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Web base inventory control system

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Introduction

Southern Goods Distributors Pvt Ltd is a fast-growing grocery and household goods distributor in Sri Lanka. The company employs manual processes and single systems, such as paper-based records and spreadsheets to manage its inventory, suppliers, and sales. These processes have given rise to many business issues, including frequent stock discrepancies, overdue orders, poor communications with suppliers, and poor visibility of stock levels in real time.

To address such issues, our team proposes the development of a Web-based Inventory Control System. The system will replace the time-consuming, error-prone processes with a centralized, effective, and easy-to-use web application. By using real-time information, automated notification, and electronic communication tools, the system will aim to make inventory functions easier and improve overall business efficiency.

The main aim of this project is to design a scalable and secure system that enables all the key stakeholders in the company like business owners, salespeople, inventory handlers, warehouse staff, and suppliers. The system shall provide real-time inventory status, automated purchase orders, advanced reporting, barcode-based warehouse management, and role-based access control.

Objectives

- Replace manual and paper-based inventory tracking systems with a centralized, web-based platform that offers real-time updates and stock visibility
- Minimize errors such as stock miscounts and incorrect order picking by providing accurate, live inventory data and automated processes
- Allow sales and warehouse staff to check stock levels instantly, helping them make quick and informed decisions to improve customer service.
- Create a simple and intuitive system that reduces the need for extensive training and helps all user roles quickly adapt to the new system.
- Streamline purchase order creation and delivery by automatically sending clear, detailed orders to suppliers via email or SMS.

Target Users/Stakeholders

- Business Owner
- Inventory Manager
- Warehouse Staff
- Sales Team
- Suppliers
- System Administrator

Scope

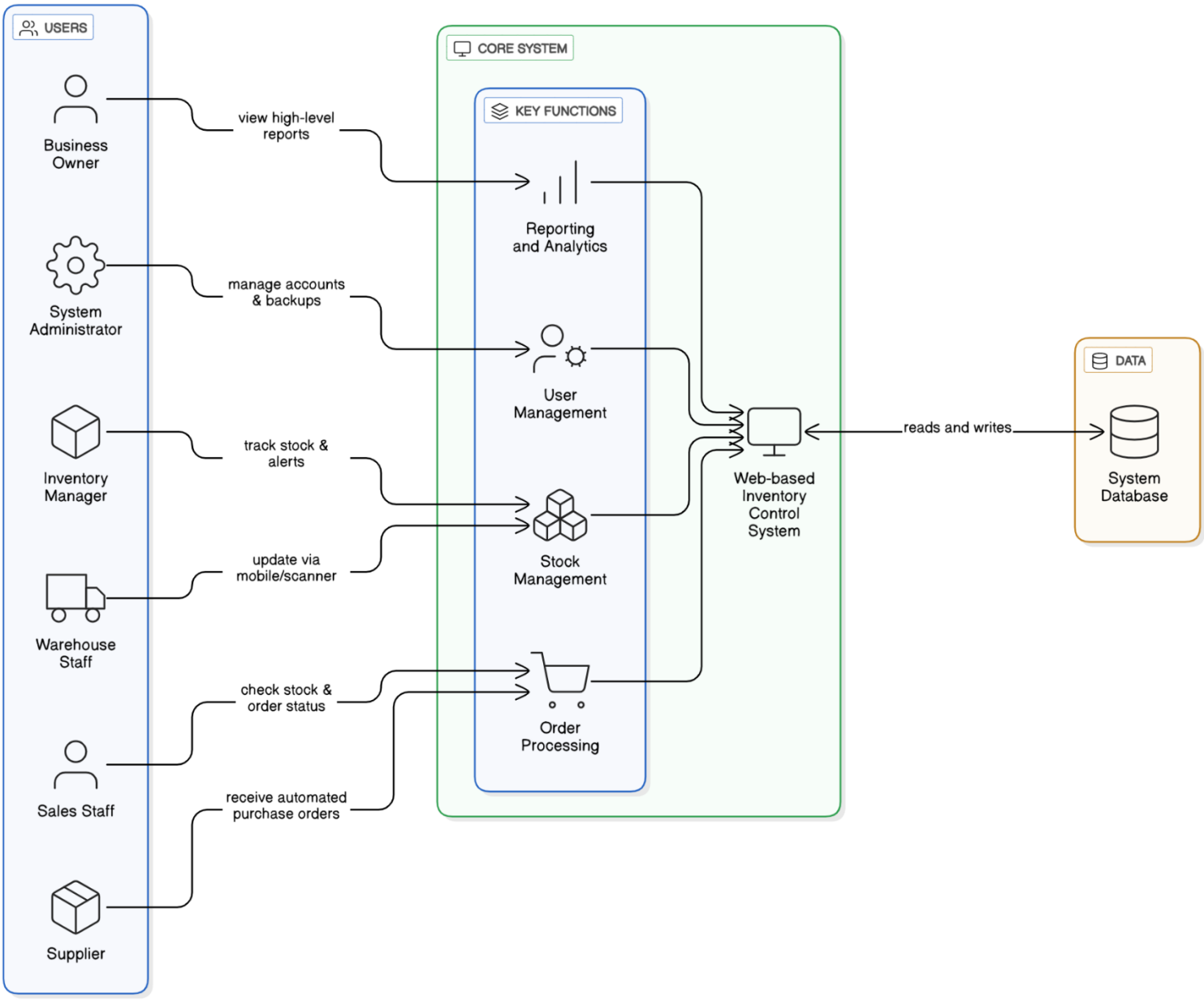
This project involves designing and developing an Inventory Control System for Southern Goods Distributors Pvt Ltd, Web-based in nature, to computerize their inventory functions. The system will substitute their existing manual and Excel-based systems with an electronic central system.

