NGO Donation Management System

Repository: https://github.com/C0deEnigma/ngo-donation-management-system

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1. Introduction

The **NGO Donation Management System** is a web-based platform built using the Django framework. Its primary goal is to streamline the interaction between a **Non-Governmental Organization (NGO)** and **donors**, enabling transparent campaign management, efficient donation handling, and centralized administrative control.

The system follows Django's **Model–View–Template (MVT)** architecture and is structured as a collection of modular Django apps, each responsible for a distinct domain of functionality.

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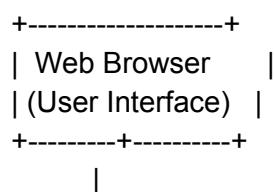
2. System Architecture
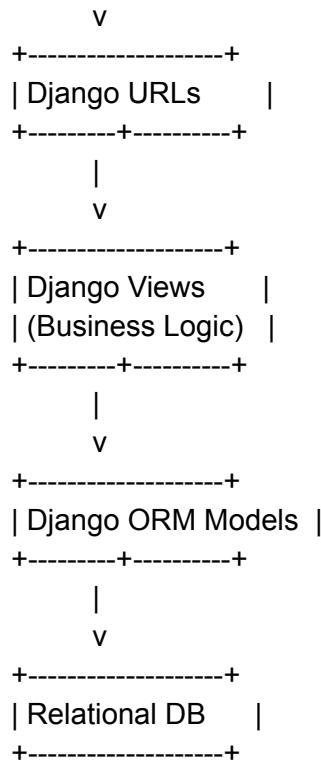
2.1 High-Level Architecture

The system follows a classic **three-tier architecture**:

1. **Presentation Layer**
   - HTML templates rendered using Django Template Language (DTL)
   - CSS served via Django static files
2. **Application Layer**
   - Django views (function-based or class-based)
   - Business logic for campaigns, donations, registrations, and authentication
3. **Data Layer**
   - Django ORM
   - Relational database (SQLite used in initial development; switched to MySQL for scalability)

2.2 Architectural Diagram

```
+-------------------+
|  Web Browser      |
| (User Interface)  |
+---------+---------+
          |
```

```
        v
+--------------------+
| Django URLs        |
+---------+----------+
          |
          v
+--------------------+
| Django Views       |
| (Business Logic)   |
+---------+----------+
          |
          v
+--------------------+
| Django ORM Models  |
+---------+----------+
          |
          v
+--------------------+
| Relational DB      |
+--------------------+
```

2.3 Modular App Design

App Name	Responsibility
accounts	Authentication, user profiles, roles
registrations	Registration for user in campaigns
campaigns	Campaign creation, display, and lifecycle
donations	Donation processing and history tracking
pages	Static and informational pages

This modularity improves **maintainability, scalability, and testability**.

3. Database Schema

1. User

Extends Django's `AbstractUser` and represents all platform users (admins and donors).

Key Fields

- `id` (PK)

- `username` *(unique, required)*

- `email` *(unique, required)*

- `password`

- Standard Django auth fields (`is_staff`, `is_superuser`, etc.)

Constraints

- `email` is unique

- `username` remains Django-default (unique)

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2. Campaign

Represents a fundraising campaign run by the NGO.

Key Fields

- `id` (PK)

- `title`

- `description`

- `goal_amount` *(nullable)*

- start_date

- end_date *(nullable)*

- is_active

- image *(nullable)*

- created_at

Indexes

- is_active

- start_date

Notes

- Campaigns are ordered by newest first

- Campaigns cannot be deleted if registrations exist

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3. Registration

Links a **User** to a **Campaign** (one registration per user per campaign).

Key Fields

- id (PK)

- user_id (FK → User)

- campaign_id (FK → Campaign)

- name *(optional)*

- created_at

Constraints

- **Unique (`user_id`, `campaign_id`)**

Delete Rules

- User deletion → registrations deleted

- Campaign deletion → blocked if registrations exist

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4. Donation

Stores donation transactions linked to a registration.

