

## Lab Activity: 15 Understanding views in DBMS

### Objective:

The objective of this lab is to understand the concept of **views** in a Database Management System (DBMS), how to create them, use them to simplify queries, and analyze their role in providing data security and abstraction.

### Step 1: Set Up the Database tables

#### 1. Create a Tables

First, create tables to work with.

```
CREATE TABLE students (  
  
    student_id INT PRIMARY KEY,  
  
    student_name VARCHAR(100),  
  
    department VARCHAR(50),  
  
    age INT  
  
);
```

```
CREATE TABLE grades (  
  
    student_id INT,  
  
    course_name VARCHAR(100),  
  
    grade CHAR(1),  
  
    FOREIGN KEY (student_id) REFERENCES students(student_id)  
  
);
```

### Step 2:-Insert Sample Data

Now, populate the `students` and `grades` tables with some data.

```
INSERT INTO students (student_id, student_name, department, age)  
  
VALUES  
  
(1, 'Alice', 'Computer Science', 20),
```

(2, 'Bob', 'Mathematics', 21),

(3, 'Charlie', 'Physics', 22);

INSERT INTO grades (student\_id, course\_name, grade)

VALUES

(1, 'Database Systems', 'A'),

(2, 'Calculus', 'B'),

(3, 'Quantum Physics', 'A'),

(1, 'Operating Systems', 'B'),

(2, 'Algebra', 'A');

### Step 3: Create a View

#### 1. Define a View

Create a view that joins data from the `students` and `grades` tables to show a summary of students' grades.

CREATE VIEW student\_grades\_view AS

SELECT

students.student\_id,

students.student\_name,

students.department,

grades.course\_name,

grades.grade

FROM

students

INNER JOIN

grades

ON

```
students.student_id = grades.student_id;
```

## Select 4 Data from the View

Now, use the view to see the data:

```
SELECT * FROM student_grades_view;
```

## Step 5: Querying the View

### 1. Query the View for Specific Information

Use the view to find all grades for students in the **Computer Science** department.

```
SELECT * FROM student_grades_view WHERE department = 'Computer Science';
```

## Step 6: Update Data through the View

### 1. Update Data Using the View

You can update data through a view (if the view is updatable). Let's update Alice's grade in the `Database Systems` course using the view:

```
UPDATE student_grades_view
```

```
SET grade = 'A+'
```

```
WHERE student_name = 'Alice' AND course_name = 'Database Systems';
```

After the update, check the data again:

```
SELECT * FROM student_grades_view;
```

## Step 7: Drop the View

### 1. Remove the View

If you no longer need the view, you can drop it:

```
DROP VIEW student_grades_view;
```