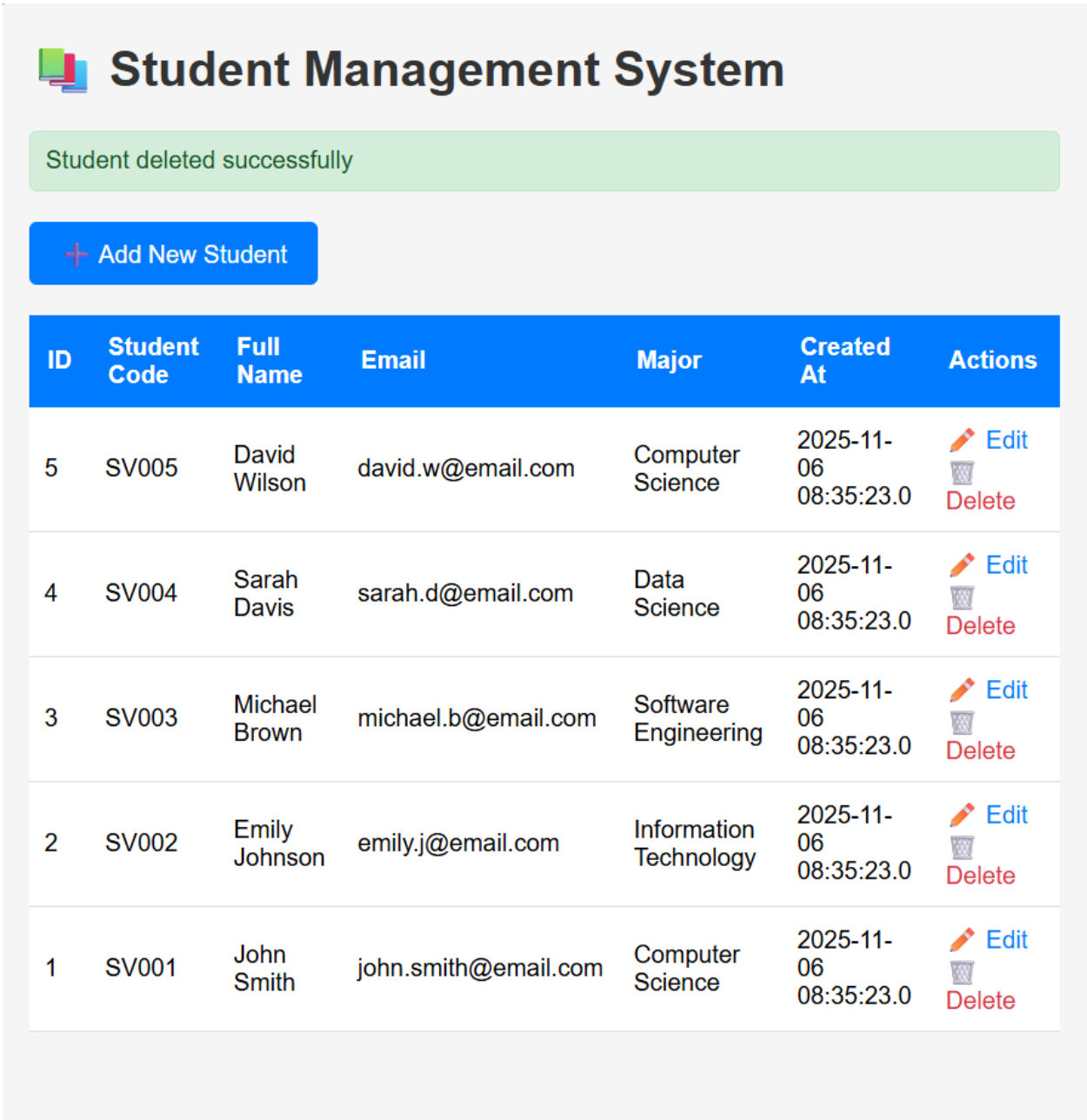
Ex1: Setup and Display

list_students.jsp:



Class.forName("com.mysql.cj.jdbc.Driver") allows java to talk to MySQL.

