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Completed the project named as Phase 2

TECHNOLOGY PROJECT NAME : PRODUCT CATALOG WITH FILTERS

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Product Catalog with Filter

Phase 2 — Solution Design & Architecture

1. Tech Stack Selection

L ayer	Technology	Description
Frontend	HTML, CSS, JavaScript	Build the user interface and handle interactions
Styling	Bootstrap / Tailwind CSS	Provides responsive design and pre-built components
Backend (Optional)	Node.js with Express / PHP	Manage API endpoints and data exchange
Data Source	JSON file / MongoDB / MySQL	Store and retrieve product data
Hosting	Local development / GitHub Page	Deploy and run the application
State Management	Vanilla JS / Redux	Handle application state for filters and sorting
API Requests	Fetch API / Axios	Retrieve product data asynchronously

2. UI Structure / API Schema Design

UI Structure:

Header	**Logo, navigation menu, search bar**
Filter Panel	Category, Price Range, Ratings, Availability
Product Listing Section	Grid view displaying product cards
Sorting Options	Sort by price, popularity, or rating
Footer	About, contact, links

API Schema Example:

Endpoint	/api/products
Request Parameters	category, maxPrice, minRating, brand, availability
Response Example	{ id, name, category, price, rating, brand, available, image }
Error Handling	Returns error message if no products found

3. Data Handling Approach

- Store products in JSON or database.
- Apply filters dynamically with JavaScript or backend API.
- Use LocalStorage for caching user preferences.

4. Component / Module Diagram

Header -> Filter Panel -> Filter Logic -> Product Listing -> Data Source \ / \---- Sorting Component ----/ | Footer

5. Basic Flow Diagram

Start -> Load Page -> Fetch Product Data -> Display All Products -> User selects filters -> Apply Filter Logic -> Update

Product Display -> User applies sorting -> Sort Data -> Update View -> User searches -> Filter by keyword -> Update

View -> End / Reset Filters