14 View

- A **VIEW** in SQL is a virtual table that is based on the result of a SQL query
- It does not store data itself but presents data from one or more tables, making it easier to manage and query complex data

1. Creating a Simple VIEW

- Suppose you want to create a view that shows only the `name` and `department` of employees from the `employees` table

```
CREATE VIEW employee_department AS
SELECT name, department
FROM employees;
```

- You can query the `employee_department` view just like a regular table

```
SELECT * FROM employee_department;
```

```
mysql> CREATE VIEW employee_department AS
    -> SELECT name, department
    -> FROM employees;
Query OK, 0 rows affected (0.41 sec)

mysql> SELECT * FROM employee_department;
+---------------+------------+
| name          | department |
+---------------+------------+
| John Doe      | IT         |
| Jane Smith    | HR         |
| Alice Johnson | Finance    |
| Bob Brown     | IT         |
| David Green   | Marketing  |
| Emily White   | Sales      |
+---------------+------------+
6 rows in set (0.10 sec)
```

2. Using REPLACE in the CREATE VIEW Statement

```
CREATE OR REPLACE VIEW employee_department AS
SELECT name, department, salary
FROM employees;
```

```
mysql> CREATE OR REPLACE VIEW employee_department AS
    -> SELECT name, department, salary
    -> FROM employees;
Query OK, 0 rows affected (0.23 sec)

mysql> SELECT * FROM employee_department;
+---------------+------------+----------+
| name          | department | salary   |
+---------------+------------+----------+
| John Doe      | IT         | 60000.00 |
| Jane Smith    | HR         | 55000.00 |
| Alice Johnson | Finance    | 62000.00 |
| Bob Brown     | IT         | 58000.00 |
| David Green   | Marketing  | 50000.00 |
| Emily White   | Sales      | 48000.00 |
+---------------+------------+----------+
6 rows in set (0.00 sec)
```

3. Creating a VIEW with Filtered Data

```sql
CREATE VIEW it_employees AS
SELECT name, salary
FROM employees
WHERE department = 'IT';
```

```
mysql> CREATE VIEW it_employees AS
    -> SELECT name, salary
    -> FROM employees
    -> WHERE department = 'IT';
Query OK, 0 rows affected (0.11 sec)

mysql> SELECT * FROM it_employees;
+-----------+----------+
| name      | salary   |
+-----------+----------+
| John Doe  | 60000.00 |
| Bob Brown | 58000.00 |
+-----------+----------+
2 rows in set (0.00 sec)
```

4. Updating Data through a VIEW

```sql
UPDATE it_employees
SET salary = 62000.00
WHERE name = 'Bob Brown';
```

```
mysql> UPDATE it_employees
    -> SET salary = 62000.00
    -> WHERE name = 'Bob Brown';
Query OK, 1 row affected (0.37 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM it_employees;
+-----------+----------+
| name      | salary   |
+-----------+----------+
| John Doe  | 60000.00 |
| Bob Brown | 62000.00 |
+-----------+----------+
2 rows in set (0.00 sec)

mysql> SELECT*FROM employees;
+--------+---------------+------------+----------+
| emp_id | name          | department | salary   |
+--------+---------------+------------+----------+
|      1 | John Doe      | IT         | 60000.00 |
|      2 | Jane Smith    | HR         | 55000.00 |
|      3 | Alice Johnson | Finance    | 62000.00 |
|      4 | Bob Brown     | IT         | 62000.00 |
|      5 | David Green   | Marketing  | 50000.00 |
+--------+---------------+------------+----------+
5 rows in set (0.00 sec)
```

5. DELETE Command

- You can delete records from the base table through a view

```
DELETE FROM employee_department WHERE name = 'Emily White';
```

```
mysql> DELETE FROM employee_department WHERE name = 'Emily White';
Query OK, 0 rows affected (0.01 sec)

mysql> SELECT*FROM employee_department;
+---------------+------------+----------+
| name          | department | salary   |
+---------------+------------+----------+
| John Doe      | IT         | 60000.00 |
| Jane Smith    | HR         | 55000.00 |
| Alice Johnson | Finance    | 62000.00 |
| Bob Brown     | IT         | 58000.00 |
| David Green   | Marketing  | 50000.00 |
+---------------+------------+----------+
5 rows in set (0.00 sec)

mysql> SELECT*FROM employees;
+--------+---------------+------------+----------+
| emp_id | name          | department | salary   |
+--------+---------------+------------+----------+
|      1 | John Doe      | IT         | 60000.00 |
|      2 | Jane Smith    | HR         | 55000.00 |
|      3 | Alice Johnson | Finance    | 62000.00 |
|      4 | Bob Brown     | IT         | 58000.00 |
|      5 | David Green   | Marketing  | 50000.00 |
+--------+---------------+------------+----------+
5 rows in set (0.00 sec)
```

6. Conditions for INSERT on a View

1. **Simple Views:**
   - The view must be simple, meaning it should be based on a single table without any joins, groupings, or aggregate functions
2. **All NOT NULL Columns Included:**
   - The view should include all columns that are `NOT NULL` in the base table, unless those columns have default values
3. **No Calculated Fields:**
   - The view should not include any calculated fields or derived columns
4. **No Distinct or Group By:**
   - The view should not use `DISTINCT`, `GROUP BY`, or similar clauses that could alter the data structure

7. Dropping a VIEW

```
DROP VIEW it_employees;
```