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**Completed the project named as Phase 1**

**TECHNOLOGY PROJECT NAME : PRODUCT CATALOG WITH FILTERS**

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# Project Report

## Product Catalog with Filters

### **1. Problem Statement**

In today's e-commerce environment, customers face challenges when browsing large product inventories. Without a structured catalog and effective filtering options, users spend excessive time searching, which reduces satisfaction and leads to cart abandonment.

A Product Catalog with Filters system is required to improve the shopping experience by providing:

- Easy product discovery.
- Advanced filters (category, price, brand, rating).
- Sorting options (price, popularity, latest arrivals).

This will benefit customers by saving time and increasing satisfaction, while businesses will see higher conversion rates and better engagement.

### **2. Users & Stakeholders**

#### **Users**

- Customers: Browse and purchase products using filters and sorting.
- Guest Users: Explore the catalog without account creation.
- Admins: Manage products, categories, and filters.

#### **Stakeholders**

- Business Owners: Gain higher sales and visibility.
- Marketing Team: Feature products and run promotions.
- Developers/Designers: Build, design, and maintain the platform.
- Customer Support Team: Assist users with catalog-related issues.

### **3. User Stories**

- As a customer, I want to filter products by category, price, brand, and rating so that I can quickly find relevant items.
- As a customer, I want to sort products by price, popularity, and latest arrivals for better decision-making.
- As a guest user, I want to browse the catalog without logging in so that I can explore before registering.
- As an admin, I want to add, update, and delete products so that the catalog remains up to date.
- As an admin, I want to configure filters to ensure customers can refine their searches easily.

#### **4. MVP Features**

- Product Catalog: Display items with images, name, price, and description.
- Search Functionality: Keyword-based product search.
- Filters: By category, brand, price range, and rating.
- Sorting Options: Price low-to-high, price high-to-low, popularity, latest arrivals.
- Product Detail Page: Detailed view with description, price, and “Add to Cart.”
- Admin Dashboard: CRUD operations (Create, Read, Update, Delete) for products and filters.

#### **5. Wireframes / API Endpoint List**

##### **Wireframes (Conceptual Design):**

- Home Page:
  - - Search bar at the top.
  - - Categories listed.
  - - Featured/Trending products displayed.
- Catalog Page:
  - - Product grid layout (image, name, price).
  - - Sidebar with filters (category, price range, brand, rating).
  - - Sorting dropdown at the top (price, popularity, newest).
- Product Detail Page:
  - - Product image, description, price.
  - - Add to Cart option.
- Admin Dashboard:
  - - Product management panel.
  - - Add, update, delete products.
  - - Manage filters and categories.

##### **API Endpoint List:**

- GET /api/products → Retrieve all products.
- GET /api/products/:id → Retrieve product by ID.
- GET /api/products?category=&price;=&brand;=&rating;= → Retrieve filtered products.
- POST /api/products → Add new product (Admin only).
- PUT /api/products/:id → Update product details (Admin only).
- DELETE /api/products/:id → Delete product (Admin only).

#### **6. Acceptance Criteria**

- The catalog must contain at least 50 products at launch.
- Users can filter products by category, price, brand, and rating.
- Filters and sorting must update product listings dynamically (without full page reload).
- Each product must show image, name, price, and a short description.
- Admin must be able to add, update, and delete products successfully.
- The system must provide responses to filter/search requests within 2 seconds.
- The platform must be mobile-friendly and responsive.
- Users must be able to browse as guests, but only registered users can purchase.

## **7. Future Enhancements (Beyond MVP)**

- Wishlist functionality for customers.
- Advanced search with AI-based recommendations.
- Customer reviews and ratings for products.
- Bulk product upload via CSV for admins.
- Personalized suggestions based on browsing history.