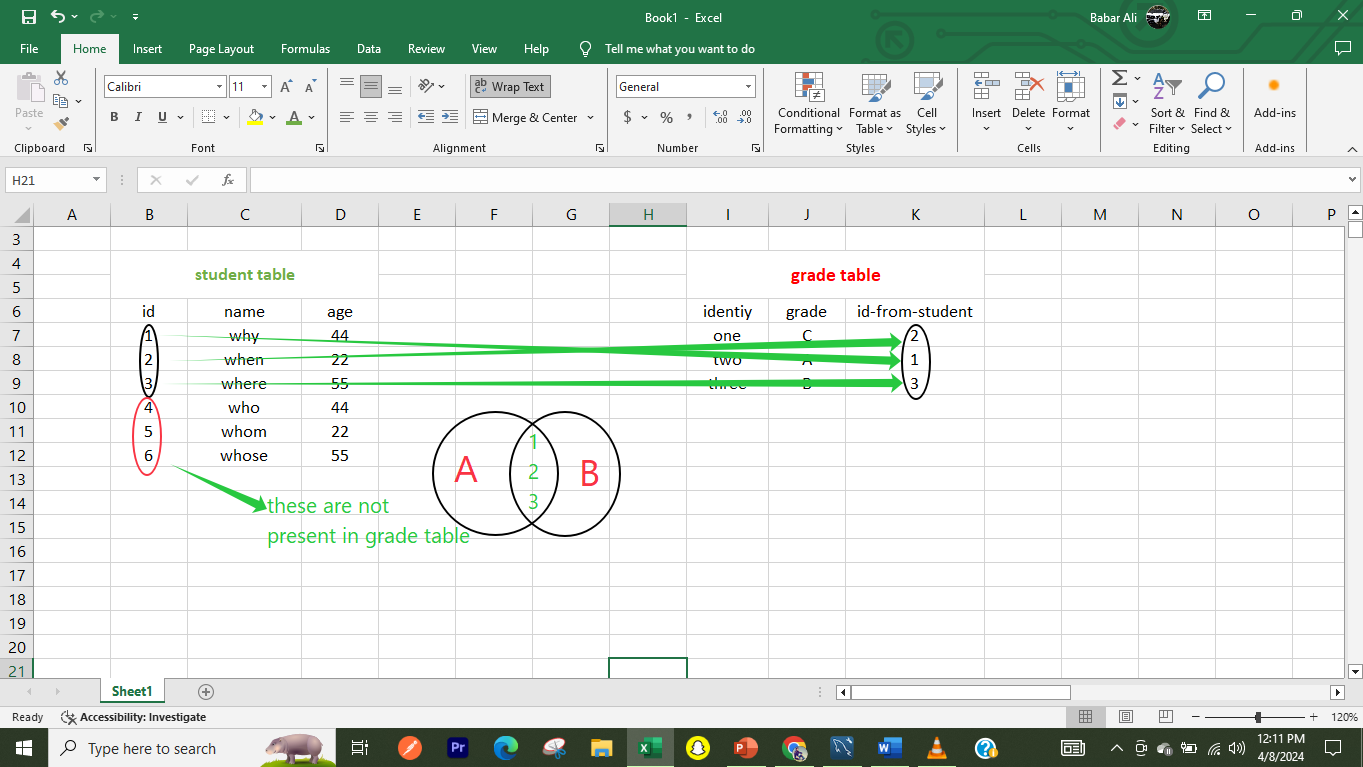
You can write join/inner join query in three different ways.

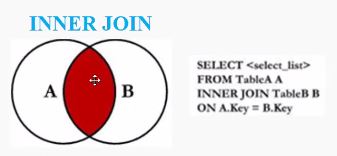
SELECT FirstName, salary FROM employee e, person p WHERE p. empId=e.empId;

SELECT FirstName, salary FROM employee e INNER JOIN person p WHERE p.empId=e.empId;

SELECT FirstName, salary FROM employee e INNER JOIN person p ON p. empId=e.empId;

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What is outer join??? Print the table data which is outer side of common data.

Outer join has three types.

1. **Left join**
2. **Right join**
3. **Full join**

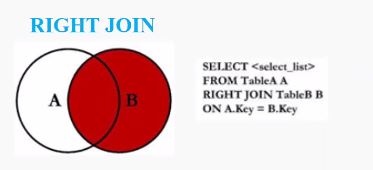
**--------------------------------------------------------------------------------------------------------**

**What is right join????**

**Print all data of right table which is written at right side of join keyword, matching plus non matching data.**

right join Returns common/matching data from both tables **and**

Return non matching data from right TABLE written in YOUR QUERY, all non-matching rows print from right table.



