

Laundry Management System

A project report submitted to the Institute of Information Technology in partial fulfillment of the requirements for the degree of Post Graduate Diploma in Information Technology



Institute of Information Technology

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CANDIDATE'S DECLARATION

I hereby declare that this project work is based on the results found by myself. Materials of work found by other researchers are mentioned by reference. This project, neither in whole nor in part, has been previously submitted for any degree.

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DEDICATION

We dedicate this project/thesis to our honorable parents and younger brother(s) for their meticulous support, continuous inspiration, and unconditional love till the very end of this journey.

ACKNOWLEDGEMENTS

I would like to express our sincere gratitude to everyone who supported and guided us throughout the development of this Laundry Management Project.

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Lastly, we acknowledge the efforts of all those who, directly or indirectly, helped us in completing this project.

Keywords: Laundry Management, Inventory Tracking, Order Processing, Customer Management, Billing System, Automation, Service Management, Database Integration, Laundry Software, Time Efficiency

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ABBREVIATIONS AND SYMBOLS

LMS = Laundry management System

JIT = Just-in-Time

VMI = Vendor Managed Inventory

SMS = short messaging services

Chapter – 1

Introduction

Background Study

In today's fast-paced world, people are increasingly seeking convenient services that save time and effort, and laundry is no exception. Whether it's individual customers, hotels, hospitals, or hostels, the demand for reliable and efficient laundry services has grown significantly. However, traditional laundry operations often rely heavily on manual processes that are time-consuming, error-prone, and difficult to scale. Issues such as misplaced garments, delayed deliveries, incorrect billing, and poor customer service are common in manually managed laundry services.

To address these challenges, technology can play a vital role in modernizing the laundry industry. A Laundry Management System (LMS) is a software-based solution designed to automate and optimize the workflow of laundry operations. Such systems streamline various tasks including order intake, customer registration, clothes tagging, service tracking (washing, drying, ironing, etc.), inventory and detergent usage management, delivery scheduling, and billing. By reducing dependency on manual records, the system ensures data accuracy, better coordination, and faster service.

Moreover, a well-developed LMS can provide additional features such as SMS or email notifications to customers, digital invoices, feedback collection, and performance analytics. These not only improve the overall service quality but also help business owners make informed decisions through data-driven insights.

This project focuses on developing a Laundry Management System that simplifies daily operations, enhances productivity, and ensures customer satisfaction. It aims to serve both small laundry shops and large-scale service providers by offering a user-friendly interface, real-time tracking, and a centralized database for efficient data handling.

1.1 Motivation

The motivation behind this project is the clear gap in efficiency and customer experience found in many local laundry services. A system that ensures accuracy, timely delivery, and easy tracking can greatly enhance both business operations and user satisfaction.

1.2 Objectives

1. To develop a user-friendly interface for managing laundry orders
2. To implement a tracking system for garments through each stage of cleaning
3. To automate invoice generation and billing
4. To manage customer records and order history
5. To provide a reporting module for business insights

Chapter – 2

Literature Review

Inventory management is a well-established discipline in manufacturing and retail, but its principles are equally critical in service-oriented industries like laundromats, hospitality laundries, and industrial textile cleaning. According to [1], effective inventory control in service sectors ensures operational continuity by maintaining optimal stock levels of detergents, chemicals, linens, and spare parts. Unlike traditional retail, laundry businesses face unique challenges such as perishable inventory (e.g., bleach degradation), variable demand (e.g., seasonal hotel linen usage), and machine downtime risks [2].

Studies highlight recurring issues in laundry operations:

- **Stockouts vs. Overstocking:** [3] found that 40% of small-scale laundries experience stockouts of detergents, while 30% over-purchase, leading to waste.
- **Perishability:** Cleaning chemicals lose efficacy over time, requiring FIFO (First-In-First-Out) systems [4].
- **Spare Parts Management:** [5] emphasized that unplanned washer/dryer breakdowns due to missing spare parts account for 15% of laundry downtime.

Recent literature advocates for digital tools to address these challenges:

- **IoT-Enabled Tracking:** Sensors in detergent dispensers and linen carts can automate stock alerts, reducing human error [6].
- **Predictive Analytics:** Machine learning models can forecast demand spikes (e.g., hospital linen demand during flu season) [7].
- **Cloud-Based Systems:** [8] demonstrated that cloud inventory software reduced stock discrepancies by 25% in commercial laundries.
- **Just-in-Time (JIT) Procurement:** Adopted by hotel chains to align detergent orders with occupancy rates [9].
- **Vendor Managed Inventory (VMI):** Chemical suppliers managing restocking for industrial laundries improved fill rates by 18% [10].
- **ABC Analysis:** Prioritizing high-cost items (e.g., enzymatic cleaners) over low-cost ones (e.g., fabric softeners) optimizes capital [11].

