

Major Project [4th Semester]

(DealDepot – Inventory Management System)

Project Synopsis

Submitted by:

Project Group – 1 (COE-UA 23-26 Batch)

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In partial fulfillment of the requirements for the award of the diploma in
COMPUTER ENGINEERING



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INTRODUCTION

Inventory management is a crucial aspect of businesses that deal with the sale and storage of goods. Traditional inventory management methods often involve manual record-keeping, which can lead to inaccuracies, misplaced stock, and inefficient tracking of sales and purchases. Managing stock manually increases the chances of data redundancy, miscalculated sales, and operational delays. As businesses grow and the volume of transactions increases, a computerized system becomes essential to ensure seamless and error-free inventory management.

To address these challenges, we propose the development of DealDepot – An Inventory Management System, which aims to digitize core inventory operations such as stock management, sales processing, and attendance tracking for employees. This system will be a web-based application that enables administrators to monitor inventory, track daily sales, and manage employee attendance efficiently. The system will be developed using FastAPI (Python) for backend processing, with HTML, CSS, JavaScript, and Bootstrap for the frontend, while CSV files will be used for data storage, providing a lightweight and efficient alternative to complex databases.

The primary objective of this project is to automate inventory tracking, minimize human errors, and enhance operational efficiency. The system will provide role-based access, ensuring that administrators have control over stock and employee management, while employees can focus on sales processing through the Point of Sale (POS) system. With features like automated report generation, downloadable sales and attendance records in PDF format, and real-time inventory updates, the system will significantly reduce manual workload and enhance overall business operations.

By implementing DealDepot, businesses will transition to a fully computerized inventory system, improving stock accuracy, reducing errors, and streamlining sales transactions. This project aims to enhance business efficiency, ensure better decision-making through data-driven insights, and provide a user-friendly platform for managing inventory and sales effectively.

PROBLEM STATEMENT

Effective inventory management is essential for businesses to maintain smooth operations and prevent financial losses. Traditional methods of managing inventory and sales often involve manual record-keeping, which can lead to errors, inefficiencies, and mismanagement of stock. Business owners and employees frequently encounter issues such as inaccurate stock levels, misplaced records, difficulty in tracking sales, and unorganized attendance management. These problems can result in overstocking, understocking, revenue loss, and inefficient workforce monitoring.

Additionally, without an automated system, generating reports for sales trends, employee attendance, and stock updates becomes a time-consuming and error-prone process. Manual tracking does not provide real-time insights, making it difficult for businesses to make informed decisions regarding inventory replenishment and employee performance. Furthermore, the lack of a structured Point of Sale (POS) system can lead to delays in transactions, inefficient billing, and poor customer experience.

To address these challenges, there is a need for an automated Inventory Management System that can streamline stock management, track sales efficiently, and automate attendance records. A system like DealDepot can provide a centralized platform for inventory control, sales processing, and employee management, ensuring accuracy, efficiency, and ease of access to critical business data. This project aims to eliminate human errors, reduce operational workload, and enhance overall business productivity through a web-based, role-based inventory management system.

PROPOSED SOLUTION

To overcome the challenges associated with manual inventory and sales management, we propose the development of DealDepot – An Inventory Management System. This system will serve as a web-based platform that automates inventory tracking, sales processing, and employee attendance management, ensuring smooth and efficient business operations.

The system will feature role-based access control, where:

- Administrators can manage inventory, track daily sales, monitor employee attendance, sales and generate reports in PDF format.
- Employees will be able to mark attendance and use the Point of Sale (POS) system to generate bills and process sales transactions.

Key Features of DealDepot:

1. Login & Authentication System:
 - Secure login system for both admin and employees to prevent unauthorized access.
2. Inventory Management Module:
 - Admins can add, update, and delete products in stock.
 - Real-time inventory tracking to ensure accurate stock levels.
3. Sales Management Module:
 - Employees can generate sales transactions through a POS interface.
 - Payment gateway integration for seamless transactions.
 - Bill printing functionality for customers.
4. Attendance Management Module:
 - Employees must mark attendance at login.
 - Admins can view and filter attendance records based on employee code and date.
5. Automated Reporting System:
 - Admins can filter and download sales and attendance reports in PDF format for record-keeping.
 - Daily sales insights help businesses track performance and make informed decisions.

