MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS

BACHELOR OF COMPUTER SCIENCE

COURSE NAME: WEB APPLICATION DEVELOPMENT

CODE: CSC 2207

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INVENTORY MANAGEMENT SYSTEM (WEB-BASED APPLICATION)

CASE STUDY: PATTY'S STORE

BY

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PROJECT REPORT 23RD MAY,2024

Table of Contents

List of figures

List of tables

Introduction

In this report, I provide a comprehensive overview of my web development project, in which I developed an Inventory Management system website using Django as the backend framework. This project allowed me to immerse myself in web development, from design, development to functional implementation, while integrating the power of Django.

Project Background

Technology plays a significant role in various fields, including the business sector. Currently, manual systems are prevalent in stores, leading to errors and increased workload. The Inventory Management System is designed to enhance accuracy, speed, and efficiency.

Problem statement

Patty's Store currently relies on a paper-based system, making it challenging to manage inventories, track orders, and handle employee details.

Main Objective

The main objective is to design and implement a computerized inventory management system to improve efficiency at the store.

Motivation

Managing a retail shop efficiently is a challenging task that requires constant attention to detail, accurate record-keeping, and effective inventory control. My dad's shop (Patty's Store), like many small businesses, has been facing difficulties with manual inventory management, leading to challenges such as stockouts, overstocking, and inefficient tracking of products. These issues not only affect the shop's operational efficiency but also impact customer satisfaction and profitability.

The Inventory Management System project is motivated by the desire to transform Patty's Store into a more efficient, customer-focused, and growth-oriented business.

Literature review

No	Literature	Strength	Gap	Solution
1	Jayanth, S., Poorvi, M.B. and Sunil, M.P., 2017. Inventory management system using IOT. In *Proceedings of the First International Conference on Computational Intelligence and Informatics: ICCII 2016* (pp. 201-210). Springer Singapore.	Uses IOT	Expensive in terms of purchasing equipment	Develop a web-based solution
2	Madamidola, O.A., Daramola, O.A. and Akintola, K.G., 2017. Web-based intelligent inventory management system. *International Journal of Trend in Scientific Research and Development*, *1*(4), pp.164-73.	Web-based Application	This system suites businesses operating on large scale as well as those with multiple warehouses	A web-based system suitable for retail shops operating on small scale

Table 1.Literature Review

Methodology

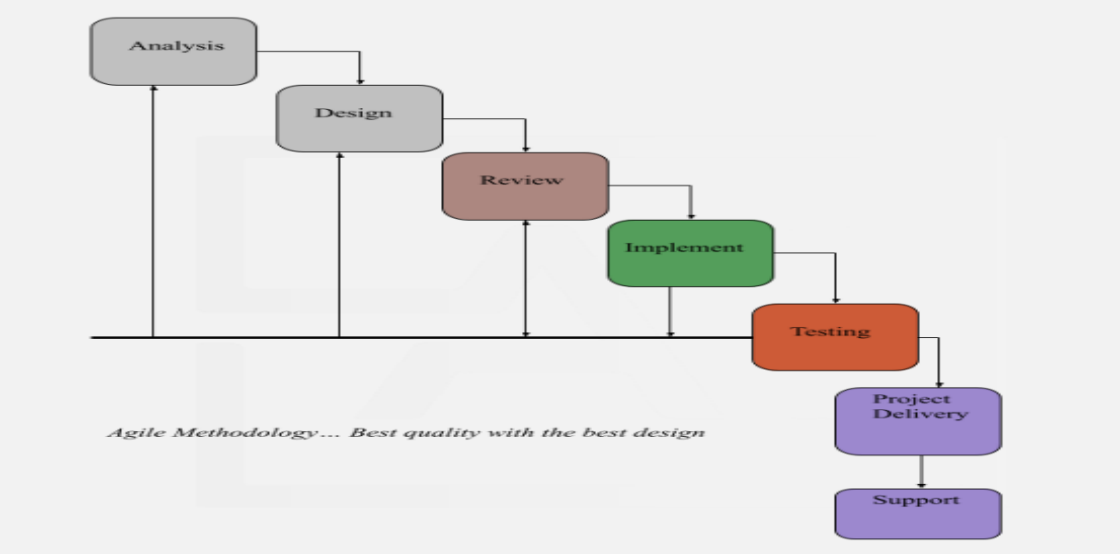

Figure 1.Agile Methodology

I followed the Agile Methodology for Project Management where we will divide the whole project into incremental, iterative work sequences that are commonly known as sprints.

