**Introduction**

The CRUD Dashboard project is to create a web application that will enable users to work with a MySQL database to Create, Read, Update, and Delete (CRUD) records. The application allow the access to the dashboard where CRUD operations are managed by user login with registration and login features. This application combine PHP and a MySQL database so that basic web development tasks could be performed and an easy-to-use interface could be created.

**Methodology**

* PHP: PHP (Hypertext Preprocessor) is a server-side scripting language designed for web development. In this project PHP used to connects to the MySQL database, executes SQL queries, and retrieves or manipulates data. For example, PHP scripts are used to insert new user records, validate user during login, and handle CRUD operations (Create, Read, Update, Delete) on the database entries. PHP handles form submissions of form data and it have a validation checks. This includes ensuring that user inputs are valid before storing them in the database.
* MySQL: It is a relational database management system (RDBMS) used for storing and retrieving data. In this project, MySQL used to stores user data, including usernames, emails, and hashed passwords. It enables efficient querying and retrieval of data. For example, fetching user information for display on the dashboard, searching for a specific user entry, or updating/deleting user records.
* HTML and CSS: HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets) are the fundamental technologies for building and styling web pages. HTML defines the structure and content of web pages. HTML elements are used to create forms, buttons, and text fields that users interact with. CSS styles the HTML elements to improve the visual appearance and user experience. CSS is used to apply colors, fonts, spacing, and layout adjustments.
* XAMPP: XAMPP is an open-source, cross-platform web server solution package that includes Apache, MySQL, PHP, and Perl. In this project it provides a local server environment to develop and test the web application on a local machine before deploying it to a live server. This includes running PHP scripts and hosting the MySQL database locally. XAMPP includes MySQL, which is used to create and manage the database and tables required for the application. It ensures that the database server is running and accessible for PHP scripts to interact with.
* phpMyAdmin: phpMyAdmin is a free, web-based tool for managing MySQL databases. It provides an easy and understandable interface for database administration tasks. In this project, phpMyAdmin was used for create the crud\_dashboard database and the necessary tables. It provides an easy way to define table structures, data types, and relationships between tables. phpMyAdmin allows for direct interaction with the database, including running SQL queries, inserting test data.

**Development process**

1. Environment Setup

Local server installation: Installed XAMPP to create a local server environment for running PHP and MySQL database.

Database creation: Created a MySQL database named crud\_dashboard and set up a users table to store user data including id, username, email, and password.

2. Application development

User registration and login

Registration page: Created an HTML form to gather login credentials (password, email address, and username). PHP was put into use for data entry into the database and form validation.

Login page: Developed an HTML login form and used PHP to check user login against the database. Users are redirected to the dashboard upon successful login.

CRUD Tasks

Dashboard: created a main page that users can access to add, edit, remove, or read data.

Create: A form for adding new data to the database was put into place. It made sure the database was properly inserted and that the input was validated.

Read: Provided a structured display of the database's data.

Update: A form was made available so that users could update already-existing data. It made sure the database was updated correctly and that data was validated.

Delete: The ability to remove an data according to the username has been implemented. Additional error handling and confirmation.

Design and User Experience

CSS Design: The pages were styled to guarantee an very good and user-friendly interface. CSS was added to improve usability and ensure consistency across pages.

**Challenges and Solutions**

Challenge 1: Incorrect Database Connections

Issue: Incorrect database credentials or configuration resulted in errors such as "Access denied for user".

Solution: The PHP scripts' database credentials were checked and updated. updated connection settings and made sure the MySQL server was configured correctly..

Challenge 2: I saw errors in PHP scripts because of undefined variables.

solution: Added checks to make sure variables are set before use is the solution. Error handling has been implemented to handle situations in which expected data may not be available.

challenge 3: Syntax Errors in SQL

Problem: Incorrect use of SQL commands or syntactic errors caused SQL queries to fail.

Reviewed and updated SQL queries was the solution. Verified that the SQL syntax was correct and tested the queries using sample data.

**Conclusion**

The CRUD Dashboard application's development to show how PHP and MySQL can be integrated for web development. The application offers a useful example of database management and user authentication by providing a user-friendly interface and implementing essential CRUD functionalities. Along with meeting the project's initial objectives, it offered insightful information about database administration and web application development from a real-world perspective.

