Stock Portal for Spice Co.

Diploma in Computer System Design

Final Project documentation

22.1P

NIBM POWERING GREAT MINDS

School of Computing and Engineering

National Institute of Business Management

Asgiriya, Kandy.

PREFACE

This final project was carried out as a part of Diploma in Computer System Designing (DCSD) of the National Institute of Business Management (NIBM) in Sri Lanka by the following students of batch 2022 part time.

- **KADCSD22.1P – 008** :- RANMETH M K S   …………………………….

- **KADCSD22.1P – 005** :- FERNANDO P D D   …………………………….

- **KADCSD22.1P – 001** :- BANDARA K G A I   …………………………….

They have carried this system development project under my advice & guidance.

…………………………………….......
Mrs. Inoka Abhayasighe
Course Director
National Institute of Business Management

Gantt Chart

i

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Introduction of the organization

Our client organization, **Dilthira** Associates plays a huge role in Sri Lankan spice trading landscape, specializing in premium black pepper and white pepper powder.

In 2010, Dilthira, a pepper powder stock trading company, was established with a vision to provide quality products at affordable prices. Over the years, Dilthira has evolved into a renowned name in the stock trading industry, mainly for the top-tier hotels and restaurants in Kandy.

The company's commitment to delivering high quality pepper powder products, coupled with its affordability, has gained attention of the market, earning it widespread recognition among customers and businesses alike.

1.2 Organization Structure

2. **Hierarchy:** There is a flat hierarchy, where one person was the sole owner of the business. This is a family business which runs by the management of the owner with the help of his family of three.
3. **Departments and Divisions:** Since the company is small and focuses on a solitary product (pepper powder), there may not be distinct departments or divisions. However, it may have functional areas such as production, sales, and administration, all managed by the family.
4. **Reporting Relationships:** All employees report directly to the owner.
5. **Span of Control:** Sole owner, have a wide span of control, overseeing all aspects of the business, from production to sales and administration.
6. **Centralization vs. Decentralization:** Decision-making authority is centralized with the owner, and he is responsible for all aspects of the business.
7. **Formalization:** The level of formalization is low, with fewer standardized procedures and more flexibility in operations, given the small size of the company.

1.3   Current Operations in the Organization

Dilthira Associates operates with a straightforward approach under the management of its owner.

At Dilthira Associates, their moral is simple: first come, first served. With a queue-based system managing export orders, there is a commitment to fairness and promptness in every transaction. Whether it is a high-end hotel or a quaint restaurant, each client order is handled with care, ensuring a seamless experience for all.

Behind the scenes, the Owner oversees every facet of the operation, from order processing to final delivery. Communication is key in this operation, with Dilthira Associates priding itself on open and transparent dialogue with clients.

In this streamlined operation, continuous improvement is especially important for the owner. The Owner is constantly seeking ways to enhance efficiency and elevate customer satisfaction, whether through refining inventory management practices or optimizing communication channels. That is why Dilthira association has decided to automate and digitalize their whole business.

Dilthira Associates prioritizes reliability, integrity, and personalized service.

1.4 Users and Responsibilities of the Organization

In culinary industry, Dilthira Associates stands as a trusted purveyor of premium black pepper, esteemed restaurants in Kandy like "Royal Mall," "Devon," and "Delight". It is evident that Dilthira Associates takes its responsibility to provide the finest quality spices to its clients with utmost seriousness.

At Dilthira Associates, the pursuit of excellence is not just a motto – it is a way of life. With a commitment to sourcing only the best black pepper from around the globe, Dilthira ensures that each shipment surpasses expectations.

Dilthira's role goes beyond just providing ingredients – it is about fostering a partnership built on trust, reliability, and mutual respect. With open lines of communication and a dedication to meeting the unique needs of each client, Dilthira Associates ensures that its partners have everything they need to succeed in the competitive world of gastronomy.

It is clear that Dilthira Associates' dedication to quality and service sets it apart in the industry.

