Technological Institute of the Philippines
College of Information Technology
CIT 309 - IT Project Management

SmartStock: Streamlined Inventory and POS Solution for Mighty Mart Grocery Store

SUBMITTED TO:

Mr. Alfio Regla

SUBMITTED BY:

Dudas, Mark Angelo
Fabunan, Mark Kenneth
Elma, John Paul Jr.
Mateo, Lawrence Ezekiel

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1.0 Introduction/ Background

SmartStock is meticulously crafted to streamline your sales process, elevate the customer experience, and optimize overall operational efficiency. Designed with a user-friendly interface and packed with powerful features, our POS system empowers you to process transactions swiftly and flawlessly, delivering a seamless checkout experience to your valued customers. Whether you run a small retail store or operate a large-scale enterprise, our POS system is tailored to meet the unique requirements of businesses across various industries.

2.0 Business Objective

1. Develop an integrated inventory management system: create a comprehensive inventory management system that automates the tracking and control of inventory items.
2. Integrate with existing business systems: The solution will offer seamless integration with existing enterprise resource planning (ERP) systems, point-of-sale (POS) systems, and other relevant software. This integration will ensure data synchronization, streamline processes and provide a holistic view of inventory across the organization.

3.0 Current Situation and Problem/Opportunity Statement

The current reliance on manual processes and outdated systems for sales and inventory management poses significant challenges for businesses. They face issues such as inaccurate data entry, inventory discrepancies, excessive time spent on inventory management tasks, and missed opportunities for growth. There is a pressing need for an advanced solution that can streamline sales operations, enhance inventory control, and provide actionable insights in real-time.

Opportunity exists to leverage modern technology, specifically a robust POS system and inventory management solution. By adopting such a system, businesses can automate sales processes, improve accuracy, reduce operational costs, and gain valuable insights into their inventory trends, customer preferences, and overall business performance. This would empower businesses to make data-driven decisions, optimize inventory levels, minimize stockouts and overstocking, and ultimately enhance customer satisfaction.

By addressing these challenges and embracing the opportunity for an advanced POS system and inventory management solution, businesses can unlock their full potential, streamline operations, and drive growth in today's competitive marketplace

4.0 Critical Assumption and Constraints

Critical Assumption: Our POS system and inventory management solution relies on the critical assumption that the business has reliable and stable internet connectivity. This is essential for seamless data synchronization, automatic updates of inventory levels, and smooth communication between different components of

the system.
Constraints:
1. Hardware Requirements: The successful implementation of our POS system and inventory management solution necessitates the availability of compatible hardware,, and computers with the necessary specifications. It is important for the business to ensure they
possess the appropriate equipment to support the system effectively.
2. Training and Familiarity: Users of the system, such as employees and staff members, may require training and a reasonable amount of time to familiarize themselves with the new technology. It is crucial to provide adequate training and support to ensure a seamless adoption and utilization of the POS system and inventory management solution.
4. Integration and Scalability: The extent of integration with existing business tools, such as accounting software or e-commerce platforms, may have certain limitations or require additional configuration. Furthermore, the scalability of the system to accommodate future business growth and evolving needs should be taken into account during the implementation process.
5. Regulatory Compliance: Depending on the industry and location of the business, there might be specific regulatory requirements pertaining to sales transactions, inventory tracking, and data privacy. It is crucial to design and configure the system to meet these compliance obligations effectively.
6. Cost and Budget: The implementation of a POS system and inventory management solution integration might entail financial investment.
The business needs to carefully assess and allocate an appropriate budget for the implementation, encompassing aspects such as hardware acquisition, software licensing, training, and ongoing support costs.

5.0 Analysis of Options and Recommendation
Analysis of Options:
1. In-house Development: One option is to develop a custom POS system and inventory management solution . This allows for complete customization and control over the system's features and functionality.
However, developing such a system requires a team of experienced developers, extensive resources, and considerable time for development, testing, and ongoing maintenance. It can be a complex and time-consuming process.
2. Commercial Off-the-Shelf (COTS) Solution: Another option is to consider adopting a pre-built POS system and inventory management software from a reputable vendor. COTS solutions offer ready-made
features, scalability, and ongoing support. They are designed to meet the common needs of businesses and often come with user-friendly interfaces. However, customization options may be limited, and the system may not perfectly align with unique business requirements.
3. Cloud-based Solution: Cloud-based POS systems and inventory management solutions.. These solutions offer the advantage of flexibility, remote accessibility, automatic updates, and data backup. They typically operate on a subscription or licensing model, allowing businesses to access the system from anywhere with an internet connection. However, it is important to assess the reliability and security measures implemented by the cloud provider to protect sensitive business and customer data.

4. Integrated Suite: Some vendors provide comprehensive business management suites that include POS, inventory management, accounting, and CRM functionalities. These integrated suites offer seamless data flow, reduced data entry, and enhanced analytics capabilities. They can streamline business processes and provide a holistic view of operations. However, they may come with higher costs and may require careful evaluation of their compatibility and suitability for specific business needs.
Recommendation: After careful consideration, our recommendation is to adopt a cloud-based POS system and inventory management solution..
Cloud-based solutions offer several advantages, including flexibility, scalability, remote accessibility, automatic updates, and data backup. They can be cost-effective, as they usually operate on a subscription-based model, allowing businesses to pay for the services they need.
It is important to select a reputable vendor that prioritizes data security and provides robust measures to protect sensitive information. Conduct thorough research, read customer reviews, and request demos or trials to assess the system's user interface, functionality, and ease of use.
Additionally, consider solutions that offer integration capabilities with existing systems, such as accounting software or e-commerce platforms. This ensures seamless data synchronization and process automation, minimizing manual effort and data entry errors.
Regularly evaluate the performance of the system and gather feedback from users to identify areas for improvement and optimization. Adequate training and support should be provided to ensure a smooth transition and successful adoption by employees.
Remember to also consider the long-term scalability and growth potential of the selected solution. It should be able to accommodate future business needs and changes in the industry.