Reference

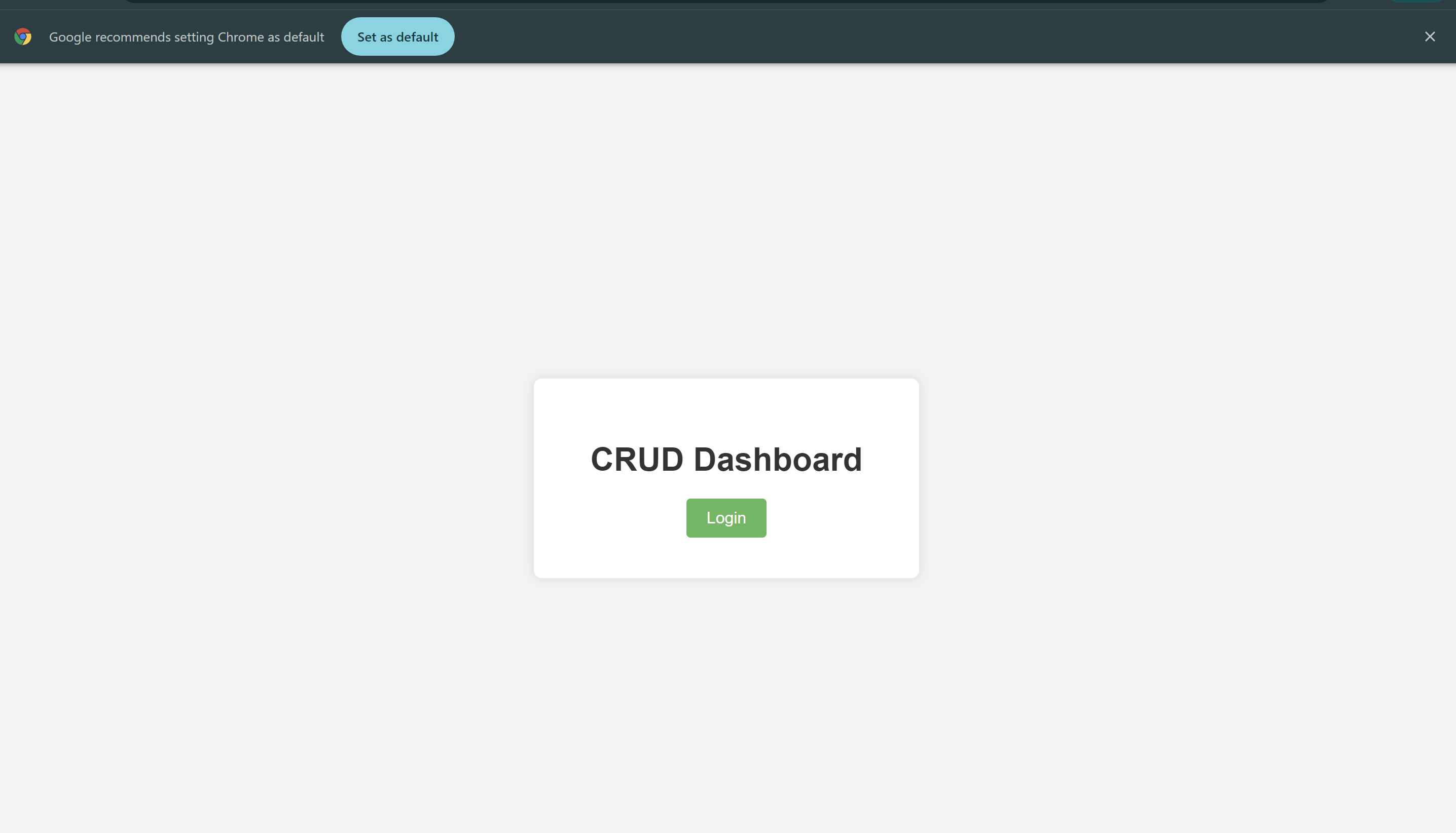
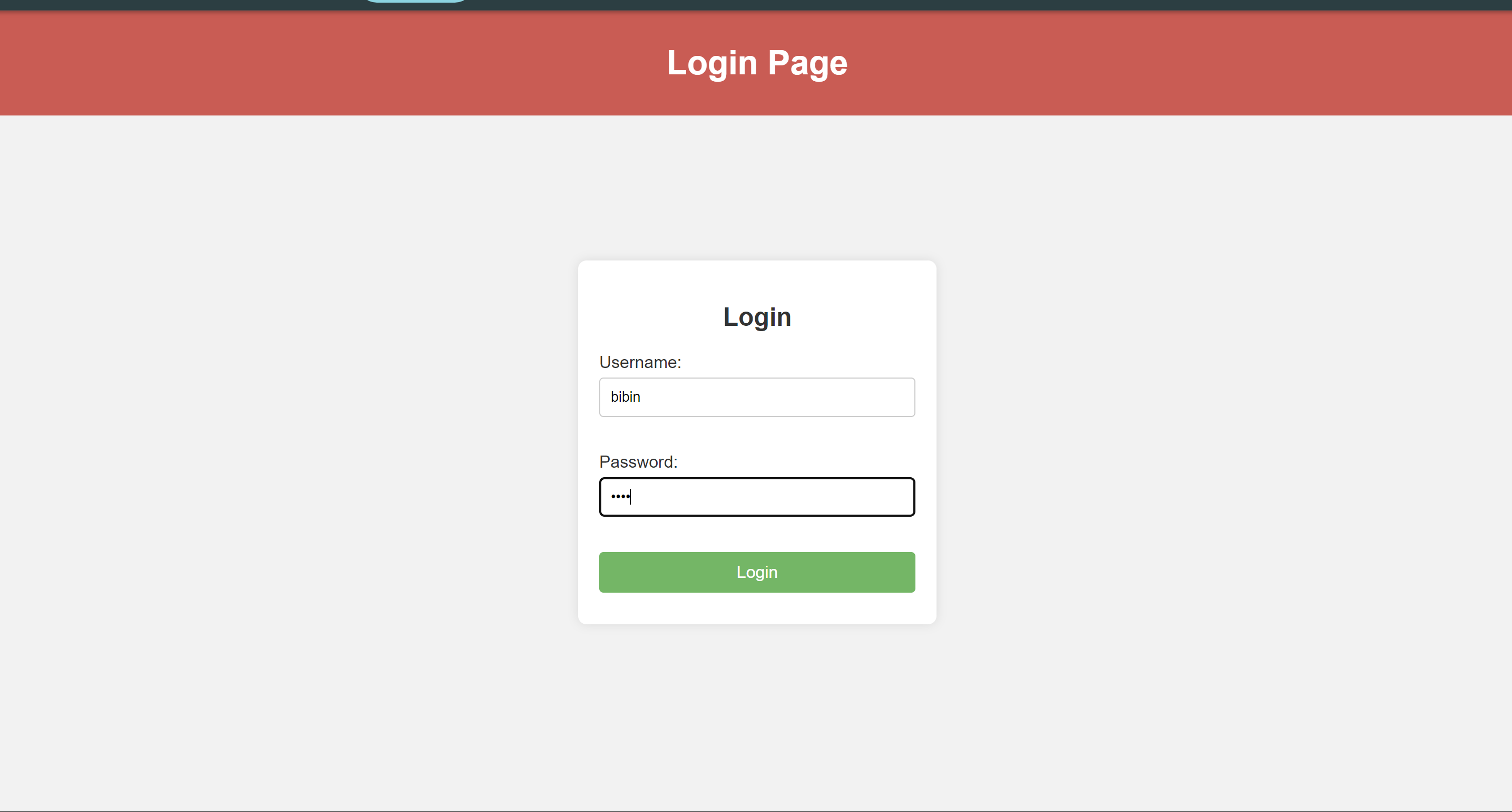
