Smart-task-manager (Documentation)

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1. Architecture & Design

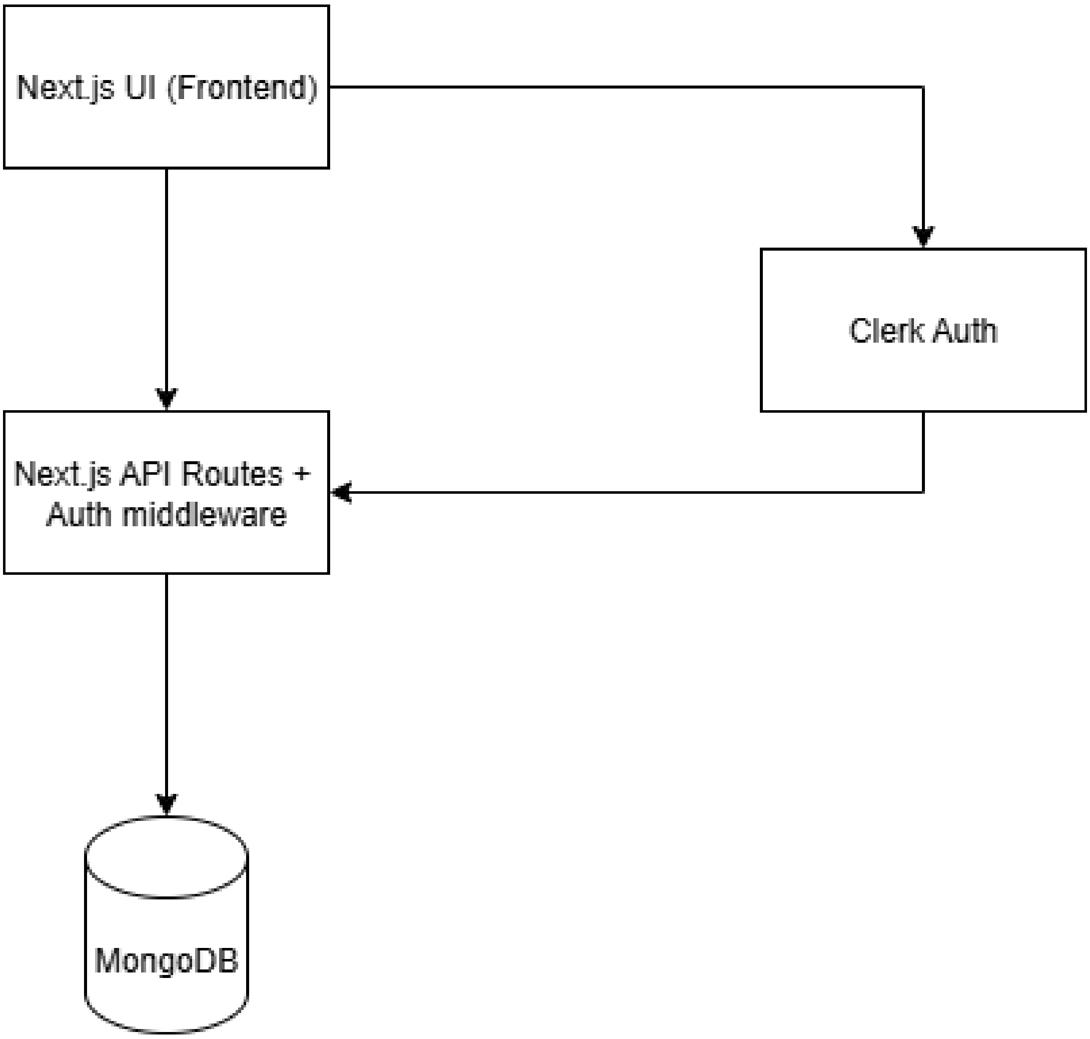
Tech Stack

- **Frontend:** React (Next.js) with Bootstrap(Customized) used for building dynamic, responsive UI with server-side rendering support.
- **Backend:** Node.js using Next.js API Routes handles all API logic seamlessly inside the Next.js app.
- **Authentication:** Clerk.dev provides secure, ready-to-use authentication with Google login support.
- **Database:** MongoDB using Mongoose used to store tasks with user-specific access using a flexible schema.
- **Deployment:** Vercel (Frontend & Backend) deploys both frontend and backend in a single platform effortlessly.

Justification

Next.js provides SSR by default and API routes in the same framework, reducing complexity and SEO friendly. Clerk offers modern authentication with minimum setup. MongoDB is also allows a flexible schema and ideal for dynamic task models.

High-Level Architecture Diagram



Database Schema (MongoDB)

Collection: Tasks

```
{
  _id: ObjectId,
  title: String,
  category: String,
  deadline: Date,
  completed: Boolean,
  userId: String, // Clerk User ID
  createdAt: Date,
  updatedAt: Date
}
```

3. Documentation

Project: Smart Task Manager

Tech Stack

React + Next.js + Clerk + MongoDB + Bootstrap(Customized)

How to Run

```
don=wnload and install Node.js and VS_code.
https://github.com/talhahassan0005/smart-task-manager.
cd s-t-m
npm install
npm run dev
```

Assumptions

- Each task belongs to a unique user (Clerk User ID) ensuring task data isolation per user.
- Tasks are standalone (no subtasks) simplifies the logic for MVP and keeps UX clean.
- Priority was given to CRUD functionality the goal was to cover basic task management operations first.

Future Improvements

- Email / push notifications for deadlines to alert users about upcoming or overdue tasks.
- Task drag-and-drop reordering allows intuitive task prioritization by reordering tasks visually.
- Role-based user access for enabling admin or multi-role features in the future.
- Admin dashboard and analytics to visualize productivity stats and user trends.

Live Project and Source Code

- **Live Site:** smart-task-manager-jade.vercel.app
- **GitHub Repository:** github.com/talhahassan0005/smart-task-manager