

Front-End UI/UX Development

Front-End UI/UX Development Mini Project

UI/UX DESIGN FUNDAMENTALS

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E-COMMERCE PRODUCT PAGE

1.Abstract

This project presents a responsive e-commerce product page designed for event-based sales. Leveraging Bootstrap for responsive layout and jQuery for dynamic interactivity, the page features a product image carousel, detailed product information, quantity selection, and an add-to-cart function. Additionally, it incorporates an interactive customer review system with star ratings, allowing users to submit and view feedback in real-time. The design emphasizes user experience, accessibility, and responsiveness, making it suitable for various devices. This implementation demonstrates key front-end development principles applicable to modern e-commerce platforms and serves as a foundation for further enhancements like data persistence and personalized user interactions.

2.Objectives

- Build a responsive e-commerce product page using Bootstrap.
- Display product images with a carousel and update product details dynamically.
- Allow users to select quantity and add products to the cart with feedback.
- Implement a star-based customer review system with real-time updates.
- Create a responsive product page with a carousel to showcase products and update details dynamically.
- Enable users to add products to the cart with quantity selection and feedback.
- Implement an interactive star rating and review system for customer feedback.

3.Scope of The Project

- Develop a responsive product page with a carousel to showcase multiple products.
- Display dynamic product information including name, brand, price, and description.
- Provide quantity selection and add-to-cart functionality with user feedback.
- Implement a customer review system featuring star ratings and text reviews.
- Focus on front-end development without backend integration or payment processing.
- Ensure compatibility and usability across different device sizes.

5. Tools & Technologies Used

Tool/Technology	Purpose
HTML5	Structure and semantic markup of the webpage
CSS3	Styling the page and controlling layout /appearance.
Bootstrap 5	Responsive grid system and UI components (carousel, buttons).
JavaScript	Dynamic content updates, carousel interaction, reviews logic
Google Fonts (Handlee)	Enhance typography and iconography (optional).

6. HTML Structure Overview

- `<div class="container">`
Main wrapper containing all page content for consistent spacing and alignment.
- **Product Carousel** (`<div id="productCarousel">`)
Displays multiple product images with controls to navigate between slides.
- **Product Details Section** (`<div class="col-lg-7 col-md-6">`)
Contains product name, brand, price, description, quantity input, and add-to-cart button with confirmation message.
- **Average Rating Display**
Shows average star rating and total number of reviews.
- **Reviews Section** (`<div id="reviewsList">`)
Lists customer reviews dynamically added by users.
- **Add Review Section**
Includes interactive star rating input, review text area, and submit button for posting new reviews.
- **Scripts**
jQuery, Bootstrap JavaScript bundle, and custom script handling dynamic page behaviors.

7. CSS Styling Strategy

- **Use of Bootstrap Utilities and Components**
Leverage Bootstrap's pre-built classes for layout, spacing, typography, and responsiveness to reduce custom CSS and speed up development.
- **Custom Styles for Product Images**
Apply `.product-img` class with `max-height` and `object-fit: cover` to ensure images are uniform in size and nicely cropped without distortion.
- **Interactive Star Ratings**
Style `.star` elements with `cursor pointer` and transition effects. Use color changes on `hover`, `active`, and `selected` states to enhance user interaction and feedback.
- **Consistent Color Scheme**
Use Bootstrap's contextual colors (e.g., `text-success`, `text-warning`) to maintain a clean and visually appealing design aligned with e-commerce standards.
- **Responsive Design Focus**
Combine Bootstrap's grid system with minimal custom media queries if necessary, ensuring all elements adapt smoothly across devices.
- **Minimalistic and Clean UI**
Use simple borders, padding, and spacing to separate sections clearly without cluttering the interface, prioritizing readability and user experience.

8. Key Features

Feature	Description
Responsive Layout	Uses Bootstrap grid system to ensure the page adapts seamlessly across desktops, tablets, and mobiles.
Product Image Carousel	Allows users to browse through multiple product images with smooth sliding and navigation controls.
Dynamic Product Details	Updates product name, brand, price, and description automatically based on the selected carousel image.
Quantity Selection & Add to Cart	Lets users specify product quantity and add items to the cart with real-time confirmation messages.
Interactive Star Ratings	Enables users to rate products by clicking stars with hover effects for intuitive feedback.

9. Challenges Faced & Solutions

Challenge	Solution
Creating an interactive star rating system	Implemented jQuery event handlers for hover and click to provide real-time visual feedback on star selection.
Managing review data and updates	Created functions to dynamically render reviews and calculate average ratings whenever reviews are added.
Validating user input for quantity and reviews	Added input validation checks and alerts to ensure valid quantity values and complete review submissions.

