Admin Panel – Project Documentation

1. Title and Scope

Title:
AI-Powered Agricultural Market Intelligence – Admin Panel

Scope:
A central web-based platform for admins/project handlers to oversee users, crops, pricing, predictions, transactions, FAQs, and system logs. This panel enhances operational control, real-time monitoring, and system-wide configuration of the agricultural ecosystem.

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2. Purpose / Objective

- Manage all platform users (Farmers, Traders,)
- Maintain an updated crop inventory with price tracking
- Visualize AI-based crop price forecasts
- Monitor transactions and logistics updates
- Manage multilingual FAQs and chatbot knowledge base
- Ensure secure and audited system activity
- Provide region-wise operational insights
- Support announcement broadcast to users
- Set automated alerts for price thresholds and risks

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3. Technologies Used

Component	Technology
Frontend	React.js, Tailwind CSS
Backend	Node.js, Express.js
Database	MySQL / MongoDB
Charts	Chart.js, Recharts
Authentication	JWT (role-based)
Hosting	Vercel / Netlify (frontend), AWS / Render

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4. Admin Panel Screens & Modules

A. Dashboard

- Total Users, Crops, FAQs
- Real-time price movement graph
- Active logistics stats
- Region-wise performance indicators
- Recent login/session activity

B. User Management

- List users by role and region
- Activate/Suspend users
- Email + Phone verification status
- Export user list as CSV

C. Crop Management

- Add/update crop details (base price, unit, season, category)
- Toggle availability
- Attach reference price data (e.g., Govt. API source)

D. Price Prediction

- View prediction graphs by crop + region
- Upload new model predictions (CSV/Excel/JSON)
- Model versioning support
- Accuracy display (AI confidence level)

E. FAQ / Chatbot

- Add/edit multilingual questions
- Link FAQs to voice or text assistants (Speech-to-Text)
- Analytics for most asked questions

F. Transaction Logs

- View crop sell history (crop, farmer, price, date)
- Monitor abnormal activities
- Export logs for audit

G. Alert Management

- Define price change thresholds

- Notify farmers/logistics via SMS/Push/Email

- Schedule warning or harvest reminders

H. Broadcast System

- Push announcements to all users

- Filter by language, location, or user role

- View engagement stats

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5. API Endpoints

GET   /api/dashboard/stats   - System overview

POST   /api/users   - Create user

GET   /api/users?role=farmers   - Filtered user list

POST   /api/crops   - Add new crop

PUT   /api/crops/:id   - Edit crop info

POST   /api/predictions/upload   - Upload prediction data

GET   /api/faqs?lang=mr   - FAQs by language

POST   /api/alerts   - Create a new alert

GET   /api/transactions   - List all sell transactions

POST   /api/broadcast   - Push announcements

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6. Database Tables

- users – Manage all users

- crops – Crop name, base price, season, region

- predictions – Crop-wise price forecasts

- faq – Language-wise Q&A for chatbot

- transactions – Sell transactions by farmers

- alerts – Threshold and notification rules

- broadcasts – Admin-pushed announcements

- logs – System action history with timestamps

7. Security & Reliability

- Role-based JWT tokens

- Passwords hashed using bcrypt

- Rate limiting + IP blacklisting

- Admin-only permission for critical operations

- Logs for all changes in crops, predictions, and users

8. Advanced Features

- Dark Mode Toggle

- Notification Badge for New Logs/Alerts

- Regional Analytics Heatmap

- AI Model Status with Upload Date

- Multilingual Admin Panel Support (EN, MR, HI)

- WebSocket Alerts for Realtime Updates

- Search + Filters on every table

9. Dev & Deployment Notes

- CI/CD with GitHub Actions

- PM2 for backend process management

- Docker setup for local dev and containerized deployment

- Nginx reverse proxy

- Automated backups for database (Daily via cron)