

Planning The Technical Foundation (Day 02)

General E-Commerce Marketplace

Technical Requirements:

1. Frontend Development

Key Technologies

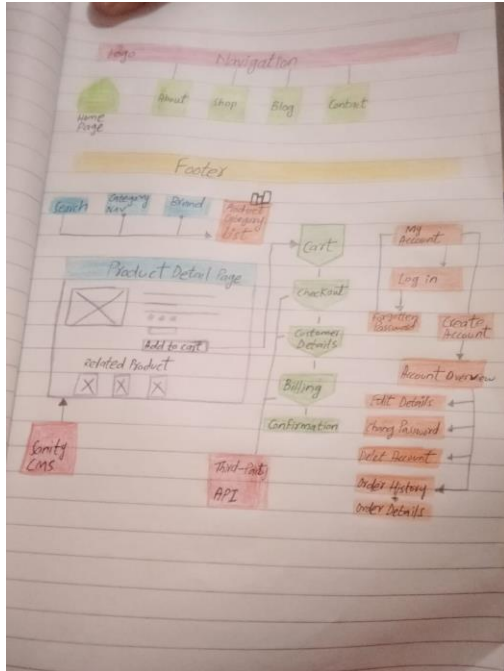
- **React.js / Next.js** (For building the user interface, with Next.js offering server-side rendering for faster load times and SEO benefits)
- **Tailwind CSS / SCSS / Styled-components** (For styling the UI with responsive design)
- **JavaScript / TypeScript** (For dynamic content and user interaction)
- **Responsive Design** (Ensure compatibility across devices: mobile, tablet, desktop)

2. Backend Development

Key Technologies

- **Node.js** (For building API endpoints and handling business logic)
- **Express.js** (For REST API routing and middleware management)

Design System Architecture



Sanity's Role for the Product Detail Page

1. **Content Management System (CMS):**
 - Acts as the backend where you manage product details.
 - Allows admins or sellers to create, update, and delete product information.
2. **Structured Content Delivery:**
 - Stores structured product data such as:
 - Product Name
 - Description
 - Price
 - Categories
 - Tags
 - Variants (e.g., size, color)
 - Media (images, videos)
 - Provides APIs (GROQ or GraphQL) to fetch this data dynamically.
3. **Dynamic Updates:**
 - Any changes made in Sanity (e.g., updating prices or descriptions) reflect immediately on the Product Detail Page without requiring redeployment.
4. **Localization and SEO:**
 - Supports multilingual content for global reach.
 - Manages metadata (title, description) to optimize SEO.

Key Roles of Third-Party APIs in the Checkout Process

1. Payment Gateway APIs

- Examples: **Stripe, PayPal, Razorpay, Square.**
 - **Role:**
 - Securely process payments made by buyers using credit cards, debit cards, net banking, UPI, or digital wallets.
 - Handle sensitive payment information (e.g., card details) without storing it on your servers.
 - Support recurring payments for subscriptions if required.
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2. Tax Calculation APIs

- Examples: **TaxJar, Avalara.**
 - **Role:**
 - Automatically calculate applicable taxes (e.g., VAT, GST) based on buyer and seller locations.
 - Ensure compliance with local tax regulations, especially in marketplaces with multiple regions.
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3. Shipping APIs

- Examples: **Shippo, EasyPost, FedEx API, DHL API.**
 - **Role:**
 - Provide real-time shipping rates during checkout.
 - Generate shipping labels and tracking IDs for orders.
 - Offer shipping options like standard, express, or same-day delivery.
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4. Address Validation APIs

- Examples: **Google Maps API, SmartyStreets.**
 - **Role:**
 - Validate and auto-complete buyer shipping addresses.
 - Reduce errors in address entry, ensuring successful deliveries.
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5. Fraud Detection APIs

- Examples: **Signifyd, FraudLabs Pro, Sift.**
 - **Role:**
 - Analyze transactions to detect and flag suspicious activities.
 - Protect buyers and sellers from chargebacks and fraudulent orders.
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6. Currency Conversion APIs

- Examples: **Open Exchange Rates**, **CurrencyLayer**.
 - **Role:**
 - Display product prices and checkout totals in the buyer's local currency.
 - Update exchange rates in real-time for accurate conversion.
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Benefits of Using Third-Party APIs

- **Speed and Efficiency:** Reduce development time by leveraging existing solutions.
- **Compliance:** Ensure adherence to industry standards (e.g., PCI DSS for payment security).
- **Scalability:** Handle high transaction volumes without performance degradation.
- **Global Reach:** Support multiple payment methods, currencies, and shipping carriers.

API requirements:

1. Authentication and Authorization API

API Endpoints:

- POST /api/auth/login
- POST /api/auth/register
- POST /api/auth/logout
- GET /api/auth/roles

2. Order and Checkout API

API Endpoints:

- POST /api/cart/add
- GET /api/cart
- POST /api/orders/checkout
- GET /api/orders/{order_id}/status

3. Shipping and Logistics API

API Endpoints:

- GET /api/shipping/rates
- POST /api/shipping/validate-address
- GET /api/shipping/track/{tracking_id}

Sanity Poduct Schema:

```
export default {
  name: 'product',
  title: 'Product',
  type: 'document',
  fields: [
    {
      name: 'name',
      title: 'Product Name',
      type: 'string',
    },
    {
      name: 'description',
      title: 'Product Description',
      type: 'text',
    },
    {
      name: 'price',
      title: 'Price',
      type: 'number',
    },
    {
      name: 'discount',
      title: 'Discount',
      type: 'number',
      description: 'Percentage discount on the original price',
    },
    {
      name: 'category',
      title: 'Category',
      type: 'string',
    },
    {
      name: 'images',
      title: 'Images',
      type: 'array',
      of: [{ type: 'image' }],
    },
    {
      name: 'ratings',
      title: 'Ratings',
      type: 'object',
      fields: [
        {
          name: 'average',
          title: 'Average Rating',
          type: 'number',
        },
        {
          name: 'totalReviews',
          title: 'Total Reviews',
          type: 'number',
        },
      ],
    },
    {
      name: 'specifications',
      title: 'Specifications',
      type: 'object',
      fields: [
        { name: 'color', title: 'Color', type: 'string' },
        { name: 'size', title: 'Size', type: 'string' },
        { name: 'material', title: 'Material', type: 'string' },
      ],
    },
    {
      name: 'status',
      title: 'Status',
      type: 'string',
      options: {
        list: ['active', 'inactive', 'deleted'],
        layout: 'radio',
      },
      initialValue: 'active',
    },
  ],
}
```