Key Fields

- `id` (PK)

- `registration_id` (FK → Registration, nullable)

- `amount`

- `payment_status` *(Pending / Success / Failed)*

- `payment_provider`

- `transaction_id` *(nullable)*

- `created_at`

Indexes

- `payment_status`

- `created_at`

Constraints

- **Conditional Unique (`transaction_id`, `payment_provider`)**

  - Applied only when `transaction_id` is not null or empty

Delete Rules

- Registration deletion → donation retained with `registration_id` = NULL

Relationships (Summary)

- User 1 ───── * Registration * ───── 1 Campaign
-                               1
-                             └───── * Donation

Design Notes

- Ensures **one registration per user per campaign**
- Supports **safe payment retries**
- Prevents campaign deletion when dependent data exists
- Optimized for **scalable MySQL deployments**

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4. System Flow Diagrams

4.1 User Registration & Login Flow

User → Register/Login → Authentication
↓
Role Assigned
↓
User Dashboard
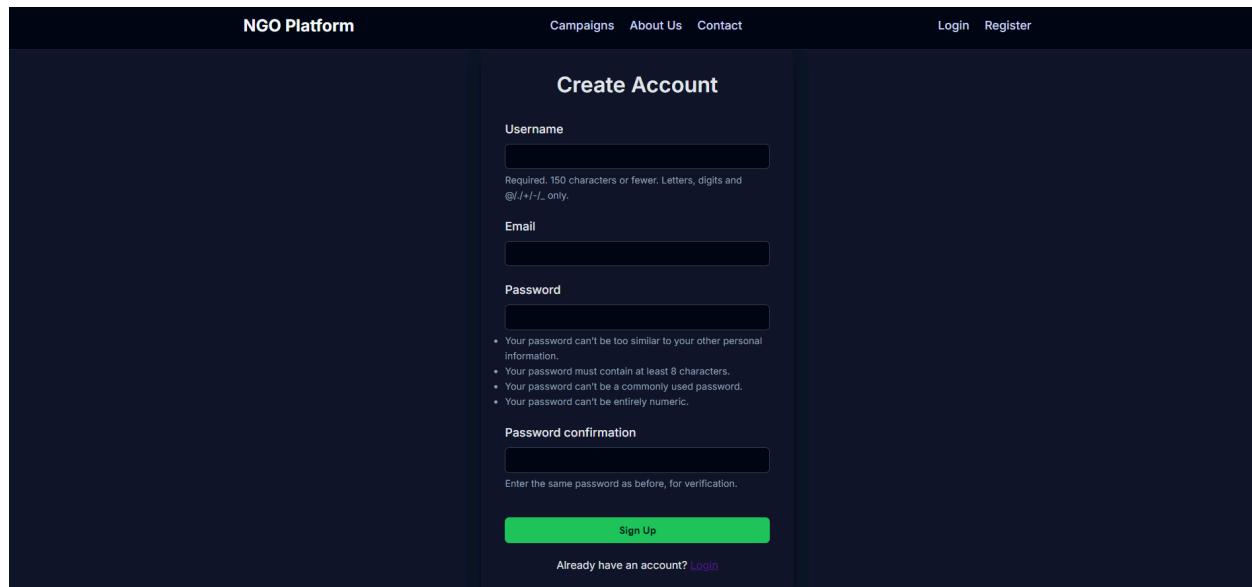
Home page

Sign up page

Campaigns   About Us   Contact

Login   Register

Login

Username

Password

Login

Don't have an account? Register

Login Page

Campaigns   About Us   Contact

Logged in as **user1**   My Profile   Logout

User Profile

Username: user1   **Email:** none16094@gmail.com   **Date Joined:** Jan. 14, 2026, 11:39 p.m.

Last Login: Jan. 19, 2026, 1:04 a.m.

Your Registrations

Campaign	Registered On
Education for Every Child Registered as: Nobody	Jan. 18, 2026, 10:17 p.m.
Accessible Healthcare for Communities Registered as: Nobody	Jan. 17, 2026, 11:49 p.m.
Skill Development for Sustainable Livelihoods Registered as: Nobody	Jan. 17, 2026, 11:12 p.m.