10. Outcome

The project successfully delivered a fully responsive e-commerce product page with an intuitive user interface. Users can easily browse through multiple products via a carousel, view detailed information, select quantities, and add items to their cart with immediate feedback. The interactive review system allows customers to rate products and submit text feedback, with the average rating dynamically calculated and displayed. The design adapts smoothly to different screen sizes, providing a consistent experience across devices. Overall, the implementation demonstrates effective use of front-end technologies to create an engaging and functional e-commerce interface ready for further expansion.

11. Future Enhancements

- **Product-specific Reviews:** Store and display reviews linked to each individual product rather than sharing a common review list.
- **Data Persistence:** Save reviews and cart data using localStorage or backend databases to retain information across sessions.
- **User Authentication:** Add login/signup features to personalize user experience and manage reviews per user.
- **Checkout Process:** Implement a full shopping cart and checkout flow including payment integration.
- **Accessibility Improvements:** Enhance keyboard navigation, screen reader support, and ARIA attributes for better accessibility.

12. Sample Code

index.html

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4    <meta charset="UTF-8">
5    <meta name="viewport" content="width=device-width, initial-scale=1">
6    <title>Responsive E-commerce Product Page</title>
7
8    <!-- Bootstrap CSS -->
9    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet">
10   <link rel="stylesheet" href="style.css">
11 </head>
12 <body class="bg-light">
13
14   <div class="container my-4">
15     <div class="row g-4">
16       <!-- Product Carousel -->
17       <div class="col-lg-5 col-md-6 mx-auto">
18         <div id="productCarousel" class="carousel slide shadow-sm" data-bs-ride="carousel">
19           <div class="carousel-inner">
20             <div class="carousel-item active">
21               
22             </div>
23             <div class="carousel-item">
24               
25             </div>
26             <div class="carousel-item">
27               
28             </div>
29           </div>
30           <button class="carousel-control-prev" type="button" data-bs-target="#productCarousel" data-bs-slide="prev">
31             <span class="carousel-control-prev-icon"></span>
32           </button>
33           <button class="carousel-control-next" type="button" data-bs-target="#productCarousel" data-bs-slide="next">
34             <span class="carousel-control-next-icon"></span>
35           </button>
36         </div>
37       </div>
```

```
38
39       <!-- Product Details -->
40       <div class="col-lg-7 col-md-6">
41         <h2 id="productName">Product Name</h2>
42         <p class="text-muted" id="productBrand">Brand</p>
43         <h4 class="text-success" id="productPrice">$0.00</h4>
44         <p id="productDesc"></p>
45
46         <!-- Quantity & Add to Cart -->
47         <div class="d-flex align-items-center mb-3">
48           <input type="number" id="quantity" class="form-control me-3" value="1" min="1" style="width:90px;">
49           <button id="addToCart" class="btn btn-primary btn-lg">Add to Cart</button>
50         </div>
51         <div id="cartMessage" class="text-success fw-bold"></div>
52
53         <!-- Average Rating -->
54         <div class="mt-3">
55           <h5>Average Rating</h5>
56           <span id="averageStars" class="text-warning fs-4">★★★★★</span>
57           <small id="reviewCount" class="text-muted">(0 reviews)</small>
58         </div>
59       </div>
60     </div>
61
62     <!-- Reviews Section -->
63     <hr class="my-4">
64     <div class="row">
65       <div class="col-lg-8 mx-auto">
66         <h4 class="mb-3">Customer Reviews</h4>
67         <div id="reviewsList" class="mb-4"></div>
68
69         <!-- Add Review -->
70         <div class="card p-3">
```

```

71     <h5>Add a Review</h5>
72     <div id="starInput" class="mb-2">
73         <span class="star" data-value="1">&#9734;</span>
74         <span class="star" data-value="2">&#9734;</span>
75         <span class="star" data-value="3">&#9734;</span>
76         <span class="star" data-value="4">&#9734;</span>
77         <span class="star" data-value="5">&#9734;</span>
78     </div>
79     <textarea id="reviewText" class="form-control mb-2" placeholder="Write your review"></textarea>
80     <button id="submitReview" class="btn btn-success">Submit Review</button>
81 </div>
82 </div>
83 </div>
84 </div>
85
86 <!-- Bootstrap & jQuery -->
87 <script src="https://code.jquery.com/jquery-3.7.1.min.js"></script>
88 <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/js/bootstrap.bundle.min.js"></script>
89 <script src="script.js"></script>
90 </body>
91 </html>

```

Style.css:

```

1  .product-img {
2      max-height: 400px;          /* Smaller image height */
3      object-fit: cover;          /* Crop nicely */
4  }
5
6  .star {
7      font-size: 1.8rem;
8      cursor: pointer;
9      color: #ccc;
10     transition: color 0.2s;
11 }
12 .star.active,
13 .star:hover,
14 .star:hover ~ .star {
15     color: #f5c518;
16 }
17

```


Script.js:

