Full-Stack Web Application Test

Objective

You are tasked with building a full-stack web application with the following functionalities:
- User authentication (login/signup)
- CSV dataset upload (multi column numeric data)
- Server-side CSV storage
- Scatter plot generation between selected columns
- Interactive axis selection with live plot updates

Tech Stack

- **Frontend**: Next.js (React)
- **Backend**: FastAPI (Python)
- **Database**: **MongoDB or PostgreSQL** (your choice)
- **Auth**: JWT or session-based (your choice)

Dataset

You can download the dataset from here: [link for data](#)

Functional Requirements

1. Authentication
- Implement Signup and Login flows.
- Use JWT or session-based auth.
- Store users in a database (PostgreSQL or MongoDB).

2. CSV Upload
- On the frontend, allow users to upload a .csv file.
- Validate that the file contains at least 5 numeric columns.
- Upload the file to the FastAPI backend and save there.
- Optionally store metadata (e.g., upload time, file name) in the database.

3. Initial Plot Generation

- After upload, show a "Create Plot" button.
- On click, show two dropdowns to select X and Y axis dimensions (all the available columns in data).
- Generate the plot and display it.

4. Dynamic Axis Selection

- After the plot is rendered, allow the user to:
    - Click on the X or Y axis label (or a nearby dropdown).
    - A list of available columns should appear.
    - On selecting a new columns:
        - Generate the new plot based on the selected labels.
        - Display an updated plot immediately (no full page reload).

Deliverables

An github Repo with following with name **YourName_PlotTest**

|-- frontend/
|-- |-- your next application
|-- backend/
|-- |-- your fastapi application
|-- README.md

* Your README.md should include the Setup instructions, API documentation, Demo Video (link), Any assumptions or design decisions

Submission Deadline

Submit your GitHub repository by: 5:00 PM IST, 13th July 2025 (Sunday)

- Your GitHub repo should be named: **YourName_PlotTest**
- Make sure the repository is public.
- Push your final commit and include all required files and documentation before the deadline.