

Week 5: Advanced Frontend Development

Description

A modern **Advanced E-commerce Frontend** built using **HTML, CSS, and JavaScript (ES6+)**, featuring a fully interactive **product catalog, shopping cart, search, filters, and responsive design**. The project demonstrates advanced frontend development skills such as **CSS Grid, Flexbox, modular JavaScript**, and modern web performance practices.

Reputable Source References

- CSS Grid – MDN: https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_grid_layout
- Flexbox – MDN: https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_flexible_box_layout
- ES6 Modules – MDN: <https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Modules>
- Web Performance – Google Web.dev: <https://web.dev/fast/>
- Webpack Documentation: <https://webpack.js.org>
- Parcel Documentation: <https://parceljs.org>

Features

- ✓ Product listing with **filtering and sorting**
- ✓ **Interactive shopping cart** (Add/Remove/Update quantities)
- ✓ **Product search** with autocomplete
- ✓ Fully **responsive** layout using Grid + Flexbox
- ✓ **Lightweight performance optimizations**
- ✓ Modular JavaScript with ES6 imports/exports
- ✓ Clean UI/UX with smooth interactions

Technologies Used

- **HTML5, CSS3, JavaScript ES6+**
- **CSS Grid, Flexbox**
- **LocalStorage** for cart persistence
- Optional bundlers: **Webpack or Parcel**

File / Code Structure

week5-ecommerce-frontend/

```
├── index.html
├── styles.css
├── script.js
├── products.js
└── README.md
└── assets/
    ├── images/
    └── icons/
```

index.html

Main structure → product grid container, search bar, filters, and cart panel.

styles.css

Full styling → Grid, Flexbox, mobile responsiveness, animations.

products.js

Static products array → id, name, price, category, image.

script.js

Main logic →

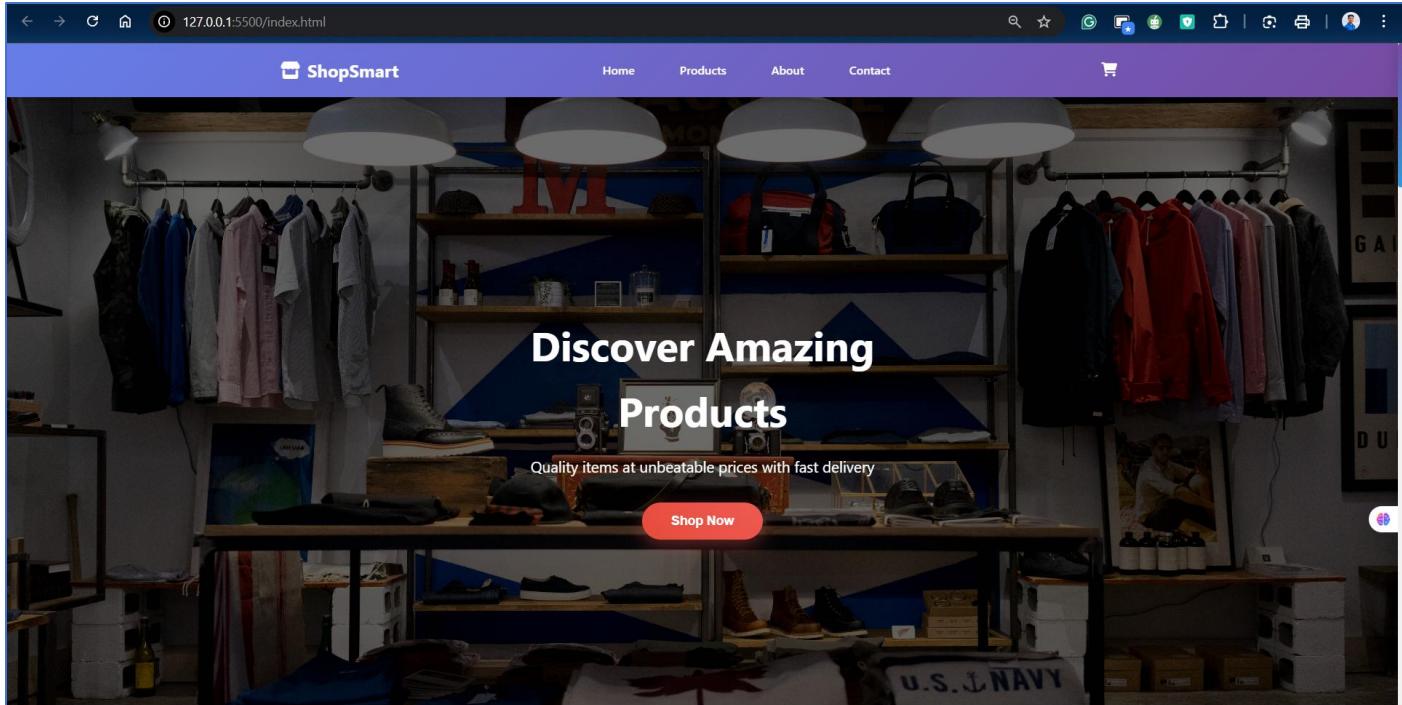
- Load products
- Handle filters, search, sorting

