Design Document

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Project Title: URL Shortener

1. Introduction

The URL Shortener project is a web-based tool designed to take long URLs and generate shorter, more manageable links. This is useful for sharing links across platforms where character limits apply or simply for ease of use.

2. Technologies Used

- Frontend: React (Vite), Material UI
- Backend: Node.js, Express.js
- Logging: Custom middleware using Axios to report logs to a remote logging server
- Other: CORS, UUID, React Router

3. Folder Structure

Frontend (Vite Project)
- src/
  - components/
    - UrlForm.jsx
    - StatsPage.jsx
  - api.js
  - App.jsx
  - main.jsx

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Backend

- server.js

- data.js

- routes/

  - shorten.js

  - stats.js

- Logging Middleware/

  - logger.js

4. Functionality

- Accepts a long URL from the frontend

- Generates a unique short ID for it

- Redirects users from the short URL to the original

- Tracks the number of times each short URL has been accessed

- Logs any server-side errors using middleware

5. Error Handling & Logging

A logging middleware captures server-side errors and sends them to a remote evaluation/logging server. It uses Axios to make POST requests with details like message, stack, and severity level.

6. Conclusion

The project demonstrates full-stack development using modern JavaScript tools. It integrates frontend and backend with a clear architecture, adding error tracking through a custom logging service.