While existing studies focus on large-scale laundries [12], fewer address SMEs or emerging economies where manual tracking prevails. Additionally, the environmental impact of inventory waste (e.g., plastic packaging from detergents) remains understudied [13].

The literature underscores that tailored inventory systems—combining automation, demand forecasting, and lean practices—can significantly enhance laundry operations. Future research should explore cost-effective solutions for small laundries and sustainable inventory models.

Chapter – 3

Methodology

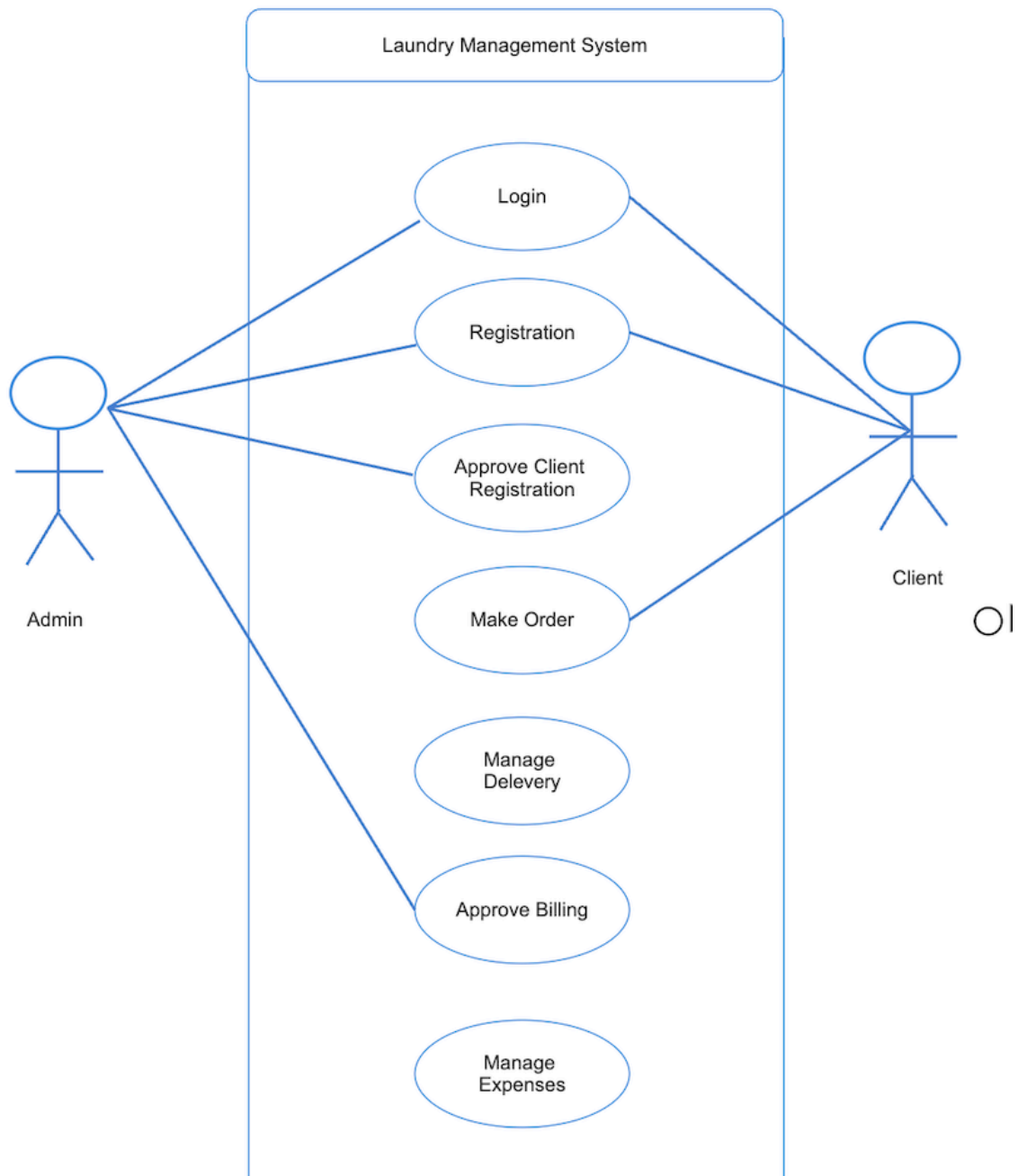
- Orders stock only when needed
- Reduces storage costs and waste
- Requires reliable suppliers
- Classifies inventory by value/importance:
 - **A** (High-value, e.g., industrial detergents)
 - **B** (Moderate-value, e.g., standard detergents)
 - **C** (Low-value, e.g., lint rollers)
- Focuses control efforts efficiently
- Ensures oldest stock is used first
- Critical for perishable chemicals (bleach, stain removers)
- Prevents spoilage and waste
- Uses historical data to predict needs
- Adjusts for seasonal demand (e.g., hotel occupancy)
- Machine learning improves accuracy
- Regular process reviews
- Staff feedback for optimization
- Small, incremental changes