- Manage cart operations
- Update UI dynamically

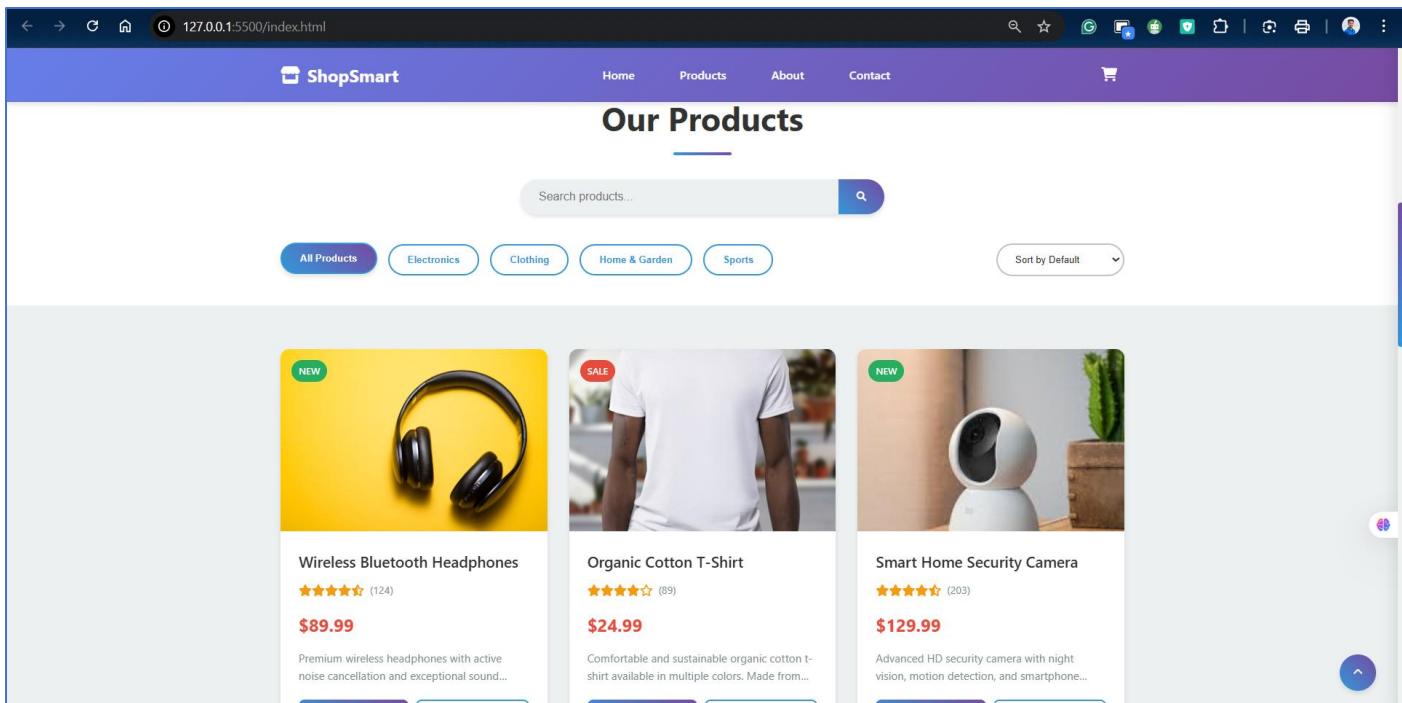
☒ Visual Documentation (Screenshots to include)

