

FSD MERN DOCUMENTATION

1. Introduction

Project Title: **FarmEase: Revolutionizing Agriculture with Technology**

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2. Project Overview

Purpose:

FarmEase aims to empower farmers with a smart, user-friendly platform that provides real-time insights, expert consultation, and an online marketplace. The platform addresses challenges like unpredictable weather, pest infestation, limited resource management, and lack of digital accessibility in agriculture.

Features:

- Real-time weather forecasting and crop alerts
- Soil health tracking and recommendations
- Pest prediction and early-warning notifications
- E-commerce for seeds, fertilizers, and tools
- Expert video/audio consultation booking
- Community forums for knowledge sharing
- Secure user authentication for farmers and admins
- Mobile-friendly UI with multilingual support

3. Architecture

Frontend (React):

- Built with React.js for a responsive interface
- Components: WeatherCard, CropDashboard, Marketplace, Navbar, etc.

- React Router for SPA navigation
- Axios for API integration
- Mobile-optimized design with multilingual interface

Backend (Node.js + Express.js):

- RESTful API architecture
- Handles user login, crop data, product listing, weather alerts
- JWT authentication and role-based access control

Database (MongoDB):

- Collections: Users, Farms, Crops, Products, Consultations, Alerts
- Schema modeling with Mongoose
- Stores real-time farm data and e-commerce transactions

4. Setup Instructions

Prerequisites:

- Node.js (v14 or higher)
- MongoDB (Atlas or local)
- Git

Installation:

```
git clone https://github.com/Sreekanth-17/FarmEase.git
```

```
cd agri-tech
```

```
cd frontend
```

```
npm install
```

```
cd ../backend
```

```
npm install
```

Environment Variables (.env):

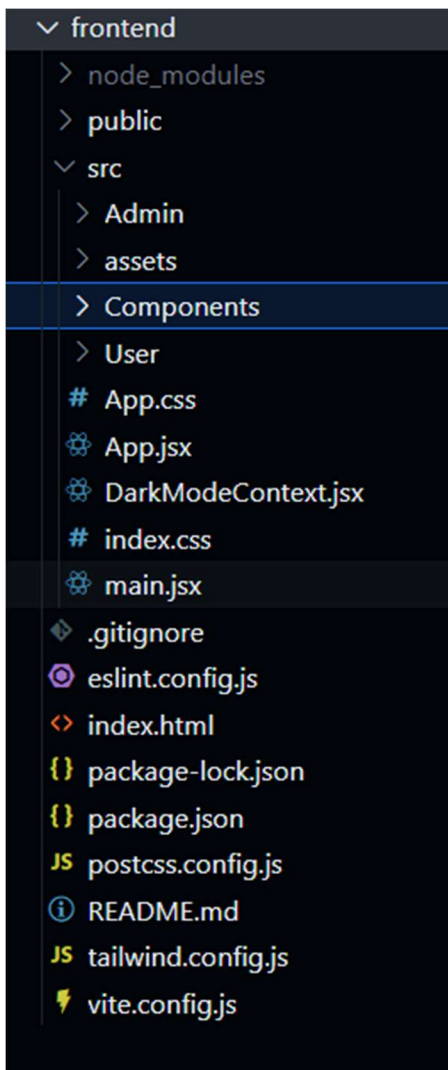
```
PORT=7000
```

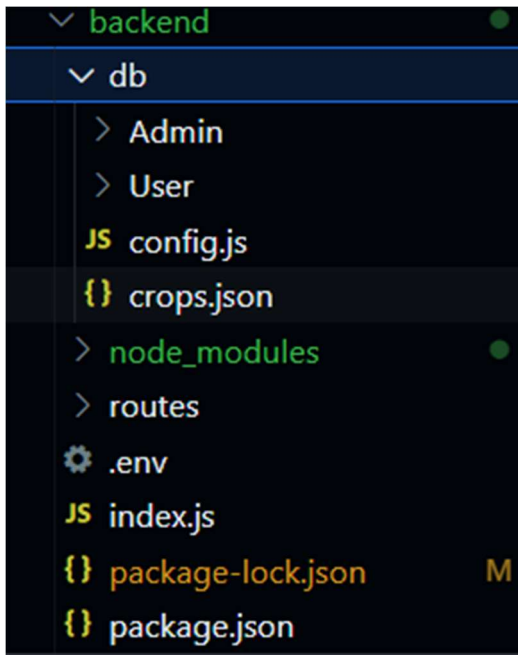
```
MONGODB_URI=your_mongodb_uri
```

```
JWT_SECRET=your_jwt_secret
```

```
WEATHER_API_KEY=your_weather_api
```

