

Secure File Sharing Web App

1. Problem Statement:

✿ File sharing is a common practice in today's digital world, but the majority of conventional file sharing techniques are vulnerable to security and privacy breaches. Because public file-sharing platforms frequently lack access control, link expiration, and end-to-end encryption, private information is susceptible to illegal access or interception.

With the help of the following features, this project seeks to create a safe, intuitive web application that permits encrypted file sharing:

- End-to-end encryption of files before upload
- One-time or expiring download links
- Optional password protection or 2FA
- Optional download limits

2. Relevant Research/Concepts:

- OWASP Top 10 (A foundational guide to web application security vulnerabilities)
- Secure File Transfer Protocols (like HTTPS, SFTP, and TLS encryption in transit)
- Modern cryptography: AES-256, RSA, hybrid encryption models

3. Security Goals:

- Confidentiality: Files are encrypted at rest and in transit
- Integrity: Files are not tampered with
- Availability: Secure sharing without complexity i.e., easily available

Secure File Sharing Web App

4. Tools and Technologies Used:

✿ **Kindly Note:** These Technologies are tentatively decided and may change in future versions.

- Backend: Python (Flask / Django)/ Node.js (Express.js)
- Frontend: React.js/ HTML + Bootstrap + Vanilla JS
- Encryption & Security Libraries: Crypto (Node.js)/ PyCryptodome/ WebCrypto API (browser)/ JWT / OAuth2
- Storage: Local filesystem/ Amazon S3
- Hosting Options: Vercel + API backend/ DigitalOcean / AWS EC2

5. Expected Outcome:

By the end of the project, you should have:

- ✿ A fully functional web app that:
 - Accepts file uploads (via drag-drop or form)
 - Encrypts files (client-side or server-side)
 - Stores encrypted files securely
 - Generates a unique one-time or expiring link
 - Optionally protects files with a password
 - Logs and restricts download attempts
 - Deletes files after expiration or max downloads

Secure File Sharing Web App

✿ Admin or user dashboard for:

→ Upload history (TBD)

→ Active links and file metadata

→ Deletion controls

✿ Optional Features: These Features are brainstormed by our team and we will try to implement but are not guaranteed to.

→ QR code for download links

→ 2FA/MFA for uploaders

→ Virus scanning before download (ClamAV)