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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. TechStack Selection

Layer	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 -> FilterPanel ->FilterLogic -> Product Listing -> Data Source \ / \---- Sorting Component ----/ | Footer

5. Basic Flow Diagram

Start-> Load Page -> FetchProduct 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