Business Case

Functional Requirements

- Generate reports of all products available, employees, and customers.
- Monitor stock levels.
- Search and query for data in the database.
- Update profile data
- View Profile details

Non-Functional Requirements

- Data integrity through validation rules.
- Efficient and ease of usability of the system.
- Security through controlled access to the system.
- Reliability
- Availability

Design

Use Case Diagram

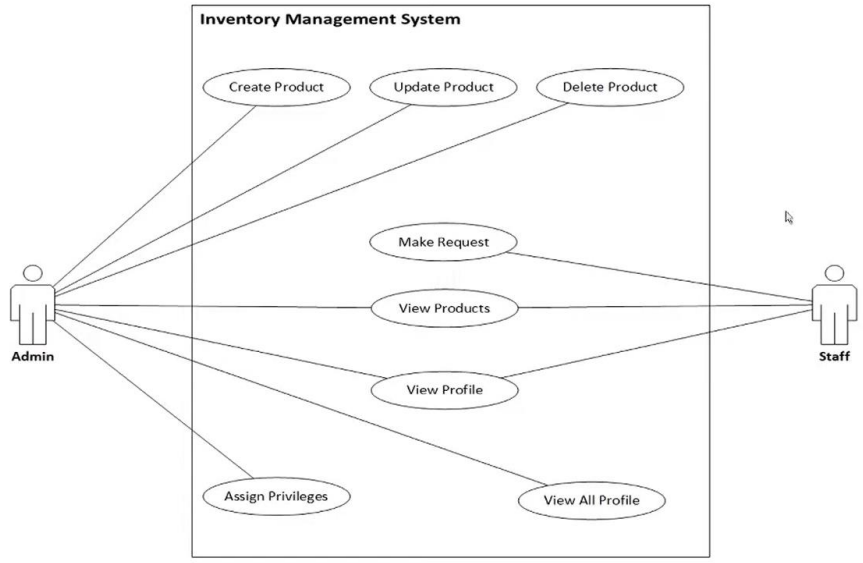

Figure 2 .Use case diagram

System Architecture

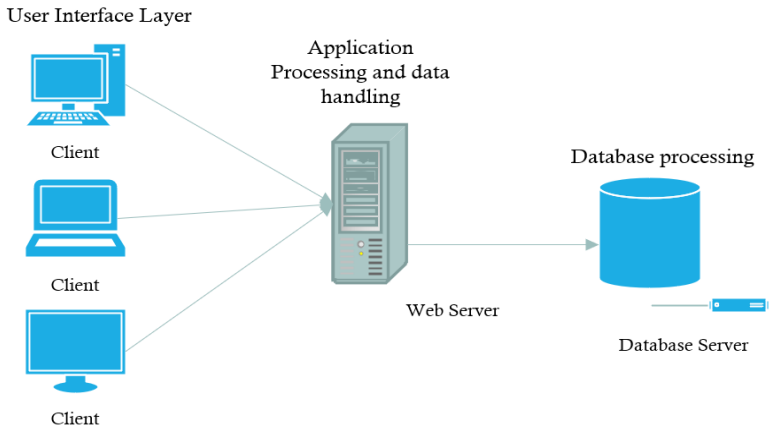

Figure 3.Three-tier architecture

Sequence Diagram

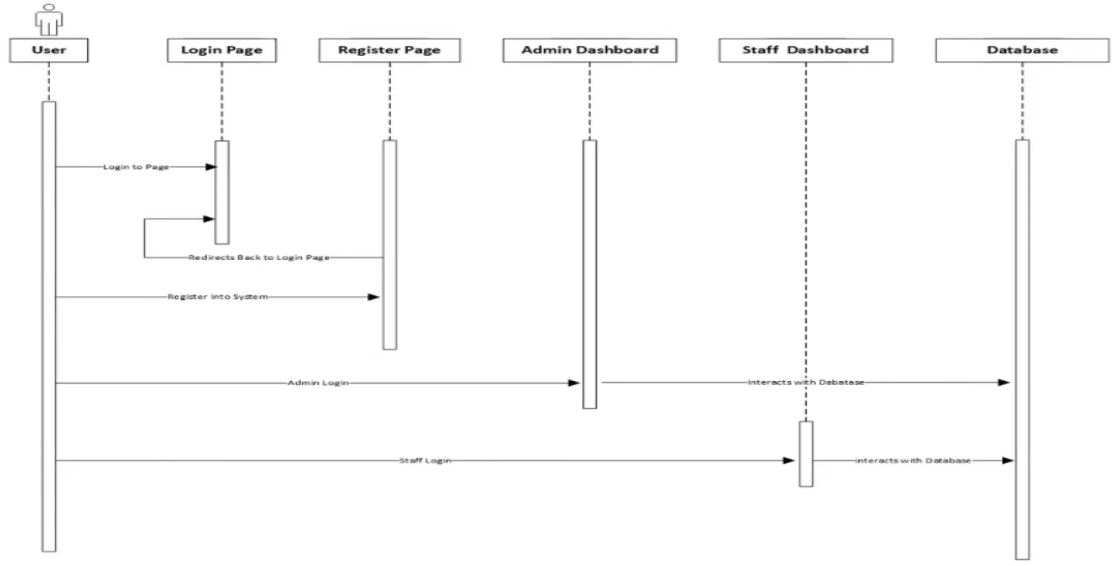

Figure 4.Sequence Diagram

