

Swarnandhra Form Management System

1. Project Overview

The **Swarnandhra Form Management System** is a full-stack web application designed to create, manage, distribute, and analyze academic forms digitally. It is inspired by Google Forms but customized for institutional use at **Swarnandhra College of Engineering & Technology**.

The system allows administrators to: - Create dynamic forms with multiple question types - Share public form links - Collect and analyze responses - Enable/disable forms - Export responses for reporting

Public users can access shared links and submit responses securely.

2. Objectives

- Replace manual form handling with a digital solution
 - Provide an easy-to-use admin interface for form creation
 - Ensure secure access for admins using authentication
 - Collect structured data efficiently
 - Provide analytics and downloadable reports
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3. Tech Stack

Frontend

- **React.js (Vite)** – Component-based UI
- **Tailwind CSS** – Modern utility-first styling
- **React Router DOM** – Client-side routing
- **Axios** – API communication
- **Lucide React Icons** – UI icons
- **Recharts** – Data visualization (charts)

Backend

- **Python Flask** – REST API backend
- **Flask-JWT-Extended** – Authentication & authorization
- **PyMongo** – MongoDB integration

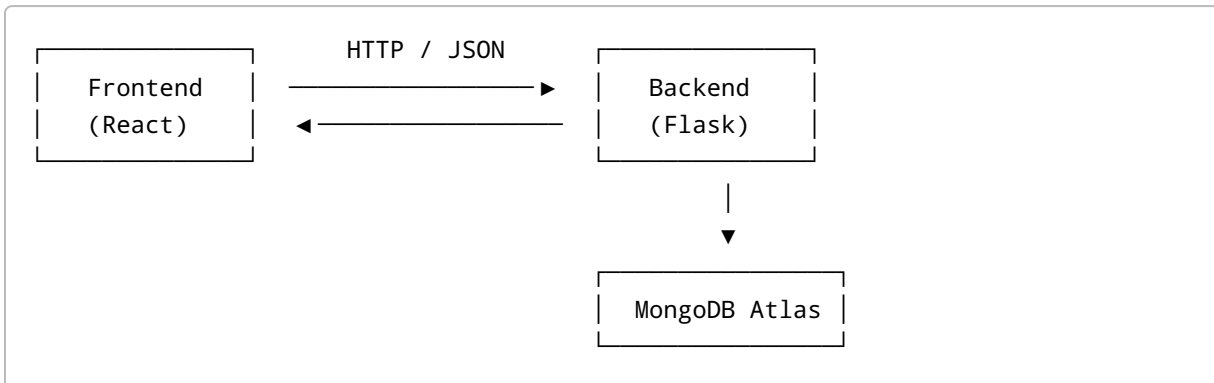
Database

- **MongoDB Atlas** (Cloud NoSQL Database)

Other Libraries

- **XLSX + File-Saver** – Excel export
 - **BSON ObjectId** – MongoDB document handling
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4. System Architecture



Architecture Type

- **Client-Server Architecture**
 - **RESTful API Design**
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5. User Roles

5.1 Admin

- Secure login using JWT
- Create & edit forms
- Manage form status (Enable/Disable)
- View responses and analytics
- Export responses
- Delete forms

5.2 Public User

- Access forms via public URL
 - Submit responses
 - View submission confirmation
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6. Core Modules

6.1 Authentication Module

- Admin login using email & password
 - JWT token stored in browser
 - Protected routes using middleware
 - Auto-redirect on token expiry
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6.2 Form Creation Module

Admins can dynamically create forms with:

Question Types Supported - Short Answer (Text) - Paragraph (Textarea) - Multiple Choice (Radio) - Checkboxes - Dropdown

Features - Add/Delete questions - Add/Delete options - Required/Optional toggle - Question numbering - Question type indicator

6.3 Public Form Module

- Public access using shareable URL
 - Mandatory field validation
 - Disabled form handling
 - Submit confirmation screen
 - Option to submit another response
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6.4 Response Collection Module

- Stores responses per form
 - Supports text & multi-select answers
 - MongoDB-optimized structure
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6.5 Analytics & Reporting Module

Features - Total response count per form - Pie charts for: - Radio - Dropdown - Bar charts for: - Checkbox questions - Text responses displayed in table - Export responses to Excel (.xlsx)

6.6 Form Management Module

- List all forms

- Search/filter forms
 - Response count badge
 - Copy public link (disabled if inactive)
 - Enable/Disable form
 - Edit form
 - Delete form (with responses cleanup)
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7. Database Design

7.1 Forms Collection

```
{
  "_id": ObjectId,
  "title": "Form Title",
  "description": "Form description",
  "imageUrl": "optional",
  "questions": [
    {
      "id": "uuid",
      "type": "radio | text | checkbox",
      "label": "Question text",
      "required": true,
      "options": []
    }
  ],
  "isActive": true,
  "createdAt": ISODate
}
```

7.2 Responses Collection

```
{
  "_id": ObjectId,
  "formId": ObjectId,
  "answers": {
    "questionId": "answer or array"
  },
  "submittedAt": ISODate
}
```

8. API Endpoints Summary

Authentication

- POST /auth/login

Forms

- POST /forms/create
- GET /forms
- GET /forms/<id> (Public)
- GET /forms/admin/<id>
- PUT /forms/<id>
- PATCH /forms/<id>/toggle
- DELETE /forms/<id>

Responses

- POST /responses/submit
 - GET /responses/form/<id>
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9. Security Measures

- JWT-based authentication
 - Protected admin routes
 - Public access limited to active forms
 - Backend validation for form availability
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10. UI/UX Highlights

- Clean academic-themed UI
 - Responsive design
 - Tailwind-based styling
 - Icons for clarity
 - Charts for visual analytics
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11. Use Cases

- Academic surveys
- Student feedback forms
- Event registrations
- Department data collection
- Institutional reporting

12. Future Enhancements

- Role-based admin access
- Email notifications
- File uploads (images, PDFs)
- AI-based response insights
- Form scheduling
- Duplicate form templates

13. Conclusion

The Swarnandhra Form Management System is a scalable, secure, and user-friendly solution for managing academic forms digitally. It demonstrates strong full-stack engineering practices and is suitable for real-world institutional deployment.

Developed Using: React • Flask • MongoDB • Tailwind • JWT • Recharts

Project Status:  Completed & Functional