

Submission Title: “ Day4- Dynamic Frontend Components - (Bandage)


Name: Zakia Begum

Role # : 00053035

Date: 19-01-2025

Functional Deliverable

- Product listing:**




Wood Chair
Introducing the Wood Chair—a beautifully crafted p...

\$100

wood chair furniture classic rustic

Add to cart




Pure Aura
Experience the essence of tranquility and purity w...

\$280

pure modern elegance interior design furniture

Add to cart




Sleek Living
Welcome to SleekLiving, where modern sophisticatio...

\$300

sleek modern elegant furniture living

Add to cart




Bed
Introducing the Bed—your sanctuary for rest and re...

\$250

bed furniture sleep cozy modern

Add to cart




Retro Vibe
Introducing RetroVibe—a perfect blend of vintage c...

\$340

retro vintage furniture modern decor

Add to cart




Zen Table
Introduce tranquility and balance into your home w...

\$250

zen table furniture calm minimalist

Add to cart



Modern Serenity
Introducing ModernSerenity—a collection that redef...

\$480

modern serenity peaceful contemporary furniture

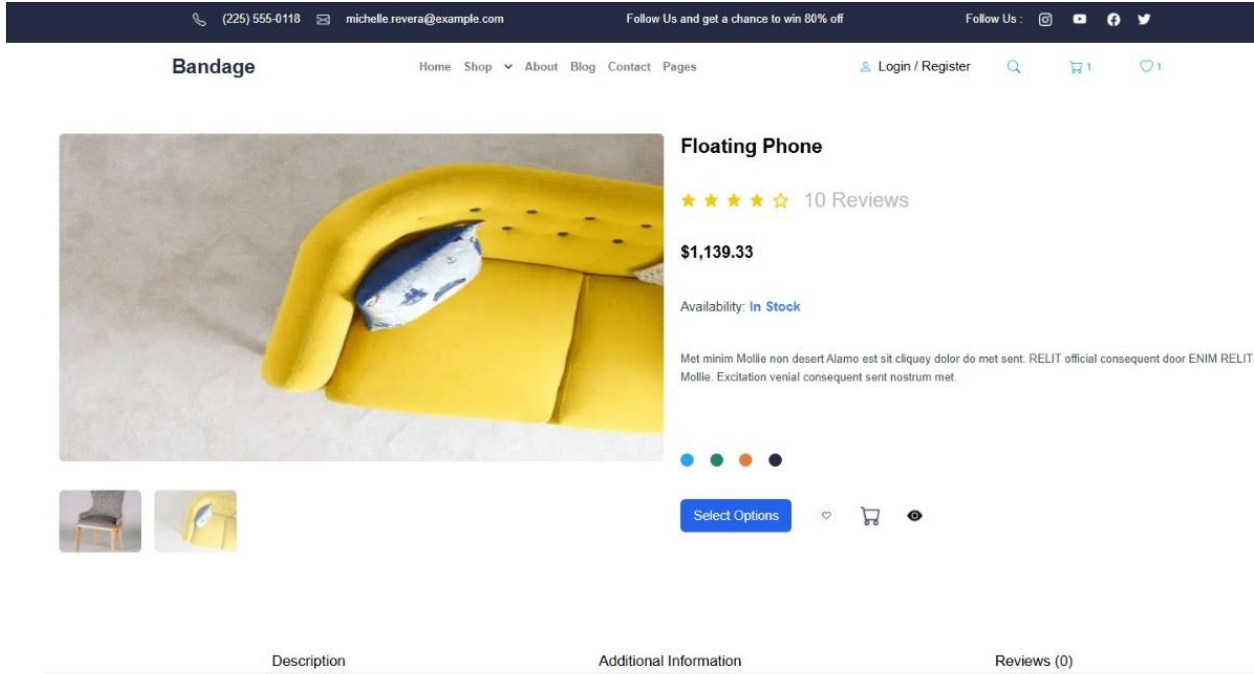
Add to cart

Cart Summary

Your Cart is Empty, Please Add Products.

```
1
2
3 "use client";
4 import React, { useEffect, useState } from "react";
5 import sanityClient from "@sanity/client";
6 import Image from "next/image";
7
8 const sanity = sanityClient({
9   projectId: "ii2buxfz",
10  dataset: "production",
11  apiVersion: "2025-01-18",
12  useCdn: true,
13 });
14
15 interface Product {
16   _id: string;
17   title: string;
18   price: number;
19   description: string;
20   discountPercentage: number;
21   imageUrl: string;
22   productImage?: {
23     asset?: {
24       _ref: string;
25     };
26   };
27   tags: string[];
28 }
```

- **Product Details:**



- **Search Bar:**

Get In Touch

Enter Your Email [Subscribe](#)