Your Donations

Campaign	Amount	Status	Date
Education for Every Child	₹ 50000.00	Success	Jan. 18, 2026, 10:34 p.m.
Education for Every Child	₹ 5000.00	Failed	Jan. 18, 2026, 10:33 p.m.
Skill Development for Sustainable Livelihoods	₹ 6000.00	Failed	Jan. 18, 2026, 1:17 a.m.

User dashboard (after login)

Admin Dashboard (Django Default authentication)

Admin (users)

Select campaign to change

ADD CAMPAIGN +

Action: [---------] [Run]   0 of 3 selected

	TITLE	GOAL AMOUNT	TOTAL DONATIONS (₹)	START DATE	END DATE	IS ACTIVE
☐	Skill Development for Sustainable Livelihoods	4000000	20000.00	Jan. 13, 2026	Jan. 31, 2026	✓
☐	Accessible Healthcare for Communities	5000000	21050.00	Jan. 13, 2026	-	✓
☐	Education for Every Child	10000000	120000.00	Jan. 13, 2026	Jan. 28, 2026	✓

3 campaigns

Admin (campaigns) - Total aggregated amounts mentioned per campaign as mentioned in requirements of admin dashboard.

Select registration to change

ADD REGISTRATION +

[🔍 _____] [Search]

Action: [---------] [Run]   0 of 8 selected

	NAME	USER	CAMPAIGN	CREATED AT
☐	Nobody	user1	Education for Every Child	Jan. 18, 2026, 10:17 p.m.
☐	Jiangly	Jiangly	Skill Development for Sustainable Livelihoods	Jan. 18, 2026, 7:44 a.m.
☐	Jiangly	Jiangly	Accessible Healthcare for Communities	Jan. 18, 2026, 4:25 a.m.
☐	Shivam Kaushik	aurora	Skill Development for Sustainable Livelihoods	Jan. 18, 2026, 2:35 a.m.
☐	Shivam Kaushik	aurora	Education for Every Child	Jan. 18, 2026, 1:32 a.m.
☐	Shivam Kaushik	aurora	Accessible Healthcare for Communities	Jan. 18, 2026, 1:23 a.m.
☐	Nobody	user1	Accessible Healthcare for Communities	Jan. 17, 2026, 11:49 p.m.
☐	Nobody	user1	Skill Development for Sustainable Livelihoods	Jan. 17, 2026, 11:12 p.m.

8 registrations

FILTER

⊙ Show counts

↓ By campaign
All
Skill Development for Sustainable Livelihoods
Accessible Healthcare for Communities
Education for Every Child

↓ By created at
Any date
Today
Past 7 days
This month
This year
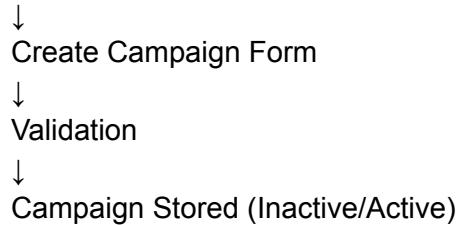
Admin (registrations for campaigns)

Donations (Registrations for campaign) - Data can be exported to csv, as mentioned in the requirements of admin dashboard.

4.2 Campaign Creation Flow

Admin Dashboard
↓
Create Campaign Form
↓
Validation
↓
Campaign Stored (Inactive/Active)