1.5   Problem Definition

"Our company currently faces a challenge with order management, as clients exclusively place orders through manual phone calls. This manual process results in inefficiencies and inaccuracies, leading to potential delays, errors, and customer dissatisfaction. Without a structured system for order management, we lack the ability to track orders, monitor inventory levels, and efficiently allocate resources. As a result, we are unable to optimize operations, streamline workflows, and provide the level of service and reliability our clients expect and deserve. The absence of an automated order management system poses a significant obstacle to our company's growth and success in the competitive market. Therefore, there is an urgent need to implement a robust, scalable, and user-friendly order management solution that integrates seamlessly with our existing processes, improves efficiency, enhances accuracy, and elevates the overall customer experience." - **Company Owner**

1.6   Project Objectives

1. **Create an Automated Order System:** Build software that lets clients place orders online easily, replacing manual phone calls.
2. **Connect with Inventory:** Ensure the system syncs with inventory data to manage stock levels accurately.
3. **Speed Up Order Processing:** Simplify order processing to save time and reduce errors by automating tasks.
4. **Ensure Data Accuracy:** Implement checks to ensure order details are accurate, improving overall reliability.
5. **Plan for Growth:** Design a system that can grow with the company's needs, allowing for future expansion.
6. **Improve User Experience:** Create an easy-to-use interface for clients and staff, focusing on simplicity and efficiency.
7. **Ensure Security:** Implement measures to protect customer data and maintain privacy, meeting security standards.

These objectives aim to build a user-friendly, efficient system that improves order management and supports the company's growth.

1.7   Proposed Solution

1. **Create an Automated Order System:** Build web application that lets clients place orders online easily, replacing manual phone calls.
2. **Connect with Inventory:** Ensure the system syncs with inventory data to manage stock levels accurately.
3. **Ensure Data Accuracy:** Implement checks to ensure order details are accurate, improving overall reliability.
4. **Plan for Growth:** Design a system that can grow with the company's needs, allowing for future expansion.
5. **Improve User Experience:** Create an easy-to-use interface for clients and staff, focusing on simplicity and efficiency.
6. **Ensure Security:** Implement measures to protect customer data and maintain privacy, meeting security standards.

1.8   Chapter Summery

In this chapter, we explore Dilthira Associates' journey towards improving order management and client experience.

We begin by highlighting the company's commitment to excellence in the spice trade, serving top restaurants with premium black pepper powder.

Next, we delve into the challenges faced by the organization, particularly with manual order processing, and the urgent need for an automated solution as the association is struggling to keep up with the number of orders coming to the owner.

Proposed objectives and solutions are presented, focusing on developing a user-friendly website for online order placement.

By aligning these objectives with the company's goals, the proposed solution aims to streamline order management and enhance client satisfaction at Dilthira Associates.

2. METHODOLOGY

2.1 Introduction

Under this chapter, we explain the methodologies that are willing to use to approach for solving the customer's issue. We detail the steps that involved in data collection, software development, testing, and project planning to ensure a systematic approach and to give a brief explanation of our pathway towards achieving our objectives.

2.2   Data Collection Method(s)

Interviewing the Owner:

We engaged directly with the owner to gain valuable insights into their management history and how orders have been handled over time.

This firsthand information was crucial for understanding the business's evolution and identifying its current needs and pain points.

Reviewing Company Management History:

We delved into the owner's management history to uncover valuable insights into how orders have been managed from the inception of the business to the present day.

This historical perspective helped us identify patterns, challenges, and areas for improvement within the order management process.

Analysing Provided Documents:

Furthermore, we thoroughly analysed documents provided by the owner to enrich our understanding of the business's inner workings.

These documents include sales reports, inventory records, customer feedback, and other relevant materials which were all manually recorded in books and other physical written documentations.

2.3   Software Process Model

For the development of the system, we are planning to use the waterfall model because we gathered the user's requirements at the beginning and after implementation, we are planning to use incremental model to increment upgrades as the client comes with more requirements while using the system.

Initial Development with Waterfall Model:

We have chosen to utilize the waterfall model for the initial development phase of the system.

This decision stems from our approach of gathering the user's requirements comprehensively at the beginning of the project.

With the waterfall model, we will follow a sequential process, moving from one phase to the next, including requirement analysis, system design, implementation, testing, and deployment.

Subsequent Upgrades with Incremental Model:

After the initial implementation, we plan to transition to the incremental model for subsequent upgrades and enhancements.

This approach allows us to incrementally add new features and functionalities as the client provides additional requirements or as new needs emerge during system usage.

By adopting the incremental model, we can efficiently address evolving client needs while maintaining the stability and integrity of the system.

By combining the waterfall model for initial development with the incremental model for subsequent upgrades, we aim to deliver a robust and adaptable system that meets the client's evolving requirements and supports their business objectives effectively.