5. Folder Structure





6. Running the Application

Frontend:

```
cd frontend
```

```
npm run dev
```

Backend:

```
cd backend
```

```
npm start
```

7. API Documentation

Endpoint	Method	Description
/api/weather	GET	Get weather updates
/api/farms	POST	Add farm and crop info
/api/login	POST	Login for user/admin
/api/register	POST	Register a new user
/api/consultation/book	POST	Book expert consultation
/api/marketplace/products	GET	View agri products

/api/community/posts	GET	View forum posts
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8. Authentication

- Role-based access control (farmer, admin)
- Protected routes via token middleware

9. User Interface

For Farmers:

- Dashboard: View weather, crops, alerts, and tips
- Marketplace: Purchase agri-inputs
- Consultation: Book expert advice

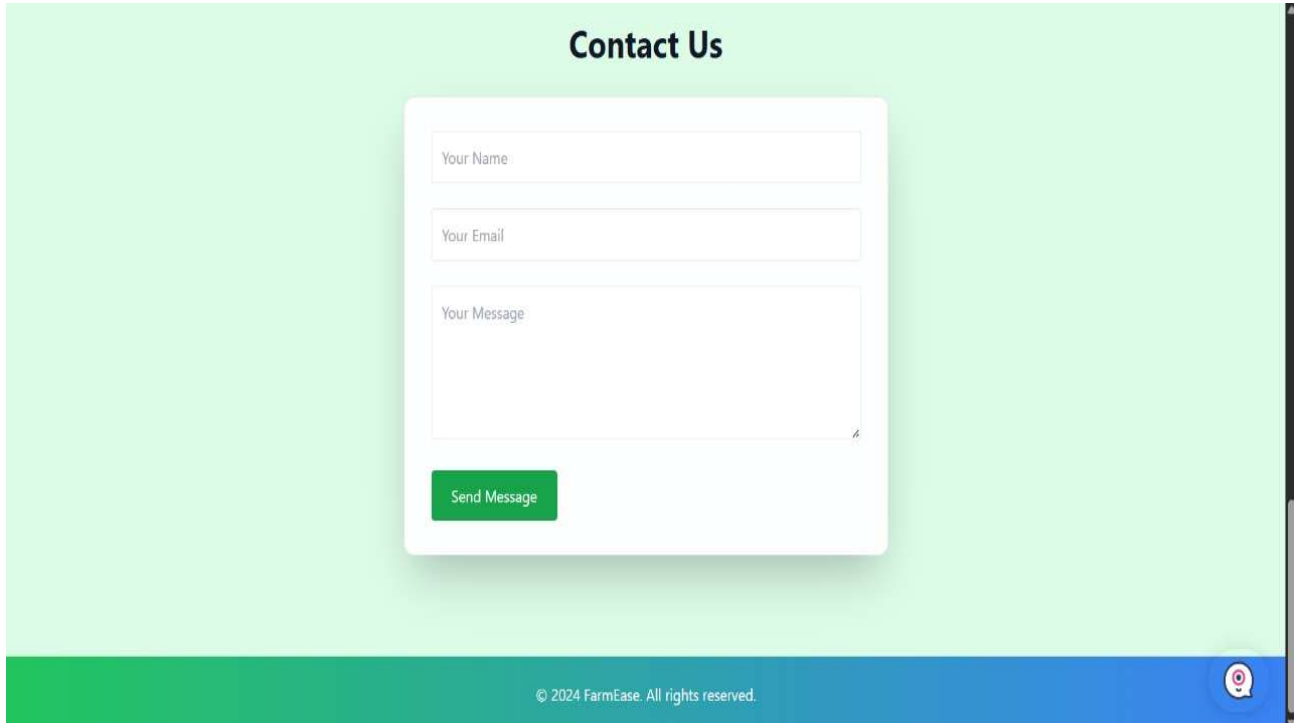
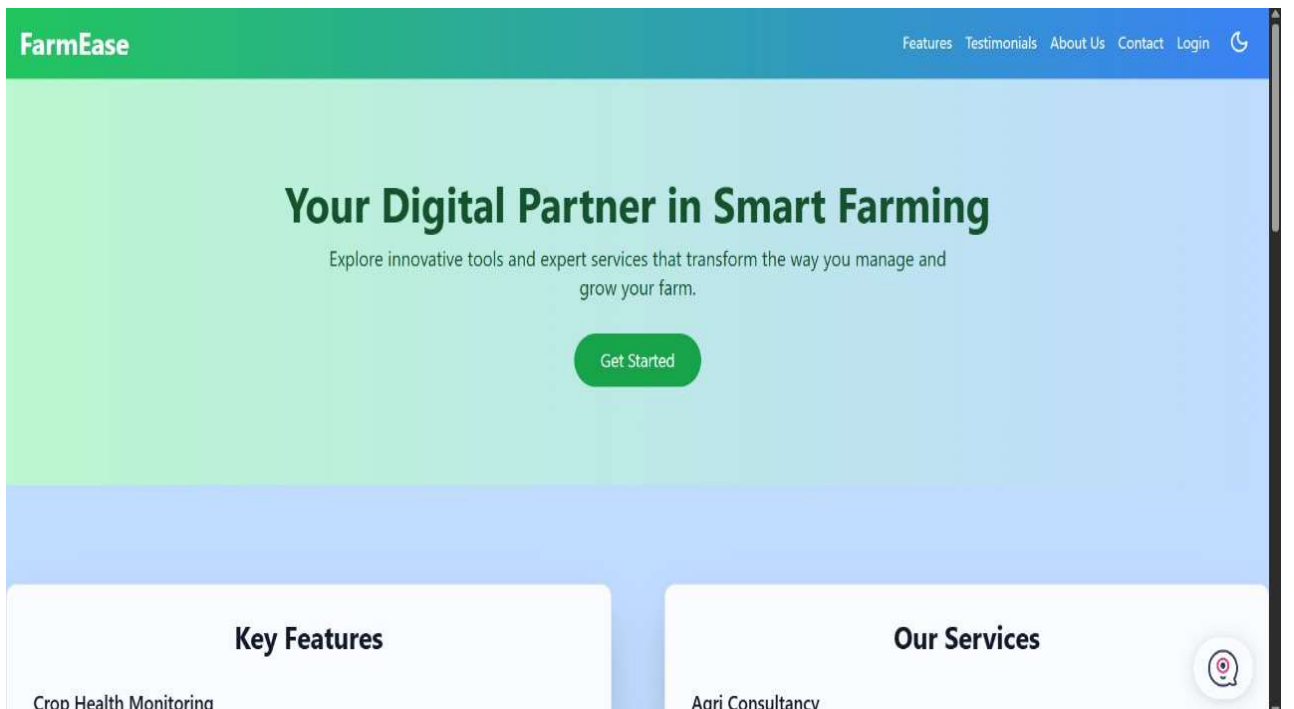
For Admins:

- Dashboard: Analytics of platform usage
- Product Management: Add/Edit/Delete items
- User Management: Moderate content and access

