COLLEGE CODE : 8203

COLLEGE NAME :A.V.C College Of Engineering

DEPARTMENT :B.Tech-Information Technology

STUDENTNM_ID : 7F21192CA579AE488C54DD3A90E6D349

ROLL NO :23IT71

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Completed the project named as Phase II
technology project name :File Upload Manager

SUBMITTED BY,
NAME :Naveen R

MOBILE NO:9655714538

Technical Stack

Frontend

- **HTML, CSS, JavaScript → For building the basic user interface and interactivity.**
- **Bootstrap / Tailwind CSS → Provides modern, responsive styling for file upload forms and file lists.**
- **Axios → Handles API calls between frontend and backend for uploading, fetching, and deleting files.**

Backend

- **Node.js → Runtime environment for executing JavaScript on the server.**
- **Express.js → Web framework to handle API routes (upload, fetch, delete).**
- **Multer → Middleware to process multipart/form-data and manage file uploads.**

Database & Storage

- **MongoDB → Stores metadata like file name, type, size, and upload date.**
- **GridFS → Special MongoDB feature to store and retrieve large files (>16MB) in chunks.**
- **Local Storage (Fallback) → Stores smaller files directly on the server.**

Security

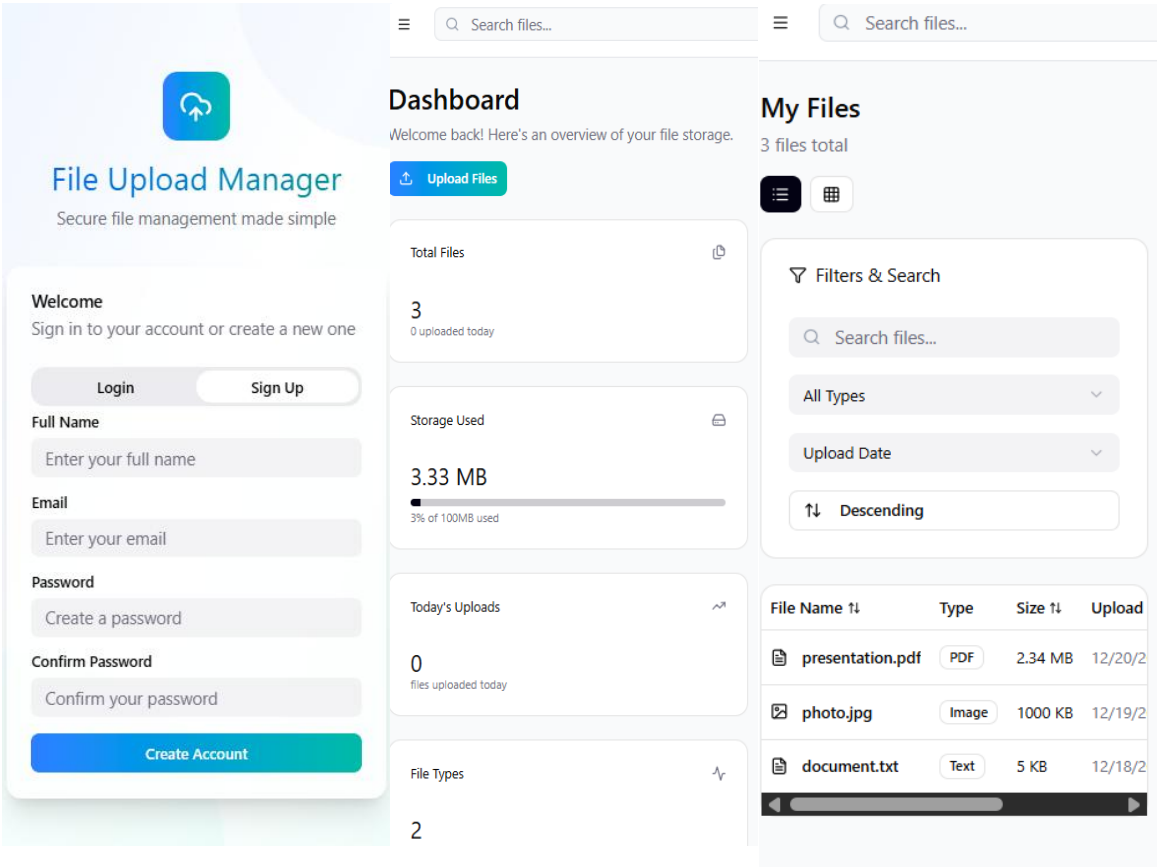
- **File Validation → Ensures only allowed file types and sizes are uploaded.**
- **Helmet.js → Adds secure HTTP headers to protect the backend from common attacks.**