2.4   Software Development Tools

Development Tools: -

- Visual Studio Code IDE
- PhpMyAdmin database management tool
- GIT version controlling tool

Languages & frameworks: -

- HTML
- CSS
- JAVASCRIPT
- PHP
- Bootstrap
- jQuery
- Laravel

2.5 Testing Strategies

Unit Testing: we run tests for individual components of the website, including database queries, user authentication functions, and any other backend logic. These tests ensure that each component functions correctly in isolation.

Integration Testing: Test the interaction between different components of the website, such as how the frontend communicates with the backend and how the database interacts with the application. This ensures that all parts of the system work together as we established.

Database Testing: Verify that the database schema is correctly implemented, and data is stored and retrieved accurately. Tests will cover CRUD (Create, Read, Update, Delete) operations and data integrity constraints.

User Interface Testing: Ensure that the user interface is intuitive and works across different browsers and devices. Test UI elements, navigation, form submissions, error messages, and visual layout.

Authentication and Authorization Testing: Verify that user authentication mechanisms, such as login, registration, and session management, work correctly. Also, test different user roles and permissions to ensure proper access control.

Security Testing: Perform security assessments to identify and address potential vulnerabilities, Captcha testing can help to strengthen the website's defences.

Performance Testing: Assess the website's performance under different load conditions to ensure it can handle concurrent user sessions and database queries efficiently. We will be using Apache JMeter to simulate various user scenarios to measure response times and identify bottlenecks.

Compatibility Testing: Test the website on different operating systems, browsers, and devices to ensure compatibility and responsiveness. Pay attention to how the website behaves on mobile devices with varying screen sizes and resolutions.

Regression Testing: After making changes or fixing issues, rerun relevant tests to ensure that existing functionality has not been affected. Automated testing frameworks can streamline this process by automatically running tests whenever code changes are made.

2.6 Project Plan

Final Project DCSD 22.1P - G01 (2024 March - June)

| Phase	Task	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Planning Phase	Interview	■											
	Analysis	■	■										
	Proposal	■	■										
Design Phase	Prototypes		■	■									
	Database Schema		■	■									
	Solution VIVA			■									
Development Phase	Develop System			■	■	■	■	■	■	■	■		
	Feedback Based Development				■	■	■						
Testing Phase	Execute Testing				■	■	■						
	User Acceptance Testing					■	■	■	■	■			
	Regression Testing							■	■	■	■		
Deployment Phase	Prepare for Deployment										■		
	Final Project VIVA											■	
	Deployment												■
End	Documentation												■
	Feedback												■

