Day 4 - Building Dynamic Frontend Components for Your Marketplace

Objective

This project focuses on designing and developing dynamic frontend components that fetch and display marketplace data from Sanity CMS via API. The key focus areas include modular, reusable component design, state management, and responsive UI.

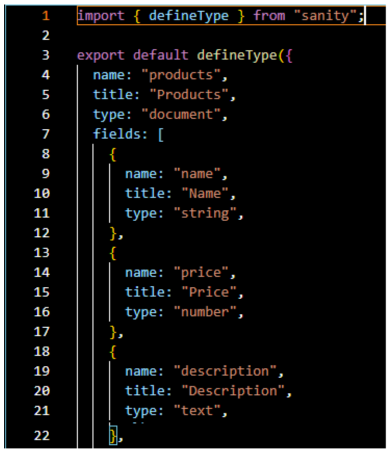
Key Learning Outcomes

- Successfully built dynamic frontend components that interact with APIs.
- Implemented modular, reusable, and scalable UI elements.
- Applied state management techniques to enhance interactivity.
- Ensured responsive design for a smooth user experience.
- Simulated real-world workflows for frontend development.

Implementation & Technical Details

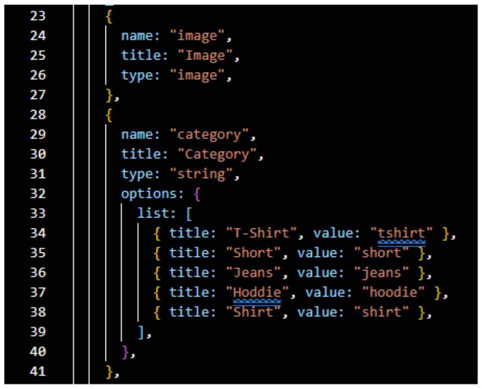
1. Setup and API Integration

Sanity CMS Schema (Located at /src/sanity/schemaTypes/product.ts)

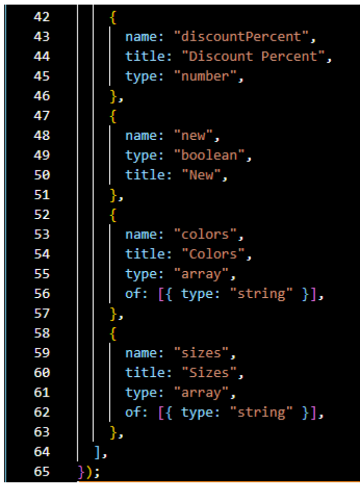


```
import { defineType } from "sanity";

export default defineType({
  name: "products",
  title: "Products",
  type: "document",
  fields: [
    {
      name: "name",
      title: "Name",
      type: "string",
    },
    {
      name: "price",
      title: "Price",
      type: "number",
    },
    {
      name: "description",
      title: "Description",
      type: "text",
    },
```

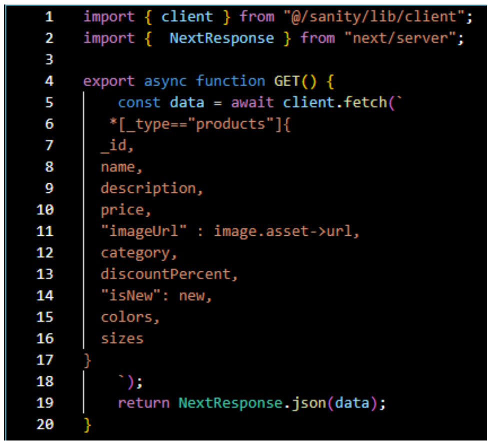


```
    {
      name: "image",
      title: "Image",
      type: "image",
    },
    {
      name: "category",
      title: "Category",
      type: "string",
      options: {
        list: [
          { title: "T-Shirt", value: "tshirt" },
          { title: "Short", value: "short" },
          { title: "Jeans", value: "jeans" },
          { title: "Hoddie", value: "hoodie" },
          { title: "Shirt", value: "shirt" },
        ],
      },
    },
```



```
    {
      name: "discountPercent",
      title: "Discount Percent",
      type: "number",
    },
    {
      name: "new",
      type: "boolean",
      title: "New",
    },
    {
      name: "colors",
      title: "Colors",
      type: "array",
      of: [{ type: "string" }],
    },
    {
      name: "sizes",
      title: "Sizes",
      type: "array",
      of: [{ type: "string" }],
    },
  ],
});
```

API Route (Located at /src/app/api/products/route.ts)



```
import { client } from "@/sanity/lib/client";
import {  NextResponse } from "next/server";

export async function GET() {
    const data = await client.fetch(`
   *[_type=="products"]{
  _id,
  name,
  description,
  price,
  "imageUrl" : image.asset->url,
  category,
  discountPercent,
  "isNew": new,
  colors,
  sizes
}
    `);
    return NextResponse.json(data);
}
```

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2. Developed Frontend Components

Product Listing Component (/components/ProductListing.tsx)

- Dynamically fetches product data from Sanity CMS.
- Includes a search bar for real-time filtering.
- Category-based filtering to refine displayed products.
- Designed for a clean and premium UI experience.