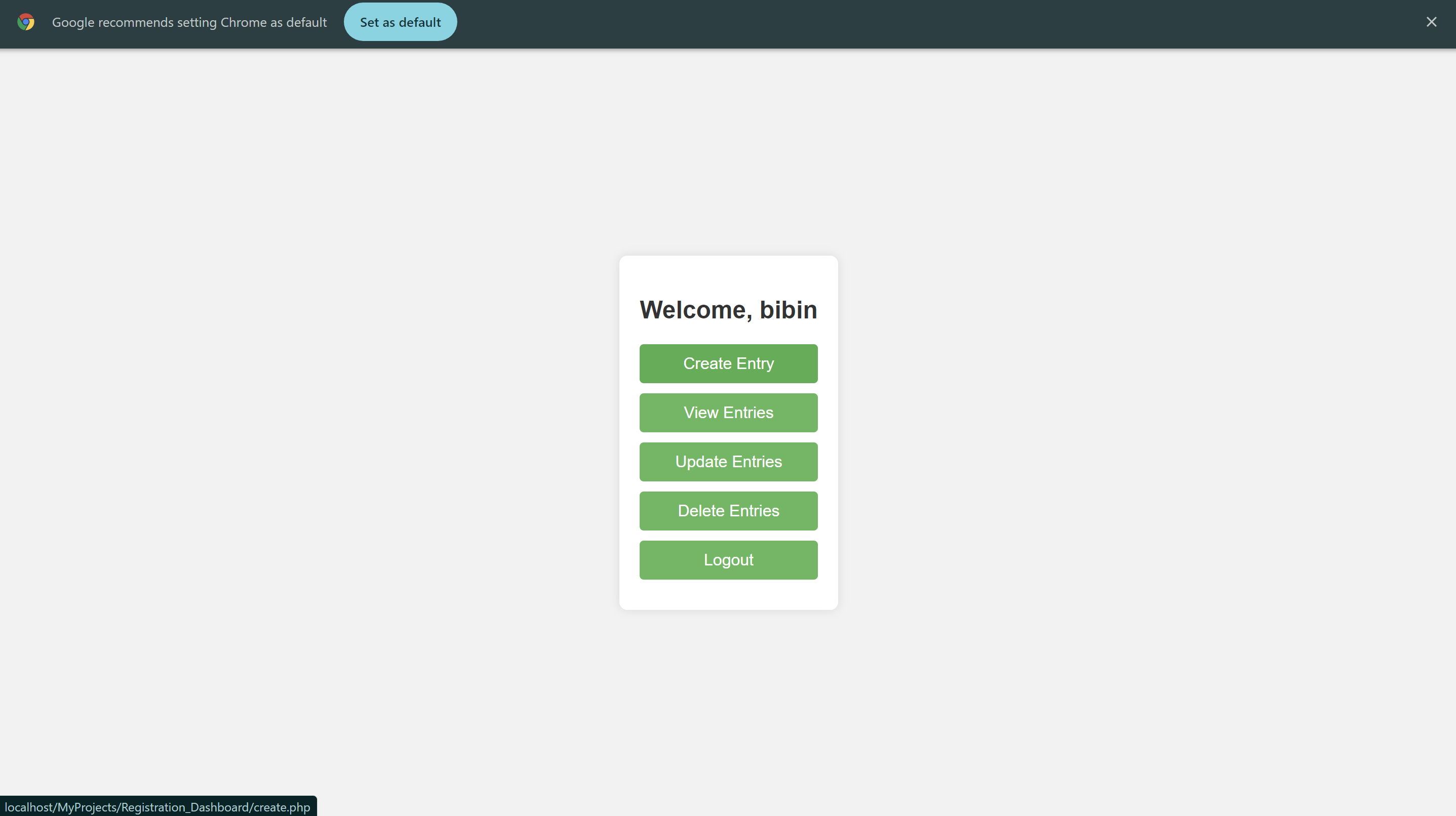
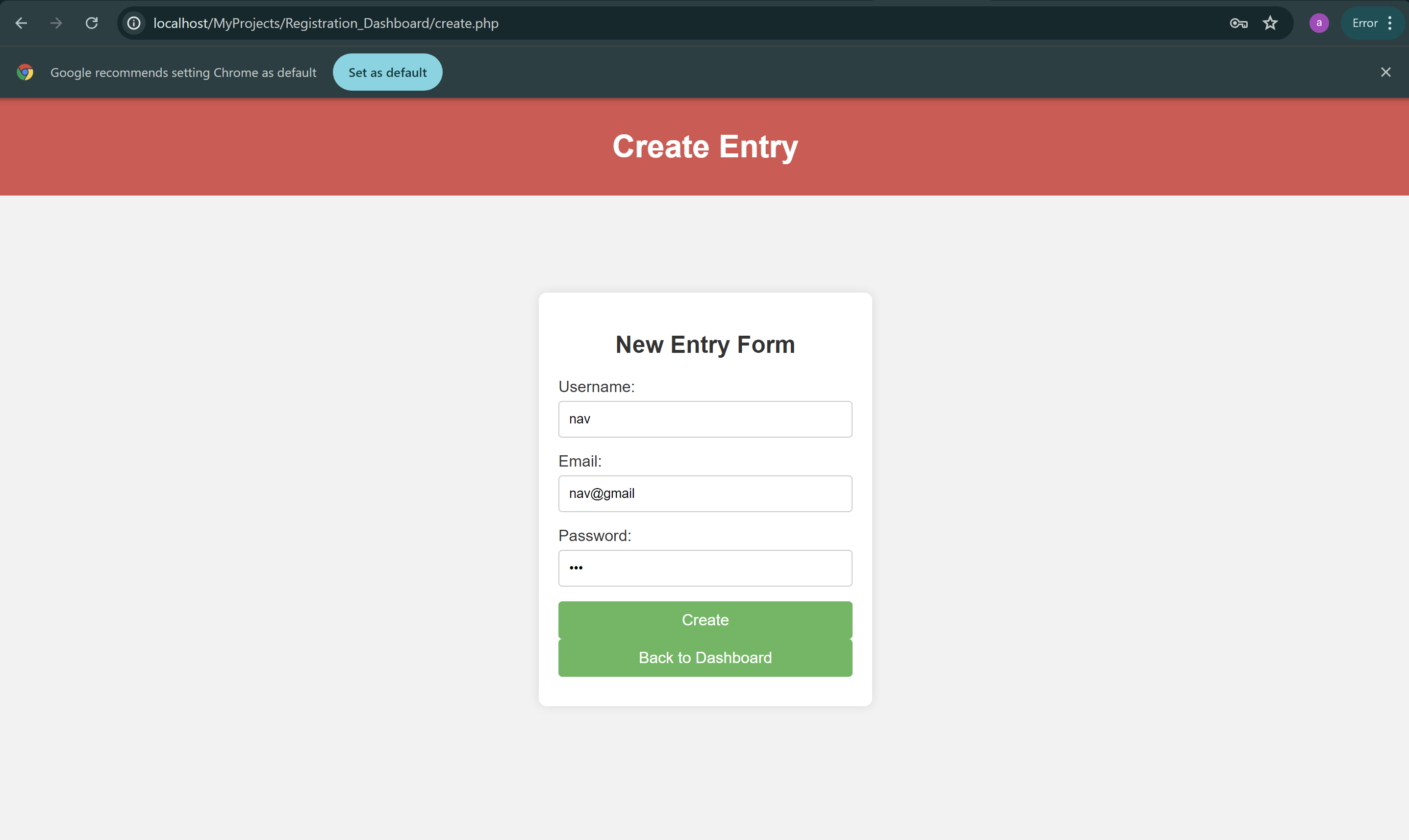