Code Structure

Django's project and app structure naturally organizes code. I maintained separation between HTML templates, CSS, and JavaScript files within each app.

Testing

I extensively tested the websites on various devices and browsers to identify and address any layout issues, broken links, or JavaScript errors. Cross-browser compatibility was achieved through targeted testing and adjustments.

Implementation

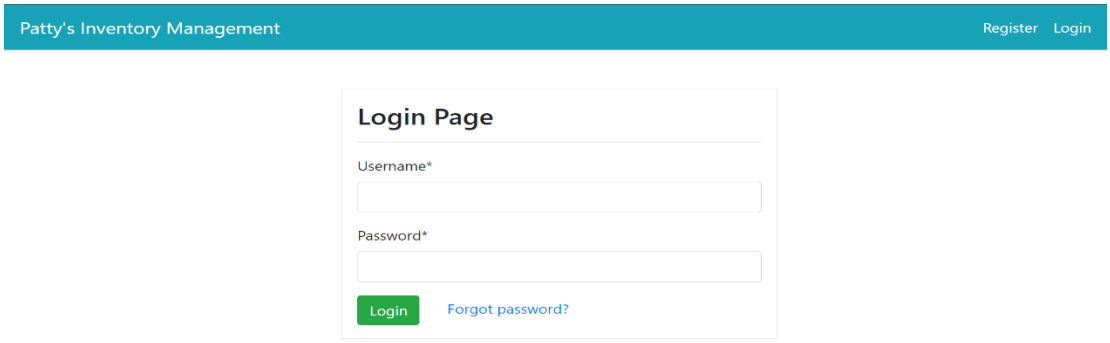

Figure 5.Login Page

The login page is the primary interface for accessing the system, granting permission to other pages based on correct email and password. It determines the level of access authorization for each user, determining the page displayed.

