Web Application for Managing Ornament and Scrap Gold Inventory

Author: Chawarat Sarayuttikron **Advisor: Assistant Professor Dr.Wijak Srisujjalertwaja**

ABSTRACT

This project aims to develop a web-based application for managing ornament and scrap gold inventory in gold shop operations. The system was initiated to address limitations of manual record-keeping, which often results in delays, data redundancy, inaccuracies, and reduced transparency in operational processes.

The proposed system integrates key business functions into a unified platform, including back-office inventory management, gold melting and percentage adjustment, workshop tracking, and loan-sale-return transactions. The application is designed with structured data management, role-based access control (RBAC), and an approval workflow to enhance operational transparency, minimize risks, and ensure data integrity.

The implementation of real-time tracking and centralized data processing improves auditability and reduces human error associated with manual documentation. As a result, the system supports more accurate reporting and enables more effective and data-driven business decision-making.

INTRODUCTION

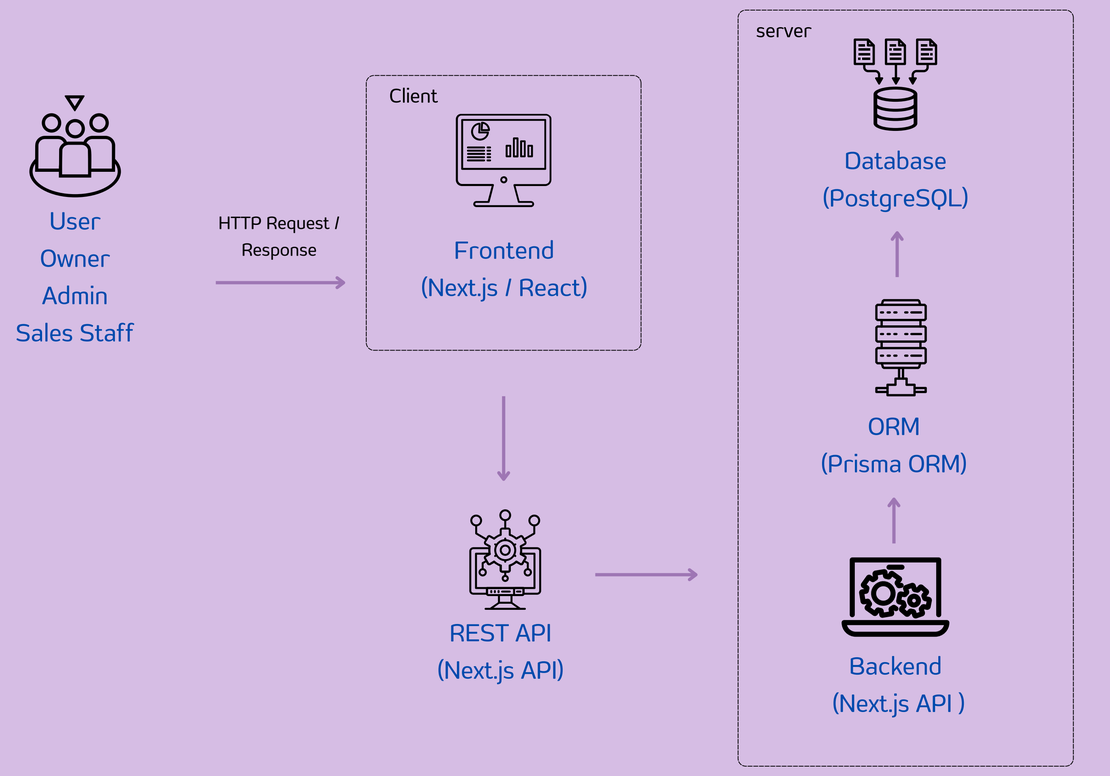
Gold shop operations involve complex processes, particularly in managing ornament and scrap gold inventory. Many shops still rely on manual record-keeping methods such as paper logs or spreadsheets, which may lead to data redundancy, calculation errors, and difficulty in auditing transactions. Since gold is a high-value asset, even minor inaccuracies can significantly impact business performance and operational control.

Therefore, there is a need for a web-based inventory management system that integrates back-office stock management, gold melting and percentage adjustment, workshop operations, front-store inventory, and loan-sale-return transactions into a structured and centralized platform. The system aims to enhance operational efficiency, improve data accuracy, and increase transparency in gold shop management.