6.0 Preliminary Project Requirements

1. User Interface: The system should have an intuitive and user-friendly interface that allows employees to perform sales transactions, manage inventory, and generate reports with ease. The interface should be customizable to adapt to different business requirements.
2. Sales Functionality: The system should enable the creation of sales orders, processing of payments, and generation of receipts. It should have the ability to handle different payment methods, apply discounts, and calculate taxes. Real-time inventory updates should be reflected in the system after each sale.
3. Inventory Management: The system should provide comprehensive inventory management features, including tracking stock levels, managing product variations (e.g., sizes, colors), and handling stock transfers between different locations or warehouses.
4. Reporting and Analytics: The system should have robust reporting capabilities, allowing businesses to generate various reports such as sales reports, inventory reports, and profitability analysis. It should provide insights into sales trends, top-selling products, slow-moving items, and other key performance indicators.
5. Integration and Scalability: The system should be capable of integrating with other business systems, such as accounting software, e-commerce platforms, and customer relationship management (CRM) tools. This integration enables seamless data flow and eliminates the need for manual data entry. Additionally,

the system should be scalable to accommodate future business growth and expansion.
6. Security and Data Protection: The system should implement strong security measures to protect sensitive business and customer data. This includes encryption of data at rest and in transit, user access controls, regular backups, and compliance with relevant data privacy regulations.
7. Training and Support: The vendor should provide comprehensive training and ongoing support to ensure a smooth transition and adoption of the system. This includes user training sessions, documentation, and responsive customer support for troubleshooting and addressing any system-related issues.
8. Hardware Compatibility:. It should support a range of industry-standard interfaces and connectivity options to ensure seamless integration with the existing hardware infrastructure

7.0 Budget Estimate and Financial Analysis
40, 000 thousand pesos

8.0 Schedule Estimate
Project Start Date: June 7, 2023
Project Deadline:

9.0 Potential Risks
1. Technical Issues: The system may face unforeseen technical glitches, such as software bugs, hardware malfunctions, or compatibility challenges. These issues can disrupt daily operations, impact sales transactions, and lead to inaccurate inventory data. Regular system updates, rigorous testing, and prompt maintenance can help address and minimize these risks.
2. Data Security Breaches: Inadequate security measures can expose sensitive business and customer data to unauthorized access or cyberattacks. This can result in financial losses, damage to the business's reputation, and potential legal consequences. Implementing robust security protocols, including encryption, access controls, and regular data backups, is crucial to safeguard against data breaches.
3. Integration Challenges: Integrating the POS system and inventory management solution with existing systems, such as accounting software or e-commerce platforms, can pose challenges. Compatibility issues, data synchronization problems, or delays in information flow may arise. Thorough testing, involving skilled technical experts, and maintaining comprehensive documentation can help mitigate integration risks.
4. Employee Resistance and Training: Employees may exhibit resistance or hesitation in adopting the new system due to unfamiliarity or resistance to change. Insufficient training or a lack of user-friendly interfaces can impede user acceptance and hinder the system's effective utilization. Providing comprehensive training, ongoing support, and involving employees in the implementation process can help alleviate these concerns.
5. Inventory Inaccuracies: Such inaccuracies can lead to stockouts, overstocking, and inaccurate sales data. Conducting regular stock audits, implementing quality control measures, and establishing well-defined inventory management

procedures are vital for minimizing these risks.
6. System Downtime: Unforeseen technical issues, power outages, or disruptions in internet connectivity can result in system downtime. This can significantly impact sales operations and customer experience. Implementing backup power solutions, establishing redundant internet connections, and developing comprehensive disaster recovery plans can help mitigate the impact of system downtime.
7. Vendor Reliability: Dependence on a third-party vendor for software updates, technical support, and system maintenance introduces potential risks. Vendor financial instability, poor customer support, or delays in software updates can adversely affect the system's reliability and availability. Conducting thorough vendor evaluations, considering customer feedback, and negotiating robust service level agreements can help mitigate these risks.
8. Regulatory Compliance: Non-compliance with industry-specific regulations, such as sales tax requirements or data privacy regulations, can lead to legal penalties and harm the business's reputation. Ensuring the system is properly configured to meet regulatory obligations, staying informed about regulatory changes, and conducting regular compliance audits are crucial steps to mitigate compliance risks.
9. Scalability Challenges: As the business expands or undergoes changes, the system may face scalability challenges. Inadequate system performance, slow response times, or limitations in handling increased data volumes can impact operations. Selecting a system designed for scalability, considering future growth plans, and consistently evaluating system performance can help address potential scalability risks.

10.0 Exhibits

Exhibit A: Financial Analysis

Project Charter

Project Title: SmartStock: Streamlined Inventory and POS Solution for Mighty Mart Grocery Store

Project Start Date: June 20, 2022 **Projected Finish Date**: July 30, 2022

Budget Information: In this project, our expenditure will be limited as we plan to primarily rely on our coding abilities. However, it may be necessary to allocate a portion of our budget towards acquiring premium tools that can assist us in effectively developing this system.