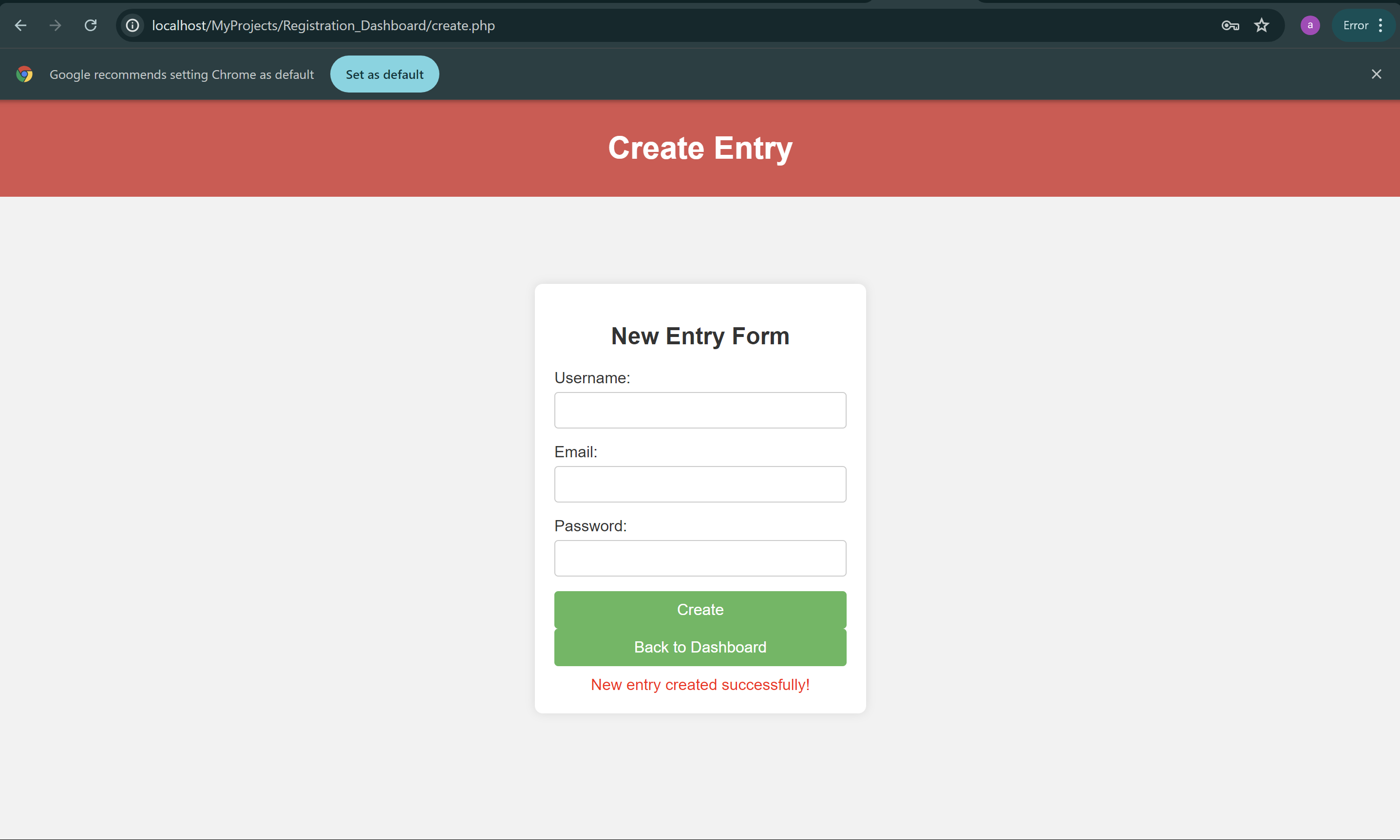
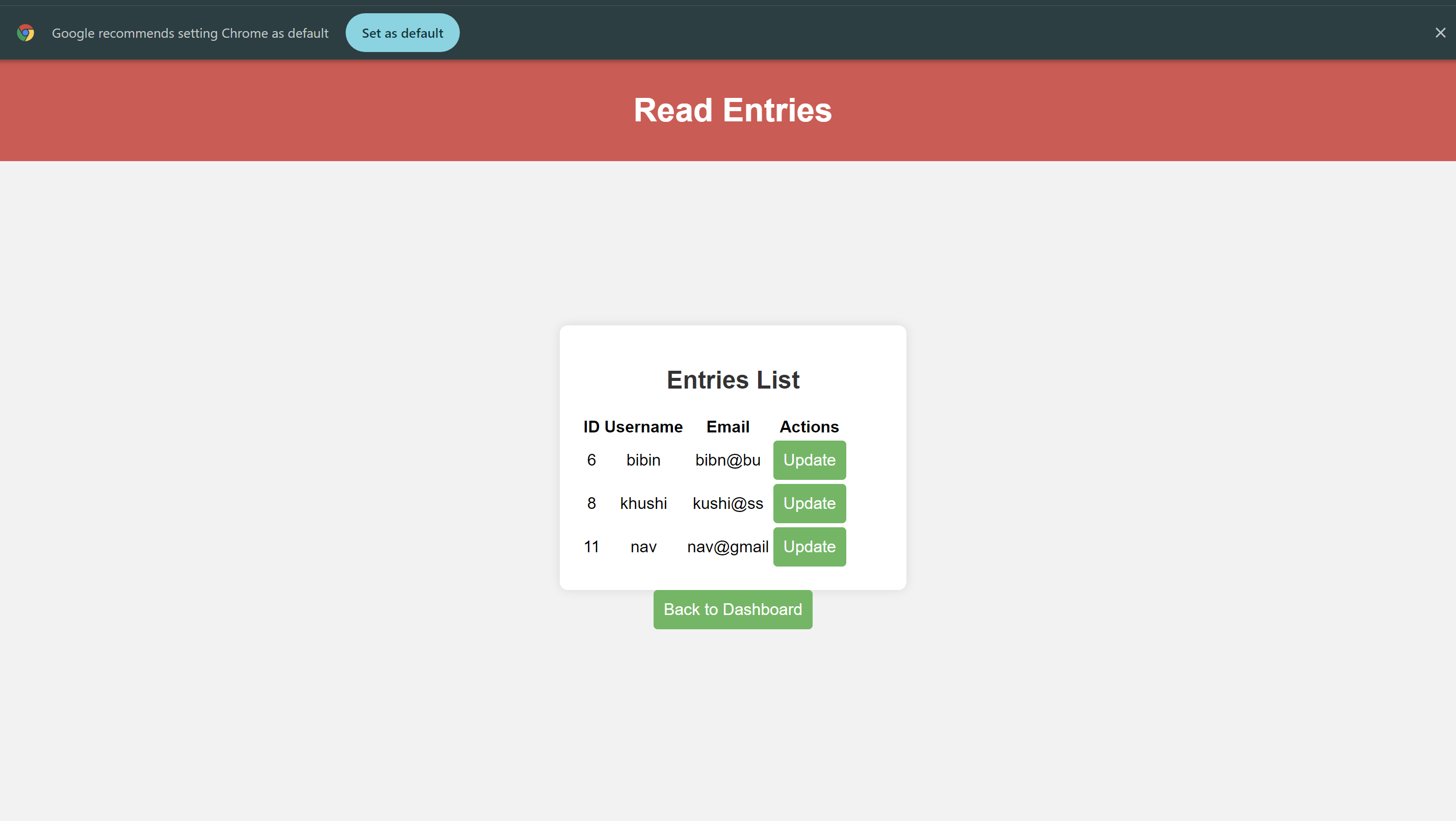