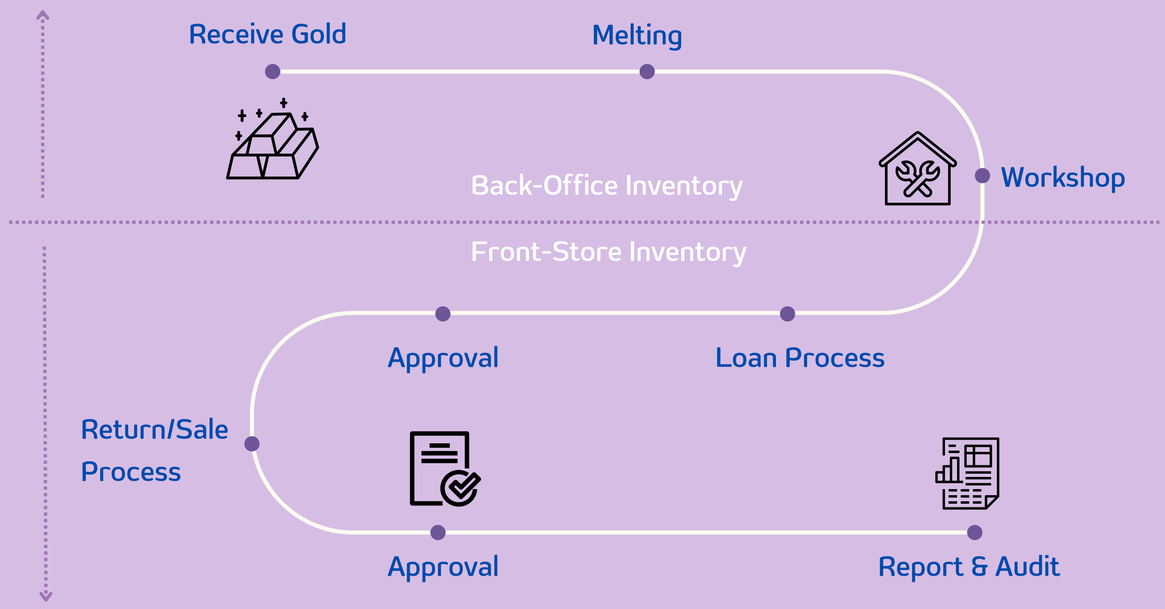
TECHNOLOGY

Next.js, TypeScript, Tailwind CSS, GitHub, Figma, Visual Studio Code, PostgreSQL, Prisma, Docker, Node.js

ARCHITECTURE



SYSTEM WORKFLOW



METHODOLOGY

1. Requirement Analysis – Analyze gold shop workflows and define system requirements.
2. System Design – Design system architecture, database structure, and access control.
3. Implementation – Develop the application using Next.js, Prisma, and PostgreSQL.
4. Testing – Perform functional testing for inventory, transactions, and approval processes.
5. Deployment – Deploy and evaluate system performance and data accuracy.

CONCLUSION

This project successfully developed a web-based application for managing ornament and scrap gold inventory by integrating back-office stock management, gold melting and percentage adjustment, workshop operations, front-store inventory, and loan-sale-return transactions into a unified system. The system transforms traditional manual processes into a structured digital platform through role-based access control and an approval process, enhancing transparency, reducing operational risks, and ensuring data accuracy. Real-time tracking and systematic data management enable effective auditing and support accurate business decision-making.

REFERENCE

[1] คณาธิป นุดดีวงศ์ และคณะ, "ระบบการจัดการสินค้าคงคลัง: การออกแบบและการ ประยุกต์ใช้เพื่อเพิ่มประสิทธิภาพการดำเนินงาน," วารสารเทคโนโลยีสารสนเทศและนวัตกรรมเชิงอุตสาหกรรม, ปีที่ 5, ฉบับที่ 1, 2561, หน้า 45-56.

[2] Pressman, R. S., Software Engineering: A Practitioner's Approach, 8th ed., McGraw-Hill Education, 2015, ISBN 978-0078022128.

[3] Sommerville, I., Software Engineering, 10th ed., Pearson Education, 2016, ISBN 978-0133943030.

[4] Guillermo Rauch, Next.js Documentation, Vercel Inc., 2024, [Online]. Available: https://nextjs.org/docs