COLLEGE CODE: 9504

COLLEGE NAME: DR G U POPE COLLEGE OF ENGINEERING

DEPARTMENT: CSE

STUDENT NM-ID: 4122921B2EE9B7EB97042BD86E090B16

ROLL NO: 950423104047

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Completed the project named as Phase 1

TECHNOLOGY PROJECT NAME : PRODUCT CATALOG WITH FILTERS

SUBMITTED BY,

NAME : THILLAI RAJA M

MOBILE NO: 63693 55154

# 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→Retrieveproductby ID.
- GET/api/products?category=&price;=&brand;=&rating;= →Re trievefiltered 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.