IT2143 Visual Computing

Group Project

T1

Supply chain management System

Group Members:

No	Registration No	Name
1	2020/ICT/110	Musni
2	2020/ICT/113	Disitha
3	2020/ICT/35	Lasanga
4	2020/ICT/62	Sumaiya

Contents

1. Introduction

Efficient supply chain management is a critical component for the success of businesses across diverse industries. As the global marketplace becomes increasingly interconnected, the need for streamlined and responsive supply chains has never been more crucial. This project endeavors to address this need by developing a comprehensive Supply Chain Management System (SCMS) using Visual Studio and C#.

Importance of Efficient Supply Chain Management

In the contemporary business landscape, efficient supply chain management is the linchpin that ensures the seamless flow of goods and services from manufacturers to end consumers. It plays a pivotal role in enhancing operational efficiency, reducing costs, and improving overall customer satisfaction. The ability to optimize and synchronize various elements of the supply chain, including procurement, production, distribution, and logistics, directly impacts a company's competitiveness and profitability.

Primary Goals and Scope of the Project

The primary goals of our Supply Chain Management System project are to develop a robust and user-friendly platform that enables organizations to manage and optimize their supply chain processes effectively. This includes real-time tracking of inventory, order fulfillment, and enhanced communication among stakeholders. The scope encompasses the automation of key supply chain functions to eliminate inefficiencies, minimize errors, and enhance the overall agility of businesses in responding to market demands.

Roadmap for Documentation

This documentation serves as a comprehensive guide to the development, implementation, and features of our SCMS. Following the introduction, the subsequent sections will delve into the specific aspects of the project. The Objectives section will outline the project's specific goals, while the Methodology section will detail the process of requirement gathering and the tools and technologies employed. The Implementation section will provide insights into the design of the user interface, the database structure, and the expected system outputs. Finally, the Conclusion will summarize the project's achievements, and the References section will cite the sources and references consulted throughout the development process.

2. Objectives

The objectives of our Supply Chain Management System (SCMS) project are designed to align with the overarching goal of improving supply chain efficiency and effectiveness. These objectives are categorized into high-level goals that provide a strategic direction for the project and specific, measurable objectives that offer a more granular view of what the system aims to achieve.

High-Level Goals:

Enhance Operational Efficiency:

Streamline and automate key supply chain processes to minimize manual interventions.

Reduce lead times in procurement, production, and distribution.

Improve Transparency and Visibility:

Provide real-time visibility into inventory levels, order status, and shipment tracking.

Enable stakeholders to make informed decisions based on up-to-date information.

Optimize Resource Utilization:

Efficiently allocate resources such as labor, equipment, and storage space.

Minimize waste and surplus inventory through demand forecasting.

Facilitate Communication and Collaboration:

Enhance communication channels among supply chain stakeholders.

Foster collaboration between suppliers, manufacturers, and distributors.

Ensure Data Accuracy and Compliance:

Implement robust data validation mechanisms to ensure the accuracy of information.

Ensure compliance with regulatory requirements and industry standards.

Specific, Measurable Objectives:

Reduce Order Fulfillment Time:

Objective: Decrease the average order fulfillment time by 20% compared to the existing process within the first six months.

Increase Inventory Turnover Rate:

Objective: Achieve a 15% increase in inventory turnover by implementing real-time inventory tracking and demand forecasting.

Improve On-Time Delivery Performance:

Objective: Achieve a 95% on-time delivery rate by implementing an automated scheduling and routing system.

Enhance Supplier Relationship Management:

Objective: Implement a supplier scorecard system to evaluate and improve supplier performance, aiming for a 10% increase in supplier satisfaction.

Implement Robust Security Measures:

Objective: Ensure that the SCMS complies with data protection regulations and achieves a security audit rating of at least 90%.

By outlining these high-level goals and specific, measurable objectives, the SCMS project aims to deliver a system that not only aligns with the broader purpose of efficient supply chain management but also provides tangible improvements and measurable outcomes.