Product Detail Component (/components/ProductDetailsClient.tsx)

- Displays product details with high-resolution images.
- Integrates a wishlist feature for user preference saving.
- Cart functionality with size & color selection.
- Responsive modal for selection confirmation.

Additional Components

- SearchBar.tsx → Enables users to search for products dynamically.
- Cart.tsx → Manages cart functionality with local storage.
- Wishlist.tsx → Allows users to save favorite products.

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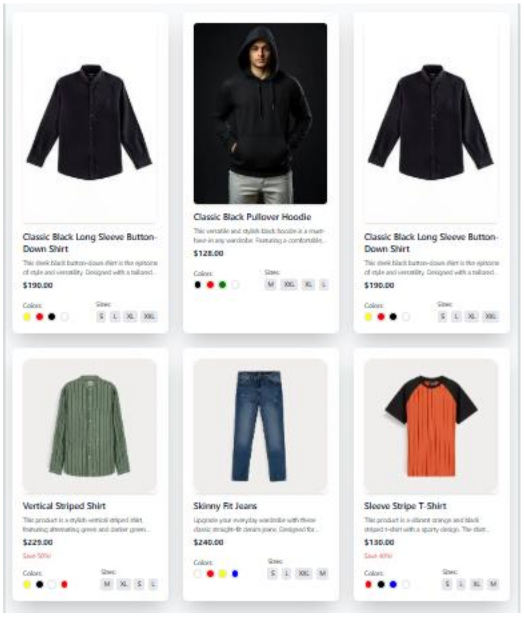
3. Submission Requirements

Functional Deliverables

- **Screenshots or screen recordings showcasing:**
  - Product listing page with dynamic data.
    - 

Classic Black Long Sleeve Button-Down Shirt
This sleek black button-down shirt is the epitome of style and versatility. Designed with a tailored...
$190.00
Colors: ● ● ● ○
Sizes: S L XL XXL

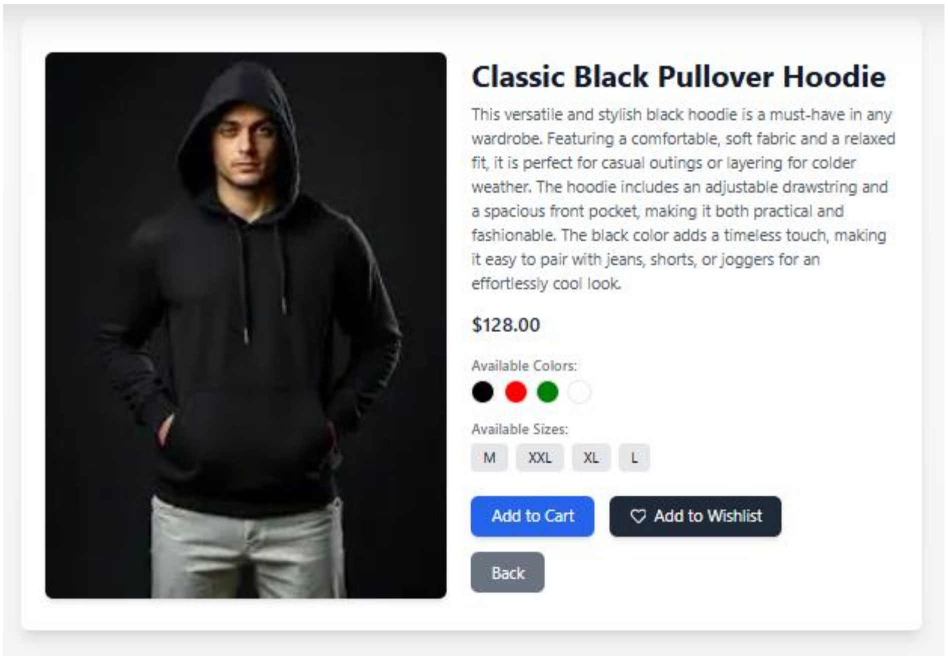
Classic Black Pullover Hoodie
This versatile and stylish black hoodie is a must-have in any wardrobe. Featuring a comfortable...
$128.00
Colors: ● ● ● ○
Sizes: M XXL XL L

Classic Black Long Sleeve Button-Down Shirt
This sleek black button-down shirt is the epitome of style and versatility. Designed with a tailored...
$190.00
Colors: ● ● ● ○
Sizes: S L XL XXL

Vertical Striped Shirt
This product is a stylish vertical striped shirt featuring alternating green and darker green...
$229.00
Save 50%
Colors: ● ● ○ ●
Sizes: M XL S L

Skinny Fit Jeans
Upgrade your everyday wardrobe with these classic straight-fit denim jeans. Designed for...
$240.00
Colors: ○ ● ● ●
Sizes: S L XXL M