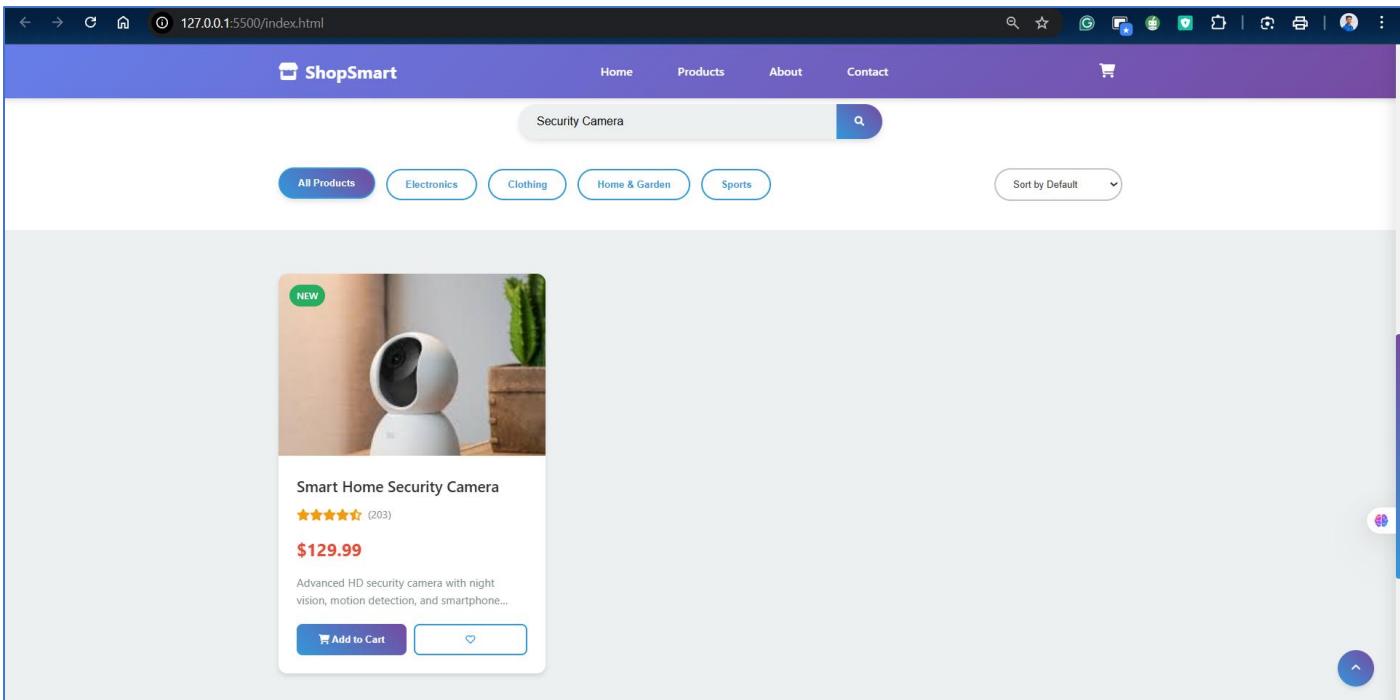
To score full marks, include screenshots of:

1. Home Page / Product Grid



2. Search & Filters





3. Shopping Cart

ShopSmart

Home Products About Contact

Security Camera

All Products Electronics Clothing Home & Garden Sports

Sort by Default

Smart Home Security Camera
★★★★★ (203)
\$129.99

Advanced HD security camera with night vision, motion detection, and smartphone...

