# ANNA UNIVERSITY: CHENNAI 600 025

## E-commerce Application on IBM Cloud Foundry

**A PROJECT REPORT**

*Submitted by*

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*in partial fulfillment for the award of the degree of*

**BACHELOR OF ENGINEERING,**

*In*

**COMPUTER SCIENCE AND ENGINEERING,**

**SASURIE COLLEGE OF ENGINEERING**

**VIJAYAMANGALAM**

**OCT 2023**

## E-COMMERCE APPLICATION ON IBM CLOUD FOUNDRY

## 

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**INTRODUCTION**

Welcome to the documentation for the "E-commerce App" project, a creative endeavor aimed at revolutionizing the way skilled artisans and small businesses connect with a global audience. This artisanal e-commerce platform, built using IBM Cloud Foundry, embodies the spirit of craftsmanship and creativity by showcasing a diverse range of handmade products, from exquisite jewelry to artistic home decor.

**Project Objective:**

The primary objective of this project is to craft a unique online marketplace that bridges the gap between artisans and their prospective customers. Our goal is to provide artisans with a platform to exhibit their handcrafted masterpieces while ensuring an engaging and secure shopping experience for buyers. Through this platform, we aim to empower artisans and support small businesses, nurturing their dreams and talents within the digital landscape.

**PHASE 1**

**PROBLEM DEFINITION AND DESIGN THINKING**

The primary problem we address in this phase is the need for an artisanal e-commerce platform that seamlessly connects skilled artisans with a global audience. We recognize the significance of providing a digital marketplace where artisans can showcase their handcrafted products, ranging from jewelry to home decor. To fulfill this vision, we aim to implement features such as secure shopping carts, efficient payment gateways, and an intuitive checkout process.

**Design Thinking:**

1. Platform Design: At the core of our design process is the layout of the platform. We envision a user-friendly interface with dedicated sections for product categories, individual product pages, shopping cart functionality, a seamless checkout process, and secure payment gateways. This design ensures a structured and enjoyable user experience.

2. Product Showcase: To effectively showcase artisans' creations, we create a robust database capable of storing essential product information. This includes product images, detailed descriptions, pricing information, and categorization. By organizing products systematically, we enable easy exploration for users.

3. User Authentication: Implementing user registration and authentication features is essential for both artisans and customers. This functionality ensures that users can securely access the platform, enabling them to manage their profiles and engage in transactions.

4. Shopping Cart and Checkout: The shopping cart and checkout process are pivotal elements of our platform. We design and develop these features to offer users a seamless shopping experience, allowing them to add and manage products, review their orders, and make secure payments.

5. Payment Integration: To facilitate secure transactions, we integrate robust payment gateways into the platform. These gateways offer various payment methods, ensuring a convenient and secure payment process for customers.

6. User Experience: Throughout the design process, our focus remains on providing an intuitive and visually appealing user experience. We understand the importance of aesthetics and usability in creating a welcoming environment for both artisans and customers.

**PHASE 2**

**INNOVATION**

In Phase 2 of the "E-commerce App" project, we embark on a journey of innovation to enhance user engagement and satisfaction. Building upon the solid foundation laid in Phase 1, we focus on incorporating new features that will elevate the overall user experience.

**Key Innovations:**

1. Product Reviews: We have introduced a product review system that allows both artisans and customers to provide valuable feedback on products. This feature promotes transparency and trust, helping users make informed purchase decisions. Users can share their experiences and rate products on a scale of 1 to 5 stars, fostering a sense of community and collaboration.

- User Benefits: Customers can make more informed choices, while artisans receive valuable insights to improve their products.

2. Wishlists: To further personalize the shopping experience, we have introduced wishlists. Users can curate lists of their favorite products, making it easier to keep track of items they desire. By enabling users to create and manage wishlists, we enhance their engagement with the platform.

- User Benefits: Customers can easily revisit and purchase their desired items, enhancing convenience and satisfaction.

3. Personalized Recommendations: Understanding that every user is unique, we have implemented a personalized recommendation system. By analyzing user behavior and purchase history, the platform offers tailored product suggestions. This feature not only increases user engagement but also contributes to higher sales and user satisfaction.