Lore imp sum dolor Amit

ting

Subscribe

- Tags:

haven contemporary modern decor

rustic vase home decor vintage interior design

wooden craftsmanship furniture modern nature inspired

cloud chair comfy home decor modern furniture

- **Carts:**

Follow Us :



- Categories:

Shop

[Home](#) [Shop](#)



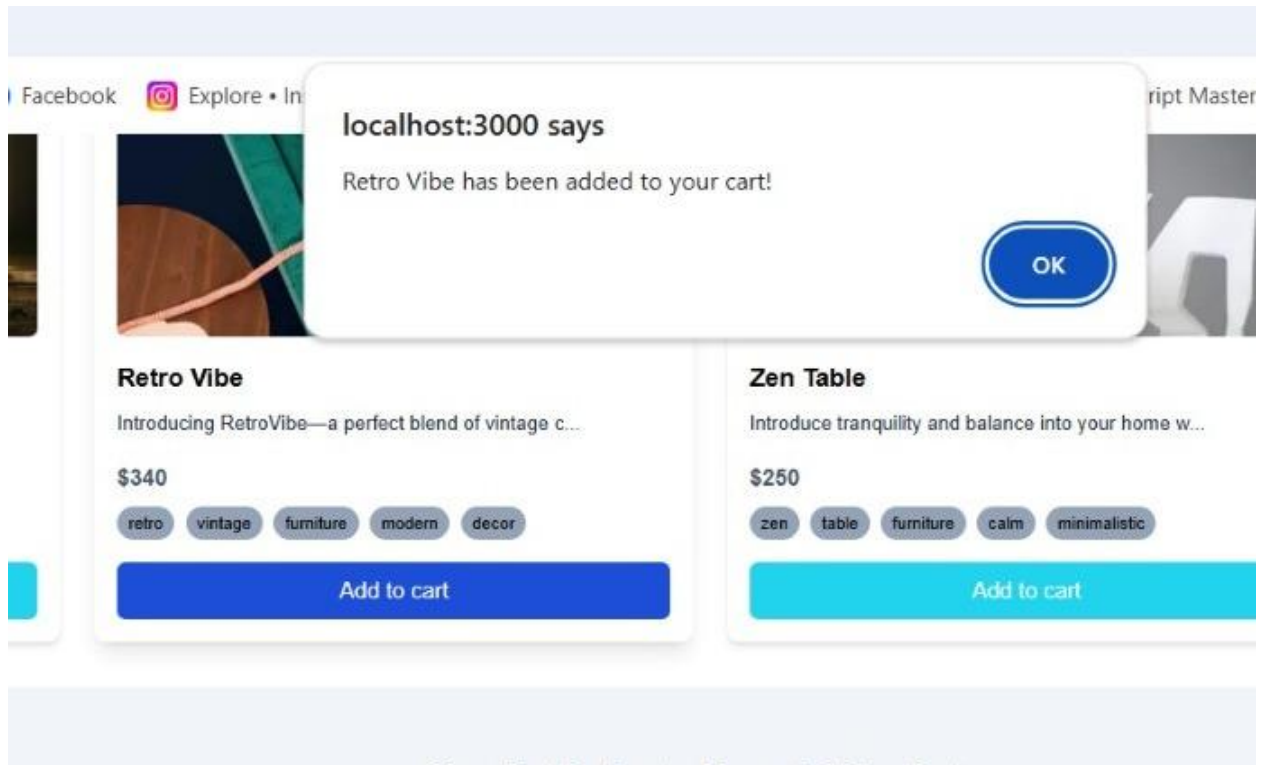
Showing all 12 results

Views:
■ ■ ■ ■

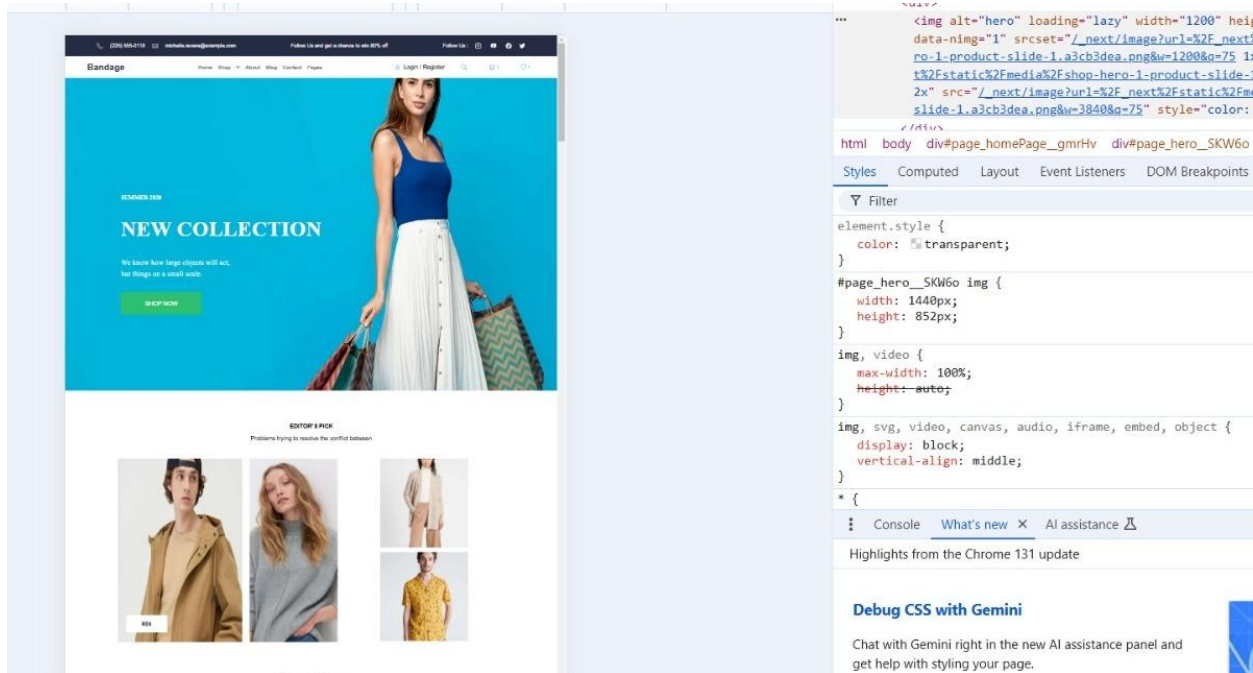
Popularity

Filter

- Wishlist Notification:



- **Responsiveness:**



Technical Report: Product Listing Development

1. Steps Taken to Build and Integrate Components

***a. *Planning and Requirements Gathering**

- Defined the core requirements such as product display, filtering, sorting, and pagination.
- Chose **Next.js** for frontend development and **Sanity.io** for backend CMS.
- Created wireframes to visualize the product listing page layout.

***b. *Frontend Development**

1. **Component Creation:**
 - Developed reusable UI components using **React** and **Tailwind CSS**.
 - Created **ProductCard** and **FilterBar** components.
2. **State Management:**
 - Utilized React's **useState** and **useEffect** hooks for managing state.
3. **API Integration:**
 - Implemented API calls using the **fetch** method to retrieve product data from Sanity.
4. **Routing:**
 - Used Next.js dynamic routing for category-based navigation.

***c. *Backend Development**

1. **CMS Setup:**
 - Designed and implemented a product schema using **Sanity.io**.
 - Connected the backend to Sanity using an environment variable.
2. **API Development:**
 - Developed API queries to handle product retrieval, filtering, and sorting.
3. **Pagination Implementation:**
 - Added pagination logic to retrieve products efficiently in chunks using Sanity's query language (GROQ).

***d. *Testing and Optimization**

- Performed unit testing on individual components.
 - Optimized API calls to reduce response time.
 - Ensured frontend and backend integration worked seamlessly.
-

2. Challenges Faced and Solutions Implemented

