

IoTGenie – Term Final Project Proposal

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Project Title:

IoTGenie – A Web-Based IoT Marketplace

Project Overview:

IoTGenie is a feature-rich, web-based e-commerce platform tailored for the Internet of Things (IoT) ecosystem. The core aim is to create a seamless marketplace where users can discover, purchase, and interact with IoT products, while also enabling individuals or businesses to register as third-party sellers. This will create a scalable, multi-vendor ecosystem where innovation in IoT can thrive.

The platform is being developed using Django and Django REST Framework for robust backend APIs and React.js for a dynamic frontend experience. The database will use SQLite during development and migrate to PostgreSQL for production deployment.

Core Features:

Customer Features:

- Browse and search IoT products with category filters.
- View detailed product information and user reviews.
- Add items to cart and securely place orders.
- Track order status and purchase history.
- Submit product feedback and ratings.

E-Commerce Functionalities:

- Full cart system with add/remove/quantity control.
- Integration with payment gateways for secure checkout (planned).
- Order management for customers and vendors.

Admin Features:

- Admin login dashboard with authentication.
- Add, update, or delete IoT product listings.
- Manage stock and view total inventory.
- View and manage customer orders and feedback.

Technology Stack:

Component	Technology Used
Frontend	React.js
Backend	Django, Django REST Framework
Database	SQLite (development), PostgreSQL (production)
Authentication	JWT (via <code>djangorestframework-simplejwt</code>)
Version Control	Git & GitHub

Project Objectives:

- Develop a functional and scalable IoT-focused e-commerce platform.
- Provide separate panels for customers, admins, and sellers.
- Ensure user-friendly navigation and clear product categorization.
- Implement cart, ordering, and payment functionalities.
- Enable multi-vendor architecture for third-party sellers.
- Maintain security and performance through proper API structuring.

Expected Outcome:

By the end of this project, a fully working prototype of IoTGenie will be developed, allowing users to:

- Browse, filter, and purchase IoT products.
- Manage orders and submit product reviews.
- For admins: add/manage inventory and track business performance.

- Lay the foundation for a multi-vendor platform.
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Future Plans:

To enhance the platform's scalability and intelligence, the following features are planned:

1. **Multi-Vendor Marketplace:** Allow any user to register as a seller, manage their own products and view analytics.
 2. **AI-Powered Chatbot Assistant:** Assist customers with queries, recommendations, and order tracking.
 3. **Smart Product Recommendation System:** Use machine learning to suggest products based on browsing and purchase behavior.
 4. **IoT Device Integration Panel:** Allow users to manage and control their purchased IoT devices from their dashboard.
 5. **Mobile App (React Native):** Extend platform usability through Android/iOS apps.
 6. **Wishlist and Alert System:** Notify users about price drops, restocks, or similar products.
 7. **Advanced Analytics Dashboard:** Admin panel with graphical data visualization on sales, traffic, and user behavior.
 8. **Real-Time Delivery Tracking:** Integrate APIs for logistics and delivery tracking.
 9. **Seller Feedback & Reputation System:** Build trust through transparent ratings and reviews of vendors.
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Conclusion:

IoTGenie aims to bridge the gap between IoT enthusiasts and quality IoT products. With its user-centric design and plans for multi-vendor support, it will serve not just as an e-commerce platform but as a hub for IoT innovation and commerce. This project reflects a practical application of full-stack development skills and is designed to scale with future integrations in AI, IoT management, and marketplace technology.
