**COMP[1682] Project Proposal**

**Develop E-Commerce System**

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1. **Overview**

In the age of digital transformation, the e-commerce realm stands out as a pivotal driving force, fundamentally reshaping the global landscape of retail and commerce. With the advent of the Internet and the widespread adoption of technology, consumer behavior in commercial transactions has undergone a profound revolution. E-commerce platforms have swiftly become indispensable channels for businesses to connect with customers, enabling online transactions with unparalleled ease.

The e-commerce landscape demands sophisticated, feature-rich systems that cater to diverse business needs, ranging from inventory management and order processing to secure payment gateways and seamless user experiences. Leveraging Java to develop a comprehensive e-commerce system presents a strategic approach to addressing these challenges.

This thesis endeavors to dissect the intricacies involved in crafting an e-commerce system using the Java programming language in conjunction with the Spring Boot framework. It delves deep into the realms of design, implementation, and optimization. The overarching objective is to construct an e-commerce platform equipped with robust functionalities encompassing product management, order processing, customer information management, seller information management, and inventory oversight.

1. **Aim**

This project aims to develop a comprehensive e-commerce system using the Java programming language. The primary goal is to build a robust platform for e-commerce activities, providing users with an easy and convenient online shopping experience.

1. **Objectives**
   1. **Objective noun**

* Build a system with a user-friendly and intuitive interface, supporting cross-platform compatibility across multiple platforms and devices to expand its usability. Specifically, the platforms include a website and Android.
* Implement a registration function allowing users to register new accounts easily and quickly with two roles: customer and seller.
* Enhance user information security by deploying secure authentication methods and data encryption for user account information. Additionally, the system will assign account permissions upon login, with three user roles: customer, seller, and administrator.
* The system allows customers to search for products, view product details, and add products to the shopping cart, and removing products from the cart. Customers can also make payments for one or all products in the cart. Furthermore, customers can update their information in more detail.
* The system allows sellers to create a new account with the role of a seller and perform functions such as adding, editing, and deleting products from the store. Additionally, sellers can request to create a new product category that does not yet exist in the system and wait for administrator approval.
* The system allows administrators to manage user accounts, including locking invalid user accounts. Administrators can also manage seller accounts by approving a new product category proposed by sellers and receiving feedback from customers and sellers to improve the system.
* The system enables administrators to manage orders, track, process, and update order status for customers.
* Ensure high performance for the system by optimizing source code and database, minimizing response times, and enhancing user experience.
  1. **Project Framework or Any Methodology used**
     1. **Technical and Framework**
* Web (Backend: Java Spring and Spring Boot + Maven, MySQL.

Frontend: HTML, CSS + Bootstrap 5, JavaScript)

* Android (Backend: Java + Gradle + RxJava, Firebase, Retrofit, RPL(Room Persistence Library))

1. **Legal, Social, Ethical and Professional**
2. **Planning (see appendix A)**
   1. **Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Task name** | **Deliverable** | **Days** |
| **1** | Conduct research on pertinent documents and engage in the development of e-commerce systems. |  | 10 days |
| **2** | Gather information on e-commerce and associated technologies for system development purposes. |  | 25 days |
| **3** | Formulate the software requirements specification document for the project's design phase. |  | 7 days |
| **4** | Implement the project according to the outlined software requirements specification. |  | 60 days |
| **5** | Perform testing procedures and refine the system as necessary. |  | 14 days |
| **6** | Finalize the project deployment to produce the end product. |  | 7 days |
| **7** | Prepare a comprehensive report documenting the entirety of the project's process and outcomes. |  | 14 days |
| **Total** | | | **137 days** |

* 1. **Scope**

The objective of this project is to create a comprehensive e-commerce system utilizing Java, aimed at delivering a seamless online shopping experience to users. With a set completion timeline of 137 days, this project placing emphasis on both quality and functionality. My project has functions such as registration function, sign-in function, assigning account permissions upon login, searching for products, adding products to the shopping cart, updating customer information, products management, orders management, and accounts management.

The platform is designed to cater to a diverse audience, spanning from individual consumers seeking convenience to businesses aiming to bolster their digital footprint, thereby reshaping the online commerce landscape for all stakeholders involved.

* 1. **Approval**

I will adopt the Waterfall model to develop this system because it offers simplicity and ease of use, particularly suitable for small and medium-sized projects. Its structured approach facilitates the management of progress across each stage and ensures meticulous quality control throughout the project lifecycle.

According to (Lutkevich, 2022) when applying the Waterfall model in a software development process, the waterfall methodology consists of seven stages:

* Requirement Gathering: The initial phase entails collecting comprehensive user requirements to establish a holistic understanding of the system under development.
* Requirement Analysis: Scrutinizing user requirements to delineate functionalities and specific data, forming the bedrock for subsequent system development processes.
* Design: Formulating requirement specification documents and enumerating pertinent technologies and methodologies for system construction. Additionally, outlining system architecture and database architecture design.
* Coding and Implementation: Leveraging requirement specification documents in tandem with relevant architectures and technologies to execute system deployment.
* Testing: This stage encompasses evaluating previously deployed functionalities to ensure quality. Successful functions proceed to the subsequent stage, while any failures necessitate code debugging.
* Operation and Deployment: Upon achieving full functionality and passing all testing phases, the product is deployed into the production environment for customer handover.
* Maintenance: Following customer handover, potential incidents may arise. At this juncture, system maintenance is conducted to address issues or implement system upgrades as per customer requirements.

1. **Initial References**