CRUD Operations: Create, Read, Update, Delete

1. Introduction

CRUD operations are the four basic operations used in databases to manage data. CRUD stands for:

- **Create**: Add new data to the database.
- **Read**: Retrieve data from the database.
- **Update**: Modify existing data in the database.
- **Delete**: Remove data from the database.

2. Practical Scenario: Managing a 'Students' Table

Scenario:

Imagine a school management system where you need to maintain student records such as their names, ages, and classes. You can use CRUD operations to handle these records efficiently.

'Students' Table Structure:

```
CREATE TABLE Students (

    StudentID INT PRIMARY KEY,

    Name VARCHAR(50),

    Age INT,

    Class VARCHAR(10)

);
```

3. CRUD Operations Explained with Examples

1. Create (INSERT)

Adding a new student to the 'Students' table.

INSERT INTO Students (StudentID, Name, Age, Class)

VALUES (1, 'John Doe', 15, '10th Grade');

- Adds a student named John Doe to the table.

2. Read (SELECT)

Fetching all student records.

SELECT * FROM Students;

- Retrieves all data from the 'Students' table.

3. Update (UPDATE)

Modifying the age of a student.

UPDATE Students

SET Age = 16

WHERE StudentID = 1;

- Updates John Doe's age to 16.

4. Delete (DELETE)

Removing a student record from the table.

DELETE FROM Students

WHERE StudentID = 1;

- Deletes the record of John Doe.

4. Summary

- **Create** is for adding new records.
- **Read** is for retrieving data.
- **Update** is for modifying existing records.
- **Delete** is for removing records.

Key Takeaway:

CRUD operations are fundamental for managing any database. Understanding these operations will help you build and maintain robust data management systems effectively.