

Hackathon Day 6

Rental E-Commerce Platform

Documentation

Overview:

The Rental E-Commerce Platform is a peer-to-peer marketplace designed to connect individuals looking to rent out their belongings with those who need them. This platform was developed in just six days, balancing speed with quality to ensure a secure, user-friendly experience for managing rentals, bookings, and payments. The project's ultimate goal was to create an accessible and efficient platform for people to share resources while earning passive income.

Day 1:

Project Conceptualization and Design

Platform Type:

- A peer-to-peer rental marketplace catering to diverse user needs.
- Supports both short-term and long-term rentals, making it versatile.

Business Objectives:

- Empower users to earn extra income by renting out unused items.
- Ensure secure, hassle-free rental transactions with clear processes.
- Provide renters with reliable options for accessing items they need temporarily.

Data Schema Design:

- Entities: Users, Items, Rentals, Reviews, Payments.
- Relationships:
 - Users can act as both renters and owners, ensuring flexibility.
 - Items connect with dynamic availability calendars to avoid conflicts.
 - Rentals include comprehensive details such as start/end dates, pricing, and status tracking.

Day 2:

Technical Architecture Planning

Technology Stack:

- **Frontend:** Next.js for its performance and Tailwind CSS for responsive styling.
- **Backend:** Node.js and Express for robust server-side functionality.
- **Database:** Supabase, chosen for its scalability and real-time features.

API Endpoints:

1. **Authentication:**
 - `/auth/register` – Simplifies user registration with a streamlined process.
 - `/auth/login` – Provides a secure login experience.
2. **Items:**
 - `/items/create` – Allows owners to add items for rent with ease.
 - `/items/:id` – Retrieves detailed information about a specific item.
 - `/items/search` – Facilitates a quick and intuitive search for renters.
3. **Bookings:**
 - `/bookings/create` – Lets renters submit booking requests quickly.
 - `/bookings/:id/status` – Tracks and updates the status of bookings.
4. **Reviews:**
 - `/reviews/create` – Enables users to provide feedback.
 - `/reviews/user/:id` – Displays reviews for specific users to build trust.

Deployment Strategy:

- Frontend hosted on Vercel for a smooth and fast user experience.
- Database secured and managed on Supabase to handle relational data efficiently.

Day 3:

Core Features Development

Database Implementation:

- Designed tables for Users, Items, Rentals, and Reviews with detailed attributes.
- Established strong relationships and constraints to ensure data reliability.

User Authentication:

- Integrated email verification to confirm user identity and prevent fake accounts.
- Added a user-friendly password reset system for seamless recovery.

Additional Efforts:

- Conducted brainstorming sessions to identify potential user pain points and addressed them proactively during development.

Day 4:

Rental Management System

Item Management:

- Developed visually appealing Item Cards to display essential details like images, descriptions, and pricing.
- Integrated an intuitive image upload feature with live preview capabilities for owners.
- Connected items with availability calendars, ensuring up-to-date rental information.

Search and Filters:

- Implemented a location-based search powered by Mapbox API to help users find items nearby.
- Enhanced usability with filters for price range, dates, and item categories.

Reusable Components:

- `DateRangePicker`: Provides a clean interface for selecting rental dates.
- `PriceCalculator`: Dynamically calculates rental costs based on selected duration.
- `AvailabilityCalendar`: Gives renters a clear view of when items are available.

Day 5:

Testing and Security Implementation

Testing Process:

- **Unit Tests:**
 - Verified critical functionalities like booking logic, item availability, and payment calculations.
 - Ensured date-handling mechanisms worked flawlessly.
- **Integration Tests:**
 - Simulated end-to-end booking scenarios to catch edge cases.
 - Tested the robustness of authentication and payment workflows.

Security Enhancements:

- Added strong input validation to block invalid or malicious data entries.
- Conducted penetration testing to identify vulnerabilities.

Performance Optimization:

- Lazy-loaded images to improve page load times for a smoother user experience.
- Implemented API response caching to reduce latency.
- Fine-tuned database queries for quicker response times.

Additional Improvements:

- Designed intuitive error messages to guide users when something goes wrong.
- Added tooltips and on-screen instructions for better user understanding.

Day 6:

Deployment and Launch

Deployment Steps:

- Automated deployments with GitHub Actions, ensuring consistency and reducing manual errors.
- Set up a staging environment for thorough pre-launch testing to catch last-minute issues.
- Configured Sentry to monitor real-time errors and address them promptly.

Final Testing:

- Conducted load testing with Artillery to ensure the platform could handle high traffic.
- Verified compatibility across all major browsers for a seamless experience.
- Tested responsiveness on multiple devices to confirm mobile readiness.

Pre-Launch Touches:

- Created a comprehensive user guide and FAQ section to assist first-time users.
- Added social sharing buttons to help spread the word about the platform.

Conclusion:

This documentation captures the step-by-step journey of creating the Rental E-Commerce Platform within six days. The project not only highlights the team's dedication but also reflects a user-centric approach to solving real-world problems. Future updates will focus on scaling the platform, introducing advanced features like AI-driven recommendations, and continuously improving the overall user experience.