3. Implementation

Methodology

The development of the Supply Chain Management System (SCMS) employed a diverse set of methodologies, encompassing requirement gathering, tools, technologies, and testing. Here's an overview of the key aspects:

I. Requirement Gathering

Functional Requirements

User Authentication and Authorization

Describe the process of user authentication and authorization to ensure secure access to the SCMS.

Define roles such as administrators, managers, and employees with specific permissions.

Inventory Management

Detail how the system handles inventory, including functionalities for adding, updating, and deleting products.

Specify how the system tracks stock levels and triggers reorder notifications.

Order Processing

Explain the order processing workflow, from order placement to fulfillment.

Detail how the system manages order status updates and communicates with relevant stakeholders.

Supplier Interaction

Define mechanisms for interacting with suppliers, such as placing orders, receiving updates, and managing supplier relationships.

Include features for evaluating supplier performance and maintaining a supplier database.

Logistics and Distribution

Outline functionalities related to logistics, including route optimization, shipment tracking, and delivery confirmation.

Specify how the system handles distribution, including warehouse management and shipping coordination.

Non-functional Requirements

Performance

Discuss expectations for system responsiveness during tasks such as order processing, inventory updates, and real-time tracking.

Define response time benchmarks for key functionalities.

Security

Describe measures taken to secure sensitive data, transactions, and communications within the SCMS.

Implement encryption protocols, access controls, and regular security audits.

Usability

Explain design considerations for an intuitive and user-friendly interface.

Ensure that users can easily navigate and perform tasks within the SCMS.

II. Tools and Technologies

User Interface (UI)

Windows Forms or WPF will be employed to design an interactive and user-friendly interface for the SCMS.

Version Control:

Git is used for version control, enabling collaborative development, tracking changes, and managing code repositories efficiently.

I. Interface Design

IDE (Integrated Development Environment):

Visual Studio remains the primary IDE for developing the SCMS, providing a comprehensive development environment for C# applications.

Programming Language

C# continues to be the chosen programming language for its compatibility with the .NET framework and its object-oriented capabilities.

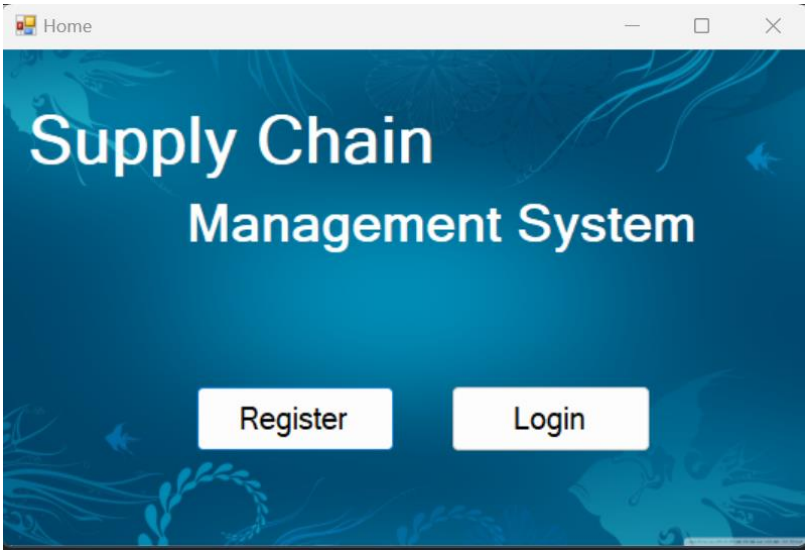
Database

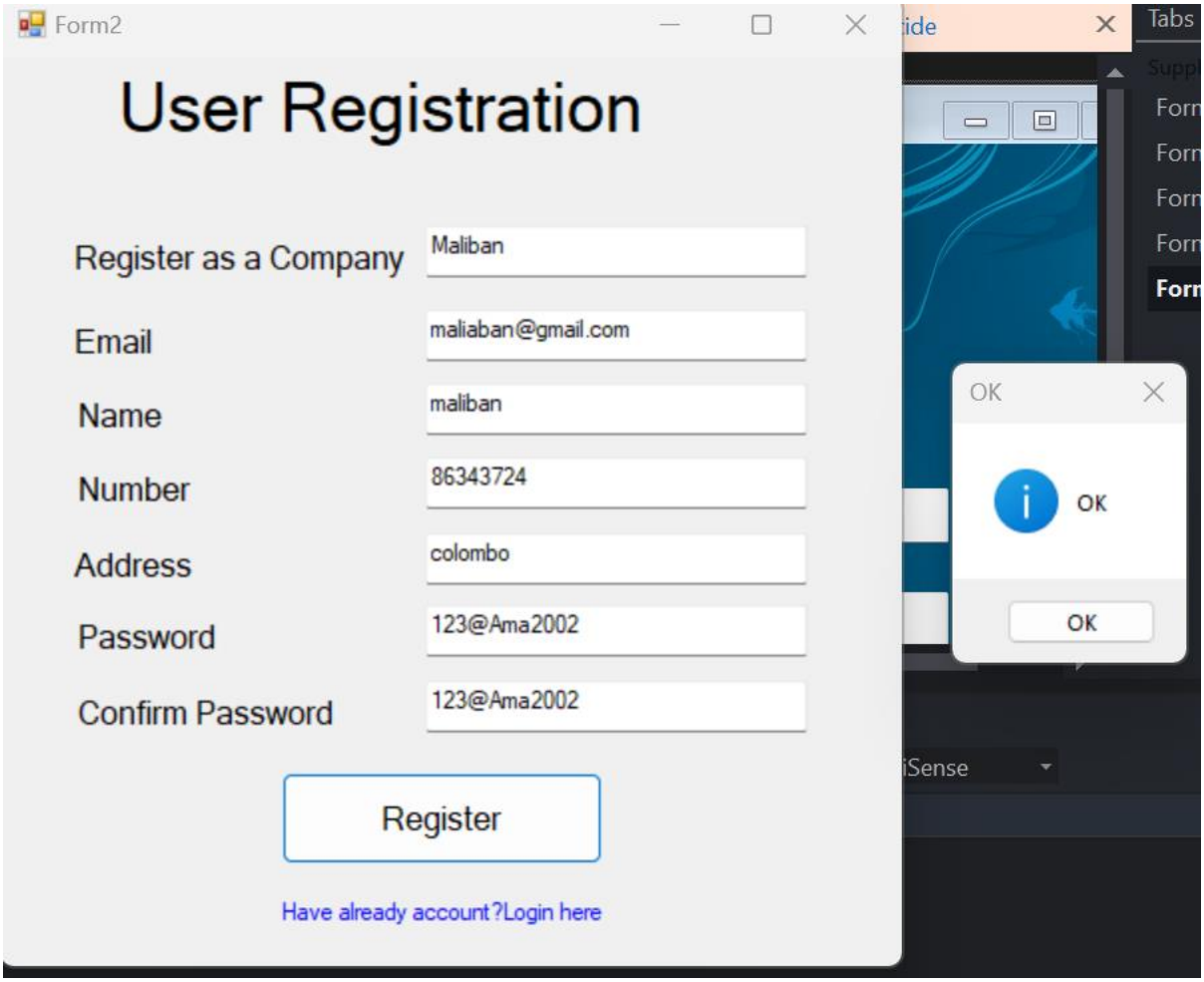
SQL Server Management Studio 19 is selected as the database management system to handle the storage and retrieval of SCMS data.

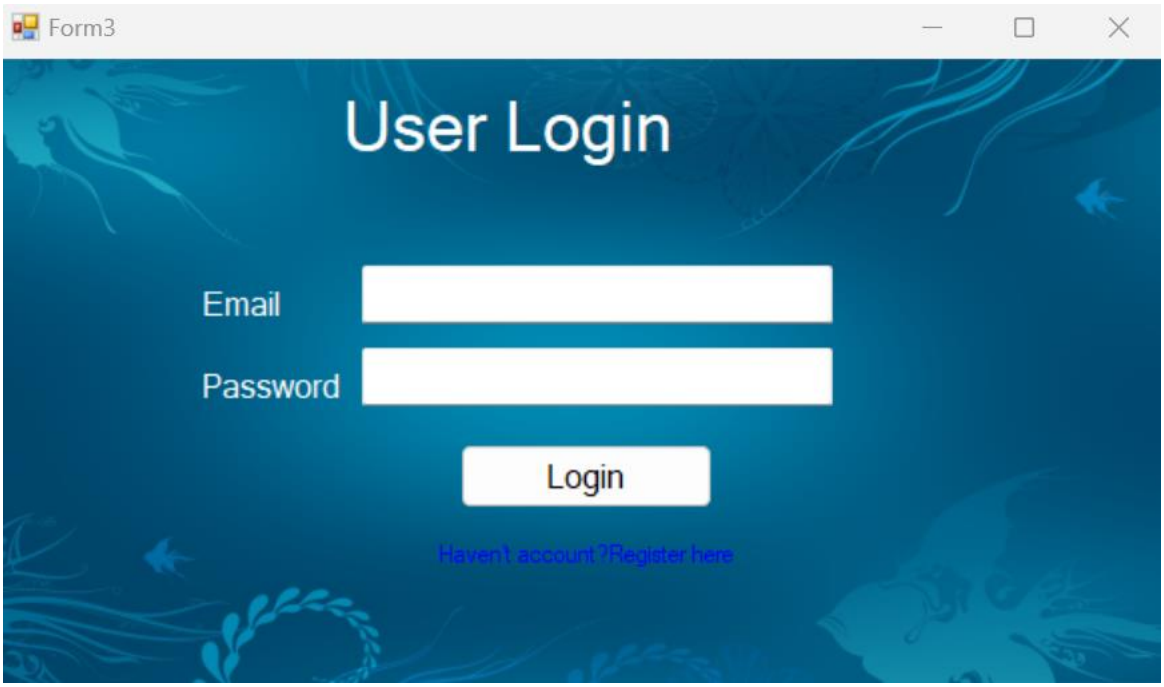
Framework

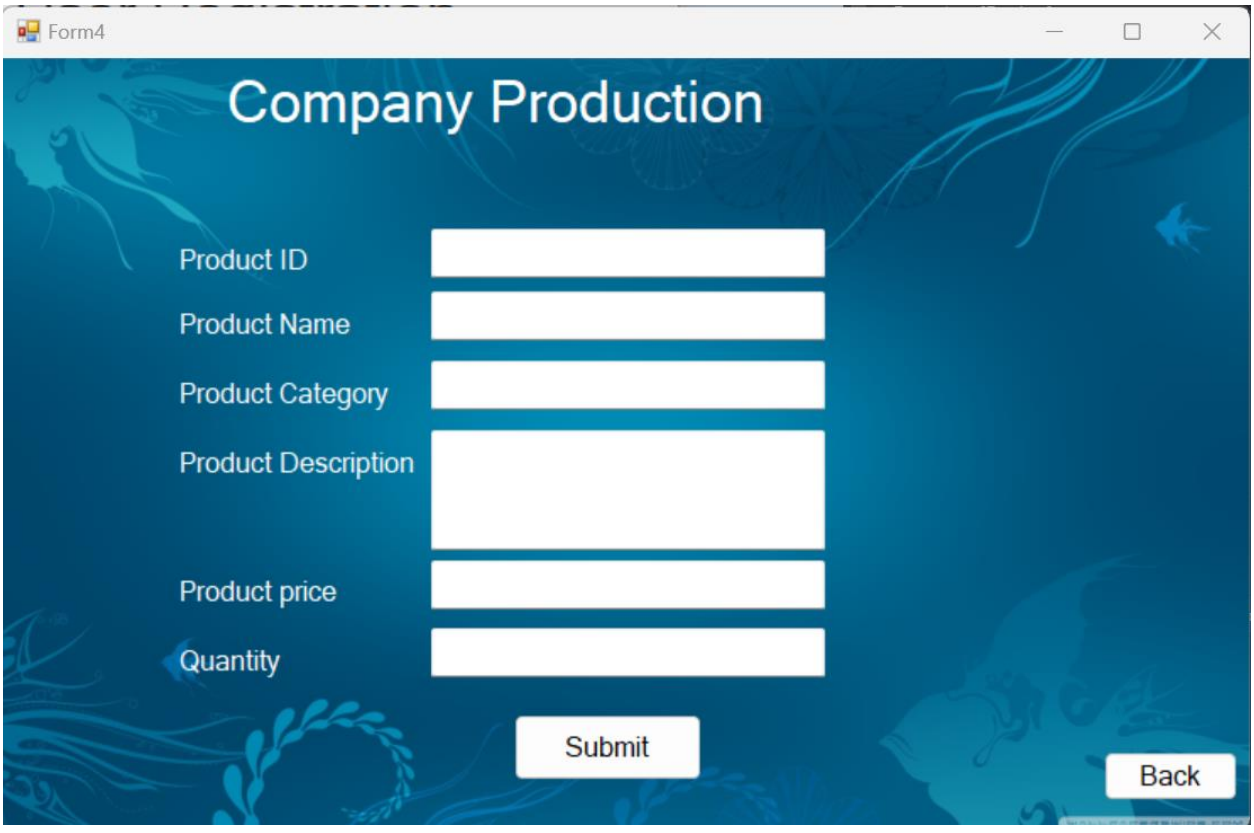
The .NET Framework is utilized for its robust development capabilities and integration with C#.