Project Manager: John Paul Elma Jr

Project Objectives:

● Develop an integrated inventory management system: create a comprehensive inventory management system that automates the tracking and control of inventory items. The system will provide feature to have real-time inventory updates
● Enable accurate inventory tracking and stock control: The system will ensure accurate and up-to-date inventory data by implementing. It will also enable businesses to set optimal stock levels, automatically reorder items when necessary, and generate reports on stock movement and availability.
● Integrate with existing business systems: The solution will offer seamless integration with existing enterprise resource planning (ERP) systems, point-of-sale (POS) systems, and other relevant software. This integration will ensure data synchronization, streamline processes and provide a holistic view of inventory across the organization

Success Criteria:

This inventory management system offers the capability to expedite and enhance inventory management processes, ensuring rapid and precise outcomes. Restricted system access is exclusively granted to authorized personnel, ensuring the utmost security of their data. Additionally, the system incorporates a real-time analytics dashboard, enabling comprehensive monitoring of stocks, products, and sales for efficient decision-making and strategic insights. Furthermore, all required features and functions must be tested and made fully operational in a six-week period.

Approach:

● Design and implement an all-encompassing inventory management system that streamlines the monitoring and management of inventory items. The system will encompass functionalities: instant updates on inventory status.
● Develop a comprehensive dashboard that provides real-time visibility into stock levels, purchase records, and sales date.
● Incorporate a secure login feature into the inventory management system to ensure that only authorized personnel have access to it

Roles and Responsibilities

Name and Signature	Role	Position	Contact Information
Mighty Mart	Client/Project Sponsor	President	
John Paul Elma Jr.	Project Manager	Project Manager	09458821355
Lawrence Ezekiel Mateo	Project team member / Consultant	Front-end Developer	09611573782
Mark Angelo Dudas	Project team member	Front-end Developer	09499037134

	/ System Designer		
Mark Kenneth Fabunan	Project team member / Quality Assurance	Front - end Developer	09637729626
Mark Angelo Dudas	Project team member / Technical Operations Officer	Back-end Developer	09499037134
Comments: (Handwritten or typed comments from above stakeholders, if applicable)			

Chapter 2

Scope Management Plan

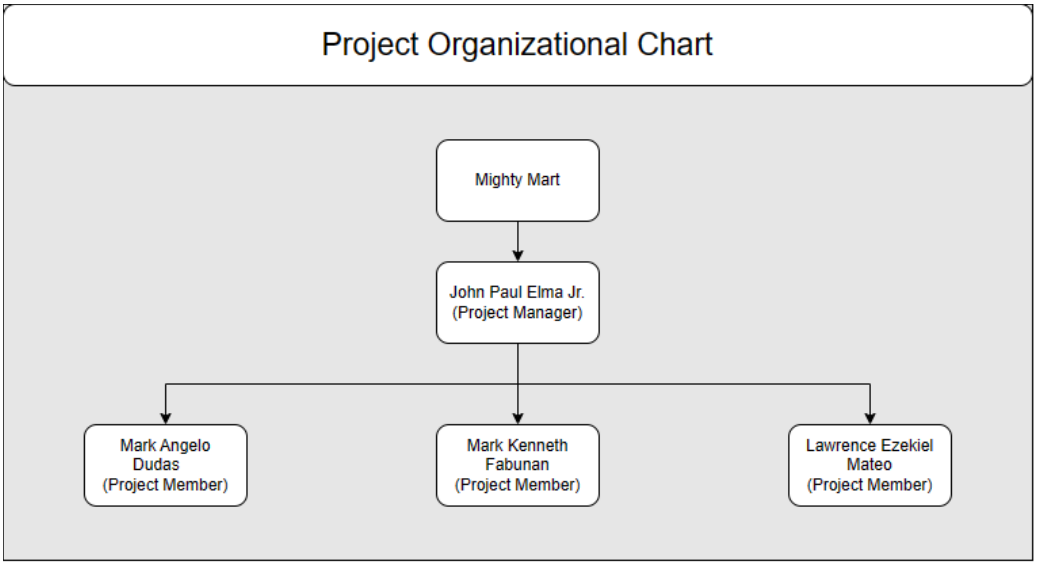
Project Title: SmartStock: Streamlined Inventory and POS Solution for Mighty Mart Grocery Store **Date:**June 19, 2023 **Prepared by:** Group 6
Project Justification: Implementing a robust real-time monitoring and security system for inventory in stores and grocery retailers offers significant benefits. This system enables efficient tracking of sales, products, and generates comprehensive sales reports, allowing stores to effectively manage inventory levels and meet customer demands consistently. Real-time monitoring provides accurate insights for informed inventory management decisions, optimizing operations and minimizing stockouts. This leads to enhanced customer satisfaction, reduced inventory costs, improved order fulfillment, and increased operational efficiency. Additionally, the system facilitates effective demand planning and enables enhanced data analysis, contributing to long-term business success and improved financial performance. .
Product Characteristics and Requirements: 1. SmartStock: Streamlined Inventory System and POS Solution for Mighty Mart Grocery Store 2. Weekly Progress Report 3. Project Documentation and Feedback
Product User Acceptance Criteria: As a business owner, my priority is to ensure efficient operations and customer satisfaction. To achieve this, I require a comprehensive system that provides real-time monitoring of our store's stock levels. This system should also incorporate robust security measures to restrict access to authorized users only. By implementing such a system, I aim to closely monitor sales and product information, enabling me to make informed decisions and effectively manage inventory. This will ultimately contribute to satisfying my customers' needs and enhancing their overall experience.
Summary of Project Deliverables

Project management-related deliverables: business case, charter, team contract, scope statement, WBS, schedule, cost baseline, status reports, final project presentation, final project report, lessons-learned report, and any other documents required to manage the project.