DriverManager.getConnection(...) create a connection to student_management database.

"SELECT * FROM students ORDER BY id DESC" get all the student information from the database.

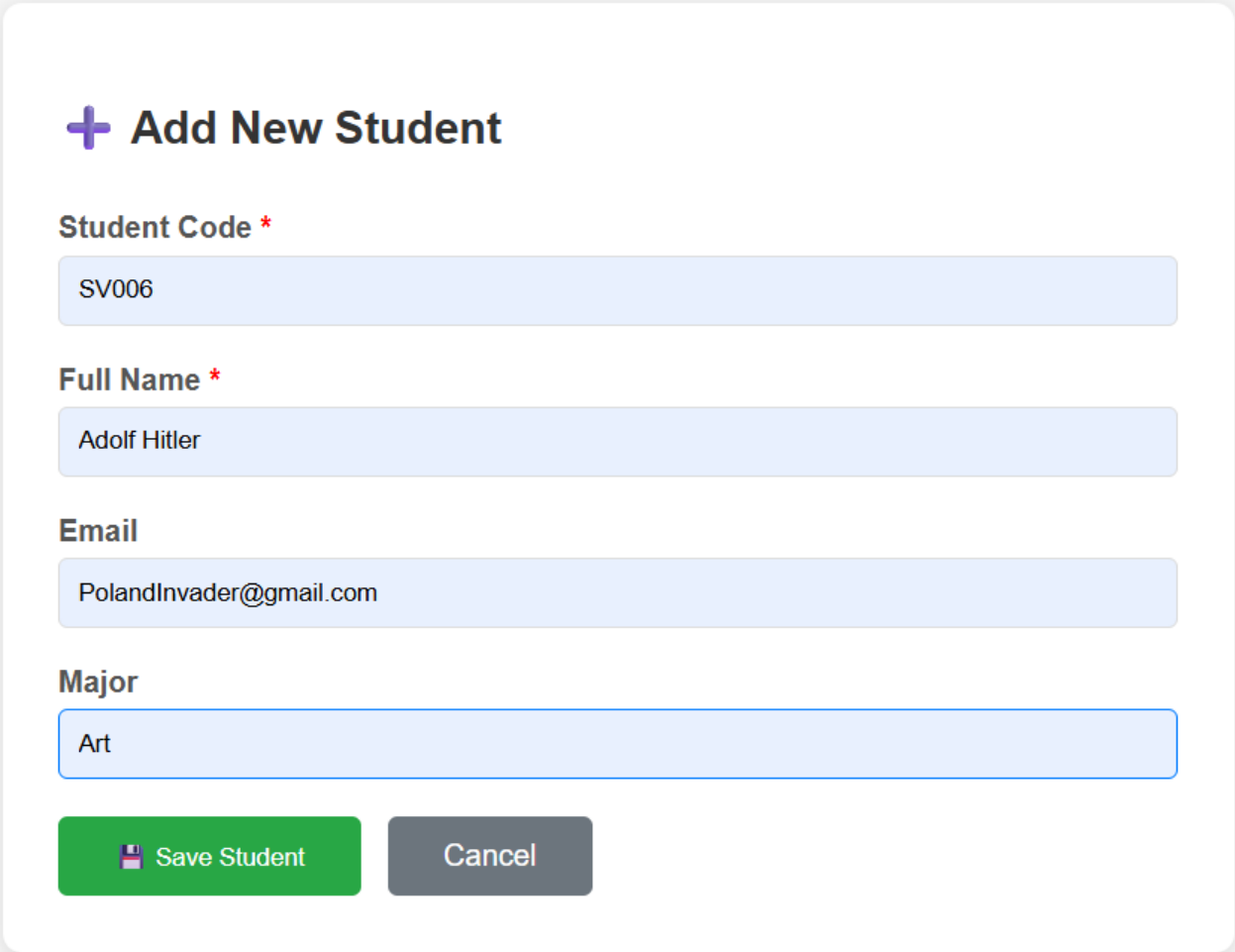
while (rs.next()) goes through each row and prints out student info inside <tr> table rows.

