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Day 3 - API Integration and Data Migration

1. Project Title:
Dynamic Product Display Using Sanity and Next.js

2. Objective:
The goal of this project was to fetch product data from Sanity CMS and display it dynamically on a Next.js frontend with proper styling and responsiveness.

3. Key Features:

- **Sanity Integration: Successfully connected Sanity CMS to Next.js using GROQ queries.**
- **Dynamic Data Fetching: Used Sanity's APIs to retrieve product details, including name, price, description, and image.**
- **Responsive Frontend Design: Built a responsive layout using Tailwind CSS, ensuring compatibility across devices.**
- **Clean Code Structure: Used modular functions for fetching data and organized React components efficiently.**

4. Technologies Used:

- **Frontend: Next.js (React Framework)**
- **Backend: Sanity CMS**
- **Styling: Tailwind CSS**
- **Programming Language: TypeScript/JavaScript**

5. Step-by-Step Implementation:

1. **Set Up Sanity CMS:**
   - **Created a new dataset in Sanity.**
   - **Added a schema for products with fields like name, price, description, image, and category.**
2. **Configured Sanity Client:**
   - **Installed the Sanity client in the Next.js project.**
   - **Set up a reusable client instance to connect to Sanity.**
3. **Created GROQ Query:**

    - **Wrote a GROQ query to fetch the required product fields.**
4. **Fetched Data in Next.js:**
    - **Used a custom fetchProducts function to call Sanity's APIs.**
    - **Managed the fetched data using React's useState and useEffect hooks.**
5. **Frontend Rendering:**
    - **Dynamically rendered product details, including name, price, description, and images.**
    - **Used Image from Next.js for optimized image loading.**
6. **Styling with Tailwind CSS:**
    - **Designed a responsive grid layout.**
    - **Styled individual product cards with hover effects for better user interaction.**

6. Challenges and Solutions:

- **Challenge: Handling dynamic images from Sanity in Next.js.**
  Solution: Used next/image and created a function to generate image URLs from Sanity assets.
- **Challenge: Managing dynamic and real-time updates from Sanity.**
  Solution: Ensured data fetching and rendering are handled efficiently with optimized GROQ queries.

7. Output:
A fully functional webpage that dynamically displays product data from Sanity CMS in a clean and responsive design.

9. Learning Outcome:
Through this project, I gained hands-on experience with:

- **Connecting a CMS to a modern frontend framework.**
- **Writing GROQ queries for fetching data efficiently.**
- **Implementing responsive designs with Tailwind CSS.**

10. Conclusion:
This project demonstrates the ability to integrate a CMS backend (Sanity) with a modern frontend framework (Next.js) for dynamic content rendering, providing a robust and scalable solution for real-world applications.