- User Benefits: Users discover new products that align with their preferences, enhancing their shopping experience.

**PHASE 3**

**DEVELOPMENT PART 1**

In Phase 3 of the "E-commerce App" project, we commence the development journey of crafting our artisanal e-commerce platform. This phase marks the beginning of transforming our design concepts into tangible, functional components. With the groundwork laid in Phase 1 and innovative features introduced in Phase 2, we are poised to build a robust and user-friendly platform on IBM Cloud Foundry.

**KEY DEVELOPMENT INITIATIVES:**

1. Front-end Development: Our front-end development efforts are concentrated on creating the user interface (UI) that users will interact with. We translate the platform's design into code, focusing on implementing intuitive navigation, responsive layouts, and visually appealing elements.

2. Review System Implementation: As a major innovation introduced in Phase 2, the product review system takes center stage during development. We have designed and implemented the capability for users to submit reviews and for these reviews to be displayed on product pages. This system enhances transparency and builds trust within our community.

- Technical Details: The review system incorporates front-end forms for submitting reviews, back-end logic to process and store reviews in the database, and dynamic rendering of reviews on product pages.

3. Database Integration: A vital aspect of development is integrating a robust database system to store product information, user data, and reviews. This ensures efficient data management, retrieval, and scalability.

4. User Authentication: To secure user data and enable personalized experiences, user authentication features are being developed. This includes user registration, login, and profile management functionalities.

5. User Experience Optimization: We continuously focus on enhancing the overall user experience (UX). This involves refining the UI for ease of use, ensuring smooth interactions, and optimizing page load times for a seamless browsing experience.

6. Testing and Quality Assurance: As we develop, we concurrently engage in rigorous testing and quality assurance processes to identify and resolve any issues, ensuring the platform's stability and reliability.

**PHASE 4**

**DEVELOPMENT PART 2**

In Phase 4 of the "E-commerce App" project, we continue our development journey, building upon the foundations laid in Phase 3. This phase is dedicated to further enhancing the functionality and user experience of our artisanal e-commerce platform.

**KEY DEVELOPMENT INITIATIVES:**

1. User Authentication: Building on the authentication features introduced in Phase 3, we further refine and expand user authentication capabilities. This includes password reset functionality, email verification, and security enhancements to protect user data.

2. Shopping Cart Implementation: One of the core features of our platform, the shopping cart, takes shape in this phase. We develop and integrate the shopping cart system, allowing users to add, remove, and manage items they wish to purchase.

- Technical Details: The shopping cart system involves front-end components for displaying cart contents and back-end logic for managing cart data. It also includes the ability to calculate and display the total price of items in the cart.

3. Checkout Functionality: We design and implement a seamless checkout process that guides users through the final steps of their purchase journey. This includes collecting shipping information, payment details, and order confirmation.

4. Integration of Payment Gateways: To facilitate secure and smooth transactions, we integrate secure payment gateways into the platform. This phase focuses on connecting our platform with these gateways, ensuring payment processing is efficient and secure.

- Technical Details: Integration may involve utilizing APIs provided by payment gateway providers to handle payment requests and responses securely.

5. User Experience Refinement: Our commitment to providing an exceptional user experience remains unwavering. We continuously optimize the UI and UX elements, making improvements based on user feedback and industry best practices.

6. Testing and Quality Assurance: As we implement new features and refine existing ones, thorough testing and quality assurance procedures are ongoing. This ensures that the platform remains stable, secure, and free of any critical issues.

With these ongoing development efforts, we are shaping our artisanal e-commerce platform into a comprehensive and user-centric marketplace. Phase 4 builds upon the features introduced in Phase 3, bringing us closer to delivering a robust and functional platform that artisans and customers can rely on.

**PHASE 5**

**PROJECT DOCUMENTATION & SUBMISSION**

In Phase 5 of the "E-commerce App" project, we focus on documenting our journey and preparing the project for submission. This phase is essential for showcasing the culmination of our efforts and providing comprehensive insights into the development process.

