



# Product Requirements & Specification Document

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## Project Name

ShopEase - E-commerce Product Catalog

## Description

ShopEase is a user-friendly, responsive e-commerce product catalog built with React and Tailwind CSS. It enables users to browse, filter, and sort products efficiently, with a focus on dynamic rendering and interactive UI components. The project is open-source and startup-oriented.

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## 1. Goals & Objectives

- Deliver a modern, responsive product catalog UI.
  - Enable dynamic filtering and sorting of products.
  - Ensure seamless user interaction and accessibility.
  - Provide a maintainable, open-source codebase.
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## 2. Stakeholders

Role	Responsibility
Product Owner	Requirements, vision
Developers	Implementation, testing
Designers	UI/UX, responsive design
End Users	Product browsing, interaction

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## 3. Functional Requirements

ID	Requirement
FR1	Display a grid/list of product cards with image, name, price, and rating.
FR2	Implement filtering by category, price range, and rating.
FR3	Enable sorting by price, popularity, and newest.
FR4	Support responsive design for mobile, tablet, and desktop.
FR5	Allow dynamic search by product name.
FR6	Provide loading and empty states.
FR7	Ensure accessibility (keyboard navigation, ARIA labels).

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## 4. Non-Functional Requirements

ID	Requirement
NFR1	Built with React (functional components).
NFR2	Use Tailwind CSS for styling.
NFR3	Codebase is open-source and well-documented.
NFR4	Performance optimized for fast rendering.
NFR5	Cross-browser compatibility.

## 5. User Stories

ID	As a...	I want to...	So that...
US1	Shopper	View products in a catalog	I can browse available items
US2	Shopper	Filter products by category/price	I can find relevant products
US3	Shopper	Sort products by price/popularity	I can see best or cheapest items
US4	Shopper	Search for a product by name	I can quickly locate an item
US5	Shopper	Use the catalog on any device	I have a seamless experience

## 6. Technical Specifications

### 6.1 Architecture

- **Frontend:** React (functional components, hooks)
- **Styling:** Tailwind CSS, advanced CSS for custom components
- **State Management:** React Context or useState/useReducer
- **Data Source:** Static JSON or mock API (for demo)
- **Routing:** React Router (if needed for navigation)

### 6.2 Component Structure

```
App
├── Header
├── FilterBar
├── SortBar
├── ProductGrid
│   └── ProductCard
└── Footer
```

### 6.3 Product Card

Element	Description
Image	Product thumbnail



Name	Product title
Price	Formatted price
Rating	Star rating (visual)
Action	(Optional) Add to cart/wishlist

## 6.4 Filtering & Sorting

- **Filtering:** By category (multi-select), price range (slider), rating (min value)
  - **Sorting:** Dropdown (price asc/desc, popularity, newest)
  - **Search:** Debounced input for product name
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## 7. UI/UX Requirements

ID	Requirement
UI1	Responsive grid layout (mobile-first)
UI2	Clear, accessible filter/sort controls
UI3	Visual feedback for loading/empty states
UI4	Consistent color scheme (Tailwind palette)
UI5	Smooth transitions/animations (where needed)

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## 8. Accessibility

- Keyboard navigable controls
  - ARIA labels for interactive elements
  - Sufficient color contrast
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## 9. Open Source & Documentation

- MIT License
  - README with setup, usage, and contribution guidelines
  - Inline code comments
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## 10. Acceptance Criteria

ID	Criteria
AC1	Catalog displays products responsively on all devices
AC2	Filtering, sorting, and search work as specified
AC3	All UI elements are accessible and keyboard navigable
AC4	Codebase is open-source and documented



AC5	No major bugs or performance issues
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## 11. Out of Scope

- User authentication
- Checkout/payment integration
- Backend/database implementation

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## 12. Milestones

Milestone	Description	Target Date
UI Prototype	Static layout, sample data	Week 1
Filtering & Sorting	Interactive controls	Week 2
Responsive & Accessibility	Mobile/tablet support, ARIA	Week 3
Documentation & Release	README, open-source launch	Week 4

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## 13. Appendix

### Sample Product JSON

```
{
  "id": 1,
  "name": "Wireless Headphones",
  "category": "Electronics",
  "price": 99.99,
  "rating": 4.5,
  "image": "url"
}
```

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**End of Document**