```
1  // ==== Product Data ====
2  const products = [
3    {
4      name: "Stylish Headphones",
5      brand: "SoundMax",
6      price: "$99.99",
7      desc: "Premium headphones with noise cancellation and 20-hour battery life."
8    },
9    {
10     name: "Wireless Earbuds",
11     brand: "AudioFlex",
12     price: "$59.99",
13     desc: "Compact true wireless earbuds with fast charging and deep bass."
14   },
15   {
16     name: "Gaming Headset",
17     brand: "ProGamer",
18     price: "$129.99",
19     desc: "7.1 surround sound headset with detachable mic and RGB lighting."
20   }
21 ];
22
23 let reviews = []; // All reviews (for all products combined in this demo)
24 let selectedRating = 0;
25
26 const nameEl = $("#productName");
27 const brandEl = $("#productBrand");
28 const priceEl = $("#productPrice");
29 const descEl = $("#productDesc");
30 const qtyEl = $("#quantity");
31 const msgEl = $("#cartMessage");
32 const reviewList = $("#reviewsList");
33 const avgStars = $("#averageStars");
34 const reviewCount = $("#reviewCount");
35
36 // ===== Display Product =====
37 function showProduct(index) {
```

```

38     const p = products[index];
39     nameEl.text(p.name);
40     brandEl.text("Brand: " + p.brand);
41     priceEl.text(p.price);
42     descEl.text(p.desc);
43 }
44 showProduct(0);
45
46 // ===== Carousel Change Event =====
47 $("#productCarousel").on("slid.bs.carousel", function (e) {
48     const index = $(e.relatedTarget).index();
49     showProduct(index);
50     updateReviews(); // show reviews (this demo uses one review list for simplicity)
51 });
52
53 // ===== Add to Cart =====
54 $("#addToCart").on("click", function(){
55     const qty = parseInt(qtyEl.val());
56     if(qty > 0){
57         msgEl.text(`${qty} item(s) of "${nameEl.text()}" added to cart!`);
58         setTimeout(()=>msgEl.text(""), 3000);
59     } else {
60         alert("Please enter a valid quantity.");
61     }
62 });
63
64 // ===== Reviews =====
65 function updateReviews(){
66     reviewList.empty();
67     if(reviews.length === 0){
68         reviewList.append("<p class='text-muted'>No reviews yet.</p>");
69         avgStars.text("★★★★★").css("color", "■ #ccc");
70         reviewCount.text("(0 reviews)");
71         return;
72     }


```

```

73     reviews.forEach(r => {
74         reviewList.append(`
75             <div class="border p-2 mb-2 rounded">
76                 <div class="text-warning">${"★".repeat(r.rating)}${"☆".repeat(5 - r.rating)}</div>
77                 <p class="mb-0">${r.text}</p>
78             </div>
79         `);
80     });
81     const avg = reviews.reduce((a,b)=>a+b.rating,0) / reviews.length;
82     avgStars.text("★".repeat(Math.round(avg)) + "☆".repeat(5 - Math.round(avg)));
83     reviewCount.text(`(${reviews.length} reviews)`);
84 }
85 updateReviews();
86
87 // Star input
88 $(".star").on("mouseenter click", function(e){
89     const val = $(this).data("value");
90     $(".star").each(function(){
91         $(this).toggleClass("active", $(this).data("value") <= val);
92     });
93     if(e.type === "click") selectedRating = val;
94 });
95
96 // Submit review
97 $("#submitReview").on("click", function(){
98     const text = $("#reviewText").val().trim();
99     if(selectedRating === 0 || text === ""){
100         alert("Please provide a rating and review text.");
101         return;
102     }
103     reviews.push({rating: selectedRating, text});
104     $("#reviewText").val("");
105     selectedRating = 0;
106     $(".star").removeClass("active");
107     updateReviews();

```

13. Screenshots of Final Output:



Gaming Headset

Brand: ProGamer

\$129.99

7.1 surround sound headset with detachable mic and RGB lighting.

[Add to Cart](#)

Average Rating

★★★★★ (0 reviews)

Customer Reviews

No reviews yet.

Add a Review

☆☆☆☆☆

[Submit Review](#)

14. Conclusion

This project successfully developed a responsive and interactive e-commerce product page that effectively showcases products and engages users through dynamic content updates and customer reviews. By integrating Bootstrap and jQuery, the page provides a seamless user experience across devices while allowing users to browse products, select quantities, add items to the cart, and share their feedback via star ratings and reviews. The implementation highlights essential front-end development practices and lays a strong foundation for future enhancements, making it a practical prototype for real-world e-commerce applications.