PLANNING THE TECHNICAL FOUNDATION

Comforty Furniture Website System Architecture

Overview

Comforty is an e-commerce platform specializing in stylish and comfortable chairs for various needs. The platform is built using **Next.js 14 with TypeScript** for optimal performance and **Sanity CMS** to manage content seamlessly. Below is the detailed system architecture designed to ensure scalability, maintainability, and a superior user experience.

High-Level System Architecture

Frontend Structure

Framework: Next.js 14 with TypeScript for fast server-side rendering (SSR) and dynamic routing.

Key Pages:

- **Home:** Showcases featured chair categories, trending products, and ongoing promotions.
- **Product Listing:** Displays all chair collections with filtering options (e.g., by type, material, price).
- **Product Details:** Dynamic page for individual chair details, including images, descriptions, and reviews.
- **Cart:** Shows selected products, allowing users to adjust quantities and view order summaries.
- **Checkout:** Securely handles payment and shipping information.
- **Order Confirmation:** Displays purchase confirmation and order details.
- **Admin Panel:** Reserved for admin tasks, including stock management, order tracking, and user analytics.

Admin-Specific Pages:

- **Analytics:** Visualizes sales trends, revenue, and product performance.
- **Stock Management:** Displays inventory data and low-stock alerts.
- **Order Management:** Tracks orders and shipping progress.

Reusable Components:

- **ProductCard.tsx:** Renders chair details (image, name, price, label,) across pages.

- **HeroSection.tsx, PopularProducts.tsx:** Key sections of the homepage to highlight Comforty’s unique offerings.
- **Filters.tsx:** Provides sorting options for the product listing page.

CMS (Sanity)

Sanity Studio is utilized for backend management:

- **Products:** Schema includes product name, price, stock, materials, dimensions, and images.
- **Customers:** Stores login credentials, order history, and saved items.
- **Orders:** Tracks order details, including purchased products, payment status, and shipping information.
- **Inventory:** Manages product availability in real time.

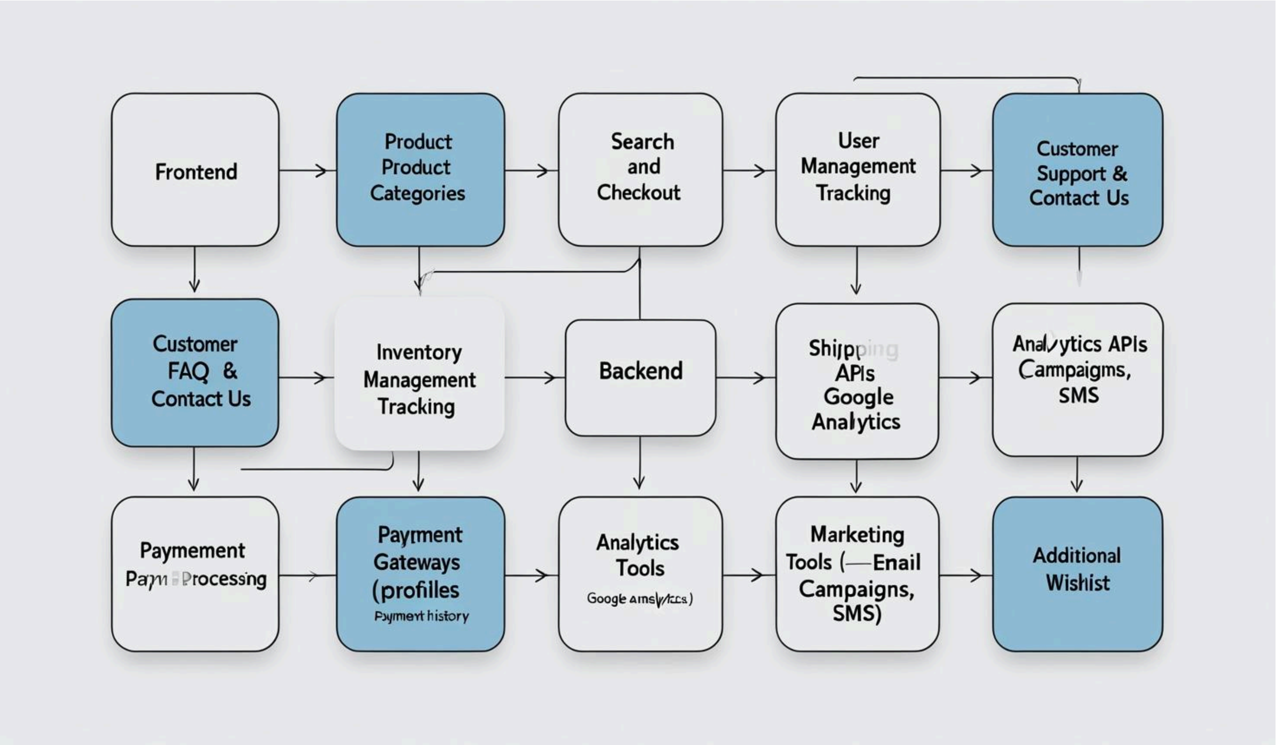
Data Management Features:

- **Custom Schemas:** Tailored to store and retrieve data for chairs, orders, and user accounts.
- **GROQ Queries:** Fetch real-time product and inventory data for seamless frontend updates.

Third-Party API Integrations

1. **Payment Gateway (Stripe):**
    - Handles secure payment transactions with support for credit/debit cards and digital wallets.
    - Utilizes **Stripe Elements** for collecting and validating payment details.
2. **Shipment Tracking (Shippo API):**
    - Enables real-time shipment updates for customers.
    - API Endpoints:
        - **`/api/products:`** `List available products.`
        - **`/api/shipment:`** `Create and manage shipments.`
        - **`/api/livetracking:`** `Real-time shipment tracking.`
3. **Email Notifications:**
    - Integrates services like **SendGrid** to send order confirmation and shipping updates to customers.

Architecture Diagram


Frontend
Product Product Categories
Search and Checkout
User Management Tracking
Customer Support & Contact Us
Customer FAQ & Contact Us
Inventory Management Tracking
Backend
Shipping APIs Google Analytics
Analytics APIs Campaigms, SMS
Paymement Paym Processing
Payment Gateways (profilles Payment history
Analytics Tools Google ams/ytics)
Marketing Tools (—Enail Campaigns, SMS)
Additional Wishist

Workflow Overview

User Workflow:

1. **Browse Products:**
   - Users view products fetched dynamically from Sanity via APIs.
   - Filters allow refined browsing by type, material, and price.
2. **Add to Cart:**
   - Users add chairs to their cart; the data is stored locally or synced to their profile after login.
3. **Checkout Process:**
   - CheckoutModal.tsx securely collects payment and shipping information.
4. **Order Confirmation and Tracking:**
   - Users receive an order summary and can track shipments through the user dashboard.

Admin Workflow:

1. **Login:**

    - Admins log in securely to access the admin panel.
2. **Data Management:**
    - Manage inventory, monitor stock levels, and update product information via Sanity.
3. **Analytics and Trends:**
    - Analyze sales data and customer behavior to inform business decisions.