3.1 Analysis

Laundry management system enables you to communicate seamlessly with the customers via messaging systems. It prevents employees from gaining access to sensitive business data. Dry cleaning POS software sets your customized services, garment lists, and price list. The software keeps track of workload to give a fixed delivery rate, does automatic email and short messaging services (SMS) reminders to the customer.

The following Figure 1 illustrates major interactions between the Client, Admin and the system model:

3.2 Design



Software Specifications

Required Software	Version	Used to
Java, Spring boot	8.0	Create an Laundry Management System
Apache Tomcat	9.0	As Web server
MySql Database Server	8.5	To store data

Hardware Specification

Hardware Requirement	Value
Processor XEON Processor	Minimum 4 core
RAM	8 GB
Storage	Minimum 10 GB Free Space

Database Design

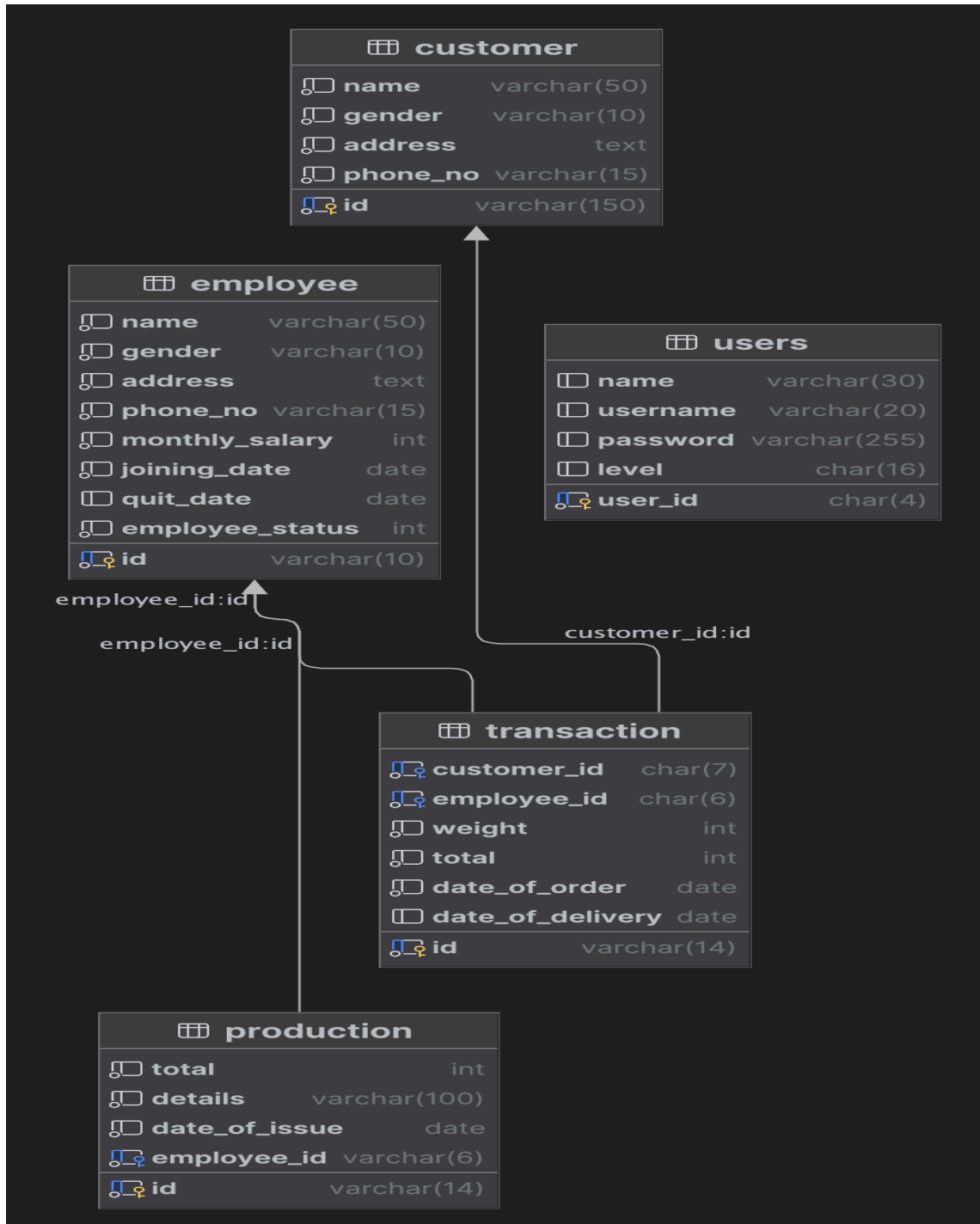


Figure 2: Entity Relationship Diagram for the proposed system

Software Implementation

The front end and back end are the two main parts of the proposed software system.