TECHNOLOGY STACK

The DealDepot – Inventory Management System is developed using a combination of modern web development technologies, focusing on simplicity and efficiency. It utilizes CSV-based storage instead of a complex database and provides essential inventory and sales management features. Below is a detailed breakdown of the technology stack used in DealDepot:

1. Frontend (User Interface & Client-Side Development)

The frontend of DealDepot ensures a smooth user experience and provides all the necessary functionalities for inventory and sales management. It is developed using:

- ◆ HTML (HyperText Markup Language)
 - Structures the web pages, including the login page, POS system, and inventory management screens.
 - Forms the base for the user interface.
- ◆ CSS (Cascading Style Sheets)
 - Styles the application, ensuring a clean and professional UI.
 - Helps in designing a responsive layout for different screen sizes.
- ◆ JavaScript (JS)
 - Adds dynamic functionality such as real-time updates, form validation, and event handling.
 - Handles POS operations, sales calculations, and frontend data processing.
- ◆ Bootstrap
 - A CSS framework used to design a mobile-friendly and visually appealing UI.
 - Provides pre-built components like buttons, tables, and forms for faster development.

2. Backend (Server-Side Development & API Management)

The backend of DealDepot is built using FastAPI, handling sales processing, inventory management, and report generation.

- ◆ FastAPI (Python)
 - A lightweight and high-performance web framework for handling inventory, sales, and attendance operations.
 - Manages data retrieval, updates, and report generation.
 - Provides a fast and efficient API for handling requests from the frontend.

3. Data Storage & Processing

DealDepot does not use traditional databases like MySQL or MongoDB. Instead, it utilizes CSV files for lightweight and easy-to-manage data storage.

- ◆ CSV Files

- Used for storing inventory records, employee attendance logs, and sales transactions.
- Eliminates the need for a complex database setup, making the system lightweight.
- Can be easily managed and edited when required.

- ◆ Pandas (Python Library)

- Used for manipulating and analyzing CSV-based data.
- Helps in filtering records, calculating sales, and managing inventory data.

4. Report Generation & File Handling

To allow administrators to download sales and attendance reports, DealDepot uses:

- ◆ jsPDF (JavaScript Library)

- Generates PDF reports for sales and attendance tracking.
- Allows users to download and print reports directly from the web interface.

- ◆ OS Module (Python)

- Used for file handling operations, such as reading and writing data to CSV files.

5. Point of Sale (POS) & Payment Gateway

The Point of Sale (POS) system is a key component of DealDepot, allowing employees to process sales and generate bills.

- ◆ Custom Payment Gateway (PG)

- Instead of using third-party services like Razorpay or Stripe, DealDepot features a custom-built payment gateway.
- This internal system ensures seamless payment processing without relying on external APIs.

- ◆ Bill Printing

- Employees can print invoices after a sale using JavaScript's built-in print functionality.
- Ensures that customers receive a physical bill for every transaction.

SYSTEM FLOW

1. User Login & Authentication

- When a user visits the system, they are first directed to login page.
- They can log in as Admin or Employee.
- The authentication process (handled in Python - FastAPI) verifies credentials
- Upon successful login, they are redirected based on their role:
 - Admin → Admin Dashboards
 - Employees → Employee Dashboards

2. Admin Functionalities

Once logged in, an Admin can:

A. View Reports

- View daily sales and attendance reports.
- Filter sales by date and attendance by employee ID and date.
- Download reports as PDF.

B. Manage Inventory

- Add new products and delete existing ones.

C. Manage Employees

- Add new employees and remove existing ones.

3. Employee Functionalities

Once logged in, an Employee can:

A. Mark Attendance

- Attendance is logged at the start of the shift.

