

Secure Login System (SLS)

Documentation

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1 Overview

The Secure Login System (SLS) is a web application designed to provide safe and reliable user authentication. It uses **Flask** for the backend and **MySQL** for storing user data, while **Bcrypt** ensures passwords are securely encrypted. **JWT tokens** are used for managing sessions, and **Google reCAPTCHA** protects the system from bots and automated attacks.

The project focuses on creating a simple yet secure login process that can be applied to websites, portals, or any platform that requires user verification.

2 Features

- Passwords are encrypted using Bcrypt for strong protection.
- JWT tokens are used to manage user sessions safely.
- User credentials are stored and managed in a MySQL database.
- Google reCAPTCHA is integrated to block bots and automated attacks.
- **Role-based access** is implemented:
 - Admin can promote/demote users, delete accounts, and track login/logout activity.
 - Users can view their dashboard.

3 Project Structure

```
secure_login_sys/
|- README.md
|- requirements.txt
|- report.pdf
|- codes/
|   |- app.py
|   |- config.py
|   |- query.txt
|   |- static/
|       |- style.css
|       |- passvalid.js
|       |- vt_assets/
|           |- about_page.png
|           |- admin_dash.png
|           |- activity_table.png
|           |- activity_dashboard.png
|           |- loginpage.png
|           |- recaptca_proof.png
|           |- reg_page.png
|           |- user_dash.png
|           |- user_db.png
|   |- templates/
|       |- index.html
|       |- about.html
|       |- register.html
|       |- admin_dashboard.html
|       |- login_activity.html
```

4 Setup Instructions

4.1 Clone the repository

```
git clone https://github.com/krtk21/secure_login_sys  
cd secure_login_sys
```

4.2 Install dependencies

```
pip install -r requirements.txt
```

4.3 Setup MySQL Database

Create a database:

```
CREATE DATABASE vault;
```

Create table user_role:

```
CREATE TABLE user_role(  
    id int PRIMARY KEY AUTO_INCREMENT NOT NULL,  
    name varchar(50) UNIQUE NOT NULL  
) ;
```

Create table user:

```
CREATE TABLE user (  
    id INT NOT NULL AUTO_INCREMENT,  
    username VARCHAR(100) NOT NULL,  
    email_id VARCHAR(150) NOT NULL,  
    password VARCHAR(255) NOT NULL,  
    role_id INT NOT NULL,  
    created_at TIMESTAMP NULL DEFAULT CURRENT_TIMESTAMP,  
    PRIMARY KEY (id),  
    UNIQUE KEY username (username),  
    UNIQUE KEY email_id (email_id),  
    KEY role_id (role_id),  
    CONSTRAINT user_ibfk_1 FOREIGN KEY (role_id) REFERENCES  
        user_role (id)  
) ;
```

Create table login_activity:

```
CREATE TABLE login_activity (  
    id INT NOT NULL AUTO_INCREMENT,  
    user_id INT DEFAULT NULL,  
    username_snapshot VARCHAR(100) DEFAULT NULL,  
    login_time TIMESTAMP NULL DEFAULT CURRENT_TIMESTAMP,  
    logout_time TIMESTAMP NULL DEFAULT NULL,  
    PRIMARY KEY (id),  
    KEY user_id (user_id),  
    CONSTRAINT login_activity_ibfk_1
```

```
FOREIGN KEY (user_id) REFERENCES user(id) ON DELETE SET
    NULL
);
```

4.4 Configure Database in app.py

Update MySQL credentials:

```
conn = mysql.connector.connect(
    host="localhost",
    user="root",
    password="your_password",
    database="vault"
)
cursor = conn.cursor(dictionary=True)
```

4.5 Run the Application

```
python codes/app.py
```

The app will run at:

<http://127.0.0.1:5000/>

5 Screenshots

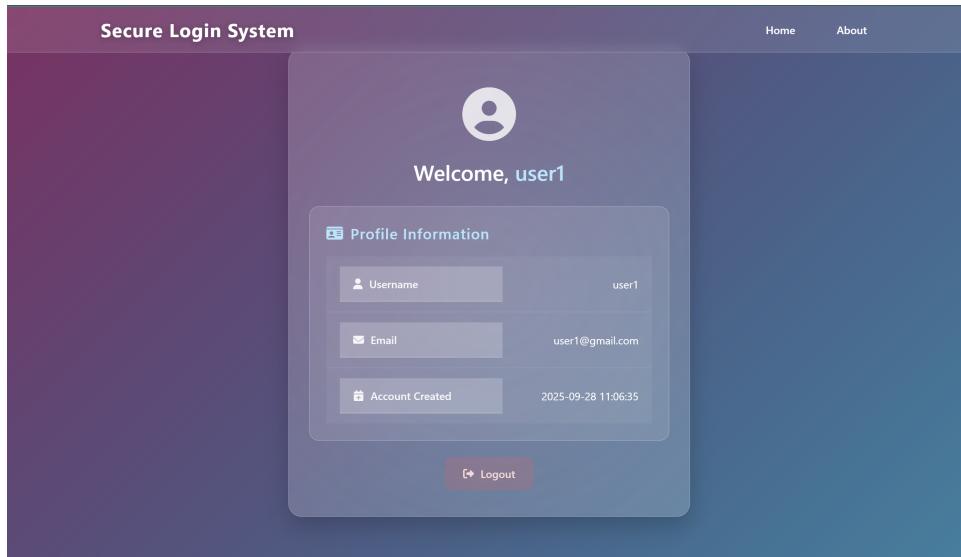
5.1 Login Page

The screenshot shows the login interface of a web application. At the top, there is a header bar with the title "Secure Login System" on the left and navigation links "Home" and "About" on the right. Below the header is a large, rounded rectangular form titled "Login". The form contains three input fields: the first for "Username" (with placeholder "admin1"), the second for "Password" (with placeholder "*****"), and the third for "Email" (with placeholder "Admin"). Below these fields is a reCAPTCHA verification box, which includes a checked checkbox labeled "I'm not a robot", the reCAPTCHA logo, and small text links for "Privacy · Terms". At the bottom of the form is a large blue "Login" button. Below the button, there is a link "Don't have an account? Register".

5.2 Registration Page

The screenshot shows the registration interface of the web application. It features a header bar with the title "Secure Login System" and navigation links "Home" and "About". Below the header is a large, rounded rectangular form titled "Register". This form includes four input fields: "Username" (placeholder "user2"), "Email" (placeholder "user2@gmail.com"), "Password" (placeholder "*****"), and a "Role" dropdown menu set to "User". A note above the role dropdown specifies: "Min 8 characters, 1 number, 1 uppercase, 1 symbol". At the bottom of the form is a blue "Register" button. Below the button, there is a link "Already have an account? Login".

5.3 User Dashboard



5.4 Admin Dashboard

The screenshot shows the Admin Dashboard of the Secure Login System. At the top, there is a header bar with the title "Secure Login System" and navigation links for "Home" and "About". The main content area features a "Admin Dashboard" header with a user icon and a "Logout" button. Below this, there is a "Registered Users" section with a table:

Username	Email	Role	Actions
admin1	admin1@gmail.com	ADMIN	Self Activity
user1	user1@gmail.com	USER	Promote Delete Activity
user3	user3@gmail.com	USER	Promote Delete Activity
admin2	admin2@gmail.com	USER	Promote Delete Activity

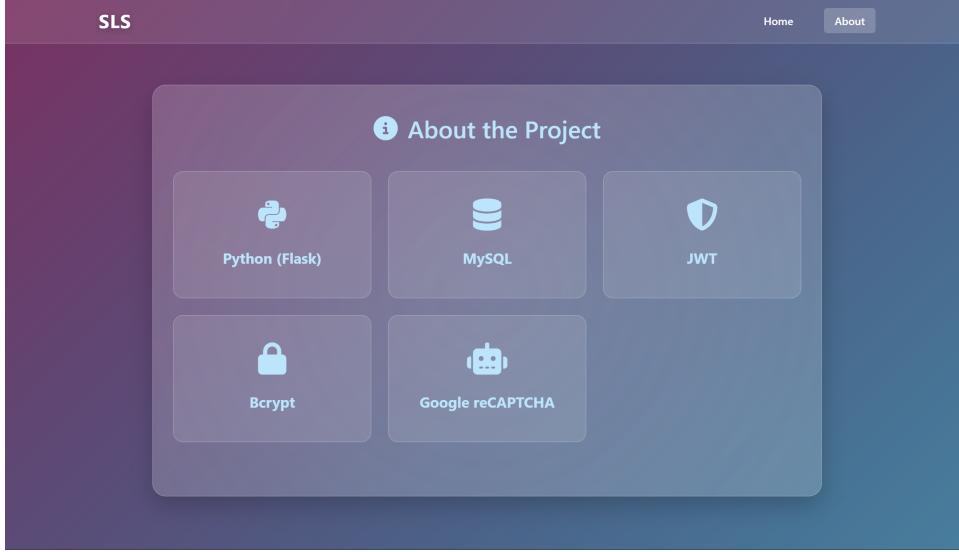
5.5 Activity Dashboard

The screenshot shows a "Secure Login System" dashboard with a "Login Activity" section. It displays a user session for "user3" created on "2025-09-29 14:49:13". Below this is a "Session History" table with columns for Login Time, Logout Time, and Status. One entry shows a session starting at 2025-09-29 22:18:38 and ending at 2025-09-29 22:18:54 with a status of "COMPLETED". A "Back to Dashboard" button is at the bottom.

5.6 reCAPTCHA

The screenshot shows a "Secure Login System" login page. On the left, there is a sidebar with user profiles: "admin", ".....", "Admin", and "D...". The main area has a "Login" title and a reCAPTCHA challenge: "Select all squares with motorcycles". Below the challenge is a grid containing a motorcycle image. At the bottom are "C", "SOUND", and "i" buttons, and a "SKIP" button.

5.7 About Page



5.8 Database Table

```
mysql> select * from user;
+----+-----+-----+-----+-----+-----+
| id | username | email_id | password | role_id | created_at |
+----+-----+-----+-----+-----+-----+
| 5  | admin1   | admin1@gmail.com | $2b$12$5GnGi0EnsaZDPOG03878D.UaSR2HItD2vd9Y77raf/7THtXhcilMe | 1 | 2025-09-28 11:06:07 |
| 6  | user1    | user1@gmail.com  | $2b$12$8H3eveU/UTRAHAFL3oN.ZXu0zjL4EXRJZK9qPwCLLznzJswRZFQLN0 | 2 | 2025-09-28 11:06:35 |
| 7  | user3    | user3@gmail.com  | $2b$12$zBWOWjkGzb3ADInGlv.i/ur18.6oN2k54xCK4KyIqYJDE2aqFWdu | 2 | 2025-09-29 14:49:13 |
| 8  | admin2   | admin2@gmail.com | $2b$12$335bycEoSGrXze/IcM360pJT/f5lgb0kMcMdhpv8kn9jneH39SPWVG | 2 | 2025-09-29 20:03:48 |
+----+-----+-----+-----+-----+-----+
4 rows in set (0.08 sec)

mysql> select * from user_role;
+----+-----+
| id | name |
+----+-----+
| 1  | admin |
| 2  | user  |
+----+-----+
```

5.9 Activity Table

```
mysql> select * from login_activity;
+----+-----+-----+-----+-----+
| id | user_id | username_snapshot | login_time           | logout_time          |
+----+-----+-----+-----+-----+
| 1  | 5      | admin1           | 2025-09-29 20:22:47 | 2025-09-29 20:35:44 |
| 2  | 5      | admin1           | 2025-09-29 21:12:40 | NULL                |
| 3  | 5      | admin1           | 2025-09-29 21:13:43 | NULL                |
| 4  | 5      | admin1           | 2025-09-29 21:18:21 | 2025-09-29 21:55:13 |
| 5  | 5      | admin1           | 2025-09-29 22:03:18 | 2025-09-29 22:03:23 |
| 6  | 7      | user3            | 2025-09-29 22:18:38 | 2025-09-29 22:18:54 |
| 7  | 5      | admin1           | 2025-09-29 22:37:53 | 2025-09-29 22:38:17 |
| 8  | 5      | admin1           | 2025-09-29 22:44:26 | 2025-09-29 22:46:14 |
| 9  | 5      | admin1           | 2025-09-30 00:23:45 | 2025-09-30 00:23:57 |
| 10 | 6      | user1            | 2025-09-30 00:24:41 | 2025-09-30 00:24:47 |
| 11 | 5      | admin1           | 2025-09-30 00:33:35 | NULL                |
| 12 | 5      | admin1           | 2025-09-30 00:37:34 | NULL                |
| 13 | 5      | admin1           | 2025-09-30 01:08:06 | 2025-09-30 01:08:37 |
| 14 | 6      | user1            | 2025-09-30 01:09:38 | NULL                |
+----+-----+-----+-----+-----+
14 rows in set (0.00 sec)
```