Front end (Client Side)

Bootstrap is an open-source front-end framework for web development created by Twitter and is now maintained by Bootstrap Community. It provides a collection of pre- designed HTML, CSS, and JavaScript components and tools to help developers create responsive and visually appealing websites and web applications quickly and efficiently.

Back end (Server Side)

The server, data access layer, and other computational logic of the system are described in the backend. Java, Spring boot Spring boot was used in the design of the proposed system's backend. The database for the system is being developed using MySQL. The server side was run using the Apache Tomcat Server Software.

Chapter – 4

Result and Discussion

4.1 Login Page

In Figure 4.1 login page, the user provides their unique authentication credentials

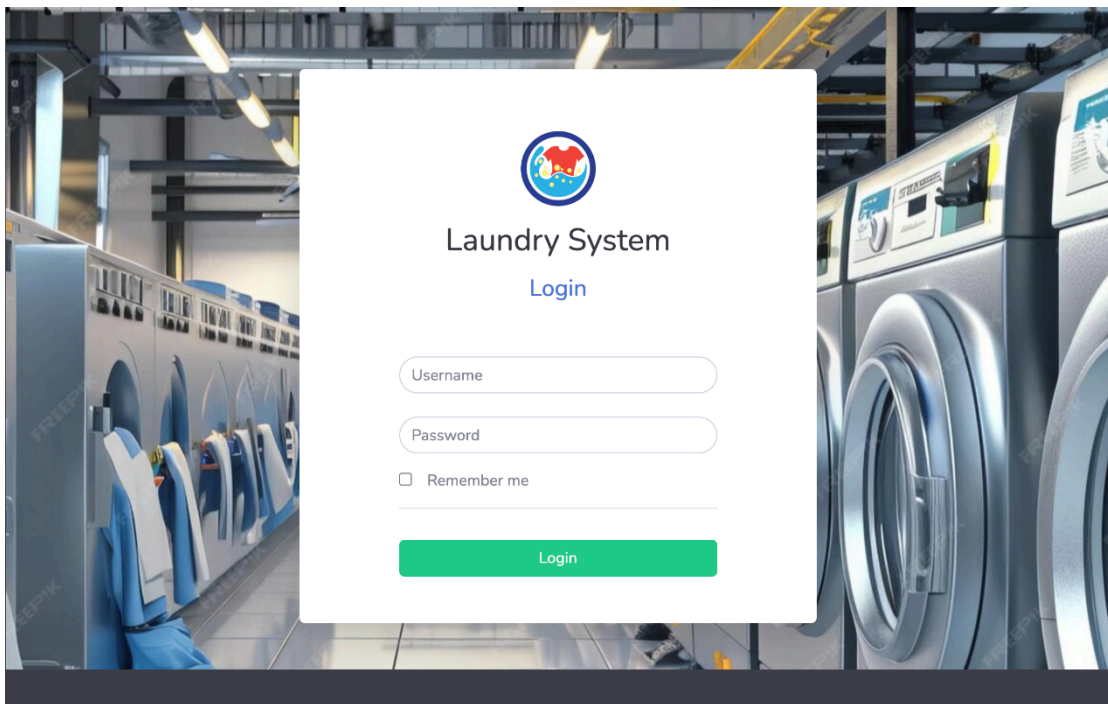


Figure 4.1: Login Page

It's the login form in the module above. The form is designed with the help of the Bootstrap Modal function, which makes it appear smooth and user-friendly.