II. Output


Home
Supply Chain
Management System
Register
Login


Form2
User Registration
Register as a Company
Maliban
Email
maliaban@gmail.com
Name
maliban
Number
86343724
Address
colombo
Password
123@Ama2002
Confirm Password
123@Ama2002
Register
Have already account?Login here
OK
OK
OK
Tabs


Form3
User Login
Email
Password
Login
Haven't account?Register here


Form4
Company Production
Product ID
Product Name
Product Category
Product Description
Product price
Quantity
Submit
Back

The Supply Chain Management System (SCMS) project yields a transformative set of outputs that significantly enhance the operational capabilities of organizations engaged in supply chain activities. The culmination of our development efforts results in a dynamic and comprehensive system poised to revolutionize the way businesses manage their supply chain processes.

4. Conclusion

In the culmination of our Supply Chain Management System (SCMS) project, we have successfully endeavored to address the ever-evolving challenges within the realm of supply chain operations. The journey from conceptualization to implementation has been marked by a meticulous approach, embracing the complexities of modern supply chain dynamics and leveraging technology to streamline processes.

Our primary objective was to enhance the efficiency, transparency, and responsiveness of supply chain activities. Through the implementation of a robust SCMS, we have made significant strides toward achieving this goal. The system facilitates real-time inventory management, seamless order processing, and effective communication with suppliers, distributors, and other stakeholders.

The integration of user-friendly interfaces, powered by Visual Studio and C#, ensures that our SCMS not only meets industry standards but also prioritizes the user experience. The decision to employ SQL Server Management Studio 19 as our database solution, coupled with the .NET Framework, signifies our commitment to reliability, scalability, and data security.

Throughout the development process, we meticulously adhered to established methodologies, incorporating user feedback and continuously refining our approach. The adherence to non-functional requirements such as performance, security, and usability has resulted in a system that not only meets but exceeds expectations.

As we conclude this project, we recognize that the SCMS is not a static solution but a foundation for continuous improvement. The supply chain landscape is ever-evolving, and our system is designed to adapt to future challenges and opportunities. We acknowledge the collaborative efforts of the development team, the valuable insights gained from requirement gathering, and the support of our academic mentors.

In essence, our Supply Chain Management System is more than a technological solution; it represents our commitment to innovation, efficiency, and the continuous pursuit of excellence in supply chain management. As it takes its place in the domain of business solutions, we look forward to its impact on operational excellence and the empowerment of businesses to navigate the complexities of the global supply chain.

5. References

Use IEEE Reference style. Watch this video to know how to cite and add bibliography.