Sleeve Stripe T-Shirt
This product is a vibrant orange and black striped t-shirt with a sporty design. The shirt...
$130.00
Save 40%
Colors: ● ● ● ○
Sizes: S L XL M

- Individual product detail pages with accurate routing and data rendering.
  - 

    Classic Black Pullover Hoodie

    This versatile and stylish black hoodie is a must-have in any wardrobe. Featuring a comfortable, soft fabric and a relaxed fit, it is perfect for casual outings or layering for colder weather. The hoodie includes an adjustable drawstring and a spacious front pocket, making it both practical and fashionable. The black color adds a timeless touch, making it easy to pair with jeans, shorts, or joggers for an effortlessly cool look.

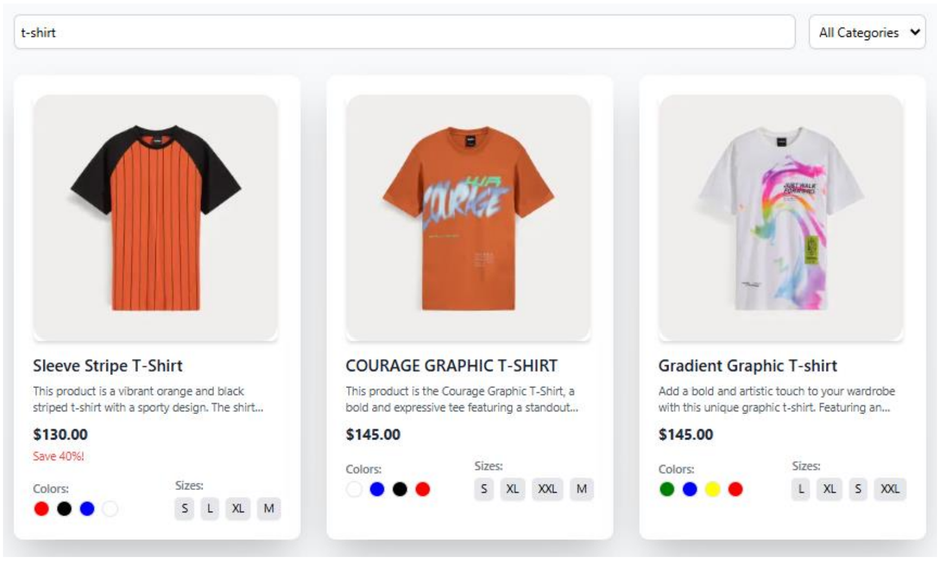
    $128.00

    Available Colors:

    Available Sizes:

    M XXL XL L

    Add to Cart | Add to Wishlist

    Back
- Working category filters, search bar, and pagination.
  - 

    t-shirt | All Categories

    Sleeve Stripe T-Shirt
    This product is a vibrant orange and black striped t-shirt with a sporty design. The shirt...
    $130.00
    Save 40%!
    Colors: Sizes: S L XL M

    COURAGE GRAPHIC T-SHIRT
    This product is the Courage Graphic T-Shirt, a bold and expressive tee featuring a standout...
    $145.00
    Colors: Sizes: S XL XXL M

    Gradient Graphic T-shirt
    Add a bold and artistic touch to your wardrobe with this unique graphic t-shirt. Featuring an...
    $145.00
    Colors: Sizes: L XL S XXL

Code Deliverables

- **Code snippets for key components:**
  - ProductListing.tsx
  - ProductDetailsClient.tsx
  - SearchBar.tsx
  - Cart.tsx
- **Scripts or logic for API integration and dynamic routing.**

Documentation & Technical Report

- **Summary of development steps:**
    - Understanding Sanity CMS & API structure.
    - Implementing reusable UI components.
    - Testing and optimizing performance.
- **Challenges & Solutions Implemented:**
    - Handling API latency with loading states.
    - State management for wishlist & cart.
- **Component Structure & Design Decisions:**
    - Using modular, reusable components.
    - Integrating dynamic filtering and search functionality.
- **Performance Considerations:**
    - Implemented lazy loading for images.
    - Used Next.js API routes for optimized data fetching.
- **Error Handling Strategies:**
    - API response validation & fallback UI.
    - User input validation for cart actions.
- **Future Scalability:**
    - Possible addition of user authentication.
    - Multi-language support for broader audience reach.
- **Document is submitted in PDF & Markdown format.**

Repository Submission

- Codebase is available in a GitHub repository.
- Structured folder hierarchy for easy navigation.

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4. Expected Outcome & Reflection

- Fully functional Product Listing and Detail pages.
- Working Search Bar, Pagination, and Category Filters.
- Responsive Next.js-based UI with a premium look & feel.

Reflection & Learning Takeaways

- Learned real-world Next.js development techniques.
- Strengthened skills in headless CMS integration.
- Improved understanding of frontend performance optimization.
- Gained experience in state management & API data handling.