4.2 Administrator Dashboard

In Figure 4.2 Admin dashboard page, the admin can see the sales status

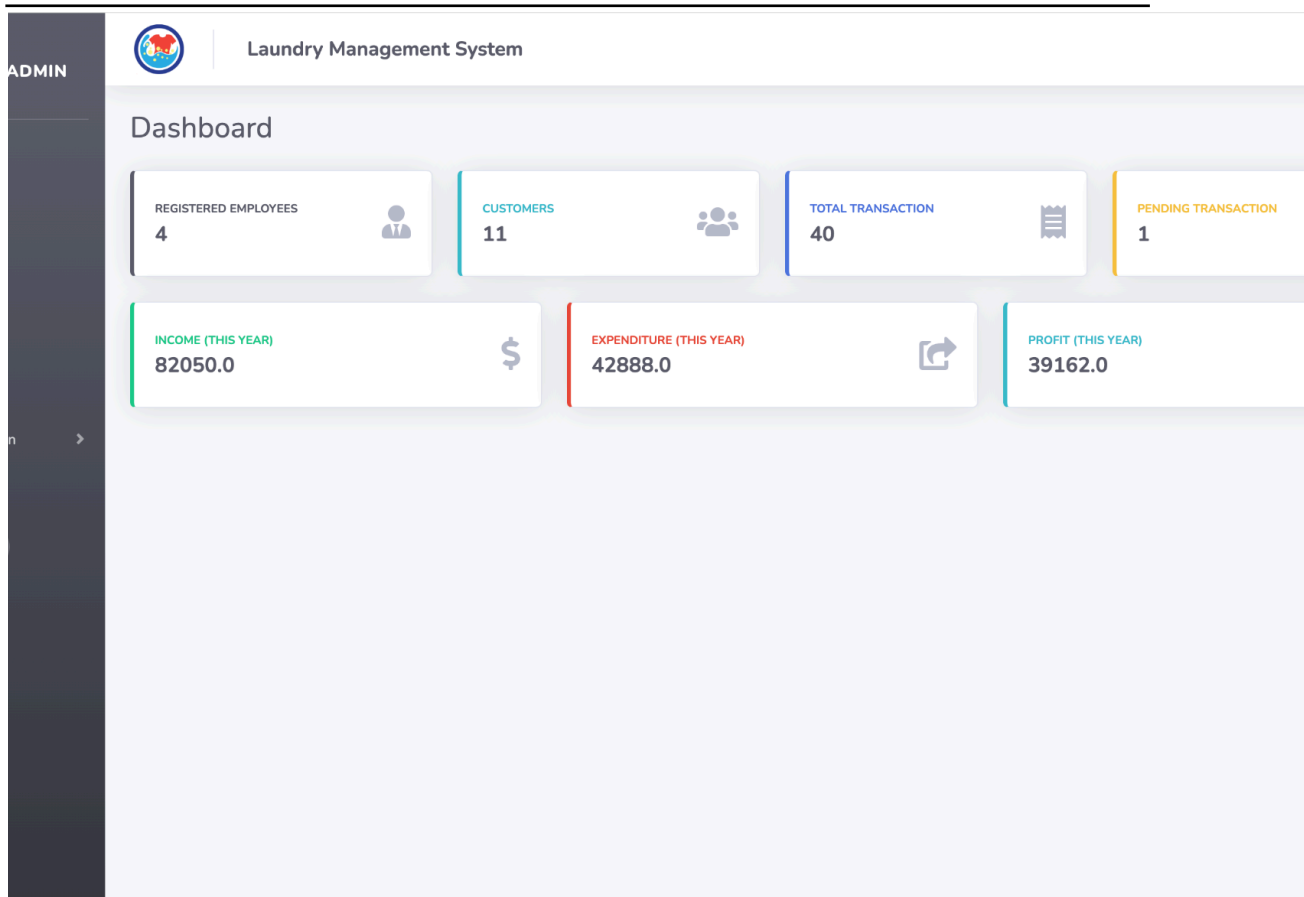


Figure 4.2: Admin Dashboard

4.3 Customer Creation

In Figure 4.3 Customer Information create page, users can add the information.

The screenshot shows the 'Customer Data Input' form in the 'Laundry Management System'. The form is a modal window with the following fields:

- ID:** P0011
- Customer's Name:** Customers Name
- Gender:** --Please Select--
- Address:** Address
- Mobile No.:** Customer Mobile Number

At the bottom of the form are two buttons: 'Cancel' (red) and 'Save' (green). The background shows a sidebar with navigation links (Dashboard, Employees, Customers, Order, Expenditure, Reports Section, Logout) and a table of customer records with columns for Contact and Action.