Product-related deliverables: research reports, design documents, software code etc.

1. Software code of SmartStock: Streamlined Inventory and POS Solution for Mighty Mart Grocery Store via GitHub
2. Trello Project Management Updates
3. Project Management Documentation
4. Project Presentation

Organizational Chart



Gantt Chart

Task Name	PIC	Week 1		Week 2		Week 3		Week 4		Week 5		Week 6	
		06| 07-23	06| 09 - 23	06| 12-23	06| 16-23	06| 19-23	06| 23-22	06| 26 -23	06| 30-23	07| 03-23	07|07-23	07| 10-23	07| 14-23
Project Proposal	Elma												
Business Case	Dudas												
Project Charter	Fabunan												
Project Life Cycle	All												
Use Case	Mateo												
Data Flow Diagram	Fabunan												
Database Schema	Fabunan												
Use Case and Discussion	Mateo												
Context Flow Diagram	Fabunan												
Data Flow Diagram	Fabunan												
Development Login	Dudas												
Develop Dashboard	Dudas												
Develop Categories Page	Dudas Mateo Fabunan												
Develop Product Page	Dudas Mateo Fabunan												
Develop Media Page	Dudas Mateo Fabunan												
Develop Sales Page	Dudas Mateo Fabunan												
Develop Sales Report	Dudas												
Create and Update Burndown Chart													
Demonstrate in meeting the progress of project													
Kick-off Meeting													
Review the System													
Finalize Documents													

Milestone Report

Milestone	Date	Status	Responsible	Issues/ Comments
Initiating Stakeholders identified	June 7, 2023	Completed	Mark Kenneth Fabunan	
Project Charter Signed	June 9, 2023	Completed	Mark Angelo Dudas	
Project kick-off meeting				
Project Proposal presentation	June 9, 2023	Completed	John Paul Elma Jr.	
Business Case	June 9, 2023	Completed		

Planning Cost Estimate	June 9, 2023	Completed	Lawrence Ezekiel Mateo
Project Schedule	June 9, 2023	Completed	Mark Kenneth Fabunan
System Concept and design	June 14, 2023	Completed	Mark Angelo Dudas
Executing Phase 1		In Progress	
Phase 2			
Phase 3			
Project Presentation			

Chapter 3

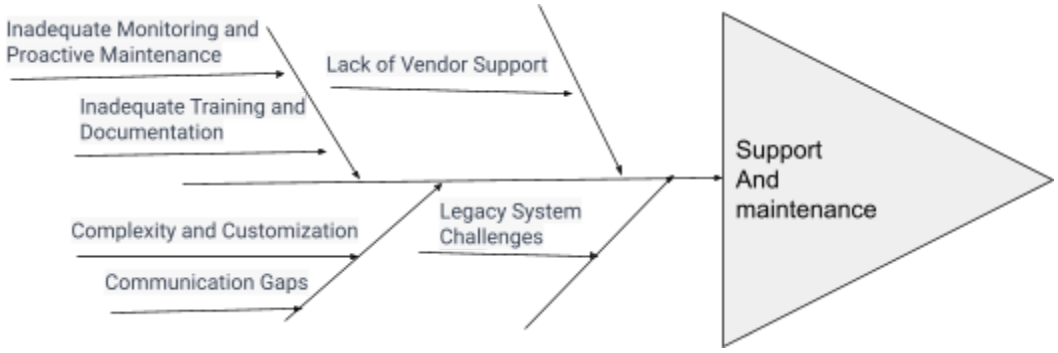
Project Analysis

Problem Statement

Mighty Mart grocery store struggle with managing their inventory effectively, leading to inefficiencies, errors, and increased costs. Manual inventory tracking, lack of real-time visibility, and difficulties in forecasting demand and optimizing stock levels hinder their ability to operate smoothly and meet customer demands.

