SQL - CRUD (Create Read Update Delete)

Kodkod 4

Overview

- Create tables based on the structure of the CSV files.
- Create (`INSERT`): add new records into a table.
- Read (`SELECT`): retrieve and view data.
- Update (`UPDATE`): modify existing data.
- Delete (DELETE): remove records from a table.
- Use the WHERE clause to control which rows are affected.
- Understand how CRUD operations impact the database.

Import Data from CSV Files

CSV to Exist Table

After defining our table structure, we can import real data directly from CSV files into our tables. We are going to use phpMyAdmin.

- In phpMyAdmin, select the database school on the left panel.
- Click on the table you want to import data into (e.g., courses).
- At the top menu, click Import.
- Click Browse and choose the correct file (e.g. courses.csv).
- Scroll to the bottom and click Import to execute the process.

Class Exercises

1. Import the table courses to the exist table. And Verify the import.
2. Import the table lecturers to a new table. And after importing, check that all column names are correct.
3. Import the table students into the table students. Confirm the number of rows in the CSV matches the number in MySQL using.
4. Import study_hours.csv (if you doesn’t exist) into a new table called study_hours

Create - INSERT

- `INSERT` is used to add new records into a table.
- You must match the order and number of columns to the values provided.
- You can insert multiple rows at once:

```
INSERT INTO courses (id, courseName, building)
VALUES
(2, 'SQL Basics', 3.2),
(3, 'Python for Data', 1.8);
```

Read - SELECT

- `SELECT` is used to retrieve data from one or more tables.
- Use `*` to select all columns from a table.
- You can combine `SELECT` with `WHERE`, `ORDER BY`, or `LIMIT` to filter or control your results:

```sql
-- Get all columns
SELECT * FROM courses;


-- Get only specific columns
SELECT id, courseName FROM courses;
```

Update

- `UPDATE` is used to change existing data in a table.
- Always include a `WHERE` clause — otherwise all rows will be updated!
- After updating, use `SELECT * FROM table_name;` to confirm your changes were applied correctly.

```sql
-- Update one record
UPDATE courses
SET building = 4.2
WHERE id = 2;

-- Update multiple columns
UPDATE courses
SET courseName = 'Advanced SQL', building = 5.0
WHERE id = 3;
```

Delete

- `DELETE` is used to remove records from a table.
- You can delete a single row, multiple rows, or all data — depending on the condition.
- Always include a `WHERE` clause to avoid deleting all data.

```sql
-- Delete one record
DELETE FROM courses
WHERE id = 3;

-- Delete all records that match a condition
DELETE FROM courses
WHERE building < 2;
```

Class Exercises

1. Create a new record in the **courses** table:
    a. **id** = 6
    b. **courseName** = "Database Design"
2. Display all the data from the table. Then, show only the course name column.
3. Update the course you just added, Change its name to “Advanced Database Design”.
4. Delete the course where id = 6.

Summary

- Import real data from CSV files into tables using phpMyAdmin.
- Use the CRUD operations to manage data in tables.
- Add new records to a table.
- Retrieve and view data .
- Modify existing data safely.
- Remove specific records (or all).