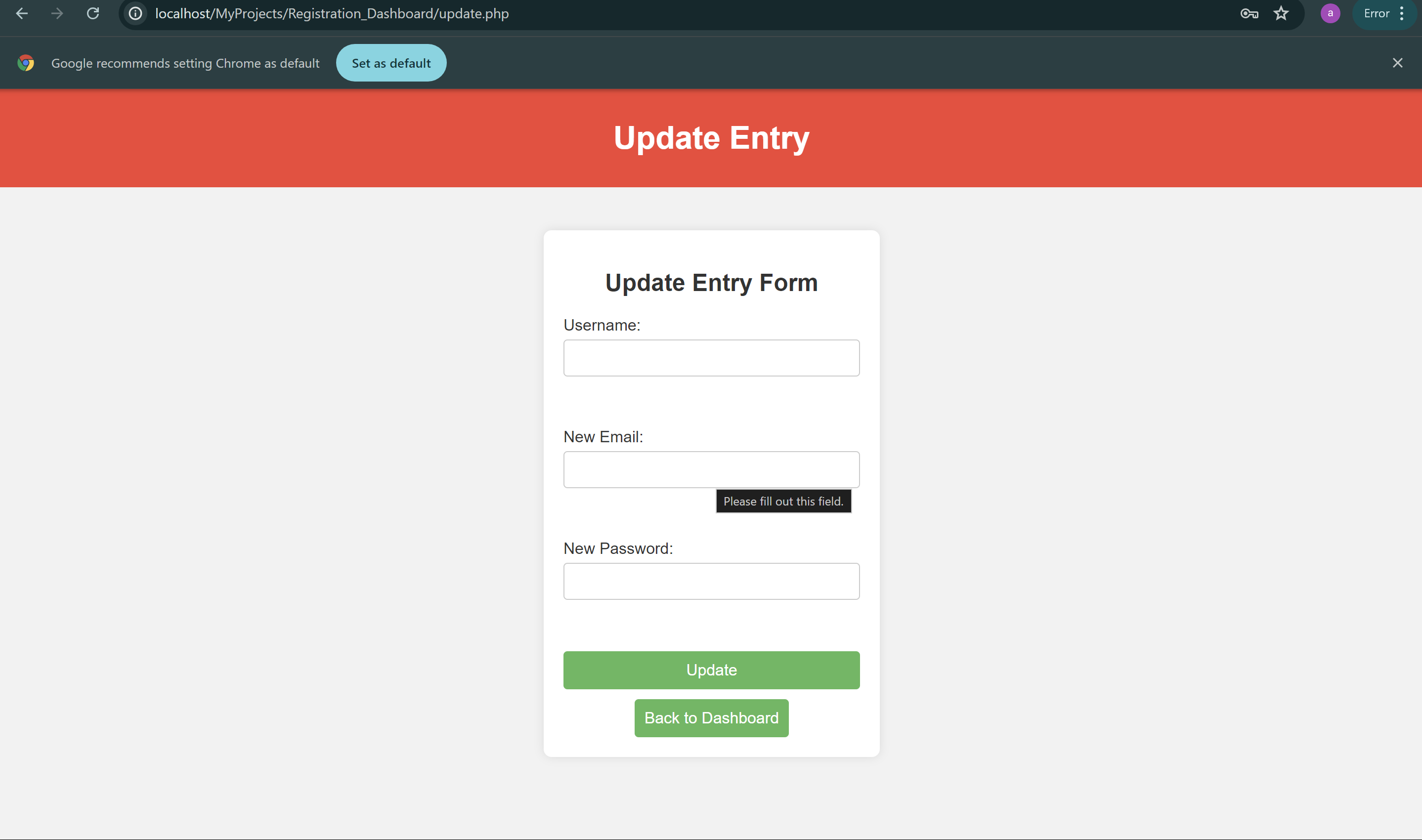
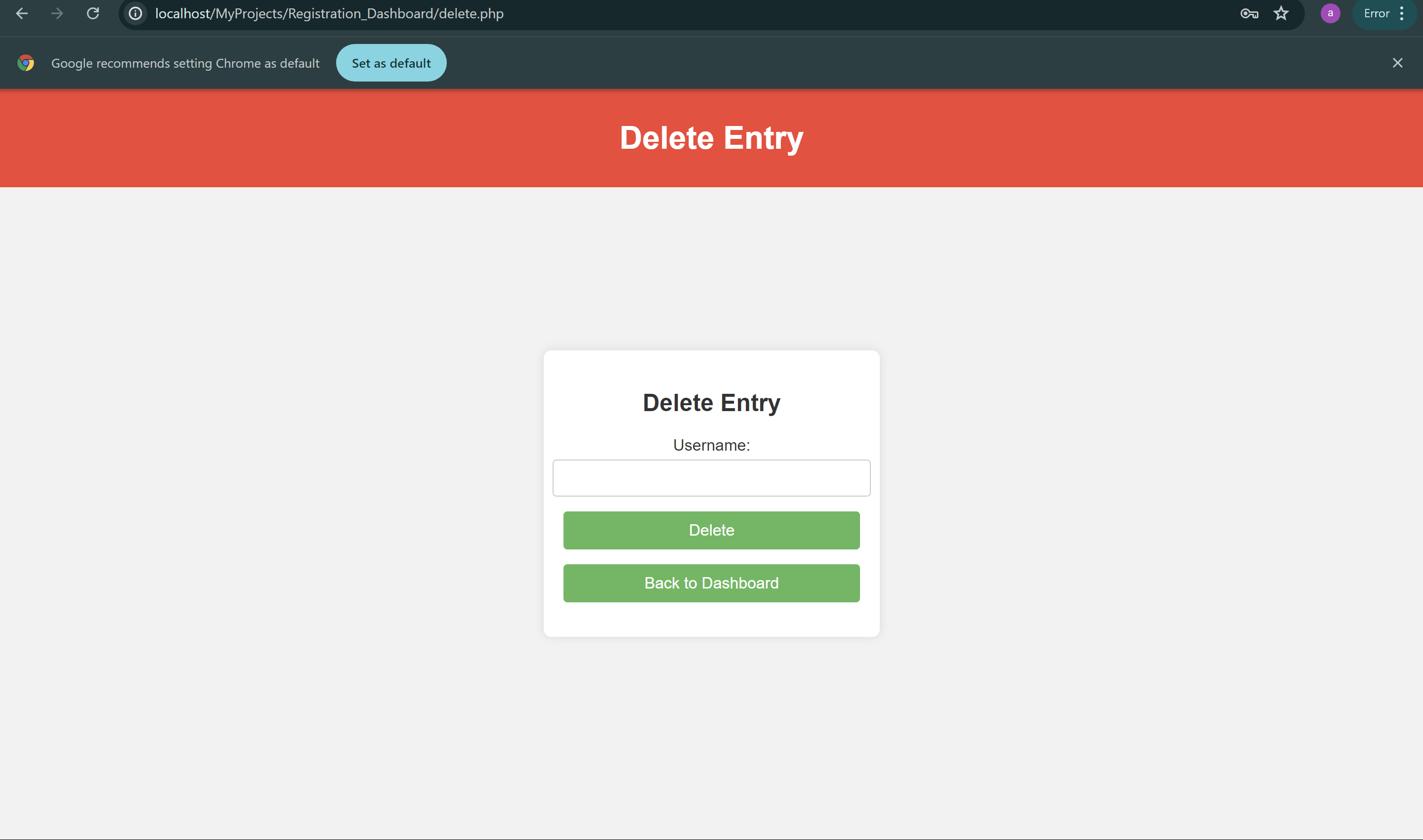
