Furniture Marketplace Project: Documentation (Days 1–6)

Overview

The Furniture Marketplace is an e-commerce platform aimed at empowering small businesses and individuals by providing a seamless and secure online shopping experience. Over the course of six days, the project evolved from brainstorming ideas to deploying a staging environment. Each day introduced specific tasks that contributed to the overall development.

Day 1: Conceptualization and Marketplace Design

Key Achievements

- **Marketplace Type:** Defined as a general e-commerce platform for furniture.
- **Business Goals:**
  - Promote small businesses and entrepreneurship.
  - Provide a platform to easily buy/sell furniture online.
- **Data Schema Design:**
  - **Entities:** Products, Orders, Customers, and Delivery Zones.
  - **Relationships:**
    - Customers place orders that reference products.
    - Delivery zones are assigned to drivers for fulfillment.

Day 2: Technical Planning

Key Achievements

- **Tech Stack:**
  - Frontend: Next.js with Tailwind CSS for styling.
  - Backend: Sanity CMS for content management.
  - Database: MongoDB for storing sensitive data and authentication.
  - APIs: ShipEngine for order tracking and Stripe for payment processing.
- **API Requirements:**
  - User Management: `/register`, `/login`, `/verify-route`
  - Product Management: `/products`, `/product/:id`
  - Orders: `/orders` (POST) and `/shipment/:id` (GET)
- **Deployment Plan:**
  - Frontend on Vercel and backend on AWS Lambda with serverless architecture.

Day 3: Data Migration

Key Achievements

- **Custom Migration Code:**
  - Data from Sanity CMS was migrated to Next.js using GROQ queries.
  - Example GROQ Query: `*[_type == "product"] {title, description, price, image}`
- **Schema Definition:**
  - Product schema included fields for title, slug, description, price, and image.

- **Client Integration:**
  - Dynamically fetched and displayed data on the homepage.

Day 4: Building Dynamic Frontend Components

Key Achievements

- **Dynamic Product Listings:**
  - Created `ProductList` component to display furniture dynamically fetched from Sanity CMS.
- **Filters and Sorting:**
  - Implemented filters for categories and price ranges.
  - Sorting options included price and popularity.
- **Reusable Components:**
  - `ProductCard`: Displayed product images, titles, and prices.
  - `FilterSidebar`: Sidebar for filtering and sorting.
  - `PaginationControls`: Enabled page navigation for large datasets.

Day 5: Testing and Backend Refinement

Key Achievements

- **Testing Types:**
  - Functional Testing: Verified workflows like product listings, cart operations, and API interactions.

  - Performance Testing: Used Lighthouse to analyze load times and responsiveness.
  - Security Testing: Validated input fields, secure API keys, and HTTPS implementation.
- **Testing Report:**

Test Case ID	Description	Expected Result	Actual Result	Status	Severity	Remarks
TC001	Verify navigation links	Links navigate correctly	All links function correctly	Pass	Low	None
TC002	Check product listing display	Products display as expected	Products displayed correctly	Pass	Medium	None
TC003	Test shopping cart operations	Items add, update, and remove	Cart functionality works	Pass	High	None
TC004	Validate contact form submission	Form submits successfully	Submission works with valid data	Pass	Medium	None
TC005	Analyze performance metrics	Achieve Performance ≥ 90	Performance: 92	Pass	Medium	Optimizations for images implemented
TC006	Verify accessibility features	Accessibility score ≥ 90	Accessibility: 96	Pass	Medium	Addressed contrast issues
TC007	Validate best practices	Best Practices score ≥ 90	Best Practices: 96	Pass	Low	Minor improvements in image ratios noted
TC008	Optimize SEO	SEO score ≥ 90	SEO: 100	Pass	Low	Structured data validated successfully

Day 6: Deployment Preparation and Staging Environment Setup

Key Achievements

- **Deployment Strategy:**
  - Hosted the application on Vercel for quick deployment.
  - Integrated GitHub repository for CI/CD.
- **Environment Variables:**
  - Configured sensitive variables (e.g., API keys) in `.env` and uploaded securely to Vercel.
- **Staging Environment:**
  - Deployed a staging build to validate functionality in a production-like environment.
  - Example `.env` File:

```
NEXT_PUBLIC_SANITY_PROJECT_ID=your_project_id
NEXT_PUBLIC_SANITY_DATASET=production
API_KEY=your_api_key
```

- **Staging Testing:**
  - Functional Testing: Verified key workflows like product listings and checkout.
  - Performance Testing: Used GTmetrix and lighthouse for analyzing speed and responsiveness.
  - Security Testing: Validated HTTPS, input handling, and secure API calls.
- **Documentation:**
  - Created a `README.md` summarizing the project structure and deployment steps.
  - Organized the GitHub repository with folders for `src/`, `public/`, and `documents/`.

GitHub Repository Structure:

```
FurnitureHub/
├── src/
│   ├── components/
│   │   ├── ProductCard.ts
│   │   ├── FilterSidebar.ts
│   │   ├── PaginationControls.ts
│   └── pages/
│       ├── index.ts
│       ├── product/
│       └── [id].ts
├── public/
│   ├── images/
│   └── assets/
├── documents/
│   ├── Day_1_Business Goals.pdf
│   ├── Day_2_Technical_Planning.pdf
│   ├── Day_3_Data_Migration.pdf
│   ├── Day_4_Functionality_Components.pdf
│   ├── Day_5_Testing_Report.csv
│   └── Day_6_Deployment.pdf
├── .env
├── README.md
```

Conclusion

Over the six days, the Furniture Marketplace project progressed from concept to deployment, integrating robust features and ensuring a seamless user experience. With a well-structured GitHub repository, dynamic components, and comprehensive testing, the project is now ready for live deployment in a production environment.

Next Steps:

1. Address any unresolved issues documented in the staging tests.
2. Monitor the live environment for user feedback and performance metrics.
3. Scale the platform to include advanced features like multi-language support and predictive analytics.

This marks the successful completion of the Furniture Marketplace hackathon project!

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