4.3 Donation Process Flow

Donor Login
↓
Browse Campaigns
↓
Select Campaign
↓
Register for Campaign
↓
Enter Amount
↓
Submit Donation
↓
Donation Record Saved
↓
Campaign Amount Updated
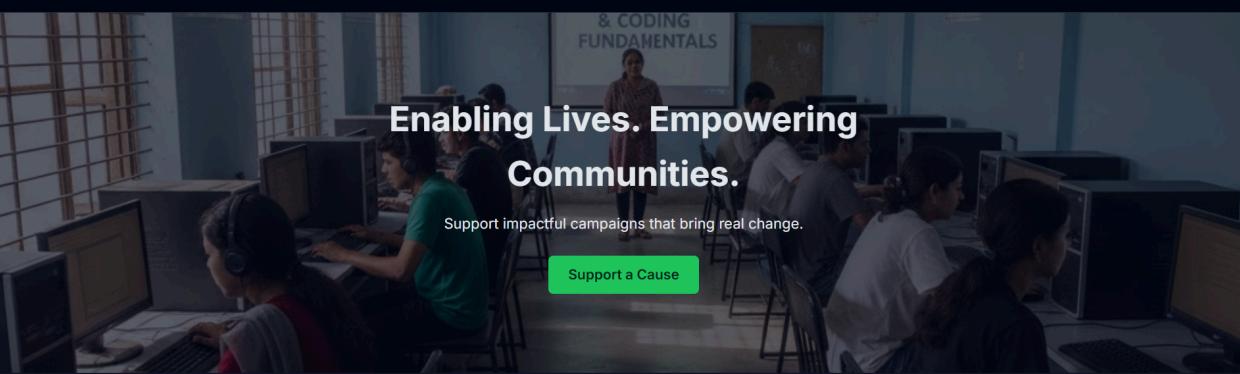
4.4 Sequence Diagram (Donation)

Donor → Campaign Page → Registration Page → Donation Form → View
View → Donation Model → Database
Database → View → Confirmation Page

Go to campaigns from nav bar

Click view campaign to go to detailed page of a campaign

Goal Amount	₹ 5000000
Start Date	Jan. 13, 2026
End Date	None
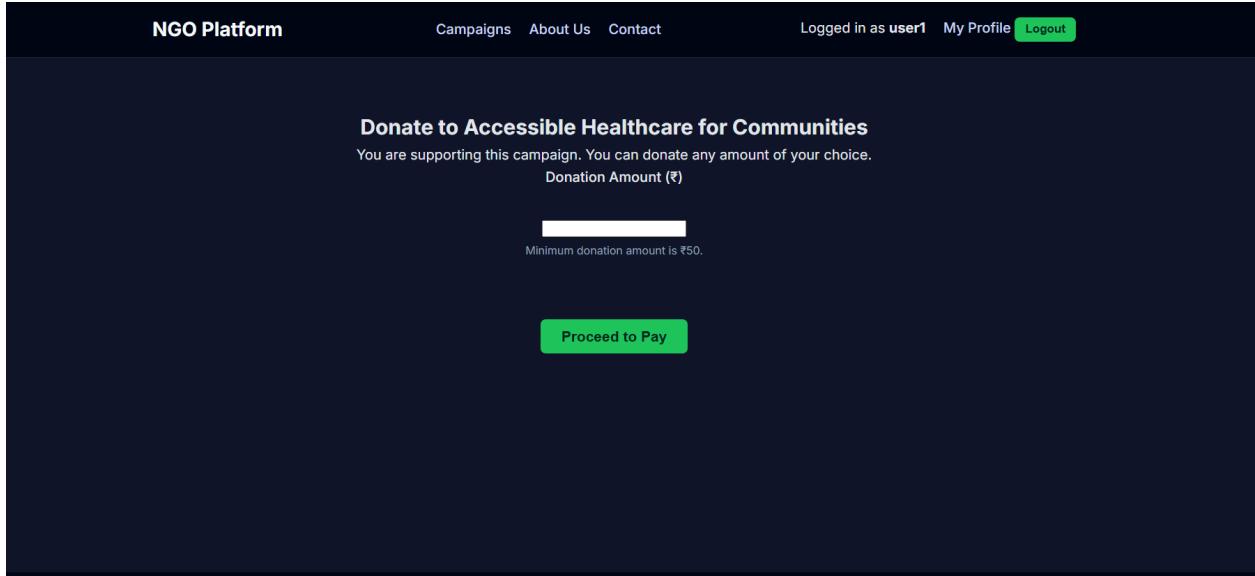
Description

This campaign is dedicated to providing essential healthcare services to underserved populations. The initiative supports medical camps, preventive care, and access to basic treatment facilities for individuals who lack adequate healthcare resources. Our goal is to improve overall well-being and ensure timely medical support for those in need.