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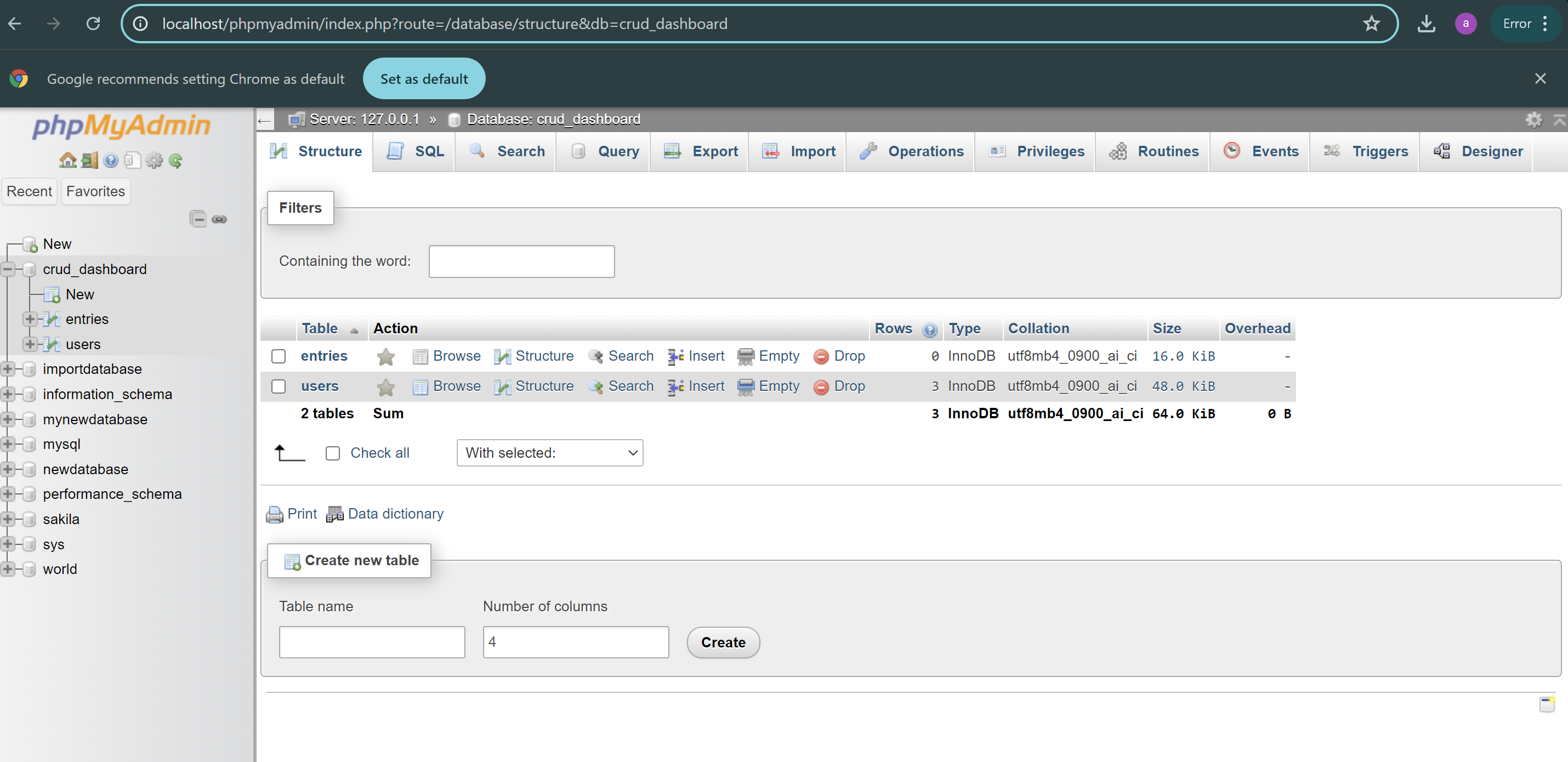
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**Screenshots of the website**

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