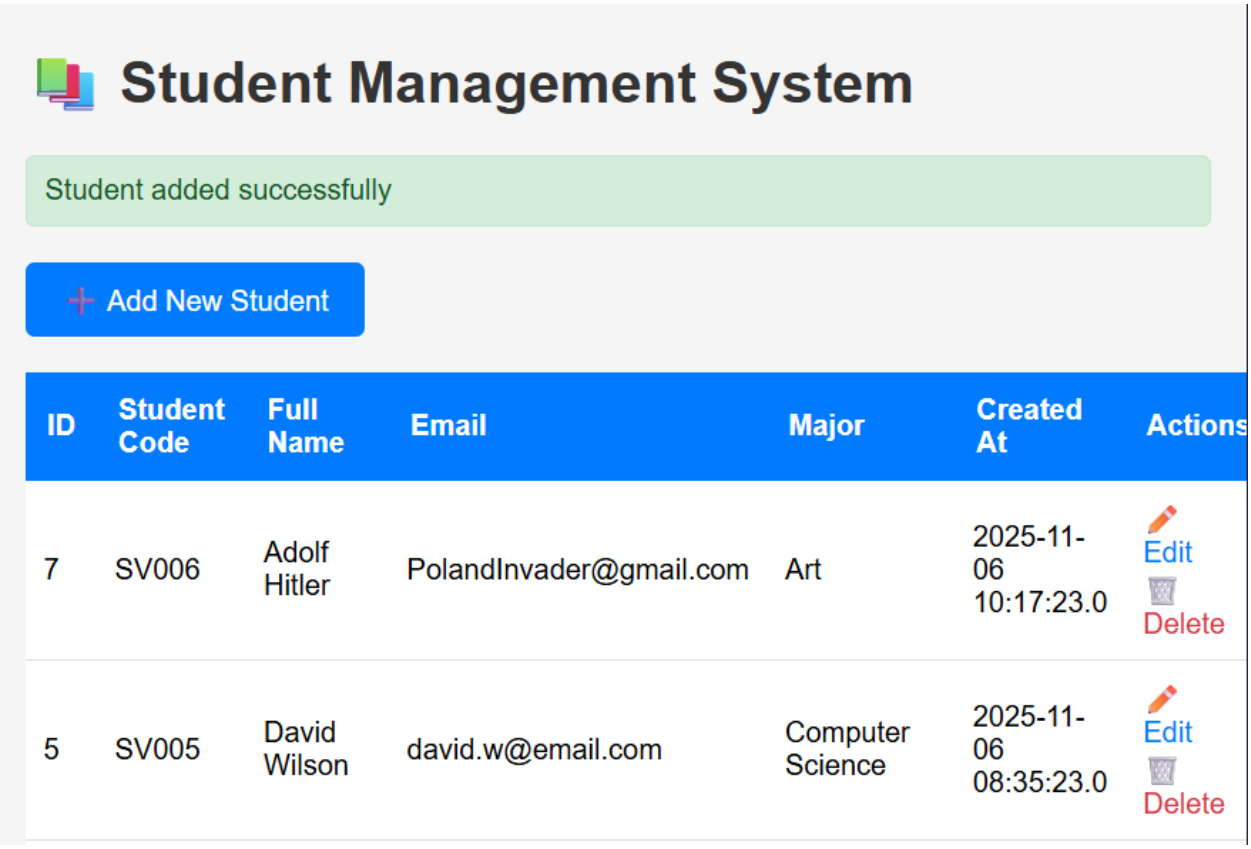
Each row includes an Edit and Delete links with the student's ID.

"Catch" shows a message if the JDBC driver or database fails.

".close" frees the ResultSet, Statement, and Connection at the end.

Ex2: Create Operation





add_student.jsp:

Create a “Add New Student” button.

If there’s an error in the URL (?error=...), it’ll show a message.

The form sends data via “POST” to process_add.jsp.

