Lab 5

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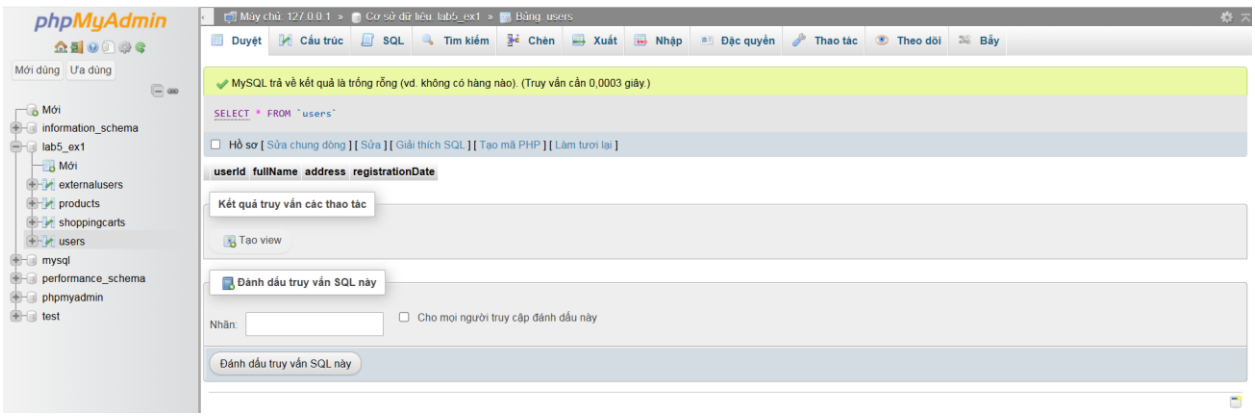
1. Database design

I created a MySQL database named "lab5_ex1" with four tables: Users, Products, ShoppingCarts and ExternalUsers.

The tables store user information, product information, shopping cart data and users imported from the external API.

2. REST API using SQL queries



I implemented CRUD endpoints for Users, Products and ShoppingCarts using raw SQL queries with the mysql2 library.

The API returns JSON responses that include the action status and the affected object.

3. REST API using ORM (Sequelize)

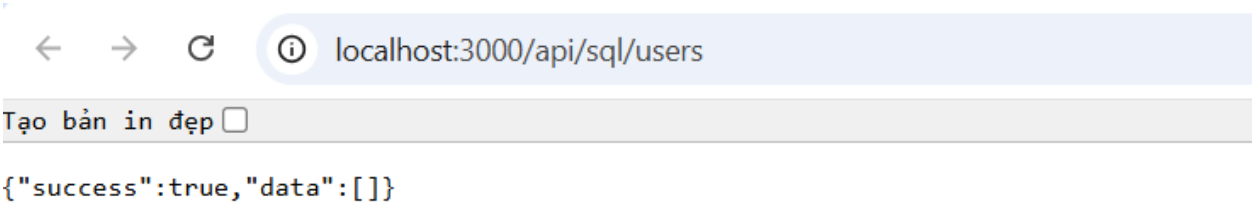
```
C:\Users\Admin\Desktop\Lab5_Ex1>node index.js
Executing (default): SELECT TABLE_NAME FROM INFORMATION_SCHEMA.TABLES WHERE TABLE_TYPE = 'BASE TABLE' AND TABLE_NAME = '
Users' AND TABLE_SCHEMA = 'lab5_ex1'
Executing (default): SHOW INDEX FROM `Users`
Executing (default): SELECT TABLE_NAME FROM INFORMATION_SCHEMA.TABLES WHERE TABLE_TYPE = 'BASE TABLE' AND TABLE_NAME = '
Products' AND TABLE_SCHEMA = 'lab5_ex1'
Executing (default): SHOW INDEX FROM `Products`
Executing (default): SELECT TABLE_NAME FROM INFORMATION_SCHEMA.TABLES WHERE TABLE_TYPE = 'BASE TABLE' AND TABLE_NAME = '
ShoppingCarts' AND TABLE_SCHEMA = 'lab5_ex1'
Executing (default): SHOW INDEX FROM `ShoppingCarts`
Executing (default): SELECT TABLE_NAME FROM INFORMATION_SCHEMA.TABLES WHERE TABLE_TYPE = 'BASE TABLE' AND TABLE_NAME = '
ExternalUsers' AND TABLE_SCHEMA = 'lab5_ex1'
Executing (default): SHOW INDEX FROM `ExternalUsers`
Đã kết nối và đồng bộ cơ sở dữ liệu
Máy chủ đang chạy tại http://localhost:3000
Executing (default): SELECT `userId`, `fullName`, `address`, `registrationDate` FROM `Users` AS `User`;
```

I defined Sequelize models for User, Product and ShoppingCart.

Then I created CRUD endpoints that use these models to interact with the database.

The API returns standardized JSON with "action", "status" and the corresponding object list.

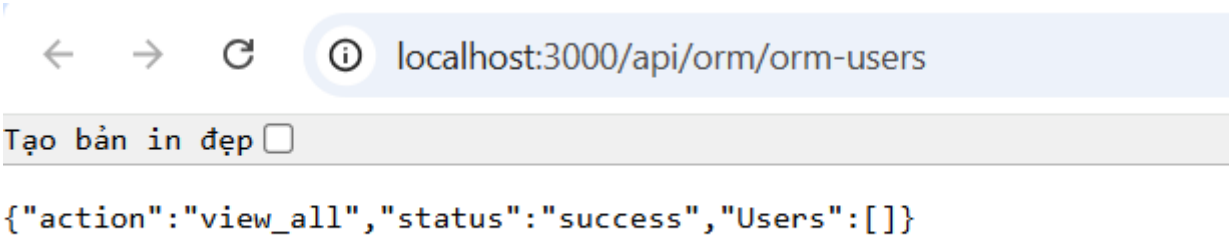
4. Image upload and display



I created an endpoint to receive image files and save them into the "uploads" folder on the server.

Another endpoint serves the stored images so they can be viewed from the browser using a URL path.

5. External API integration



I implemented an endpoint that calls "https://jsonplaceholder.typicode.com/users".

The response data is mapped to the ExternalUser model and stored in the ExternalUsers table in the local database.

6. Source code

Link: https://github.com/tangkimson/Lab5_Web_22521258_22520953

7. Conclusion

The lab helped me practice building RESTful APIs in Node.js with different ways of accessing MySQL: raw SQL queries and ORM with Sequelize.

I also learned how to handle file uploads and how to fetch and store data from an external API.