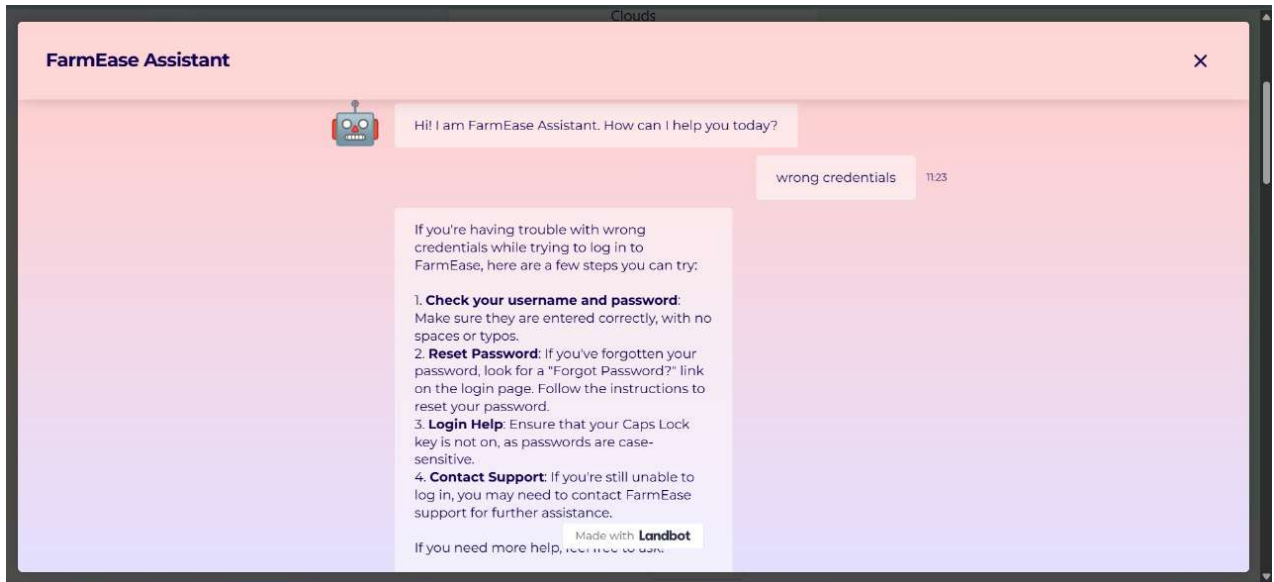
10. Testing

- Manual testing with real-user feedback
- Postman used for API endpoint verification
- Load testing performed with JMeter
- Planned: Unit testing with Jest