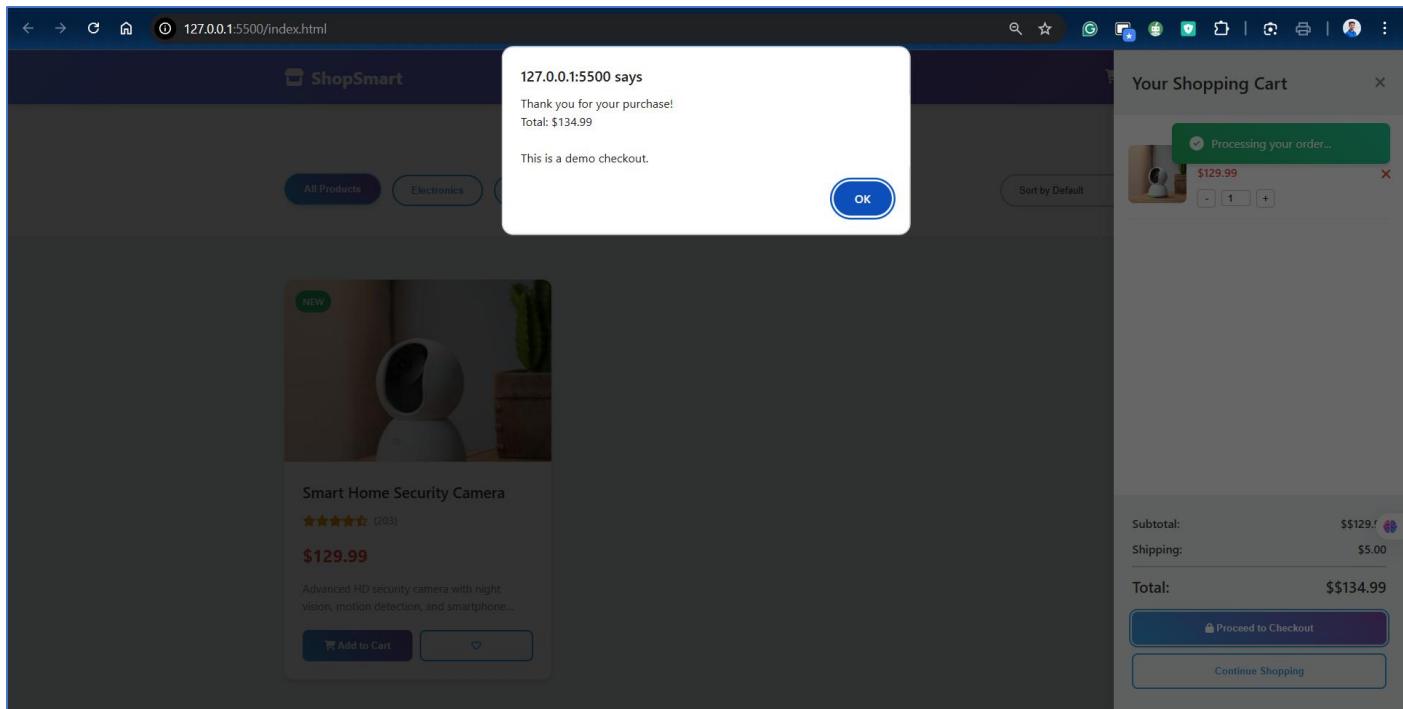
Add to Cart Heart

Your Shopping Cart

Smart Home Security Camera
\$129.99
1

Subtotal: \$129.99
Shipping: \$5.00
Total: \$134.99

Proceed to Checkout Continue Shopping



⌚ Technical Details

Algorithms & Logic Used

- **Search Algorithm** → simple substring match for autocomplete.
- **Filtering** → category-based + price-range filtering.
- **Sorting** → sort by price (ASC/DESC) using Array.sort().
- **Cart System** →
 - Cart stored in LocalStorage
 - Add/Remove/Update operations with object mapping
 - Dynamic cart UI updates

Data Structures

- **Array of product objects**
- **Cart as an Object** (key = productId, value = quantity)

📝 Testing Evidence

Include screenshots or text for:

- Adding an item to the cart
- Removing an item
- Searching a product
- Sorting high-to-low / low-to-high
- Responsive view tested on mobile

🌐 Data Flow Diagram (Simple Side-by-Side Version)

User Action



script.js (Controller)



products.js (Data Source)

| sends products



UI Update (DOM)



LocalStorage (Cart Save)

Side-by-side explanation:

index.html → Displays all UI components

styles.css → Styles UI elements

products.js → Supplies product data

script.js → Connects user actions → data → UI updates