***a. *Challenge: Data Fetching Performance**

- **Problem:*** Slow loading times due to a large product dataset.*
- **Solution:*** Implemented pagination and query optimization in Sanity CMS.*

***b. *Challenge: State Management Complexity**

- **Problem:*** Managing multiple filters and sorting options.*
- **Solution:*** Used URL query parameters to store filter states and improve navigation.*

**c. *Challenge: Responsive Design Issues*

- **Problem:*** Product grid not displaying correctly on smaller screens.*
- **Solution:*** Utilized Tailwind CSS's responsive utility classes and media queries.*

**d. *Challenge: Server-Side Rendering (SSR) Optimization*

- **Problem:*** Page flickering during data load.*
 - **Solution:*** Leveraged Next.js `getServerSideProps` to fetch data before page render.*
-

3. Best Practices Followed During Development

**a. *Code Structure and Modularity*

- *Divided the code into reusable components.*
- *Maintained separation of concerns by keeping API logic separate from UI components.*

**b. *Performance Optimization*

- *Used lazy loading for images.*
- *Implemented caching strategies to minimize API calls.*

**c. *Security Measures*

- *Validated API inputs to prevent injection attacks.*
- *Used environment variables to store sensitive information securely.*

**d. *Version Control*

- *Maintained a proper Git branching strategy using feature branches.*
- *Documented commits with meaningful messages.*

**e. *User Experience Enhancements*

- *Added loading spinners and skeleton loaders for a better UX.*
- *Ensured accessibility compliance with proper semantic HTML.*

**f. *Scalability Considerations*

- *Designed API endpoints to be flexible for future enhancements.*
 - *Adopted scalable folder structure for future feature additions.*
-

Conclusion

By following a structured approach to development, overcoming challenges through optimization techniques, and adhering to industry best practices, the product listing feature was successfully implemented with a focus on performance, scalability, and user experience.