Register

Click Register for registering for a campaign
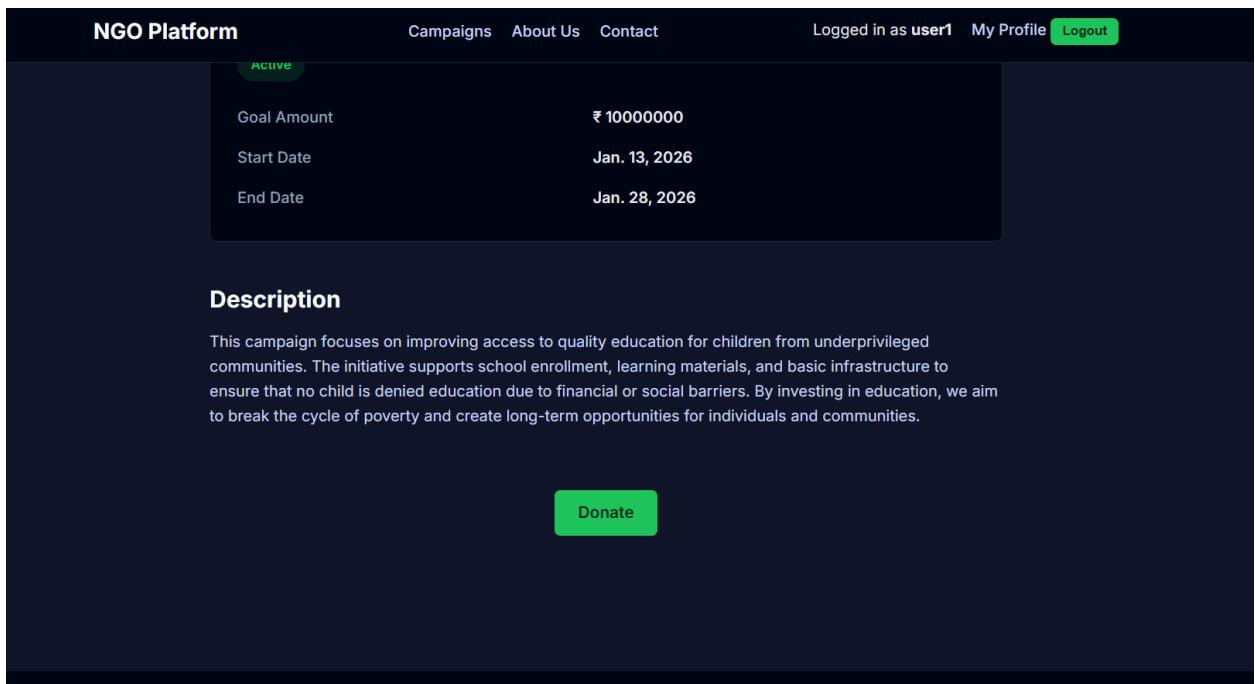
Register for Campaign

Accessible Healthcare for Communities

This campaign is dedicated to providing essential healthcare services to underserved populations. The initiative supports medical camps, preventive care, and access to basic treatment facilities for individuals who lack adequate healthcare resources. Our goal is to improve overall well-being and ensure timely medical support for those in need.

Your Name (optional)

Leave blank for anonymous registration

Confirm Registration   Cancel

Fill your name and confirm registration (Anonymous registrations are allowed)

Donate to Accessible Healthcare for Communities

You are supporting this campaign. You can donate any amount of your choice.

Donation Amount (₹)

Minimum donation amount is ₹50.