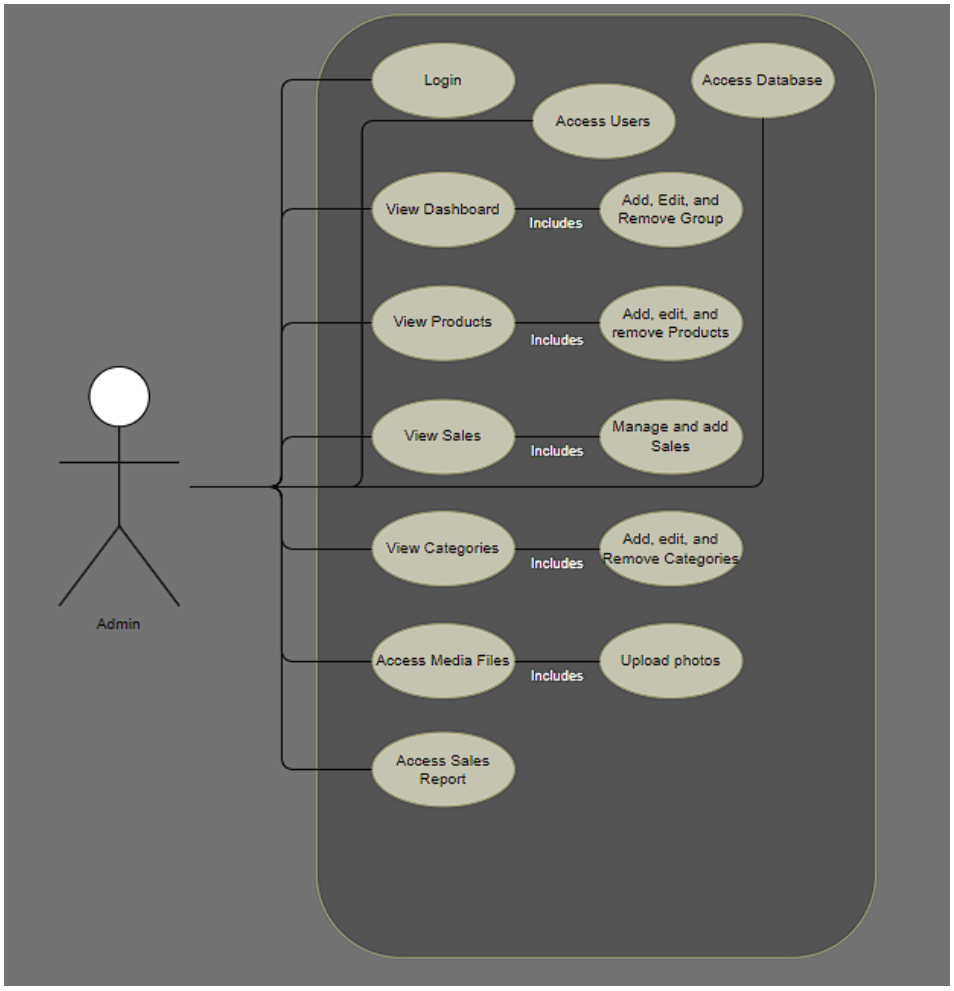
Cause and Effect

Fishbone



Logical Design

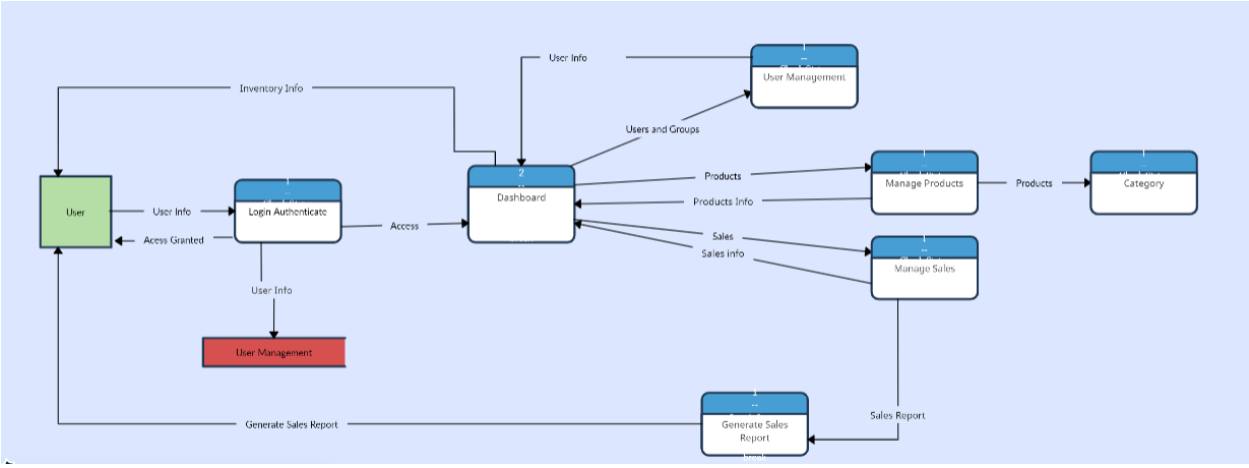
Use Case Discussion



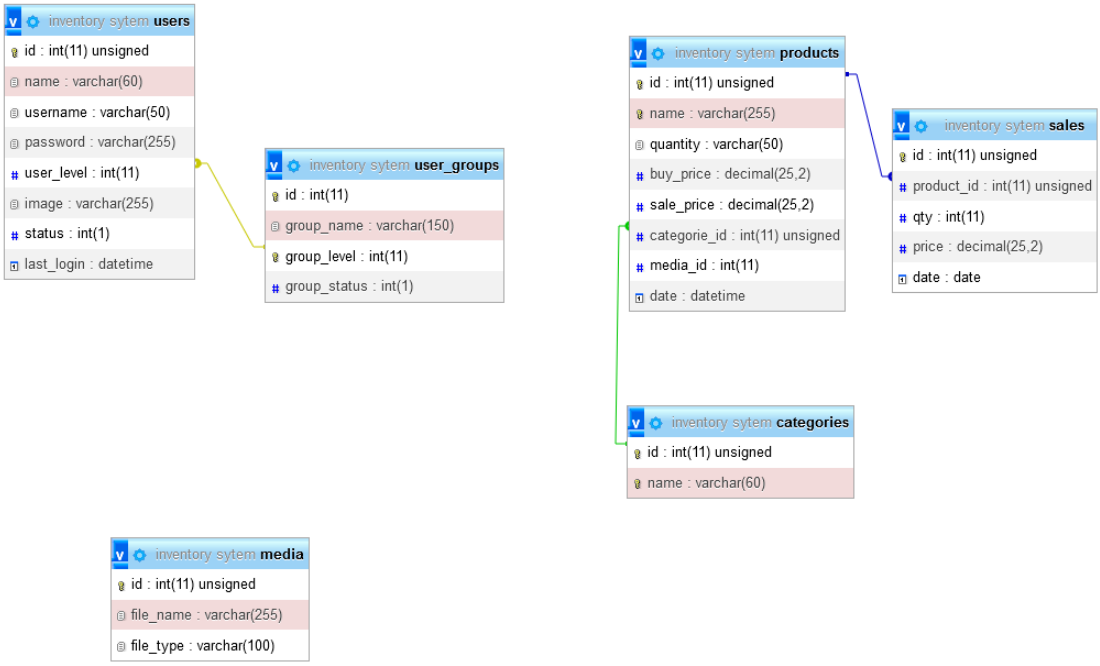
Data Design

Context Flow Diagram

Data Flow Diagram