The system will offer fundamental features such as real-time stock tracking, automated purchase order creation, warehouse operations management (barcoding), business analytics reports, and secure role-based access. The system will cater to the requirements of various stakeholders such as the business owner, inventory manager, warehouse and sales staff, suppliers, and system administrator.

Limitations

- The system will work with internet connection.
- Initial Data Migration Challenges
- There is no offline mode. Users cannot interact with the system when disconnected and must wait for internet reconnection to perform tasks.
- Although the interface is designed to be simple, some staff (especially those used to manual systems) may require training to fully adopt the new system.

System Overview Diagram



Functional Requirements

- Real-time Inventory Dashboard
- Purchase Order Management
- Business Reporting & Analytics
- Warehouse Operations Interface
- User and Access Management
- Automated Data Backups

Non-functional requirements

- Performance: Quick access to data
- Security: Role-based access, secure login
- Scalability: Support future growth
- Usability: Intuitive interface
- Reliability: Reliable backups and recovery

Major Stakeholders

- **Business Owner:**

  Responsible for the entire company and makes high-level strategic decisions. She requires accurate and timely business reports to keep track of performance, watch over growth, and guide future planning.

- **Inventory Manager:**

  Responsible for maintaining the levels of the inventory, tracking the movement of stock, and managing the reorder process. She requires real-time visibility and low-stock level alerts.

- **Warehouse Staff:**

  In charge of physical stock handling within the warehouse, i.e., receiving goods, picking, packing, and restocking inventory. Has to have an easy-to-use interface and barcode scanning capability.

- **Sales Staff:**

  Manages customer orders and queries. She needs to view real-time current stock levels and order status in order to allow for smooth customer service and avoid over-promising.

- **Supplier:**

  Provides products to the company upon purchase orders. Requires immediate and certain order details (product, quantity, delivery date) in order to process and confirm deliveries efficiently.

- **System Administrator:**

  Responsible for the system security, access levels, and backup. Manages user levels, technical issues, and keeps the system running secure and efficiently.

Six Major functions

1) Inventory Dashboard: Priyamalka W D N

- **Used by:** Sales personnel
- The sales personnel are able to see the available stock quantities of all products in the system through this feature. Available stock levels, low-stock alerts, and future inventory are provided through real-time updates from the dashboard. It helps personnel to verify product availability prior to filling customer orders or bookings.
- **Expected Outcome:** Employees are confident in placing customer orders and placing items on hold, leading to increased customer satisfaction and fast turnaround.