Figure 4.3: Customer Create Page

The above-mentioned page allows Admin or employee to input the customer information at a glance. Selected users can edit customer information if required. Customer Add, Edit, Delete and view are controlled with user wise access permission.

4.4 Customer Information

In Figure 4.4 Customer Information page, Employees can see the information.

Customer Data [+ Add Customers](#)

10 entries per page Search:

#	ID	Customer's Name ^(M/F)	Address	Contact	Action
1	P001	Brenda Roach	3641 Frum Street	081243568387	Edit Delete
2	P0010	Larry Meuller	85 Stom Avenue	72566600150	Edit Delete
3	P002	Gerald Whisler	1005 Heliport Loop	08234454345	Edit Delete
4	P003	Johnny Smith	4327 Nuzum Court	082284003073	Edit Delete
5	P004	Misti R Hurd	398 Central Avenue	082282553856	Edit Delete
6	P005	Antonio Waree	704 Brown Street	08236749827	Edit Delete
7	P006	Amber Slank	1518 Wilkinson Court	085634872555	Edit Delete
8	P007	Joseph Howie	2254 Norma Avenue	085544338866	Edit Delete
9	P008	James Smith	7125 Demo Street	01478541000	Edit Delete
10	P009	Karen Peige	4552 Poling Farm Road	74100025690	Edit Delete

Showing 1 to 10 of 10 entries

« 1 »

Figure 4.4: Customer Information

The above-mentioned page allows Admin or employee to input and view the customer information at a glance. Selected users can edit customer information if required. Customer Add, Edit, Views are controlled with user wise access permission.

4.5 Employee Creation

In Figure 4.5 Employee Information creation page, Admin can create the employee information.

The screenshot displays the 'Employee Create Page' within the 'LMS: ADMIN' dashboard. The left sidebar contains navigation links: Dashboard, Employees, Customers, Transactions, Expenditure, Reports Section, and Logout. The main content area features a form for creating a new employee. The form fields are as follows:

- ID:** A text input field containing 'K008'.
- Employee Name:** A text input field.
- Gender:** A dropdown menu with 'Male' selected.
- Address:** A text input field containing 'Employee Address'.
- Mobile Number:** A text input field containing 'Employee Mobile Number'.
- Salary per month:** A text input field containing 'Employee Salary per month'.
- Join Date:** A date input field with the placeholder 'dd/mm/yyyy' and a calendar icon.
- Stop Date:** A date input field with the placeholder 'dd/mm/yyyy' and a calendar icon.

At the bottom of the form are two buttons: a red 'Cancel' button and a green 'Save' button. To the right of the form, a table is partially visible with columns for 'End Date' and 'Actions'. The table contains three rows, each with the date '2025-04-30 00:00:00.0' and two action icons (edit and delete). A green '+ Add Employees' button is located above the table.

Figure 4.5: Employee Create Page

The above-mentioned page allows Admin to input the employee information at a glance. Selected users can edit employee information if required. Employee Add, Edit, Delete and view are controlled with user wise access permission.

4.6 Employee Information

In Figure 4.6 Employee Information page, Admin can see the information.

The screenshot displays the 'Employee Data' page in the 'Laundry Management System'. On the left is a dark sidebar with navigation options: Dashboard, Employees, Customers, Transactions, Expenditure, Reports Section, and Logout. The main content area has a header with 'Employee Data' and a '+ Add Employees' button. Below this is a table with columns: #, ID, Employee (M/F), Address, Contact, Salary, Join Date, End Date, and Actions. The table contains three entries. At the bottom of the table area, it says 'Showing 1 to 3 of 3 entries' and includes a pagination control showing '1'.