The form comprises:

Fields:

- student_code (required, 2 capital letters + number)
- full_name (required)
- email (optional, valid format)
- major (optional)

Buttons:

- Save Student => submits the form
- Cancel => goes back to the student list page

process_add.jsp:

Step 1: get the form's data:

Reads "student_code", "full_name", "email", and "major" from the form.

Step 2: validation:

If "student_code" or "full_name" is missing => display error under the text field.

Step 3: database connection:

Loads the MySQL driver and connects to the "student_management" database.

Step 4: insert data:

Uses a "PreparedStatement" to safely insert the student record:

"INSERT INTO students (student_code, full_name, email, major)

VALUES (?, ?, ?, ?)"

Step 5: redirect results:

- If successful => goes to list_students.jsp with a success message
- If failed => returns to add_students.jsp with an error message

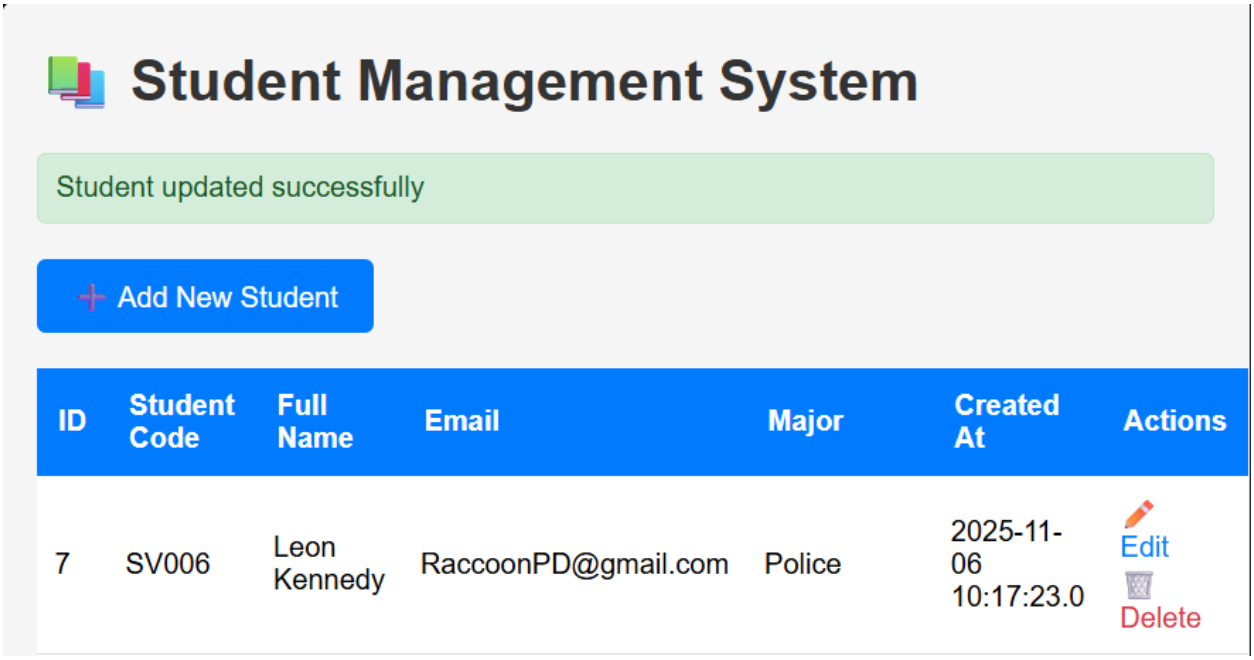
Step 6: error handling:

Detects duplicate student codes and database or driver issue.

Step 7: close resources:

Closes database connections to prevent leaks.

Ex3:



edit_student.jsp:

Step 1: gets “id” from the URL.

Step 2: checks if “id” is missing or invalid => redirects with error.

Step 3: converts “id” to integer

Step 4: connects to “student_management” database.

Step 5: prepares SQL: “SELECT * FROM students WHERE id = ?”.

Step 6: executes query and gets the student record.