**Documentation:**

1. Objective Recap: We begin by revisiting the project's initial objectives and goals. This section serves as a reminder of what we set out to achieve and whether those objectives have been met.

2. Design and Development Phases: A detailed breakdown of the project's key phases, from problem definition and design thinking to development and innovation. We summarize the critical milestones achieved in each phase.

3. Platform Layout and Features: We describe the platform's layout and highlight its core features, including product showcase, user authentication, shopping cart functionality, payment integration, and innovative elements like product reviews and wishlists.

4. Technical Implementation: This section provides insights into the technical aspects of the project, including the programming languages, frameworks, and tools used in the development process.

5. User Interface Showcase: We include screenshots or images of the platform's user interface, allowing readers to visualize the user experience we've crafted.

**Submission:**

1. GitHub Repository: We provide a link to the project's GitHub repository, where the code and project files are hosted. This allows reviewers and stakeholders to access and evaluate the project's source code and documentation.

2. Deployment Instructions: Clear and concise instructions on how to deploy the artisanal e-commerce platform on IBM Cloud Foundry or the chosen deployment environment. This section ensures that others can replicate and run the project successfully.

3. README File: We create a comprehensive README file within the repository, offering guidance on navigating the website, updating content, and managing any dependencies. This document serves as a practical resource for future users and developers.

# APPENDIX

**SOURCE CODE:**

**Platformlayout.html:**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Artisanal E-commerce</title>

<link rel="stylesheet" href="C:/Users/Vicky111/Desktop/IBM NSS/style.css">

</head>

<body>

<header>

<h1>Welcome to Artisanal E-commerce</h1>

</header>

<nav>

<ul>

<li><a href="C:/Users/Vicky111/Desktop/IBM NSS/projectshowcase.html">Categories</a></li>

<li><a href="C:/Users/Vicky111/Desktop/IBM NSS/shopingcart.html">Shopping Cart</a></li>

<li><a href="C:/Users/Vicky111/Desktop/IBM NSS/userauthentication.html">Checkout</a></li>

<li><a href="C:/Users/Vicky111/Desktop/IBM NSS/payment.html">Payment</a></li>

</ul>

</nav>

<main>

<section id="categories">

<!-- Product categories -->

<div class="category">

<h2>Jewelry</h2>

<ul>

<li>

<img src="C:/Users/Vicky111/Desktop/IBM NSS/Jewellery 2.jpg" alt="Jewelry Product 1">

<h3>Jewelry Product 1</h3>

<p>Description: Beautiful handcrafted necklace.</p>

<p>Price: $50.00</p>

<button>Add to Cart</button>

</li>

<li>

<img src="C:/Users/Vicky111/Desktop/IBM NSS/Jewellery 1.jpg" alt="Jewelry Product 2">

<h3>Jewelry Product 2</h3>

<p>Description: Elegant bracelet with gemstones.</p>

<p>Price: $40.00</p>

<button>Add to Cart</button>

</li>

</ul>

</div>

<div class="category">

<h2>Home Decor</h2>

<ul>

<li>

<img src="C:/Users/Vicky111/Desktop/IBM NSS/Home decarator 1.jpg" alt="Home Decor Product 1">

<h3>Home Decor Product 1</h3>

<p>Description: Hand-painted ceramic vase.</p>

<p>Price: $35.00</p>

<button>Add to Cart</button>

</li>

<li>

<img src="C:/Users/Vicky111/Desktop/IBM NSS/Home decarator 2.jpg" alt="Home Decor Product 2">

<h3>Home Decor Product 2</h3>

<p>Description: Wooden wall art for your home.</p>

<p>Price: $55.00</p>

<button>Add to Cart</button>

</li>

</ul>

</div>

</section>

<!-- Product Page HTML -->

<div class="product-details">

<!-- Product details go here -->

<!-- "Leave a Review" Button -->

<button id="leave-review-button">Leave a Review</button>

<!-- Review Form (Initially hidden) -->

<div id="review-form" style="display: none;">

<h3>Leave a Review</h3>

<form id="review-submit-form">

<label for="rating">Rating:</label>

<select id="rating" name="rating">

<option value="1">1 Star</option>

<option value="2">2 Stars</option>

<option value="3">3 Stars</option>

<option value="4">4 Stars</option>

<option value="5">5 Stars</option>

</select>

<br>

<label for="comment">Comment:</label>

<textarea id="comment" name="comment" rows="4" cols="50"></textarea>

<br>

<button type="submit">Submit Review</button>

</form>

</div>

<!-- Existing Reviews -->

<div id="existing-reviews">

<!-- Reviews will be displayed here dynamically -->

</div>

</div>

<script>

// JavaScript to toggle the review form visibility when the "Leave a Review" button is clicked