Technologies and Tools

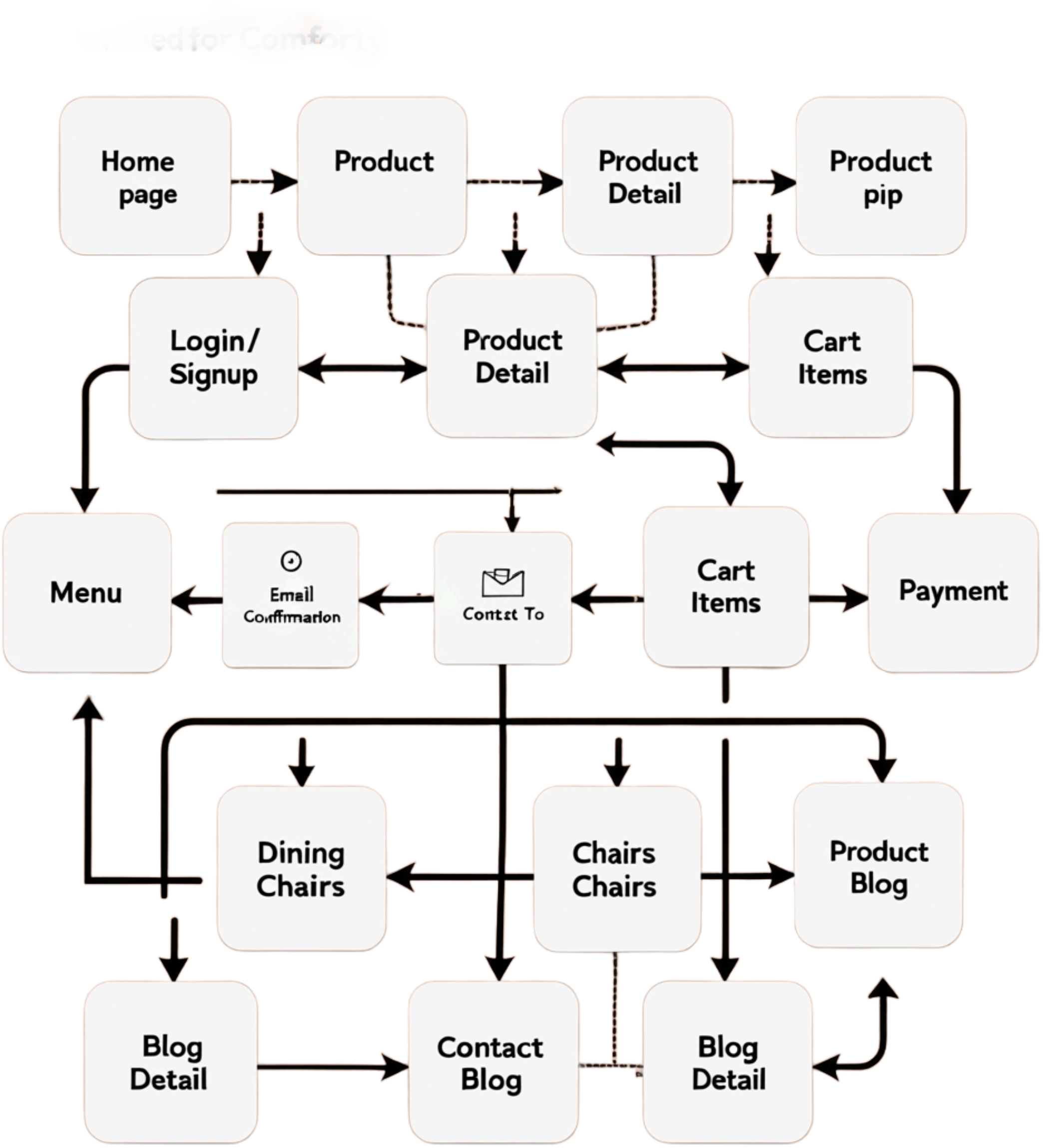
- **Frontend:** Next.js 14 with TypeScript
- **CMS:** Sanity
- **Payment Gateway:** Stripe
- **Shipment Tracking:** Shippo API
- **Hosting:** Vercel for fast and reliable deployment

Folder Structure

```
    /src
/app
  /about
  /allproducts
  /cart
  /checkout
  /contact
  /faq
  /filter
  /products
  /shop
  /studio
  /wishlist
/cartcontext
  /CartContext.tsx
  /WishListContext.tsx
/sanity
```

```
  /schemas
  sanityClient.js
/types
  /product.ts
```

Workflow Diagram



Data Flow

1. **Products:** Fetched from San CMS and displayed dynamically.
2. **Cart:** Items stored in local storage or synced to the user profile after login.
3. **Orders:** Stored in Sanity CMS and accessible by both users and admins.
4. **Payments:** Processed through Stripe with webhook support for updates.
5. **Shipments:** Managed using Shippo API for real-time tracking.

Conclusion

This system architecture ensures that Comforty provides a user-friendly experience while maintaining scalability and flexibility. Leveraging Next.js, Sanity, Stripe, and Shippo establishes a robust foundation for smooth operations, efficient data management, and a delightful customer journey.

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