

# Advanced Secure Login System with 2FA

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A Flask & MySQL-based Project

# Team Members

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# Project Overview

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- Secure registration system with hashing features.
- Implements Two-Factor Authentication (2FA) using Email OTP.
  - Built using Flask, MySQL
- User-friendly interface with client and server validation.

# Objectives

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- Enhance security for web applications.
- Protect against brute-force and unauthorized access.
- Ensure secure OTP handling using RSA encryption.
- Provide feedback and logging for user actions.



# Technologies Used

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- Python Flask - Backend framework
  - MySQL - Database
  - Werkzeug - Password hashing
- RSA Encryption - OTP protection
  - HTML/CSS/JS - Frontend
  - SMTP - Email OTP delivery

# Key Features

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- Email OTP with expiry & retry limit (stored in DB, expiry enforced)
- RSA-encrypted OTP in the database (no plaintext OTP storage)
- Strong password validation (client + server)
  - Login rate-limiting and account lockout
  - Password hashing using Werkzeug



# Additional Features

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- Session timeout management
- Flash messages for user feedback
- Logging of all login attempts
- JavaScript-based form validation
  - User dashboard after login

# Future Updates

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- Integration with SMS-based OTP service
  - Multi-device login management
- Integration with Google Authenticator
  - Role-based access control
- UI/UX improvements for mobile users
  - RSA Encryption - OTP protection



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Thank you