document.getElementById("leave-review-button").addEventListener("click", function() {

var reviewForm = document.getElementById("review-form");

reviewForm.style.display = "block";

});

</script>

</main>

<footer>

&copy; 2023 Artisanal E-commerce

</footer>

</body>

</html>

**Payment.html:**

<main>

<section id="payment">

<h2>Payment</h2>

<form>

<label for="card-number">Card Number:</label>

<input type="text" id="card-number" name="card-number" required>

<label for="expiration-date">Expiration Date:</label>

<input type="text" id="expiration-date" name="expiration-date" required>

<label for="cvv">CVV:</label>

<input type="text" id="cvv" name="cvv" required>

<!-- Additional payment fields here -->

</form>

<button>Pay Now</button>

</section>

</main>

**projectshowcase.html:**

<main>

<section id="categories">

<!-- Product categories -->

<div class="category">

<h2>Jewelry</h2>

<!-- List of jewelry products -->

</div>

<div class="category">

<h2>Home Decor</h2>

<!-- List of home decor products -->

</div>

</section>

<section id="individual-product">

<!-- Individual product details -->

<img src="C:/Users/Vicky111/Desktop/IBM NSS/kimnamjoon.jpg" alt="Product Name">

<h2>Kim Nam-Joon</h2>

<p>Description: Lorem ipsum dolor sit amet.</p>

<p>Price: $40.00</p>

<button>Add to Cart</button>

</section>

<section id="individual-product">

<!-- Individual product details -->

<img src="C:/Users/Vicky111/Desktop/IBM NSS/lepisium loane.jpg" alt="Product Name">

<h2>lepisium lorane</h2>

<p>Description: Lorem ipsum dolor sit amet.</p>

<p>Price: $50.00</p>

<button>Add to Cart</button>

</section>

</main>

**shopingcart.html:**

<main>

<section id="cart">

<h2>Shopping Cart</h2>

<ul>

<!-- List of cart items -->

<li>Product 1 - $20.00 <button>Remove</button></li>

<li>Product 2 - $30.00 <button>Remove</button></li>

</ul>

<p>Total: $50.00</p>

<button>Proceed to Checkout</button>

</section>

<section id="checkout">

<h2>Checkout</h2>

<form>

<!-- Checkout form fields (shipping, payment info, etc.)

</form>

<button>Place Order</button>

</section>

</main>

**userauthentication.html:**

<main>

<section id="authentication">

<h2>Sign In</h2>

<form>

<label for="username">Username:</label>

<input type="text" id="username" name="username" required>

<label for="password">Password:</label>

<input type="password" id="password" name="password" required>

<button type="submit">Sign In</button>

</form>

</section>

</main>

**STYLE.CSS**

/\* Reset some default styles for better consistency \*/

body, h1, h2, p, ul, li, form {

margin: 0;

padding: 0;

}

body {

font-family: Arial, sans-serif;

}

/\* Header styles \*/

header {

background-color: #333;

color: #fff;

padding: 10px 0;

text-align: center;

}

/\* Navigation styles \*/

nav ul {

list-style: none;

display: flex;

justify-content: center;

background-color: #444;

padding: 10px 0;

}

nav ul li {

margin: 0 15px;

}

nav ul li a {

text-decoration: none;

color: #fff;

}

/\* Main content container \*/

main {

max-width: 1200px;

margin: 20px auto;

padding: 20px;

}

/\* Product categories styles \*/

.category {

margin-bottom: 20px;

}

.category h2 {

font-size: 24px;

margin-bottom: 10px;