2) Purchase Order Automation: Panagodage N.M.H

- **Used by:** Inventory manager
- This functionality allows the inventory manager to prepare purchase orders automatically and send them via email to suppliers. The application is capable of supporting item descriptions, quantities, delivery dates, and supplier names. Orders are sent via email or SMS and tracked for delivery status.
- **Expected Outcome:** Orders are sent timely and unambiguously, reducing delays and human error. Suppliers receive standard and accurate requests for orders.

3) Business Reporting: Mummullage B.U.T

- **Used by:** Business owner
- This facility provides analytics and report features to support decision-making. The business owner can view movement of stocks, sales performance, stocks' value, and fast/slow-moving items reports. Reports are presented in graphic formats and can be exported.
- **Expected Outcome:** The business owner can view performance trends and make investment and planning decisions accordingly.

4) Warehouse Interface: Sooriyabandara U.R.G.W.K

- **Used by:** Warehouse staff
- This facility allows warehouse staff to search for products, select and pack goods, and monitor stock using barcode scanners or handheld devices. It displays item locations, orders waiting, and allows real-time adjustments to stock.
- **Expected Outcome:** Inventory is updated accurately and without mistake, reducing picking errors and speeding up order fulfillment.

5) User Management: Alahakoon A. M. J. P

- **Used by:** System administrator
- This module enables the system administrator to configure and administer user accounts with preconfigured roles and permissions. Access privileges can be granted by the admin, user actions can be monitored, and login credentials can be reset as required.
- **Expected Outcome:** System access is shielded and controlled, whereby users utilize only what they need without exposing confidential data.

6) Scalability & Training: Siriwardane K.D.D.D

- **Used by:** All users
- This aspect makes the system easy to use and expandable in future business growth. It provides a user-friendly interface, embedded instructions, and support manuals to allow instant adaptation by the users. The system is also able to deal with more users, inventory, and multiple branches in the future.
- **Expected Outcome:** Users readily adapt to the system with little training, and the company can grow without having to make major modifications to the system.

Minor functions

- User Login and Logout-Secure login system for all users with username and password.
- Password Reset and Recovery-Allows users to reset forgotten passwords via email verification or admin reset.
- Search and Filter Options-Enables users to quickly search for items, orders, or users in large datasets.
- Notifications and Alerts-System-generated alerts for low stock, pending orders, and delivery confirmations.
- Responsive Web Interface-Works across desktops, tablets, and smartphones via web browsers.
- Data Export and Print Support-Users can export reports and inventory lists in PDF or Excel formats.

System Limitations / Constraints

- Internet Dependency
- No Native Mobile App
- Limited Offline Functionality
- Initial Data Migration Effort
- Supplier Digital Readiness
- Training Requirement for Some Staff

Project Timeline

Week 3	Identify final project concept and derive primary requirements from client/stakeholders
Week 4	Create system architecture design and create use case diagrams / flowcharts
Week 5	Develop user interface mockups and finalize module designs
Week 6	Fully backend development (user login, dashboard setup)
Week 7	Inventory control and purchase order module implementation
Week 8	Warehouse interface development and barcode scan integration
Week 9	Implement reporting and analytics feature, admin/user management module
Week 10	Perform integration testing for all modules
Week 11	User testing, bugs fixing, and peer/mentors' comments
Week 12	Final documentation completion and user guides completion
Week 13	Preparation of presentation material and system demo run
Week 14	Final project submission, formal presentation, and system demonstration

Conclusion

The proposed Web-based Inventory Control System is an integrated system aimed at revolutionizing and automating the inventory function of Southern Goods Distributors Pvt Ltd. Moving from time-consuming paper-based procedures to a centralized computerized platform, the system will assist in reducing errors, improving stock accuracy, and improving overall departmental efficiency.

The system meets the real business requirements of all the key stakeholders, ranging from the business owner who needs thoughtful reports, through to stockroom staff who require quick and accurate inventory notifications. The system supports activities like real-time inventory tracking, automated purchase orders, stockroom management, business analysis, and secure user authentication.

With scalability and ease of use in mind, the system will not only solve the current operational challenges but also serve the future expansion of the company. It has a user-friendly interface and simple role-based accessibility, so the system makes fast adaptation and minimal training for users possible.

Our members are confident that this system will yield measurable increases in daily business operations, make communications with suppliers easier, and provide a sound foundation for fact-based business decisions.