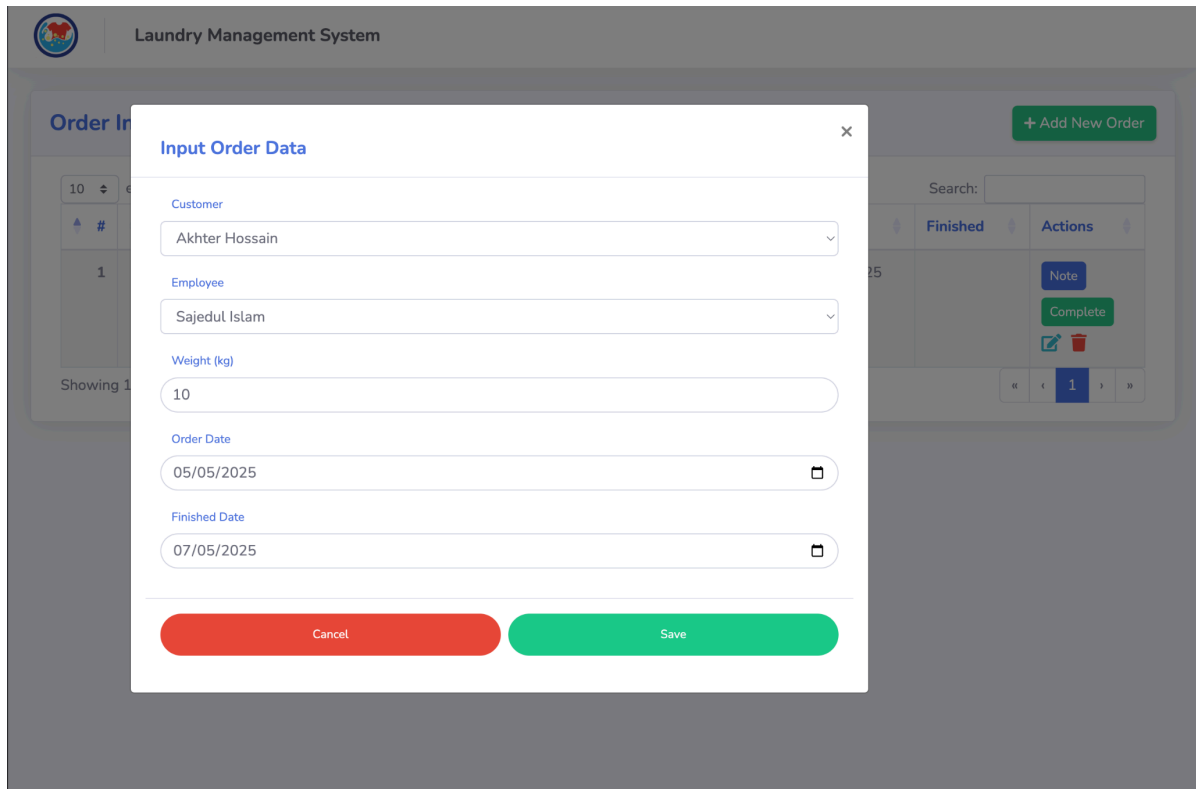
#	ID	Employee (M/F)	Address	Contact	Salary	Join Date	End Date	Actions
1	K004	Christine Moore	8600 Allace Avenue	08122334458	1400.0	2020-02-03 00:00:00.0	2025-04-30 00:00:00.0	
2	K005	Clea Randolph	3914 Dennison Street	78500014714	1600.0	2021-05-04 00:00:00.0	2025-04-30 00:00:00.0	
3	K006	Thomas	4572 Emily Drive	71400000250	1560.0	2021-08-01 00:00:00.0	2025-04-30 00:00:00.0	

Figure 4.6: Employee Information

The above-mentioned page allows Admin to input and view the employee information at a glance. Selected users can edit employee information if required. Employee Add, Edit, Views are controlled with user wise access permission.

4.7 Order Creation

In Figure 4.7 Order Creation page, Admin, Customer or Assigned Employee can create the order information.



The screenshot displays the 'Laundry Management System' interface. A modal window titled 'Input Order Data' is open, allowing users to create or edit order information. The form includes the following fields:

- Customer:** A dropdown menu with 'Akhter Hossain' selected.
- Employee:** A dropdown menu with 'Sajedul Islam' selected.
- Weight (kg):** A text input field containing '10'.
- Order Date:** A date picker showing '05/05/2025'.
- Finished Date:** A date picker showing '07/05/2025'.

At the bottom of the modal are two buttons: a red 'Cancel' button and a green 'Save' button. The background shows a blurred view of the main system interface, including a table with columns for 'Finished' and 'Actions', and a '+ Add New Order' button.

Figure 4.7: Order Create Page

The above-mentioned page allows Admin to input and view the order information at a glance. Selected users can create or edit order information if required. Order Add, Edit, Views are controlled with user wise access permission.

4.8 Order Information

In Figure 4.8 Order Information page, Admin or Employee can see the information.

