The Barrel House- Alcohol E-Commerce Project Documentation

1. Title

The Barrel House- An E-Commerce Platform for Alcohol and Related Accessories

2. Introduction

Barrel House is a robust and scalable full-stack e-commerce application developed to streamline the online sale and management of alcoholic beverages. The platform offers a seamless and secure shopping experience for users, allowing them to register, verify their age, browse a rich catalog of alcohol products, add items to a personalized cart, and complete purchases through a user-friendly checkout process.

Key features include secure user authentication, product categorization, inventory tracking, real-time stock updates, customer reviews and ratings, order history, and automated shipping detail management. Administrators have access to powerful backend tools for managing users, products, categories, orders, and inventory logs, all while ensuring regulatory compliance specific to alcohol sales.

Designed with modularity and performance in mind, Barrel House provides a complete digital storefront solution tailored to meet the operational needs of modern alcohol retailers, both large and small.

3. Synopsis

3.1 Project Description

The Barrel House is a feature-rich e-commerce web application tailored for the online sale of alcoholic beverages and related accessories. Designed with user convenience and compliance in mind, the platform enables customers to easily browse a wide selection of products, view detailed descriptions and multiple product images, and add items to a shopping cart. The checkout process is secure and streamlined, supporting address management, order tracking, and various payment options. Users can also leave product reviews, enhancing trust and engagement within the community. With built-in age verification and user authentication, The Barrel House ensures legal compliance while offering a smooth and responsive user experience. Whether on desktop or mobile, the platform delivers a modern, intuitive interface for both shoppers and administrators.

3.2 Business Model

Barrel House operates on a Business-to-Consumer (B2C) model, directly connecting individual customers to a curated online platform for purchasing alcoholic beverages. This model allows the platform to offer a personalized shopping experience while maintaining full control over pricing, promotions, and customer engagement. Revenue is primarily generated through direct product sales, with additional income streams from sponsored listings—where brands pay to feature their products—and affiliate marketing of related accessories such as glassware and bar tools. To ensure legal compliance, especially with regard to age-restricted products, Barrel House implements robust age verification at both sign-up and checkout, helping to prevent underage purchases.

3.3 Key Features

1. User Authentication and Age Verification
Ensures only verified users above legal drinking age can register, log in, and make purchases securely on the platform.

2. Category-Based Product Listing
Organizes alcohol and accessories into categories for easier browsing, filtering, and targeted discovery based on user preferences.

3. Shopping Cart and Checkout System
Allows users to add products to a cart, review orders, and securely complete purchases through a streamlined checkout process.

4. Address and Payment Integration
Supports saving multiple addresses and integrates secure payment gateways for efficient, flexible billing and shipping processes.

5. Review and Rating Functionality
Enables customers to leave product reviews and ratings, helping others make informed decisions and improving platform credibility.

6. Admin Dashboard for Product/Order/User Management
Provides administrators with tools to manage inventory, monitor orders, and oversee user activity through a centralized dashboard.

4. Tools and Technologies Used
- Backend: Python, Django
- Frontend: HTML, CSS, Tailwind, JavaScript
- Database: SQLite (development), PostgreSQL (production)
- Image Processing: Pillow
- Version Control: Git & GitHub
- Deployment: Heroku, AWS or PythonAnywhere

5. Major Modules and Minor Modules
User Module:
- Registration/Login
- Age Verification
- Profile Management

Product Module:
- Category Management
- Product
-Product Images
- Reviews

Cart Module:
- Cart Management
- Cart Item Handling

Order Module:
- Order
- Order Item
- Address and Payment Handling

Payment Module:
- Method Selection
- Status Tracking

6. Database Tables

- User: id, username, email, password, phone, is_active
- Category: id, name, description, is_active
- Product: id, name, sku, price, stock, category_id (FK), is_active
- ProductImage: id, product_id (FK), image_url, alt_text, is_primary
- Review: id, user_id (FK), product_id (FK), rating, title, comment
- Cart: id, user_id (FK), status, created_at
- CartItem: id, cart_id (FK), product_id (FK), quantity, price_at_time
- Order: id, user_id (FK), order_number, total_amount, status, tax
- OrderItem: id, order_id (FK), product_id (FK), quantity, unit_price, total_price
- Address: id, user_id (FK), street, city, state, country
- Payment: id, order_id (FK), amount, method, status

6. ER Diagram

The following is the ER diagram that illustrates the relationships between tables: