Project Proposal

for

PID-27 - Smart POS (Point of Sales) application

Prepared by Group 11

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PROJECT PROPOSAL

1. **Title of the project:** Smart POS (Point of Sales) application for a supermarket group

2. **Overview of the Project**

The Smart POS application aims to develop a modern and feature-rich Point of Sales (POS) system for businesses to efficiently manage sales transactions, inventory, and customer information. The proposed system will consist of both a mobile application and a web application to cater to different user needs. The mobile application will turn a smartphone into a hand-held POS system, enabling sales staff to process transactions on the go. The web application will provide a comprehensive platform for managers and administrators to monitor sales data, manage inventory, and analyze business performance. And customers will have an online portal to order and purchase goods.

Input:

- Product details such as descriptions, pricing, variants (sizes, colors), and images entered by administrators through the web application.
- Sales transaction information, including product quantities, payment methods, and customer details, input by sales staff using the mobile application.
- Customer orders placed through the online portal by customers.

Output:

- Receipts generated after each transaction, including a breakdown of the purchased items and the total amount, displayed on the mobile application for customers and sales staff.
- Real-time updates on inventory levels and stock alerts for low items, shown on the web application for administrators and managers.
- Reports and analytics on sales trends, best-selling items, employee performance, and other key metrics, accessible on the web application for managerial decision-making.
- Order confirmations and delivery details sent to customers through the online portal after placing their orders.

3. **Objectives of the Project**

- Design and implement a user-friendly application for efficient sales processing.
- Automate inventory management processes.
- Create an online portal to purchase goods.
- Create a Comprehensive Web Application for Managers and Administrators.

4. **The Need for the Project**

Traditional POS systems often lack mobility and comprehensive analytics, limiting businesses' ability to make data-driven decisions. By automating sales processes, optimizing inventory management, and offering real-time data insights, the Smart POS system aims to enhance business efficiency and decision-making. With a focus on data security, scalability, and cost-effectiveness, the Smart POS system is designed to empower businesses, foster growth, and adapt to technological trends, ensuring their sustained success in today's dynamic market.

5. **Scope of the Project.**
   - Sales Staff: Access the application for processing sales transactions, scanning barcodes/QR codes, and generating receipts.
   - Managers/Administrators: Utilize the web application to monitor sales trends, manage inventory, employees and generate reports.
   - Customers: Engage with the online portal to purchase goods.
6. **Deliverables.**
   - A web-based software system for managing sales transactions and for managing employees by administrators.
   - A mobile application for staff members to manage sales transactions and for managing the inventory as well.
   - An online portal for customers to purchase goods.

7. **Overview of Existing Systems and Technology**

Square POS [1] is a popular mobile-based Point of Sale system that enables businesses to process payments, track sales, and manage inventory. It offers a user-friendly mobile app for sales staff and a web-based dashboard for administrators to monitor sales data and inventory. Square POS uses secure payment processing technologies and provides real-time analytics to help businesses make data-driven decisions. It is widely used in various industries, including retail, foodservice, and small businesses.

Techniques/Tools/Resources/Approaches for System Implementation:

The Smart POS application utilizes a modern technology stack to provide a seamless and user-friendly experience. With React [2] and React Native [3] for frontend development, Spring Boot [4] for the backend, GraphQL for APIs, and PostgreSQL as the database. For secure and seamless payment processing, we will integrate a reliable payment gateway API, such as PayPal, Stripe, or Square, to handle transactions securely. To implement barcode and QR code scanning functionality, we will utilize barcode scanning libraries and APIs like ZXing (Zebra Crossing) or Google Vision API for mobile platforms.

8. **References**

[1] Square Point of Sale. Square, Inc. https://squareup.com/us/en/point-of-sale. Accessed: July 31, 2023.

[2] "React,". React - A JavaScript library for building user interfaces. https://react.dev/reference/react. Accessed: July 31, 2023.

[3] "React Native,". React Native - A framework for building native apps using React. https://reactnative.dev/docs/getting-started. Accessed: July 31, 2023.

[4] "Spring Boot,". Spring Boot Documentation. https://docs.spring.io/spring-boot/docs/current/reference/htmlsingle/#getting-started. Accessed: July 31, 2023.