Proceed to Pay
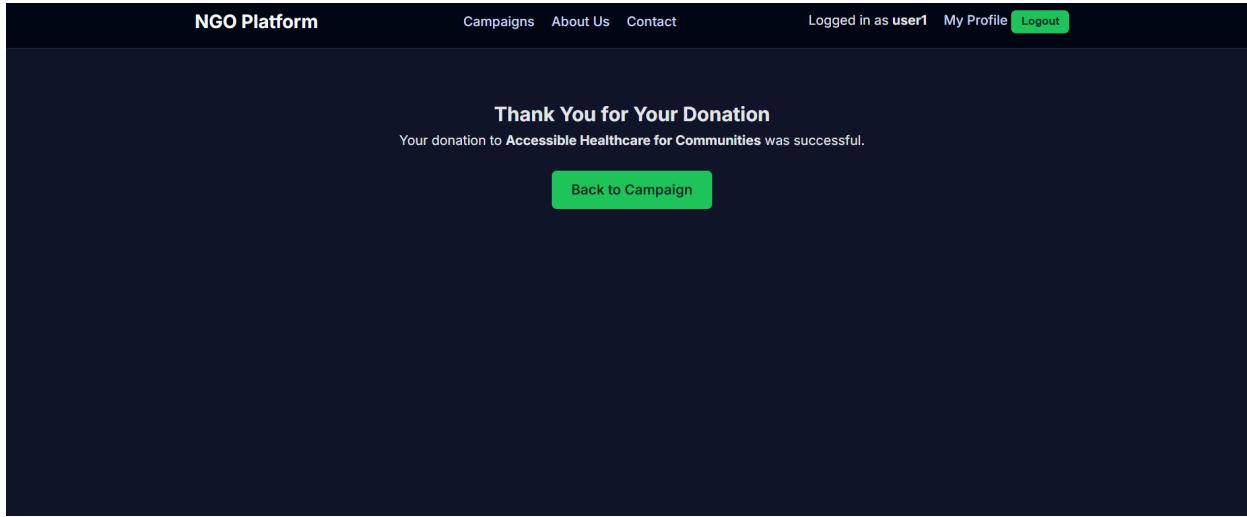
You will be redirected to the donations page once the registration is complete. After completion of registration, there will be option for donation on campaigns details page as well, as shown in image below -

Active

Goal Amount	₹ 10000000
Start Date	Jan. 13, 2026
End Date	Jan. 28, 2026

Description

This campaign focuses on improving access to quality education for children from underprivileged communities. The initiative supports school enrollment, learning materials, and basic infrastructure to ensure that no child is denied education due to financial or social barriers. By investing in education, we aim to break the cycle of poverty and create long-term opportunities for individuals and communities.

Donate

Then, you will be redirected to the mock payment gateway (stripe).
For successful transaction use card details - 4242 4242 4242 4242 and any future expiry and any cvc.

If you abort the payment, you will be redirected to a page where you get the option to retry payment -

If the payment is successful, you will be redirected to payment success page -

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5. Key Design Decisions (Elaborated)

5.1 Django Framework Selection

- Rapid development with built-in authentication
- Secure defaults (CSRF, XSS protection)
- Scalable architecture suitable for NGO platforms

5.2 Role-Based Access Control

- Different dashboards and permissions for Admin and Donor
- Prevents campaign creation or approval for users other than Admins

5.3 Campaign-Centric Donation Model

- All donations are linked to campaigns
- Enables accurate reporting and transparency

5.4 Media Handling

- Campaign images improve donor engagement
- Django's MEDIA_ROOT used for file handling

6. Assumptions (Detailed)

1. **Database**: SQLite is used during development; switched to MySQL for higher scalability.
2. **Payments**: Donation records assume external payment confirmation or mock payments using Stripe.
3. **Security**: Django's default middleware stack is enabled.
4. **Scalability**: System is designed for higher traffic, with future horizontal scaling possible.

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7. Future Enhancements

- REST API using Django REST Framework
- Real payment gateway integration instead of mock-up
- E-mail authentication during sign-up
- Deployment

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8. Conclusion

The NGO Donation Management System demonstrates a **clean, modular, and scalable Django architecture**. With clearly separated concerns, well-defined data relationships, and extensibility in mind, the system provides a strong foundation for real-world NGO fundraising and management platforms.