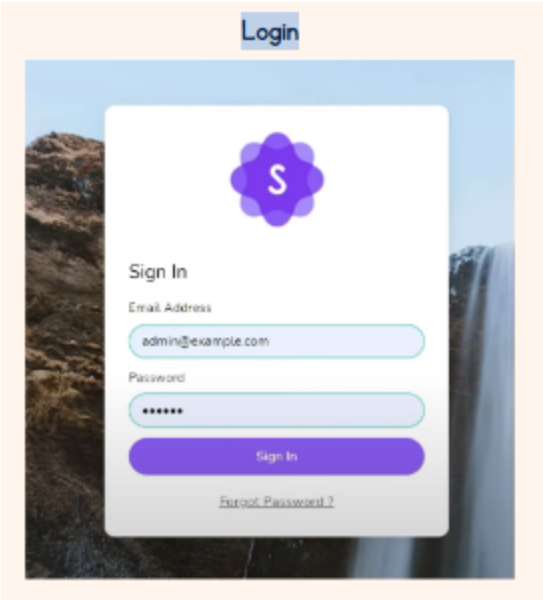


Database Schema



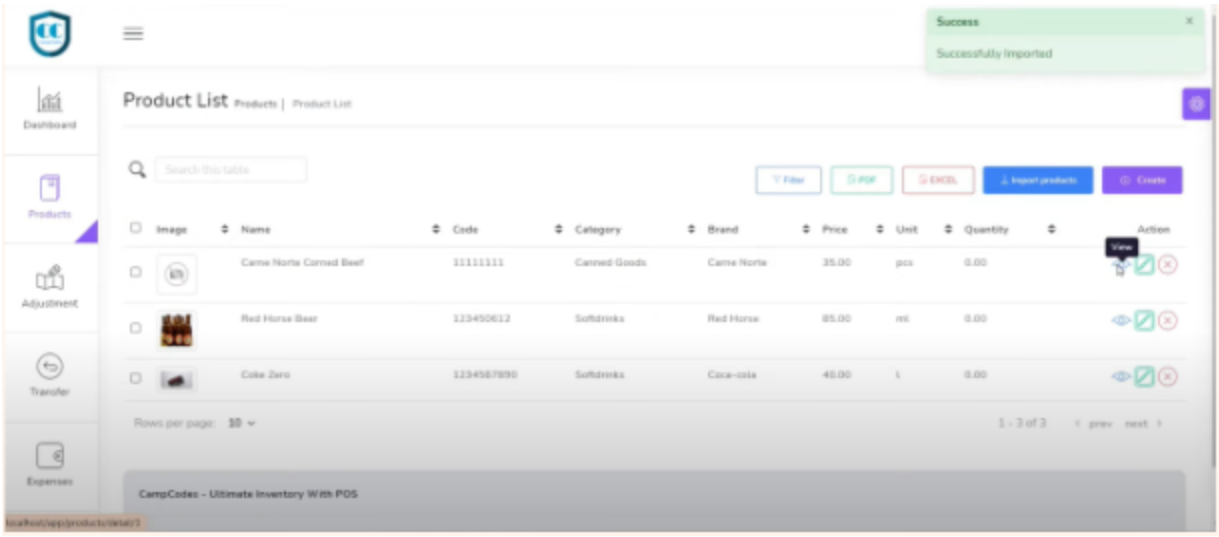
StoryBoard

Login

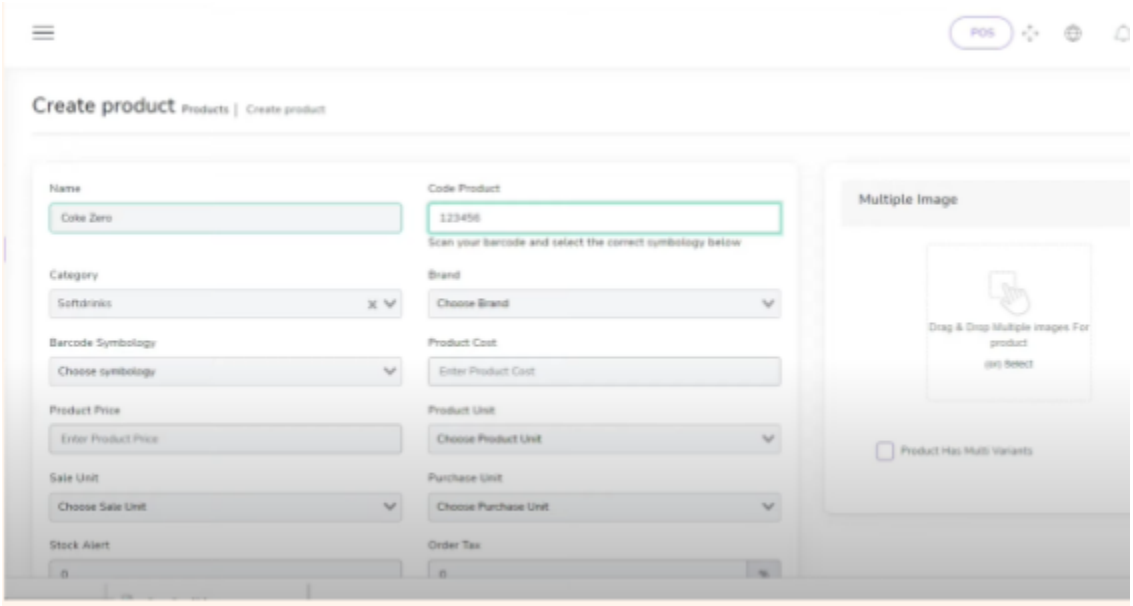


Dashboard

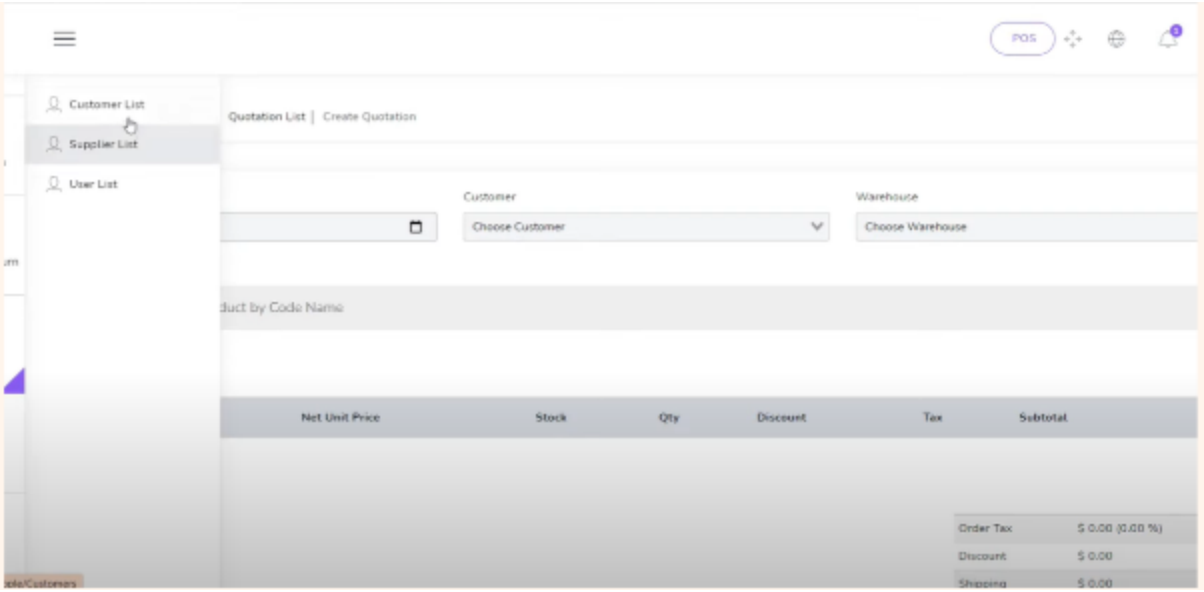
Sales



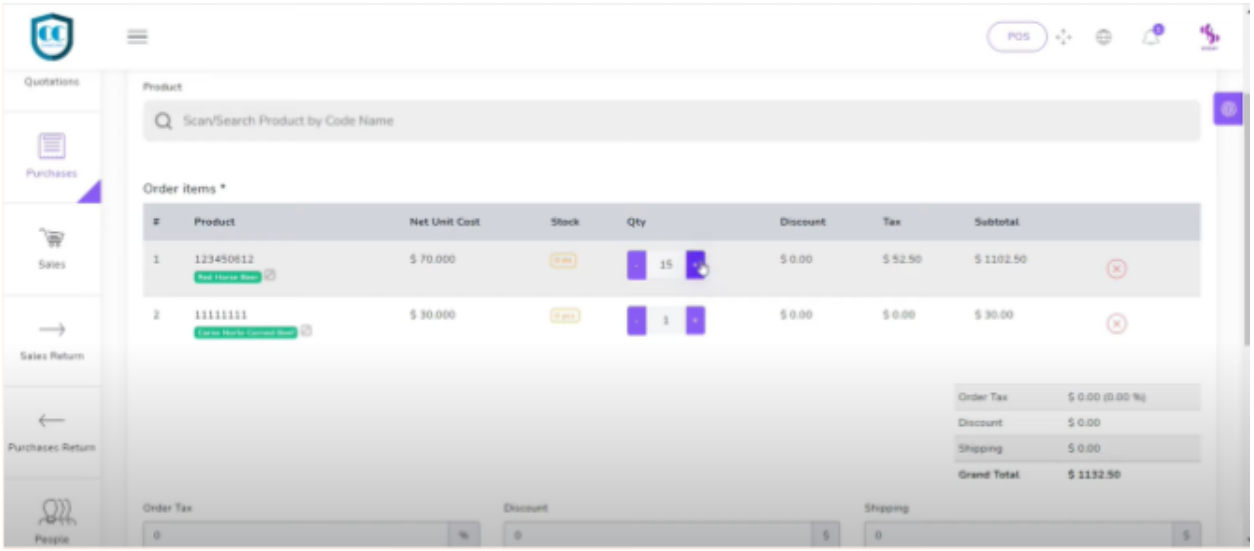
Product



People


POS
Customer List
Supplier List
User List
Quotation List | Create Quotation
Customer
Choose Customer
Warehouse
Choose Warehouse
duct by Code Name
Net Unit Price
Stock
Qty
Discount
Tax
Subtotal
Order Tax
$ 0.00 (0.00 %)
Discount
$ 0.00
Shipping
$ 0.00