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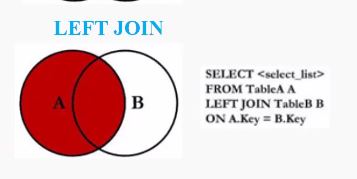
**What is left join????**

**Print all data of left table which is written at left side of join keyword .**

**matching plus non matching.**

Left join Returns common/matching data from both tables and

Return non matching data from LEFT TABLE written in YOUR QUERY, all non-matching rows print from left table.



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**What is full join???**

print all the data both table from left and from right table which are being joined.

In my SQL full join is not supported, you use **union key word** to join right and left join.



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**What is self join????**

A self-join in which **a table is joined with itself.** Self joins are useful when you need to compare columns within the same table.

**To perform a self-join, you use an alias** to differentiate between the two same tables.

**You have to consider one table as two table.**

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free SQL live hosting data base link

<https://www.freemysqlhosting.net/>

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**What are set operators in SQL??**

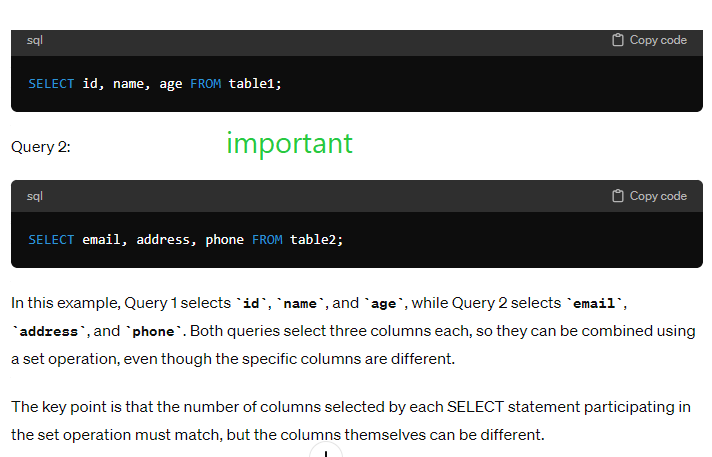
Set operators are used to join/combine the result set of two or more SELECT queries vertically. Vertically fashion rows are added.

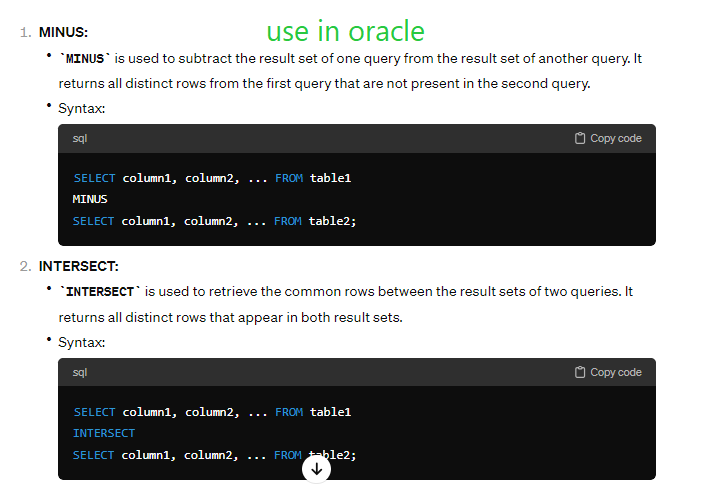
**Rules of set operators???**

* **Same number of columns** (quantity must be same) must be present in each SELECT statement.
* **Same Data types of the column** must be the same in each SELECT statement.

**There are four set operators?**

1. **Union All ----** print result set of two query plus also print duplicate values
2. **Union --------** print result set of two query but remove duplicate values---like distinct keyword.
3. **Intersect ---** print the result set of two select queries having common values in both queries. not supported in MYSQL but supported in oracle database.
4. **Minus. -----** print the result set of two queries values which are not present in both queries. not supported in MYSQL but supported in oracle database**.**

****

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**Your user name is your data base name = sql12676917**

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**What are SQL sub languages / commands????**

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**What is the difference in delete and drop???**

**Drop** delete the complete table and all data. Table structure is deleted.

**Delete** remove the all rows of a table or specified row from the table, table structure not deleted.

**Truncate**; is use to delete all rows of table, not deleted specific row but deleted all rows.

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**What is difference in delete and truncate??????**

Truncate is used only to delete all rows once from a table

Delete is used to delete all rows once or you can delete specific row from table.

Like **DELETE**, **TRUNCATE (TRASHANA, SHAAKHY TARANSHA, CHOTA KRNA, SMALL KRNA)** removes all rows from a table, but it is typically faster and uses fewer system resources. It can also retrieve data.

