NGO Fundraiser System

Technical Documentation Report

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1. Executive Summary

Relief Core is a full-stack web application designed to facilitate transparent and secure fundraising for NGO campaigns. The platform enables donors to contribute to various social causes while providing administrators with comprehensive tools for campaign management, expense tracking, and impact reporting.
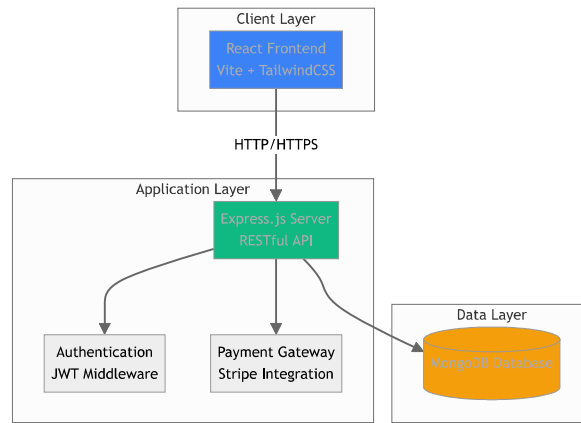
Key Features

- **User Management:** Role-based access control (Admin/Donor)
- **Campaign Management:** Create, track, and manage fundraising campaigns
- **Secure Payments:** Integration with Stripe payment gateway
- **Expense Tracking:** Transparent expense logging and categorization
- **Impact Analytics:** Real-time dashboards with visual analytics
- **Certificate Generation:** Automated donation certificates (PDF)

2. System Architecture

2.1 High-Level Architecture

The system follows a **three-tier architecture** pattern with clear separation of concerns:

2.2 Technology Stack

Frontend

- **Framework:** React 19.2.0 with React Router DOM
- **Build Tool:** Vite 7.2.4
- **Styling:** TailwindCSS 3.4.1 with custom design system
- **UI Components:** Lucide React (icons), Recharts (analytics)
- **State Management:** React Context API
- **HTTP Client:** Axios 1.13.2
- **PDF Generation:** jsPDF 4.0.0

Backend

- **Runtime:** Node.js with Express.js 5.2.1
- **Database:** MongoDB 9.1.4 with Mongoose ODM
- **Authentication:** JWT (jsonwebtoken 9.0.3) + bcryptjs 3.0.3
- **Payment Processing:** Stripe 20.2.0
- **Email Service:** Nodemailer 7.0.12
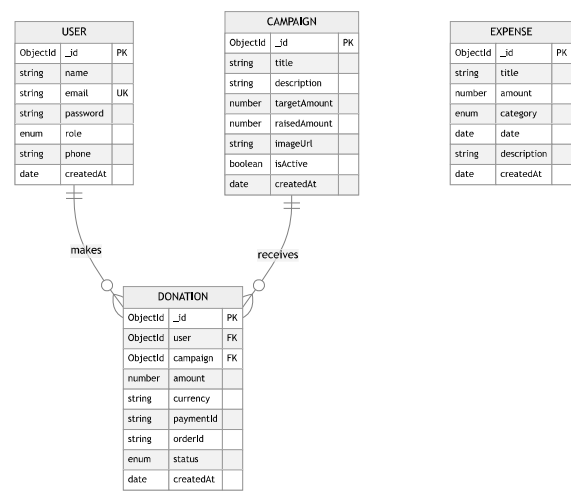- **Development:** Nodemon 3.1.11

2.3 API Architecture

The backend exposes **5 primary route modules**:

Route Module	Endpoint	Purpose
Auth Routes	`/api/auth`	User registration, login, profile management
Campaign Routes	`/api/campaigns`	Fetch active campaigns
Donation Routes	`/api/donations`	Payment processing, donation history
Admin Routes	`/api/admin`	Campaign CRUD, user management, analytics
Expense Routes	`/api/expenses`	Expense logging, CSV export

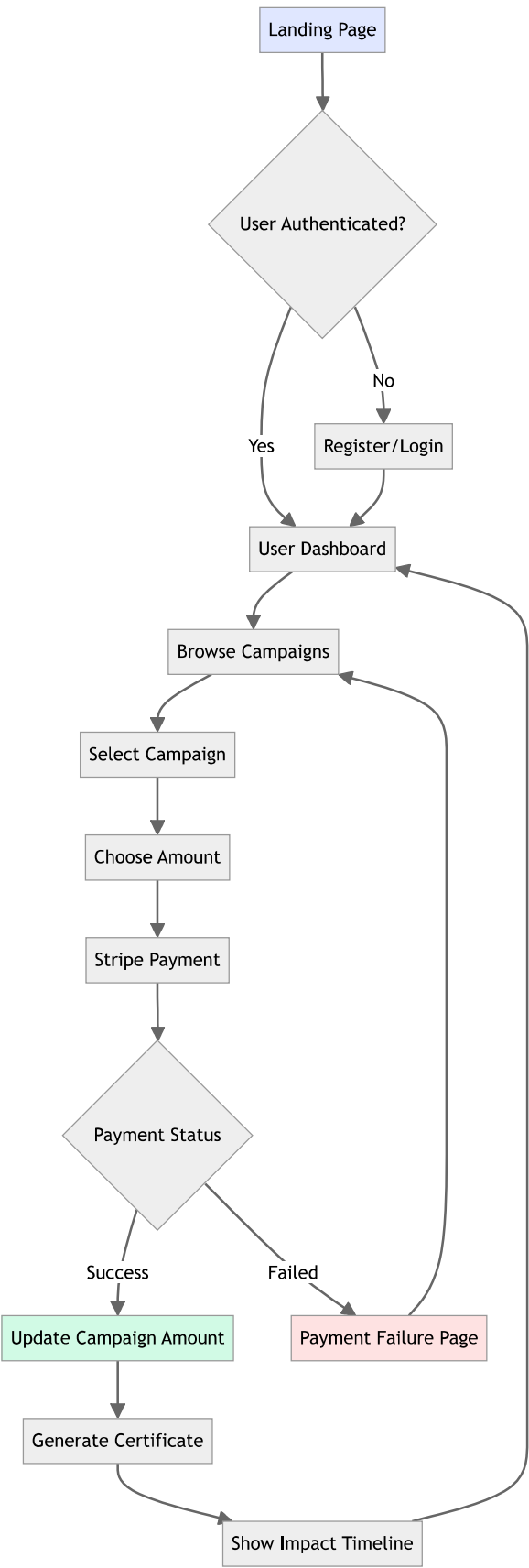# 3. Database Schema

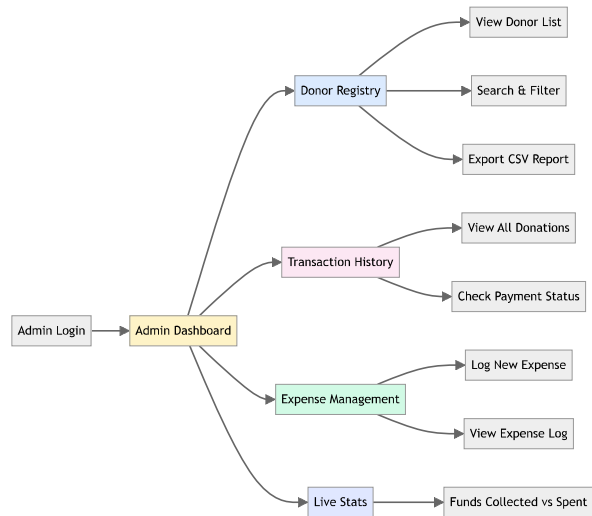## 3.1 Entity-Relationship Diagram

3.2 Schema Details

- **User Collection:** Roles (user/admin), Passwords hashed via bcryptjs.
- **Campaign Collection:** Real-time tracking of raised amounts, Soft delete (isActive).
- **Donation Collection:** Audit trail with Stripe IDs (orderId, paymentId).
- **Expense Collection:** Categorized expenses (Medical, Logistics, etc.) independent of campaigns.

4. User Flow Diagrams

4.1 Donor Journey

```mermaid
flowchart TD
    A[Landing Page] --> B{User Authenticated?}
    B -->|Yes| D[User Dashboard]
    B -->|No| C[Register/Login]
    C --> D[User Dashboard]
    D --> E[Browse Campaigns]
    E --> F[Select Campaign]
    F --> G[Choose Amount]
    G --> H[Stripe Payment]
    H --> I{Payment Status}
    I -->|Success| J[Update Campaign Amount]
    I -->|Failed| K[Payment Failure Page]
    J --> L[Generate Certificate]
    L --> M[Show Impact Timeline]
    K --> E
    M --> D
```

Landing Page

User Authenticated?

Yes / No

Register/Login

User Dashboard

Browse Campaigns

Select Campaign

Choose Amount

Stripe Payment

Payment Status

Success / Failed

Update Campaign Amount

Payment Failure Page

Generate Certificate

Show Impact Timeline
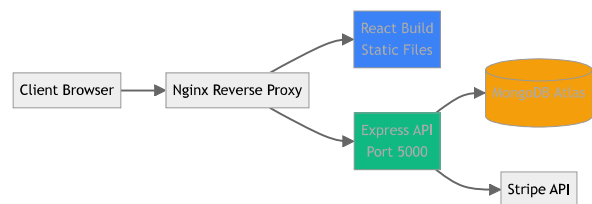
4.2 Admin Workflow

5. Key Design Decisions

- **Security:** JWT Auth, CORS restrictions, and bcrypt password hashing.
- **Payments:** Stripe for reliable processing, atomic database updates on success.
- **Frontend:** Optimistic UI updates, Context API for state, Responsive Tailwind design.
- **Database:** Denormalized `raisedAmount` for read performance, Soft deletes.

6. Deployment Architecture

6.1 Recommended Setup

6.2 Environment Configuration

Backend (.env)

```
 MONGO_URI=mongodb://localhost:27017/ngo-fundraiser
 JWT_SECRET=<secure-random-string>
 CLIENT_URL=http://localhost:5173
 STRIPE_KEY_ID=<stripe-key>
 STRIPE_KEY_SECRET=<stripe-secret>
 PORT=5000
```

7. Conclusion

Relief Core successfully demonstrates a production-ready NGO fundraising platform. The system prioritizes transparency, security, and user experience while maintaining scalability. The modular architecture allows for easy feature additions and third-party integrations.

Repository: github.com/atharv-pdarshi/ngo-fundraiser-system