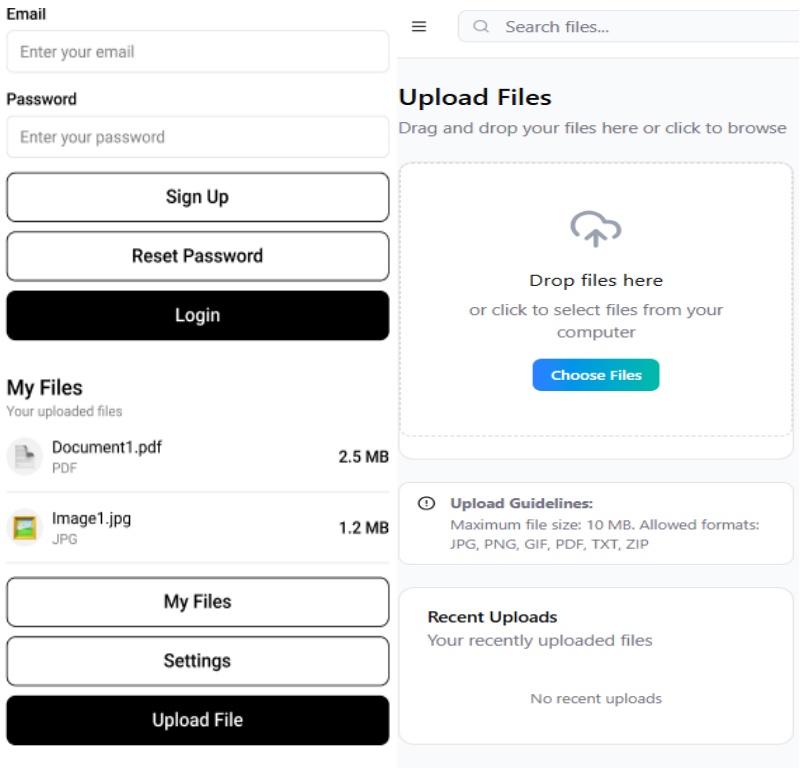
Deployment & DevOps

- **GitHub → Version control for source code.**
- **MongoDB Atlas → Cloud-hosted MongoDB database.**
- **Heroku / Render → Hosting platforms for deploying the backend and frontend.**

UI Structure & API Schema Design

UI Structure:





API Schema Design:

1. Upload File

Endpoint:

POST /api/files/upload

Description: Upload a new file.
Request:

- multipart/form-data → file
- Validation → check file type & size
  Response (Success):

```
{
  "status": "success",
  "fileId": "64b1a2f4c9a1",
  "fileName": "document.pdf",
  "fileType": "application/pdf",
  "fileSize": "2MB",
  "uploadDate": "2025-09-25",
  "fileUrl": "/api/files/64b1a2f4c9a1"
}
```

2. Fetch File (Download)

Endpoint:

GET /api/files/:id

Description: Retrieve/download a file by its ID.
Response (Success): Returns file stream (binary).
Error Response:

```
{
  "status": "error",
  "message": "File not found"
}
```

3. Get File Metadata

Endpoint:

GET /api/files/:id/metadata

Description: Get details of a specific file.
Response:

```
{
  "fileId": "64b1a2f4c9a1",
  "fileName": "image.png",
  "fileType": "image/png",
  "fileSize": "1.2MB",
  "uploadDate": "2025-09-25"
}
```

4. Delete File

Endpoint:

DELETE /api/files/:id

Description: Delete a file by its ID.
Response (Success):

```
{
  "status": "success",
  "message": "File deleted successfully"
}
```

Error Response:

```
{
  "status": "error",
  "message": "File not found"
}
```

5. List All Files (Optional)

Endpoint:

GET /api/files

Description: Get all uploaded files with metadata.
Response:

```
[
 {
  "fileId": "64b1a2f4c9a1",
  "fileName": "report.docx",
  "fileType": "application/msword",
  "fileSize": "450KB",
  "uploadDate": "2025-09-25"
 },
 {
  "fileId": "64b1a2f4c9b2",
  "fileName": "photo.jpg",
  "fileType": "image/jpeg",
  "fileSize": "3MB",
  "uploadDate": "2025-09-25"
 }
]
```

Components & Module Diagram

Components

1. Frontend (User Interface)

- **Upload Component**→ File selector + drag-and-drop zone + upload button.
- **File List Component**→ Displays uploaded files with metadata.
- **Action Buttons**→ Download, Delete, View Metadata.

- **Notification/Alert Component**→ Success & error messages.
- **Search/Filter Component** (optional) → Search files by name/type/date.

2. Backend (Server-Side)

- **API Controller**→ Handles requests for upload, fetch, delete, metadata.
- **Multer Middleware**→ Processes file uploads (multipart/form-data).
- **Validation Module**→ Checks file type & size before saving.
- **File Service Layer**→ Logic for storing, retrieving, deleting files.
- **Response Handler**→ Standardizes success/error JSON responses.

3. Database & Storage

- **MongoDB (Metadata Collection)**→ Stores file details (ID, name, type, size, upload date).
- **GridFS Storage**→ Stores large files in chunks (>16MB).
- **Local Storage (Optional)**→ Stores small files in server directory.

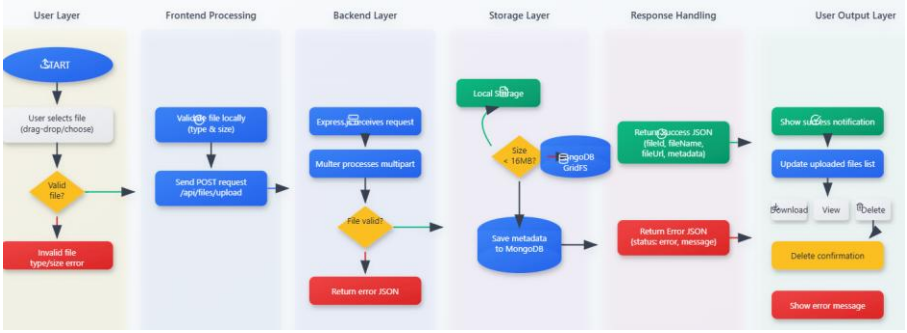
4. Security Layer

- **Validation & Sanitization**→ Prevent malicious uploads.
- **File Restrictions**→ Allowed types & size limits.
- **Access Control (Future Scope)**→ Role-based permissions for admin vs normal users.

5. Deployment & DevOps

- **Version Control (GitHub/GitLab)**→ Source code management.
- **Hosting (Heroku/Render/Vercel)**→ Backend & frontend deployment.
- **MongoDB Atlas**→ Cloud-hosted database.
- **CI/CD Pipeline (Optional)**→ Automated testing & deployment.

Module Diagram:



Basic FlowDiagram