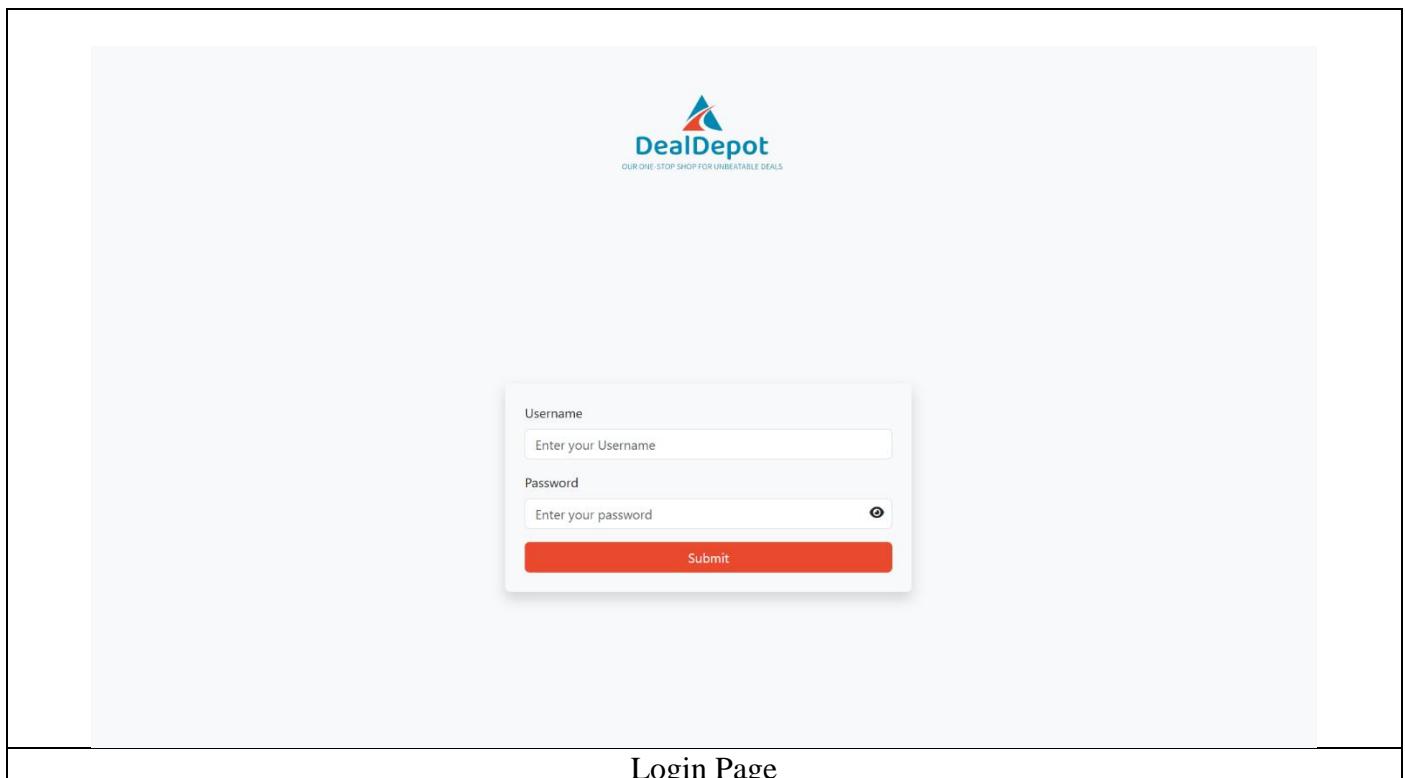
B. Process Sales

- Employees generate sales using the POS system.
- Sales receipts can be printed.

C. Payment Processing

- Uses a custom-built payment gateway for transactions.

UI Design



The screenshot shows the login page for the DealDepot system. At the top center is the DealDepot logo with the tagline "OUR ONE-STOP SHOP FOR UNBEATABLE DEALS". Below the logo is a login form. The form has two input fields: "Username" and "Password", both with placeholder text "Enter your Username" and "Enter your password" respectively. To the right of the password field is a small eye icon for password visibility. Below the input fields is a red "Submit" button.

Login Page



The screenshot shows the Admin Panel of the DealDepot system. At the top center is the "Home" title. On the left side, there is a sidebar with the DealDepot logo and navigation links: "Home" (which is highlighted in blue), "Inventory Management", "Sales Records", "Employee Attendance Records", and "Manage Employees". At the bottom of the sidebar are "Admin" and "Sign Out" buttons. In the main content area, there is a summary box containing the following information: "Date: 2025-03-05", "Today's Sales: ₹0", and "Total Attendance: 0".

Admin Panel



Inventory Management

[All](#)
[Groceries](#)
[Household Essentials](#)
[Personal Care & Hygiene](#)
[Baby & Kids Products](#)
[Health & Wellness](#)
[Stationery & Books](#)

[Electronics & Accessories](#)
[Clothing & Footwear](#)
[Beauty & Cosmetics](#)
[Home & Kitchen Essentials](#)
[Automotive Accessories](#)
[Pet Supplies](#)

[Sports & Fitness](#)
[Home Improvement & Hardware](#)
[Travel & Luggage](#)
[Luxury & Fashion Accessories](#)
[Toys & Games](#)
[Party & Festive Supplies](#)

[Gardening & Outdoor Supplies](#)
[Industrial & Office Supplies](#)
[Special Sections \(Seasonal & Occasional\)](#)
[Books & Media](#)



Aashirvaad Whole Wheat Atta
Category: Groceries
Price: ₹ 250

[Delete](#)



Daawat Basmati Rice
Category: Groceries
Price: ₹ 180

[Delete](#)



Tata Salt
Category: Groceries
Price: ₹ 20

[Delete](#)



Fortune Sunflower Oil
Category: Groceries
Price: ₹ 120

[Delete](#)