3.   ANALYSIS

3.1   Introduction

In this phase, we represent the detailed information of analysed information about the current system and our system to give a brief idea about our project. We used multiple types of diagrams which are used in system analysing & designing to represent a brief sketch about the functionalities of our proposing system.
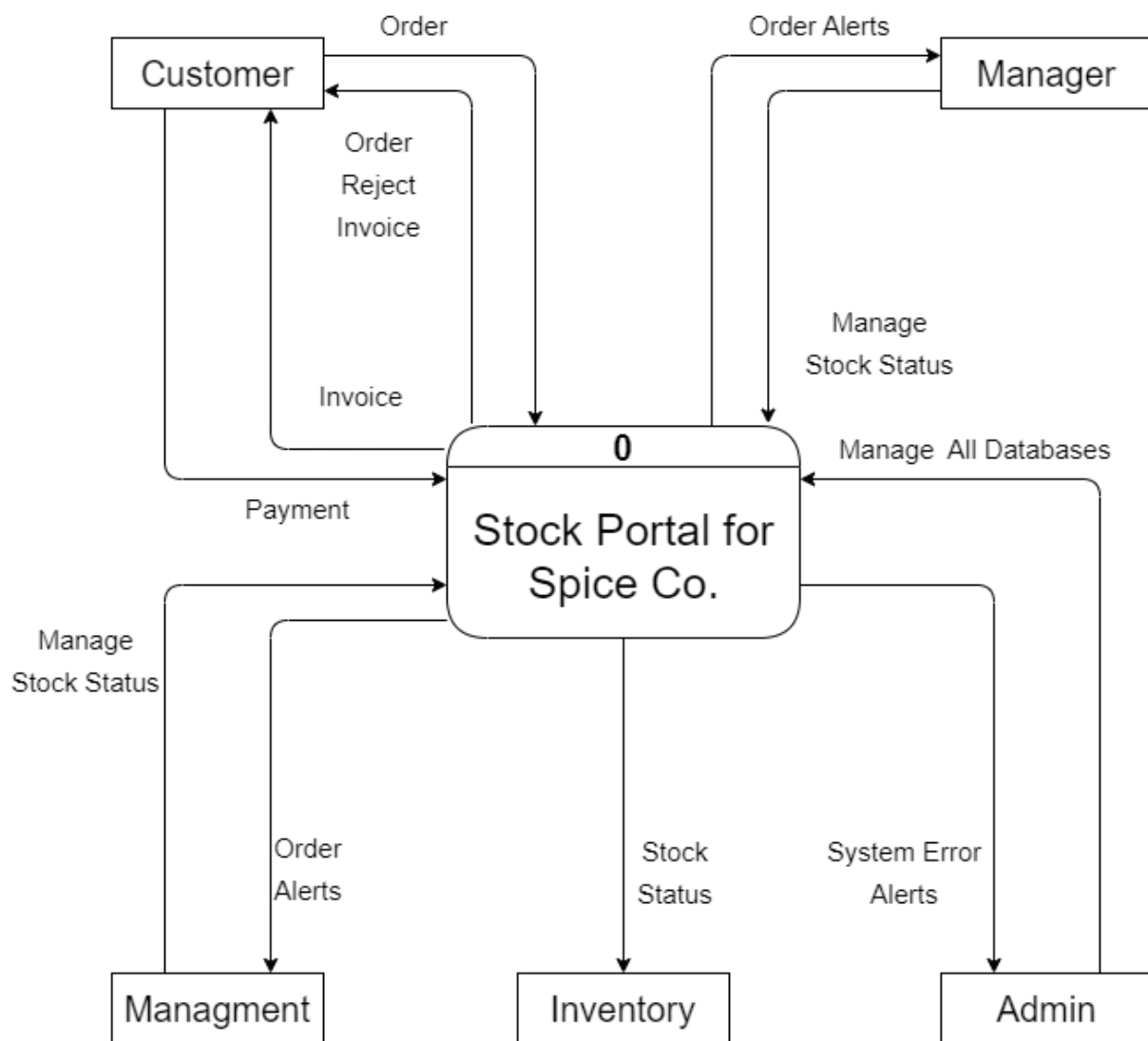
3.2   UML Diagram
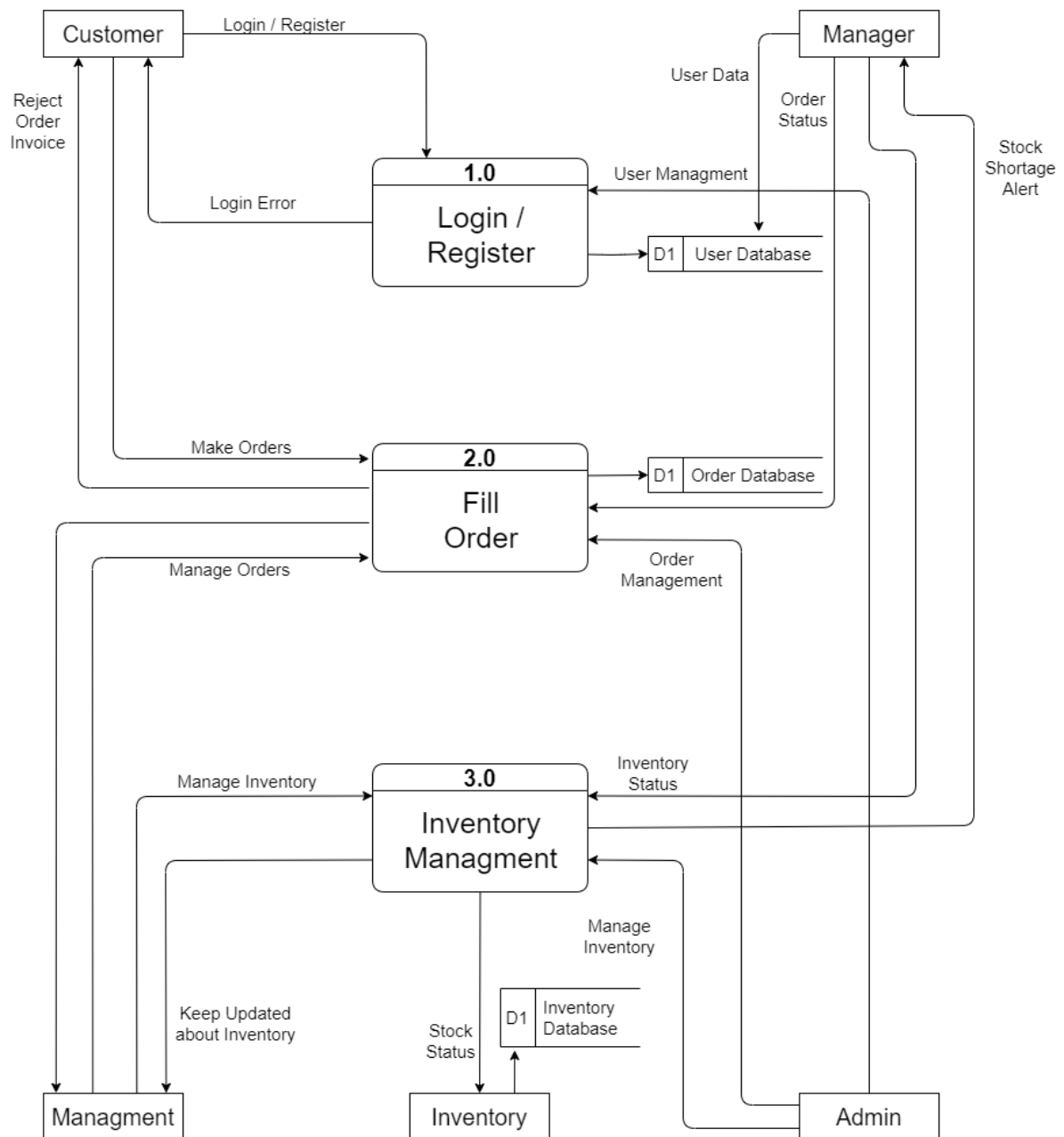
a.   Use Case Diagram of Current System