Step 7: stores “student_code”, “full_name”, “email”, and “major”.

Step 8: if no record found => redirects with “Student not found”.

Step 9: shows error message if query fails.

Step 10: closes all database resources.

Process_edit.jsp:

Step 1: reads “id”, “full_name”, “email”, and “major” from the form.

Step 2: checks for missing data => redirects with error.

Step 3: converts “id” to integer.

Step 4: connects to “student_management” database.

Step 5: prepare SQL: “UPDATE students SET full_name=?, email=?, major=?

WHERE id=?”.

Step 6: fills the query with form values.

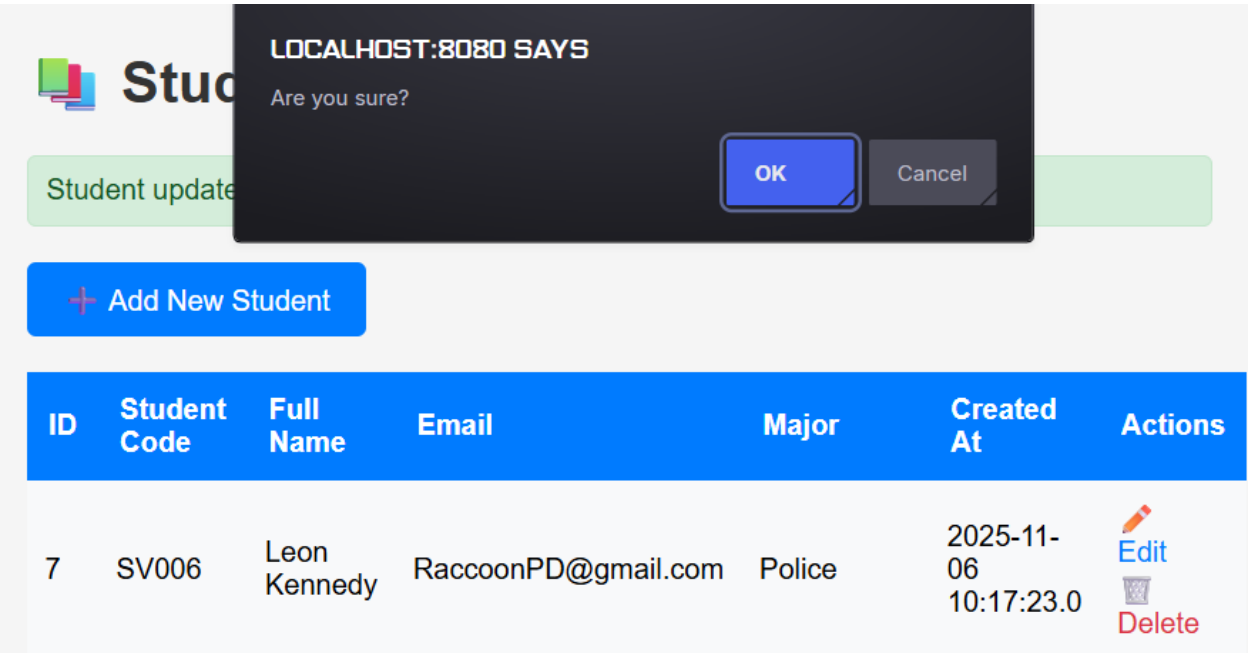
Step 7: executes update command.

Step 8: if successful => redirects to list with success message.

Step 9: if failed => redirects back with error.

Step 10: closes all database resources.

Ex4:



delete_student.jsp:

Step 1: gets the “id” parameter from the URL to know which student to delete.

Step 2: check if the “id” is valid; if not, redirects with an error.

Step 3: converts the “id” string to an integer.

Step 4: loads the MySQL JDBC driver and connects to the database.

Step 5: prepares a SQL “DELETE” statement using “PrepareStatement”.

Step 6: executes the delete query and checks if a row was affected.

Step 7: redirects with a success or “not found” message.

Step 8: catches SQL errors like foreign key constraints.

Step 9: closes the statement and database connection in “finally”.