}

/\* Individual product styles \*/

#individual-product {

position: 123px;

display: flex;

flex-direction: column;

align-items: center;

text-align: center;

}

#individual-product img {

max-width: 100%;

height: auto;

margin-bottom: 10px;

}

#individual-product h2 {

font-size: 20px;

}

#individual-product p {

margin: 10px 0;

}

#individual-product button {

background-color: #007bff;

color: #fff;

border: none;

padding: 10px 20px;

cursor: pointer;

font-weight: bold;

}

/\* User authentication styles \*/

#authentication {

max-width: 400px;

margin: 0 auto;

padding: 20px;

background-color: #f4f4f4;

border: 1px solid #ddd;

}

#authentication h2 {

font-size: 24px;

margin-bottom: 10px;

}

#authentication form label {

display: block;

margin-bottom: 5px;

}

#authentication form input {

width: 100%;

padding: 10px;

margin-bottom: 10px;

border: 1px solid #ddd;

}

#authentication form button {

background-color: #007bff;

color: #fff;

border: none;

padding: 10px 20px;

cursor: pointer;

font-weight: bold;

}

/\* Shopping cart and checkout styles \*/

#cart, #checkout {

max-width: 600px;

margin: 0 auto;

padding: 20px;

}

#cart h2, #checkout h2 {

font-size: 24px;

margin-bottom: 10px;

}

#cart ul {

list-style: none;

padding: 0;

}

#cart li {

display: flex;

justify-content: space-between;

align-items: center;

padding: 10px 0;

border-bottom: 1px solid #ddd;

}

#cart p {

font-weight: bold;

margin-top: 10px;

}

#cart button, #checkout button {

background-color: #007bff;

color: #fff;

border: none;

padding: 10px 20px;

cursor: pointer;

font-weight: bold;

}

/\* Payment integration styles \*/

#payment {

max-width: 400px;

margin: 0 auto;

padding: 20px;

background-color: #f4f4f4;

border: 1px solid #ddd;

}

#payment h2 {

font-size: 24px;

margin-bottom: 10px;

}

#payment form label {

display: block;

margin-bottom: 5px;

}

#payment form input, #payment form select {

width: 100%;

padding: 10px;

margin-bottom: 10px;

border: 1px solid #ddd;

}

#payment form button {

background-color: #007bff;

color: #fff;

border: none;

padding: 10px 20px;

cursor: pointer;

font-weight: bold;

}

**SERVER.JS:**

const express = require('express');

const bodyParser = require('body-parser');

const sqlite3 = require('sqlite3').verbose();

const app = express();

app.use(bodyParser.urlencoded({ extended: true }));

app.use(bodyParser.json());

// Create a SQLite database (you can replace this with your preferred database)

const db = new sqlite3.Database('reviews.db');

// Create a table to store reviews

db.serialize(() => {

db.run('CREATE TABLE IF NOT EXISTS reviews (id INTEGER PRIMARY KEY AUTOINCREMENT, product\_id INTEGER, user\_id INTEGER, rating INTEGER, comment TEXT)');

});

// Handle review submissions

app.post('/submit-review', (req, res) => {

const productId = req.body.product\_id;

const userId = req.body.user\_id;

const rating = req.body.rating;

const comment = req.body.comment;

// Insert the review into the database

const stmt = db.prepare('INSERT INTO reviews (product\_id, user\_id, rating, comment) VALUES (?, ?, ?, ?)');

stmt.run(productId, userId, rating, comment);

stmt.finalize();

res.send('Review submitted successfully.');

});

// Retrieve reviews for a product

app.get('/product-reviews/:product\_id', (req, res) => {

const productId = req.params.product\_id;

// Query the database for reviews of the specified product

db.all('SELECT rating, comment FROM reviews WHERE product\_id = ?', [productId], (err, rows) => {

if (err) {

res.status(500).send('Error retrieving reviews.');

} else {

res.json(rows); }

});});

const port = 3000;

app.listen(port, () => {

console.log(`Server is running on port ${port}`);

});

**GIT HUB LINK:**

<https://github.com/sowndharya-3/Project_2_E-commerce_Application_BMCloud.git>