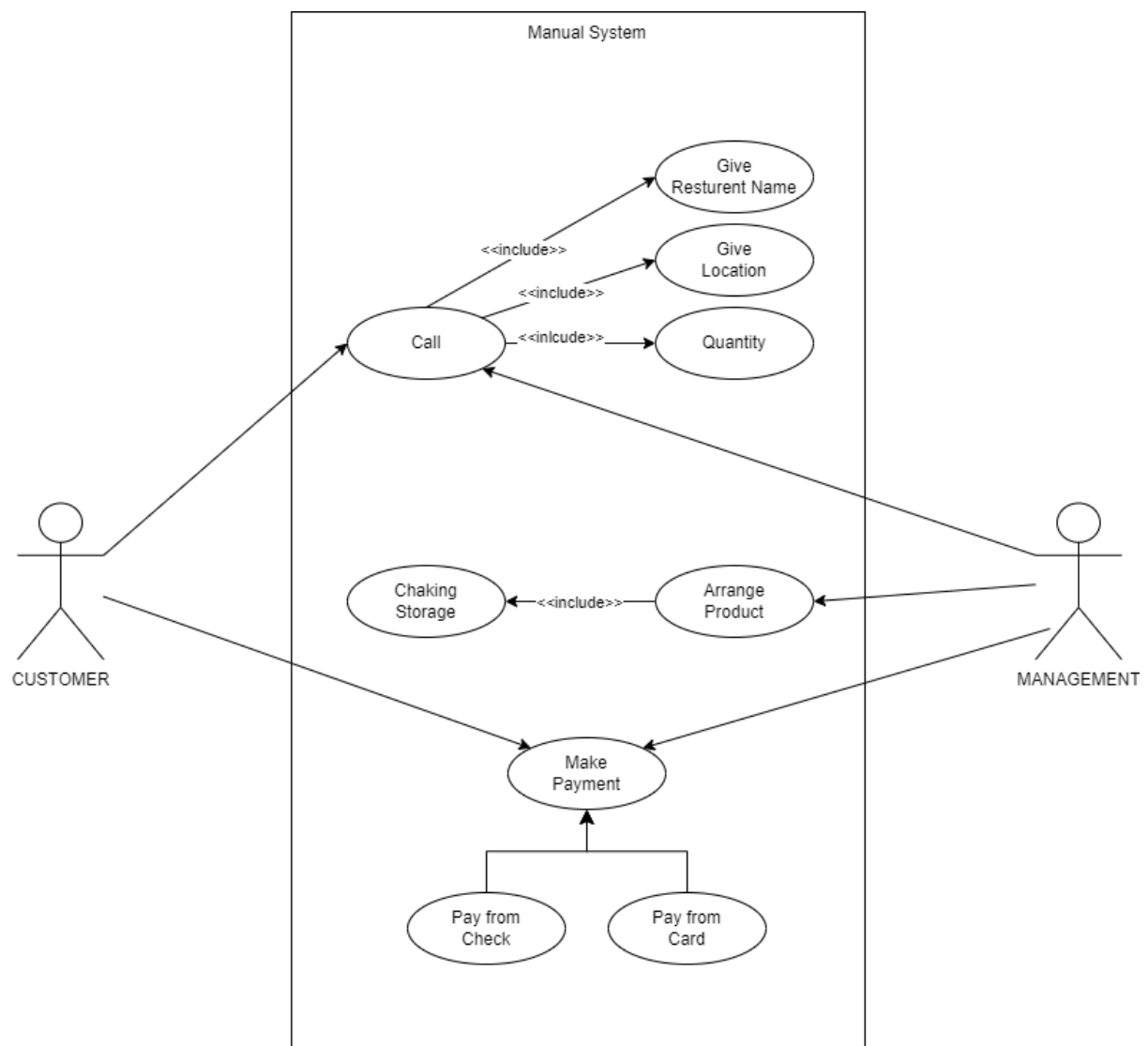
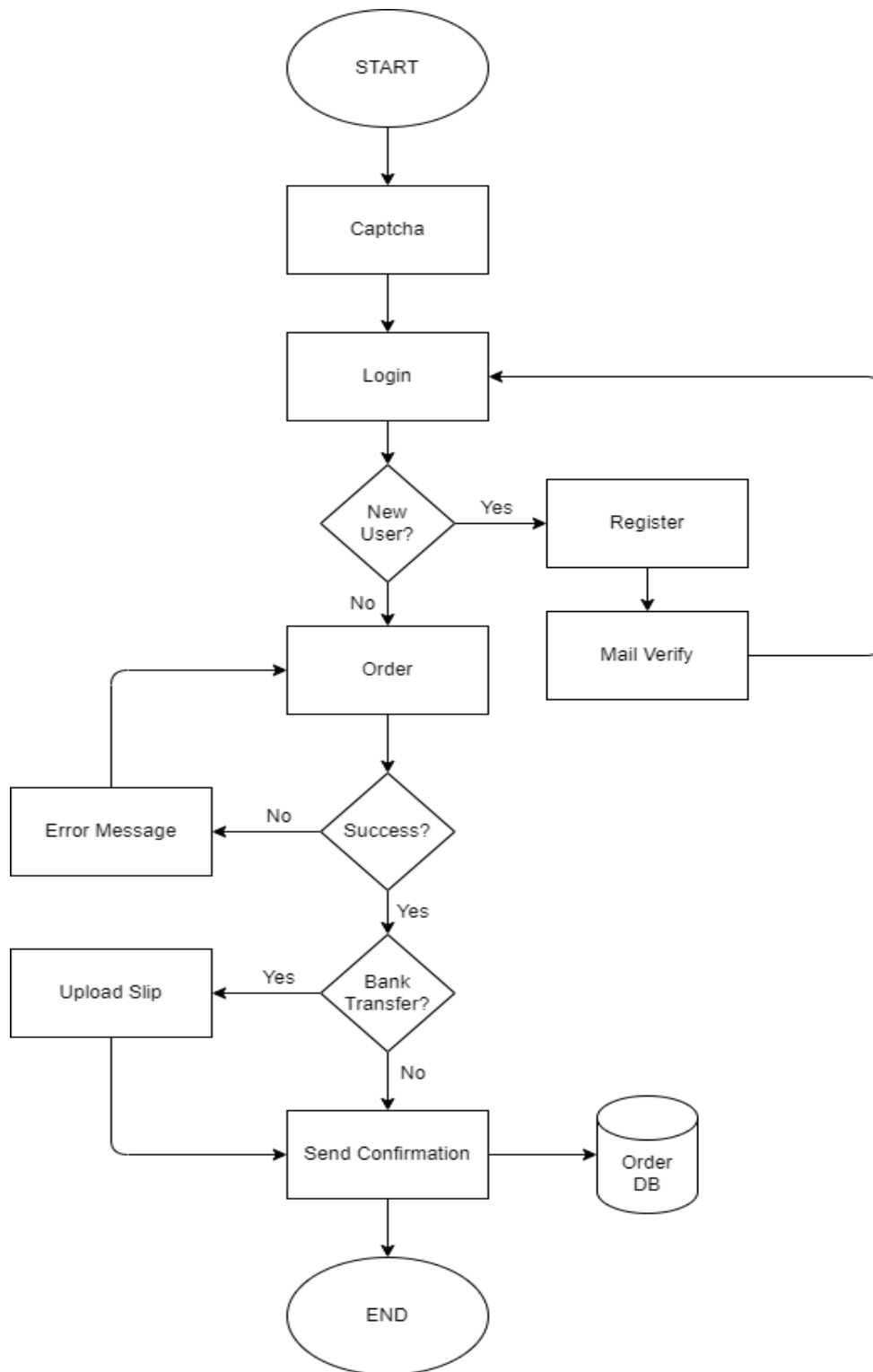## b.   Use Case Diagram of Proposed System
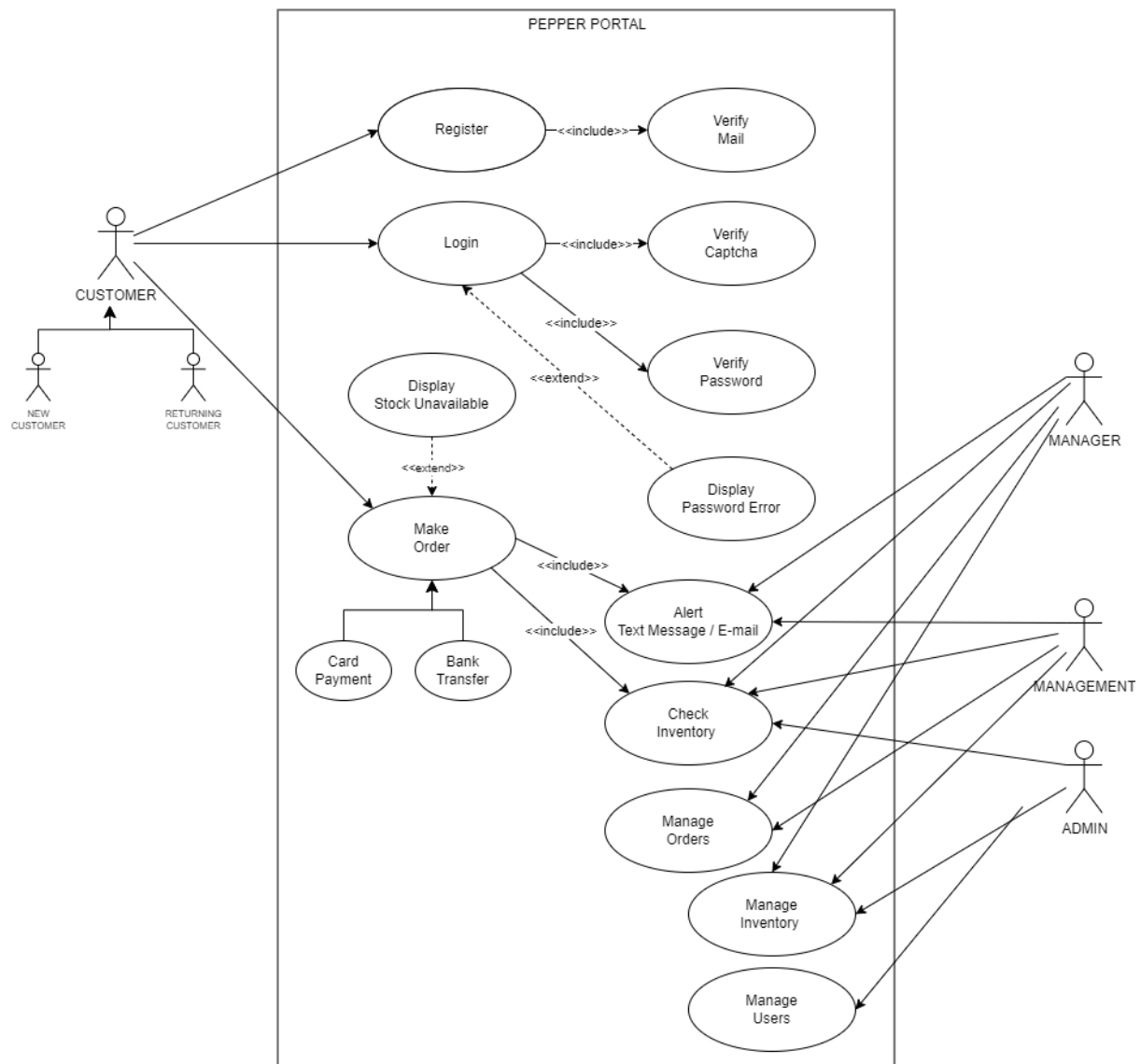
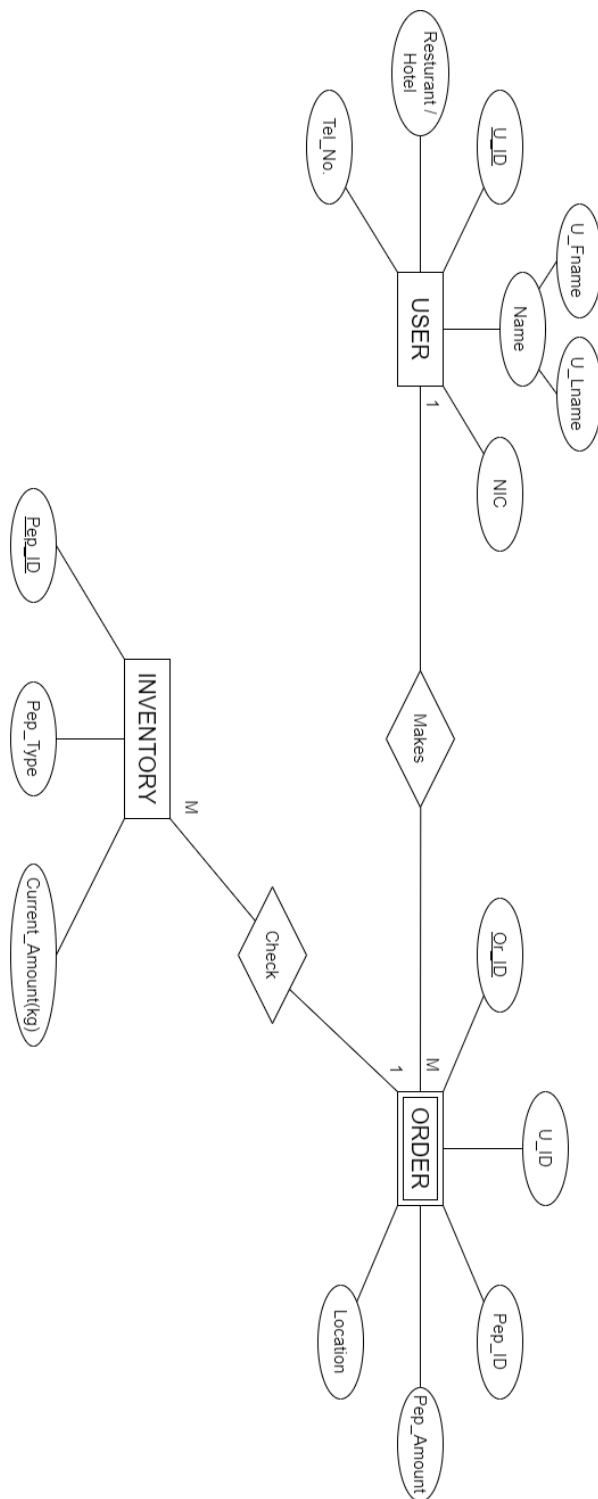## 3.3   Data Flow Diagram of Proposed System (Context)

3.4   Data Flow Diagram of Proposed System (Level 0)

3.5   Flow Chart of Proposed System

3.6 Entity Relationship Diagram of Proposed System

CONCLUSION

In conclusion, Dilthira Associates, a prominent business in the Sri Lankan spice trading field, has built a powerful reputation for delivering premium black pepper for top-tier hotels and restaurants in Kandy. With a commitment to quality, affordability, and personalized service, the company has earned widespread recognition and trust among its clients.

However, the manual order management process currently in place poses challenges, including inefficiencies, inaccuracies, and potential delays. Recognizing the need for improvement, Dilthira Associates has embarked on a project to implement an automated order management system. This system aims to streamline order processing, improve accuracy, enhance efficiency, and elevate the overall customer experience.

The proposed solution involves creating a user-friendly web application that allows clients to place orders online seamlessly. By integrating with inventory data, ensuring data accuracy, planning for future growth, prioritizing user experience, and implementing robust security measures, the automated order system will empower Dilthira Associates to optimize operations, meet client expectations, and position the company for continued success in the competitive market.

This project proposal outlines a strategic initiative that aligns with Dilthira Associates' commitment to excellence and innovation, setting the stage for enhanced productivity, profitability, and customer satisfaction in the years to come.