LMS: ADMIN

Dashboard

Employees

Customers

Order

Expenditure

Reports Section

Logout

Laundry Management System

Order Information

+ Add New Order

10 entries per page

Search:

#	Tx. ID	Customer	Employee	Weight	Total	Order	Finished	Actions
1	1746460649140	K004 Christine Moore	P007 Joseph Howie	200	6000b	05-05-2025		<div>Note</div> <div>Complete</div> <div></div>
2	1746462749002	K0010 Sajedul Islam	P0011 Akhter Hossain	10	300b	05-05-2025		<div>Note</div> <div>Complete</div> <div></div>
3	1746462797032	K004 Christine Moore	P008 James Smith	5	150b	05-05-2025		<div>Note</div> <div>Complete</div> <div></div>
4	1746462823216	K006 Thomas	P006 Amber Slank	6	180b	05-05-2025		<div>Note</div> <div>Complete</div> <div></div>

Showing 1 to 4 of 4 entries

1

Figure 4.8: Order Information

The above-mentioned page allows Admin to input and view the order information at a glance. Selected users can edit order information if required. Order Add, Edit, Views are controlled with user wise access permission.

4.9 Payment Voucher Information

In Figure 4.9 Payment voucher page, Users can generate payment voucher information.

LAUNDRY Management SYSTEM	
Payment Voucher	
Transaction No.	1746460367558
Employee	Sajedul Islam
Order Date	2025-05-05 00:00:00.0
Customer	Akhter Hossain
Laundry Weight	50KG
Cost	30৳ Per KG
Total	1500৳
Thank you for using our services. Looking forward to your next visit.	

Figure 4.9: Voucher Generation

The above-mentioned page allows Admin to generate and view the voucher information at a glance. Selected users can generate and print voucher information if required. Voucher generation is controlled with user wise access permission.

4.10 Expense Creation

In Figure 4.10 Expense Creation page, User can create the information.

The screenshot displays the 'Laundry Management System' interface. A modal window titled 'Expenditure Data Input' is centered on the screen. The modal contains the following fields:

- Detail:** A text input field labeled 'Expenditure Details'.
- Total:** A text input field labeled 'Total Exp.'.
- Employee:** A dropdown menu with the placeholder text '--Please Select--'.
- Expenditure Date:** A date input field with the placeholder text 'dd/mm/yyyy' and a calendar icon.

At the bottom of the modal are two buttons: a red 'Cancel' button and a green 'Save' button. The background shows a table with columns for 'Employee' and 'Action'. The table contains several rows of data, including employee IDs like K000 and K004. A search bar is visible at the top right of the table area.

Figure 4.10: Expense Create Page

The above-mentioned page allows Admin to input the expense information at a glance. Selected users can edit expense information if required. Expense Add, Edit, Views are controlled with user wise access permission.

4.11 Expense Information

In Figure 4.11 Expense Information page, User can view the information.

Expenditure Data

10 entries per page Search:

#	Expenditure ID	Details	Total	Date	Employee	Action
1	1746208335266	Employee Salary Payment for the month of April 2025	10000b	02-05-2025	K0010 Sajedul Islam	Edit Delete
2	1746208723677	Misc Expense	5000b	01-05-2025	K0010 Sajedul Islam	Edit Delete
3	1746209497023	Employee Salary Payment for the month of April 2025	7888b	03-05-2025	K004 Christine Moore	Edit Delete
4	20210130093105	Washers Bought	5503b	01-01-2021	K004 Christine Moore	Edit Delete
5	20210130110802	Electricity Bills	466b	16-06-2021	K004 Christine Moore	Edit Delete
6	1746207424341	Employee Salary Paymen	10000b	02-05-2025	K005 Clea Randolph	Edit Delete
7	1746208264582	Employee Salary Payment Apr 2025	10000b	02-05-2025	K005 Clea Randolph	Edit Delete

Showing 1 to 7 of 7 entries

1

Figure 4.11: Expense Information

The above-mentioned page allows Admin to view the expense information at a glance. Selected users can edit expense information if required. Expense Edit, Delete and Views are controlled with user wise access permission.

Chapter – 5

Conclusion

5.1 Overview

The Laundry Management System developed in this project meets its intended objectives by providing a streamlined and automated solution for managing laundry services. It improves accuracy, saves time, and enhances customer experience.

5.2 Future Enhancements

- Online booking and payment integration
- Mobile app version
- Notification system (SMS/Email)
- RFID/NFC garment tracking
- Multi-branch management

5.3 Limitations

We tried to do our level best to establish the product, but due to lack of environment and necessary support it has some limitations. We hope these limitations are considerable. Some limitations are listed below.

- No SMS and email service in the proposed system.
- Only Customer, Employee, and order and expense are included.
- The online payment system isn't available currently.

APPENDIX/APPENDICES

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Project Source Code:

https://github.com/programmersohag/laundry_ms