E-commerce Application on IBM Cloud Foundry

Project: Artisanal E-Commerce Platform

Problem Statement:

The project aims to build an artisanal e-commerce platform using IBM Cloud Foundry. The primary objective is to connect skilled artisans with a global audience, allowing them to showcase their handmade products. The platform will offer features such as secure shopping carts, payment gateways, and an intuitive checkout process, ensuring a seamless user experience.

Understanding the Problem:

Scope and Objectives:

The platform will showcase handmade products created by artisans.
Users can browse products, add them to their shopping carts, and make secure payments.
The platform should offer an engaging and user-friendly experience for both artisans and customers.

Target Audience:

Artisans: Skilled individuals who create handmade products.
Customers: Individuals looking to purchase unique and artisanal items.

Key Features:

Product Listings: Artisans can list their products with descriptions and images.
Shopping Cart: Users can add products to their cart and proceed to checkout.
Payment Gateway: Secure payment processing for customer transactions.
User Accounts: Artisans and customers can create accounts for a personalized experience.

Security and Compliance:

Security is a top priority to protect user data and financial information. Compliance with data privacy regulations, such as GDPR, is essential.

Design Thinking Approach:

1. Platform Design:

Create a visually appealing and user-friendly layout. Organizing the platform into sections for product categories, individual product pages, shopping cart, checkout, and payment with responsive design for seamless access across various devices.

2. Product Showcase:

Implementing a robust database system to store product information. Storing product data, including images, descriptions, prices, and categories as well as search and filter functionality for easy product discovery.

3. User Authentication:

Developing user registration and authentication features which enables artisans and customers to create accounts and log in securely with password reset and account recovery options.

4. Shopping Cart and Checkout:

Designing and developing a shopping cart system that allows users to add, remove, and modify items in their carts. Creating a smooth and user-friendly checkout process with multiple payment options.

5. Payment Integration:

Integrating secure payment gateways to facilitate transactions that supports various payment methods.Ensuring the highest level of security and compliance with payment industry standards.

6. User Experience:

Prioritizing an intuitive and seamless user experience. Conducting user testing and gathering feedback for continuous improvement. Focus on responsive design, fast page loading, and easy navigation. The platform will have a user-friendly product review and rating system.

Design Principles:

The platform will be designed with the following principles in mind:

- **User-centric**: The platform will be designed with the needs of both artisans and customers in mind.
- **Simple and intuitive**: The platform should be easy to use for both artisans and customers, regardless of their technical expertise.
- **Visually appealing:** The platform should be visually appealing and engaging, with high-quality product images and a well-designed layout.
- **Scalable**: The platform should be able to scale to meet the growing needs of the artisan community and its customers.

The platform will have a simple and intuitive layout, with sections for product categories, individual product pages, shopping cart, checkout, and payment. The product pages will include high-quality images of the products, as well as detailed descriptions, prices, and categories.

The shopping cart will allow customers to add products to their cart and view their total price. The checkout process will be smooth and easy to follow, with customers able to enter their shipping and payment information quickly and securely.

A database will be created to store product information such as images, descriptions, prices, and categories. This database will be used to populate the product pages on the platform.

User registration and authentication features will be implemented to enable artisans and customers to access the platform. Artisans will be able to create accounts to manage their products and orders. Customers will be able to create accounts to save their shipping and payment information, as well as track their orders.

The shopping cart functionality and a smooth checkout process will be designed and developed. The shopping cart will allow customers to add products to their cart and view their total price. The checkout process will be smooth and easy to follow, with customers able to enter their shipping and payment information quickly and securely.

Secure payment gateways will be integrated to facilitate transactions. Customers will be able to pay for their purchases using a variety of payment methods.

The focus will be on providing an intuitive and visually appealing user experience for both artisans and customers. The platform will be easy to navigate and use, with clear and concise instructions. The design will be modern and stylish, with high-quality product images and a well-designed layout.

Next Steps:

Developing a detailed project plan

The main goal of this project is to create a marketplace on IBM Cloud Foundry that connects talented artisans with people from all over the world. During the planning and design stage we will determine the project's scope, develop user profiles and design an interface that's user friendly. In order to bring this platform to life we will set up the Cloud Foundry environment, implement both Front-end and back end functionalities and conduct testing. Once everything is ready we will have a launch. Employ marketing strategies to attract artisans and customers alike. Throughout the process we will continuously seek feedback, for improvement purposes while also ensuring maintenance. Finally we will conclude by evaluating our progress and documenting lessons learned along the way.

Identifying and choosing the necessary technologies and tools

For the development stack, **HTML/CSS/JavaScript** as the foundational web technologies, with options like **React** and **Flask** for building interactive user interfaces. Complementing these with front-end frameworks like **Bootstrap** for responsive design. On the back end, **IBM Cloud Foundry** as a hosting and deployment platform. For database management, **IBM's Cloud Databases** or **MongoDB**. For version control and collaboration, **Git** and platforms like **GitHub** will be used.

Implementing the platform and its features

Building the artisanal e-commerce platform involves the implementation of several vital features to deliver a user-friendly experience. First and foremost is user registration and authentication. To accomplish this, we will create a user management system where artisans and customers can register, log in securely, and manage their profiles. Implementing industry-standard authentication protocols like OAuth or JWT for security. Additionally, offering options for social media login to simplify the registration process. This ensures that users can access personalized features and securely manage their accounts, setting the foundation for a robust user experience.

Test the platform thoroughly

We will thoroughly test the artisanal e-commerce platform to ensure its reliability and functionality. In the testing phase, we will employ a multi-faceted approach. Firstly, unit testing will scrutinize individual components, like functions and modules, to verify their proper functioning. Integration testing will assess how these components interact cohesively within the system, ensuring smooth overall operation. Crucially, user acceptance testing (UAT) involving real users or stakeholders will provide invaluable insights into the platform's usability. It's in this phase that end-to-end scenarios, such as user registration, cart management, and purchase completion, will be rigorously evaluated to guarantee a seamless user experience. This comprehensive testing regimen is instrumental in identifying and rectifying any issues before the platform goes live, ultimately ensuring its reliability and user satisfaction.

Deploy the platform to production

Deploying the artisanal e-commerce platform to production is a pivotal step in bringing the project to life. This phase involves making the platform accessible to users on the internet while ensuring its stability and scalability. Hosting environment, such as IBM Cloud Foundry, and package your application for deployment, conducting final tests in a staging environment before executing the actual deployment. Implement monitoring and error tracking tools to ensure performance and have a well-defined rollback plan in case of unexpected issues. This strategic approach will ensure a seamless transition to production, making your platform available to a global audience of artisans and customers.

Conclusion

This document outlines the problem statement and presents a high-level project plan for the development of the artisanal e-commerce platform. Each phase is crucial for the successful execution of the project, with a strong focus on user experience, security, and compliance.

Team Members:

Gowtham R   - 310121243016
Joel Kirubakaran G - 310121243021
Lalith Adithya S   - 310121243024
Sivarathinam S D   - 310121243043
Vikram G   - 310121243055