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**What are SQL commands/sub languages??????**

There are four SQL sub languages or commands.

1. **DML data manipulation language**
2. **DDL data definition language**
3. **DCL data control language**
4. **TCL transaction control language**

We will learn only first two.

**Summary (DML): SUDI** the acronym SUDI helps remember the four main commands;

DML commands (SELECT, UPDATE, DELETE, INSERT) is used to manipulating or interacting with the data stored in tables.

**Summary (DDL): DR CAT – can-not be reversed / roll back.** meaning once executed, the changes are permanent. the acronym DR CAT helps recall the five main commands

DDL commands (DROP, RENAME, CREATE, ALTER, TRUNCATE) are used to create and modify the structure of database objects (rows, columns, tables) in a database.

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**RENAME TABLE** current\_table\_name **TO** new\_table\_name;

**ALTER TABLE** my\_table **ADD** new\_column INT;

This will add a new column named **new\_column** of type **INT** to the table **my\_table**.

------------------------------------------------------------------------

**DML is Roll back**/ undo/restore/go previous state.

Roll back mean is that if there is error in completing the transaction any transaction then go back to the previous step. don’t move the transaction forward.

**Example to understand what is roll back mean, Bank account.**

* + I decide to transfer money from Account A to Account B.

1. **Operations:**
   * This transfer involves two operations: deducting money from Account A and adding the same amount to Account B.

Rollback (Failure):

If there's a problem (e.g., insufficient funds), you "rollback" the transaction. This means undoing any changes made during the transaction. The money stays in Account A, and nothing is added to Account B.

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Seamlessly ----- بغیر کسی رکاوٹ کے

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**Class 05 SQL DATA BASE**

**What is JDBC??**

JDBC is a java API, which is used to communicate between wide range of data base and java programming language.

**JDBC provides a multiple classes and interfaces that define how Java applications can interact with databases.**

**------------------------------------------------------------------------------------------------------------**

**What classes or interface JDBC provide???**

**JDBC provide meta data interface**

Meta data interface has methods to provide information about

* Data base meta data
* Result set meta data

**--------------------------------------------------------------------------------------------------------------**

JDBC (Java Database Connectivity) is a SQL level API that allows to execute SQL statements.

JDBC is Database Independent

JDBC is Not SQL Independent

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**What are JDBC classes which we will use???**

These classes we will used present in JAVA SQL library.

1. Connection interface
2. Statement interface
3. Result set interface
4. Result set meta data interface

**Connection** is an interface in the java.sql package. Is used to make a connection with data base so that we can interact with Data base.

* We will use one method of connection interface, **driver manager**.**Get connection** method.

**Statement** is an interface in the java.sql package. that represents a SQL statement that can be executed against a database. Statement means like java statement or SQL query or you can say like API request.

* We will use one method of statement interface which is **create statement.**

**Result-Set** is an interface in the java.sql package. You can say that result set is similar as result grid in workbench, response from server as in API.

* We will use two method of result set interface which is **execute query**,
* **resultset. Next ()**

**Driver manager** is a class in java SQL package which takes care of connection between data base and java, it is like as in selenium there is chrome driver which takes care chrome browser. Make connection between selenium and chrome browser.

**What is result set meta data???**

**ResultSetMetaData** is an interface in the java.sql package.

Result set meta data mean perform operation on that data which is obtained from data base. which information of table you want to see, number of columns, column name, column size.

Meta data mean is that data which provide information about other data.

Result set is response from the database which is obtained when make a request.

The data which comes from database as a response store inside result set. To represent that response data there are different methods.

**Methods of result set meta data.**

1. **getColumnCount ()**:
   * Returns the number of columns in the Result Set.
2. **getColumnName (int column)**:
   * Returns the name of the specified column.
3. **getColumnType (int column)**:
   * Returns the SQL type of the specified column as a constant from the Types class.
4. **getColumnTypeName (int column)**:
   * Returns the database-specific name of the SQL type of the specified column.
5. **getColumnDisplaySize (int column)**:
   * Returns the display size of the specified column.
6. **isNullable (int column)**:

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**What is meta data????**

Data about Data: Metadata is data that provides information about other data. It describes the properties, structure, and context of the actual data.

**To obtain data from rows we use**

The resultSet.next() method is used in Java to move the cursor in a Result Set object to the next row. It returns true if there is a next row, and false if there are no more rows in the result set.

Here's how it's typically used in a loop to iterate through the rows of a result set

https://github.com/SyntaxTechnologies/CucumberFrameworkBatch11.git