MDH Chana Masala
Category: Groceries



Patanjali Honey
Category: Groceries



Kissan Mixed Fruit Jam
Category: Groceries



Maggi 2-Minute Noodles
Category: Groceries

 Admin
[Sign Out](#)

Admin Panel



Sales Records

Filter by Date:

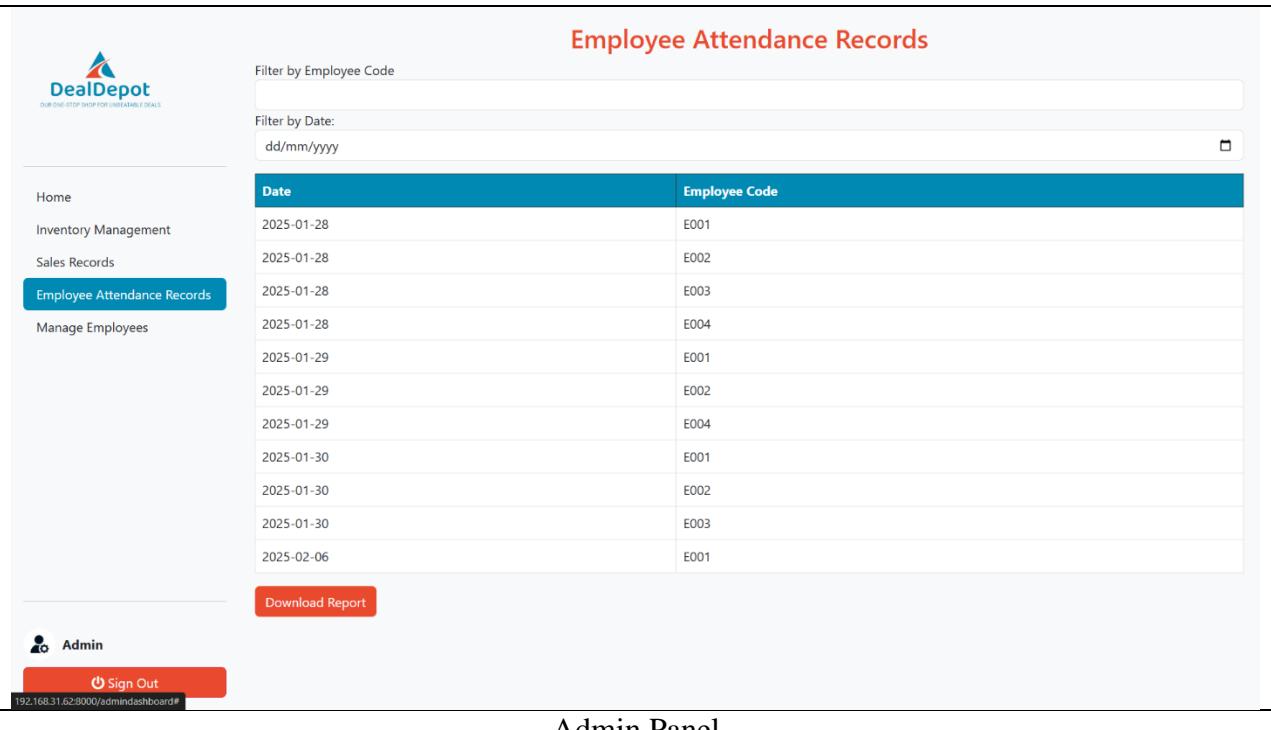
[Download Report](#)

Date	Employee Code	Bill Number	Total Cost
2025-01-30	EMP001	1001	500
2025-01-30	EMP002	1002	700
2025-02-06	EMP003	1003	200

 Admin
[Sign Out](#)