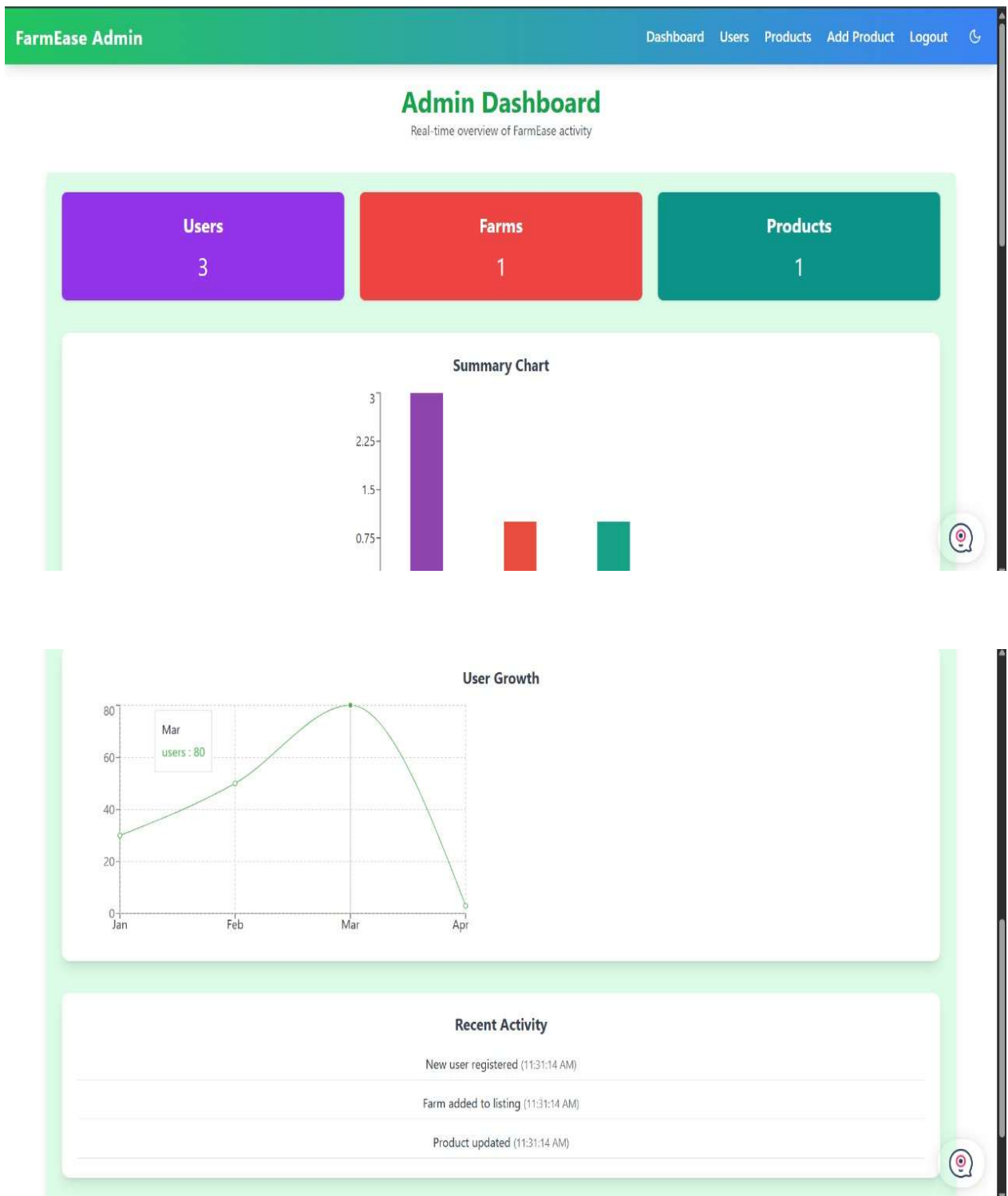
11. Screenshots or Demo



Landing Page



ChatBot



Admin Dashboard

FarmEase

Products

Farms

Crops

MyBookings

Logout

Welcome back, Tanmay Srivastav!


Here's the latest info tailored for you.

Weather Forecast

Hyderabad

Loading weather...


Featured Crop of the Day




Filter by Season:

Kharif


Best Crops to Grow




Wheat




Rice




Maize




Soybean




Sugarcane





Potato



localhost:5173/crop/soybean







Wheat

Crop Name:	Wheat
Scientific Name:	Triticum aestivum
Season:	Winter
Temperature Range:	10-25°C
Rainfall Range:	300-900 mm
Soil Type:	Loamy soil
Sowing Time:	October-November

Crop Description

Crop added successfully!

OK

Crop Name

tomato

Variety

grape tomato

Quantity

50

Planted Date

10-10-2024

Estimated Harvest Date


10-02-2025

Adding...

FarmEase Admin

DashboardUsersProductsAdd ProductLogout

Products List




Potato

Category: Vegetable

Price: ₹25

Description: Starchy, tuberous vegetable



onion

Category: Vegetable

Price: ₹30

Description: bulb onion or common onion

FarmEase

ProductsFarmsCropsMyBookingsLogout

Complete Your Order

Full Name

Layeba Irshad

Email

layeba.irshad@gmail.com

Phone Number

7004995635

Quantity

- 1 +

Price

₹ 25

Convenience Fee

₹ 45

Total Amount

₹ 70

Confirm Order

Order Portal

12. Known Issues

- No real-time video consultation integrated yet
- External API downtime can affect data fetching
- Older users may need onboarding support

13. Future Enhancements

- Offline-first mobile app for remote users
- IoT sensor integration for soil and climate data
- AI-based disease prediction
- Auto-apply for government schemes
- Multilingual chatbot and voice interface