

Assignment No. A3

Title: Design at Least 10 SQL queries for suitable database applications using SQL DML statement: Insert, Select, Update, Delete with operators, functions, and set operators.

Problem Statement / Aim: Upon Completion of this assignment students should able to learn

1. Insert data into database tables
2. Updating data into tables
3. Deleting data from tables
3. Use of aggregate functions in SQL
4. Use of operators in SQL

Theory:

Data Manipulation Language (DML)

The data manipulation language (DML) is used for accessing and manipulating data in a database. It allows users to access, insert, update and delete data from the database.

To insert record into the table-INSERT

To access or read records from table –SELECT

Update the record in table- UPDATE

Delete the records from the table- DELETE

Problem Statement:

Create a table Employee(emp_no, emp_name,joining_date, salary)

product_details(product_id,product_name,quantity,prices)

sales_details(sale_no,product_id,quantity,price,customer_name)

and execute the following queries on Employee Table:

- 1) Insert 5 record into Employee Table
- 2) Retrieve all the record from Table Employee
- 3) Retrieve all records from column emp_no and emp_name only
- 4) Retrieve the salary from Employee where salary >8000;
- 5) Retrieve the salary using distinct clause from Employee
- 6) Update the Salary to 50000 of Employee whose emp_no =101

- 7) Delete the Employee record from table whose emp_no =106
- 8) Retrieve the records of Employee whose salary is in between 8000 to 30000
- 9) Retrieve the records of Employee whose salary is 8000 and 30000
- 10) Display the records of Employee who join in 2015
- 11) Retrieve the minimum salary of Employee
- 12) Retrieve the highest salary of the Employee
- 13) Retrieve the count of Employee who join in 1999
- 14) Find the total salary amount paid to the employee
- 15) Display only joining year of the employee
- 16) Retrieve the ids of all product even if they were sold or present in the storage room(use union Operator)
- 17) Retrieve the ids of all the sold product even if they were sold or present in the storage room(use union all operator)
- 18) Retrieve all the ids of all the sold products(use intersect operator)
- 19) Retrieve all the ids of all the sold products(use minus operator)

Theory:-

1. Inserting a Single row of data into a table

Syntax:

```
Insert into table_name values(value1,value2.....);
```

2. Inserting data into a table from another table

Syntax:

```
Insert into table_name select Column1,Column2 from table_name;
```

3. Retrieve data from tables

SELECT Query

SELECT query is used to retrieve the data from database.SELECT query never make any change in database.

Syntax:

```
SELECT Column_name1,column_name2.....from table_name;
```

If we want to retrieve data from all the column of a table then instead of writing all the column name use

‘*’ . The ‘*’ symbol represent all the column.

```
SELECT * from table_name;
```

With SELECT statement different clauses can be used to display the data as per our requirement.

A) WHERE Clause

WHERE clause is used to specify condition in SELECT statement while fetching records from the database. The records satisfying the condition given by where clause are retrieved.

```
SELECT Column_name1,column_name2.....from table_name WHERE condition;
```

B) DISTINCT Clause

This clause is used to avoid selection of duplicate rows.

```
SELECT distinct (Column_name) from Employee;
```

C) ORDERBY Clause

To arrange the displayed rows in ascending or descending order of a given column, ORDERBY Clause is used.

```
SELECT * from table_name orderby Column_name desc/asc;
```

ASC or DESC words are used to maintaining ascending or descending order.

4. Modifying Data in Tables

To make changes in the database update command is used. The update command consists of 'set' Clause and optional 'where' clause. 'WHERE' clause is used to make changes in specific records.

Syntax:

```
Update table_name set Column_name=new_value[where condition];
```

5. Remove records from table

Delete

As per requirement, the records from existing table can be removed using delete command. Delete command can have 'Where' clause optionally.

Syntax:

```
SELECT Column_name1,column_name2.....from table_name [WHERE condition];
```

BETWEEN ,IN, LIKE Predicate

a) BETWEEN predicate

Between predicate is used to specify certain range of values. The AND keyword is used in this predicate.

Syntax:

```
Test_expression [NOT] Between begin_expression AND end_expression
```

For example:

```
Select * from Employee where salary between 10000 and 20000;
```

b) IN predicate

IN Predicate particularly determines where the value of expression to test matches any value in specified the list.

For example

Manager wants to view records of employees whose salary is 8000 and 30000

The query will be

```
Select * from Employee where salary in(8000,30000);
```

Manager wants to view records of employee whose salary is not 8000 and 30000

```
Select * from Employee where salary NOT IN(8000,30000);
```

c) LIKE Predicate

LIKE operator determines whether a specific character string matches the given pattern or not.

For Example

Display the records of employee who join in 2015

```
Select * from Employee where joining_date LIKE '2015%';
```

Display records of Employee who didn't join in 2015

```
Select * from Employee where joining_date not like '2015%';
```

Aggregate Functions:

1)Min() –This function returns smallest value from specified column of the table

For example

Query to retrieve record of employee who gets least salary as compare to other employee

```
Select * from Employee where Salary=(select min(salary) from Employee;
```

2)Max()- This function return greatest value from specified column of the table.

Query to retrieve record of employee who gets maximum salary as compare to other employee

Select * from Employee where Salary=(select max(salary) from Employee;

3)Count()- This function return total number of values of specified column of the table

For example

Query to retrieve count of employee who join in 2015 year

Select count(Employee_no) from Employee where joining_date like'2015%';

4)Sum()- This function returns the sum of all the values of specified column of the table.

For example

Query to find total salary amount paid to all the employee

Select Sum(Salary) from Employee;

Scalar Functions in SQL to Perform DML operations on table Data.

1)MID()- This functions is used to extract substrings from column values of string type in a table

Syntax:

```
Select MID(Column_name,start,length) from table_name;
```

For example

```
Select MID(joining_date,1,4)from Employee;
```

2)LCASE()- This functions is used to convert value of string column in Lowercase characters.

```
Select LCASE(Column_name) from table_name;
```

3)UCASE()- This functions is used to convert value of string column in Uppercase characters.

```
Select UCASE(Column_name) from table_name;
```

4)ROUND() – This function is used to round a numeric field to number of nearest integer. It is used on Decimal point values.

```
Select round(Column_name) from table_name;
```

SET operations in SQL queries to perform DML operations on table data.

The Different set operations are as follows.

1) UNION- The union operator returns all distinct rows

selected by either query; Syntax:

```
Select column_name from table1  
Union  
Select Column_name from table2;
```

2) UNION ALL- This returns all rows selected by either query

including duplicates. Syntax:

```
Select column_name from table1  
Union all  
Select Column_name from table2;
```

3) INTERSECT- This operator returns only those rows which are common to both the queries.

```
Select column_name from table1  
intersect  
Select Column_name from table2;
```

4) MINUS- Minus operator displays the rows which are present in the first query but absent in the second query with no duplicates and data is arranged in ascending order by default.

```
Select column_name from table1  
minus  
Select Column_name from table2;
```