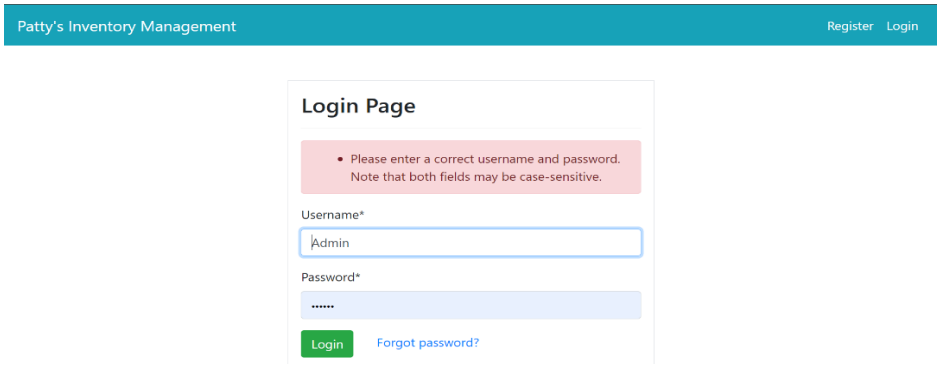

Figure 6.Authentication

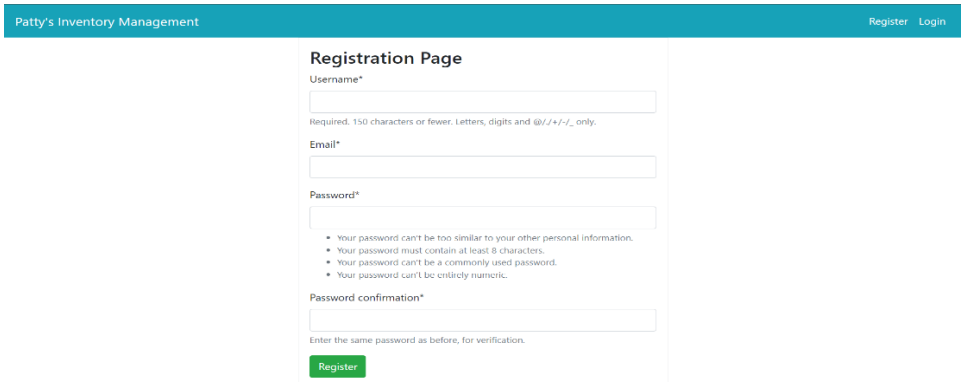

Figure 7.Staff Registration Page

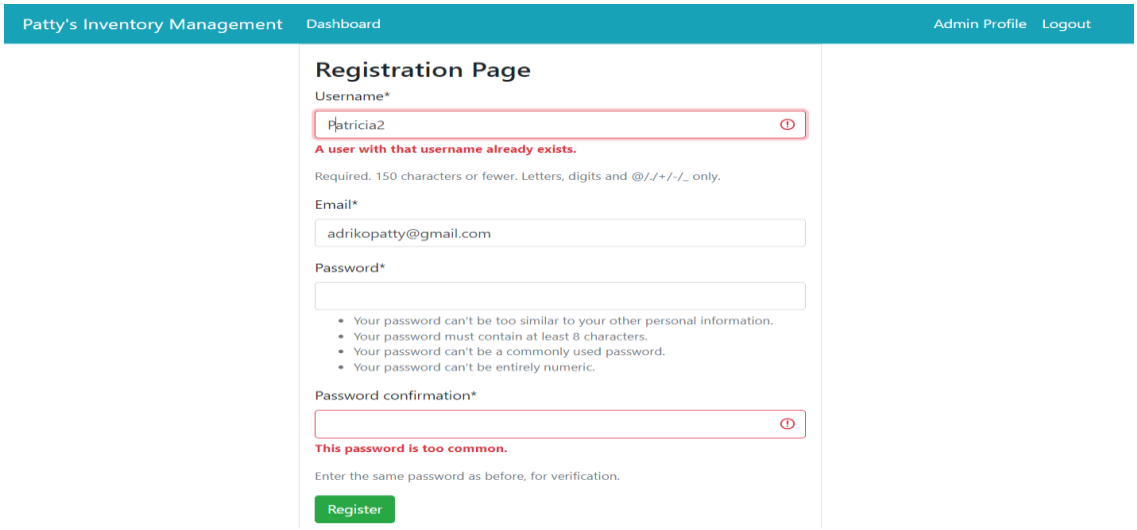

Figure 8.username already exists & common password

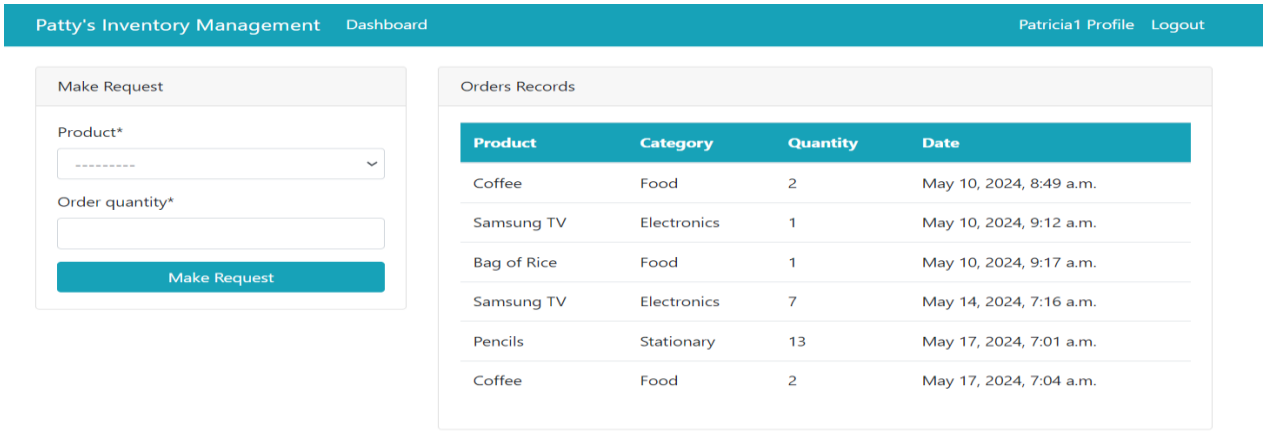

Figure 9.Staff view

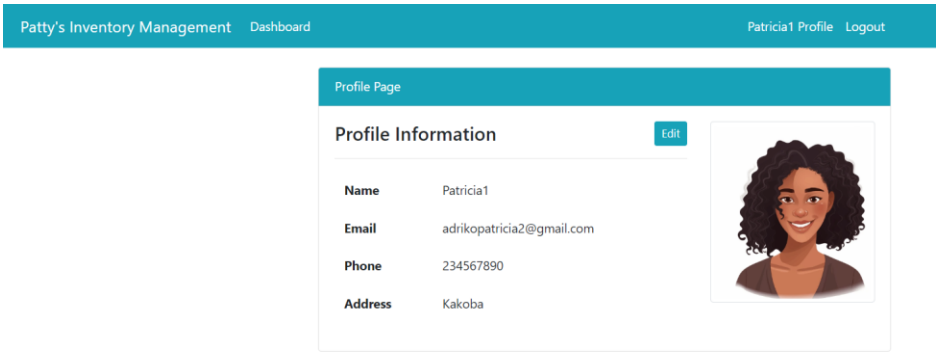

Figure 10.Logged in user Profile

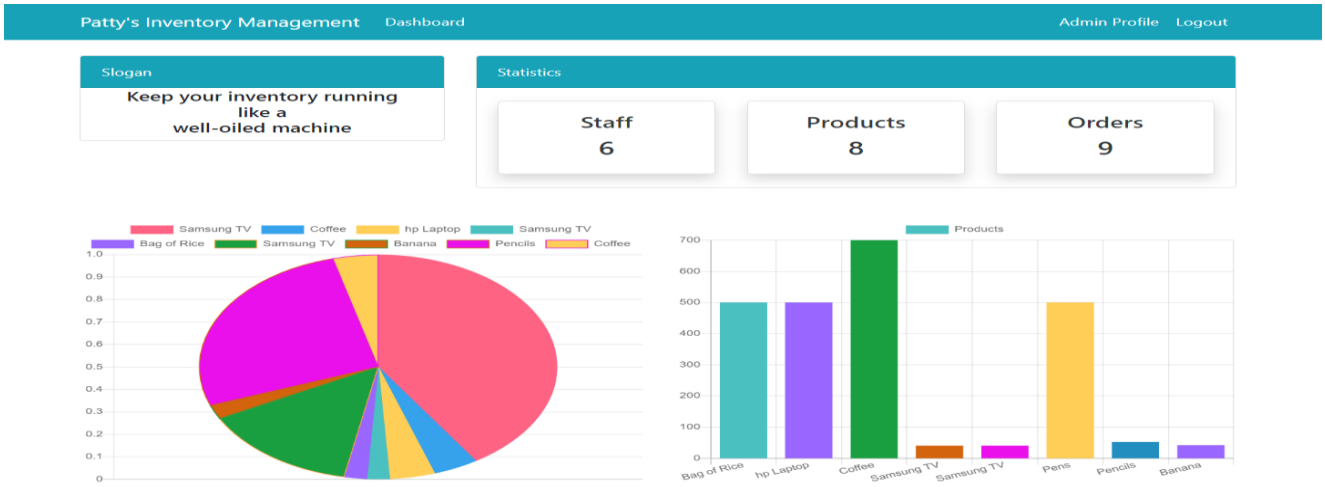

Figure 11.Admin Dashboard

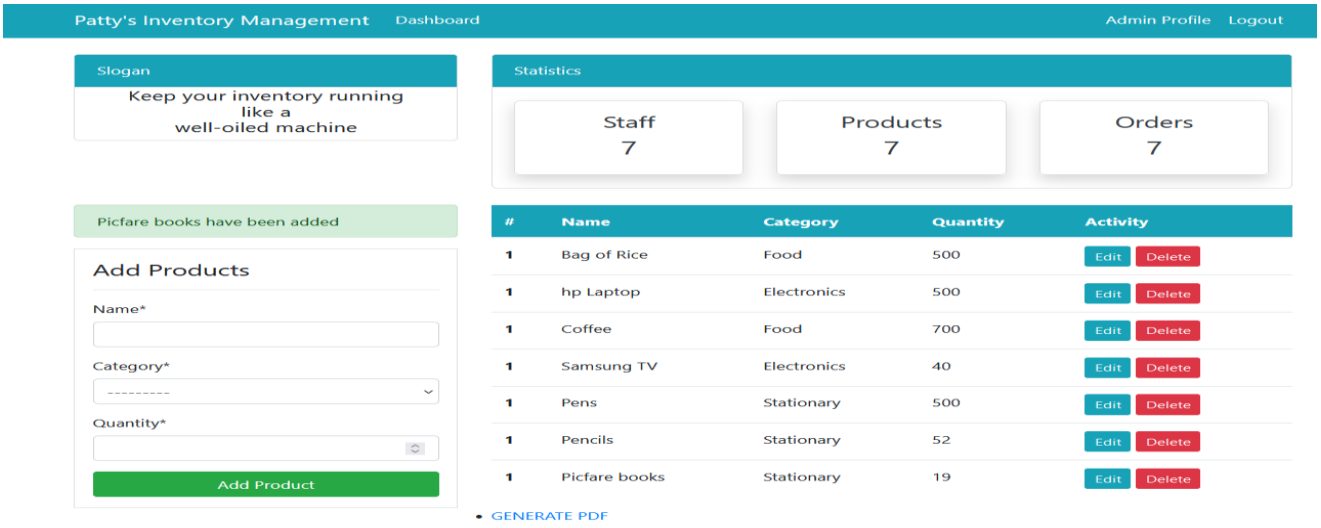

Figure 12.Product Page

Challenges faced during development

Risk management.

Evolving Requirements.

Managing project timelines.

Poor Communication.

Future Improvements

Use of Barcode as well as bar code reader.

Online Payment

Feedback from customers

Refine the animations and enhance the search functionality to provide more intuitive results.

Conclusion

Working on the Inventory Management system website with Django has enriched my web development skills, deepening my understanding of HTML, CSS, JavaScript, and Django. This project shown the value of attention to detail and responsive design in building user-friendly websites.

References

Jayanth, S., Poorvi, M.B. and Sunil, M.P., 2017. Inventory management system using IOT. In *Proceedings of the First International Conference on Computational Intelligence and Informatics: ICCII 2016* (pp. 201-210). Springer Singapore.

Madamidola, O.A., Daramola, O.A. and Akintola, K.G., 2017. Web-based intelligent inventory management system. *International Journal of Trend in Scientific Research and Development*, *1*(4), pp.164-73.

https://docs.djangoproject.com/
https://www.w3schools.com/django/

Complete project available on
https://github.com/adrikopatty/inventoryproject.git