Admin Panel

Employee Attendance Records

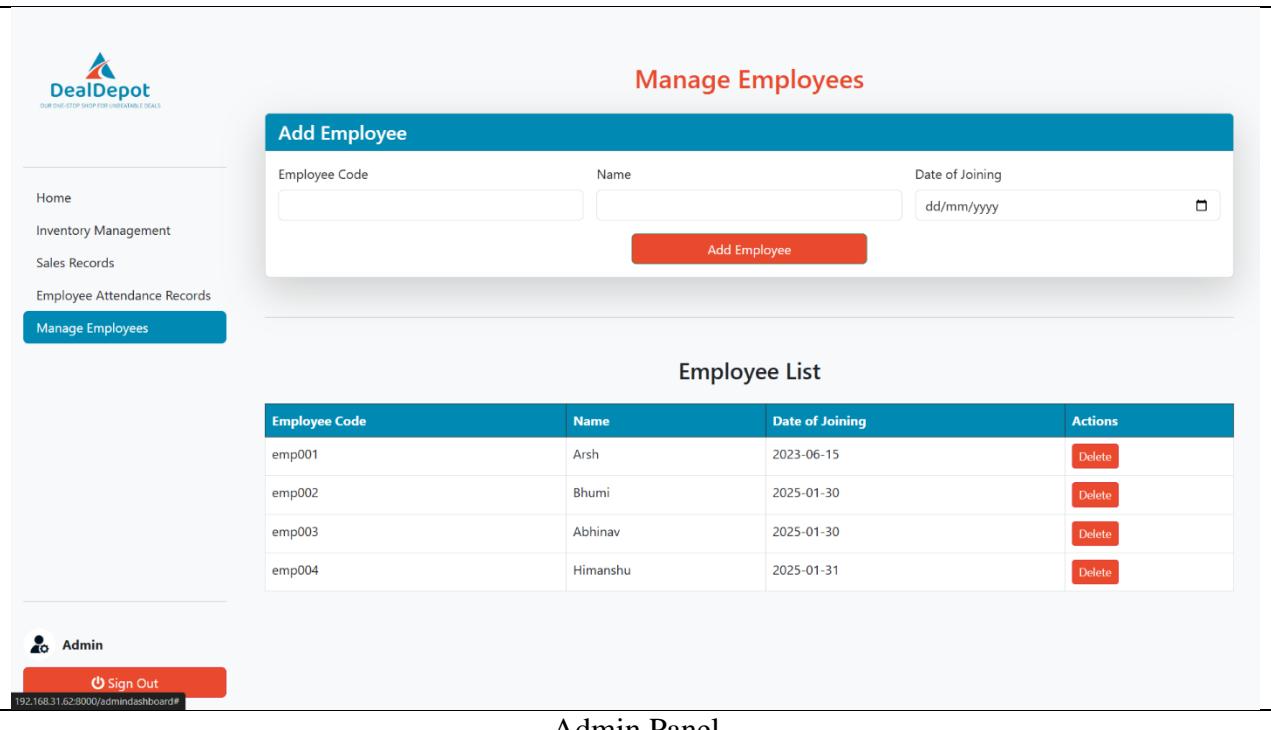


The screenshot shows the 'Employee Attendance Records' section of the admin panel. It features a table with columns for Date and Employee Code, containing data from January 28 to February 6, 2025. A 'Download Report' button is located below the table.

Date	Employee Code
2025-01-28	E001
2025-01-28	E002
2025-01-28	E003
2025-01-28	E004
2025-01-29	E001
2025-01-29	E002
2025-01-29	E004
2025-01-30	E001
2025-01-30	E002
2025-01-30	E003
2025-01-30	E001

Admin Panel

Manage Employees



The screenshot shows the 'Manage Employees' section of the admin panel. It includes an 'Add Employee' form with fields for Employee Code, Name, and Date of Joining, and a large 'Add Employee' button. Below the form is an 'Employee List' table with columns for Employee Code, Name, Date of Joining, and Actions (Delete button).

Employee Code	Name	Date of Joining	Actions
emp001	Arsh	2023-06-15	Delete
emp002	Bhumi	2025-01-30	Delete
emp003	Abhinav	2025-01-30	Delete
emp004	Himanshu	2025-01-31	Delete

Admin Panel



DealDepot Payment Gateway

UPI Cards Net Banking Wallets

Pay via UPI



Cancel
Payment

Confirm Payment

Payment Gateway

CONCLUSION

The DealDepot – Inventory Management System is currently under development with the goal of simplifying inventory management, sales tracking, and employee attendance monitoring. The project aims to enhance operational efficiency by providing a user-friendly web interface for both administrators and employees.

Using FastAPI for the backend and CSV files for data storage, the system remains lightweight and efficient. The Point of Sale (POS) system facilitates smooth transactions, while jsPDF is used for generating reports in PDF format. Additionally, a custom-built payment gateway (PG) ensures seamless transaction processing.

Although the project is still in progress, the core functionalities—admin dashboard, employee attendance tracking, inventory management, and sales reporting—have been successfully implemented. Moving forward, we plan to improve security features, refine the UI/UX, and optimize system performance before final deployment.

This project is a collaborative effort by the following team members:

Team Member	Roll Number
Adarsh Dhiman	230150800102
Arsh	230150800113
Bhumi	230150800116
Abhinav	230150800101
Himanshu	230150800122

As development continues, we aim to refine DealDepot into a fully functional, reliable, and efficient inventory management solution, providing real-world benefits for businesses handling stock, sales, and employee management.