Purchases


POS
Quotations
Purchases
Sales
Sales Return
Purchases Return
People
Product
Scan/Search Product by Code Name
Order items *
#
Product
Net Unit Cost
Stock
Qty
Discount
Tax
Subtotal
1
123450612
$ 70.000
15
$ 0.00
$ 52.50
$ 1102.50
2
11111111
$ 30.000
1
$ 0.00
$ 0.00
$ 30.00
Order Tax
$ 0.00 (0.00 %)
Discount
$ 0.00
Shipping
$ 0.00
Grand Total
$ 1132.50
Order Tax
Discount
Shipping

Weekly Progress Report

Project Name: Inventory System Management
Date: June 21, 2023

Work Complete this week:
Make a login page and dashboard
Work with team and start a management system
Organized all requirements
Continue work with team

Work to complete next week:
Create Sales Page
Create Product Page
Create Categories Page

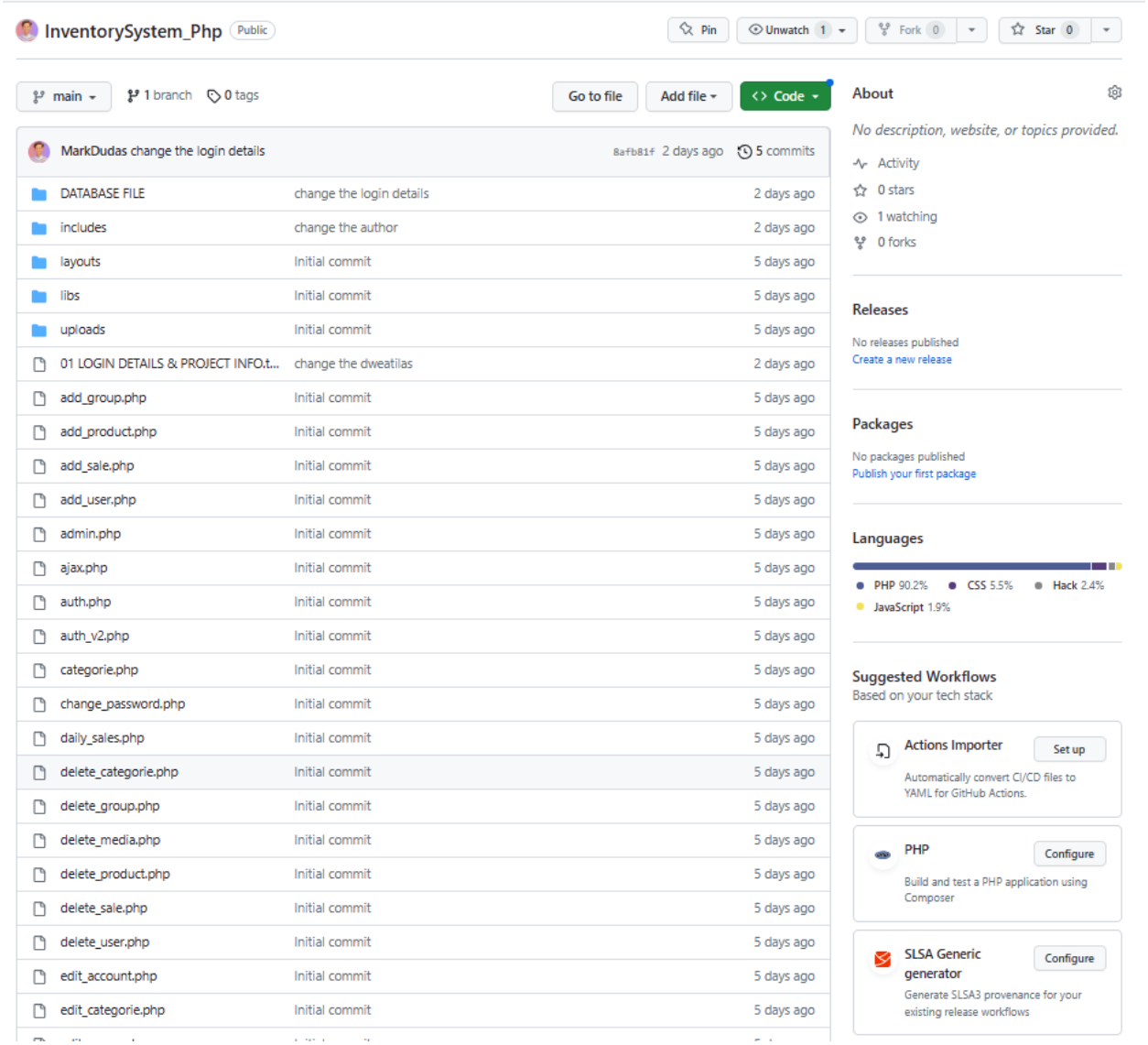
What's going well and why:
The project has been started, we have a login page and the dashboard. So far not much error happens.

Suggestions/Issues:
Hold more meetings for clearer understanding of the project

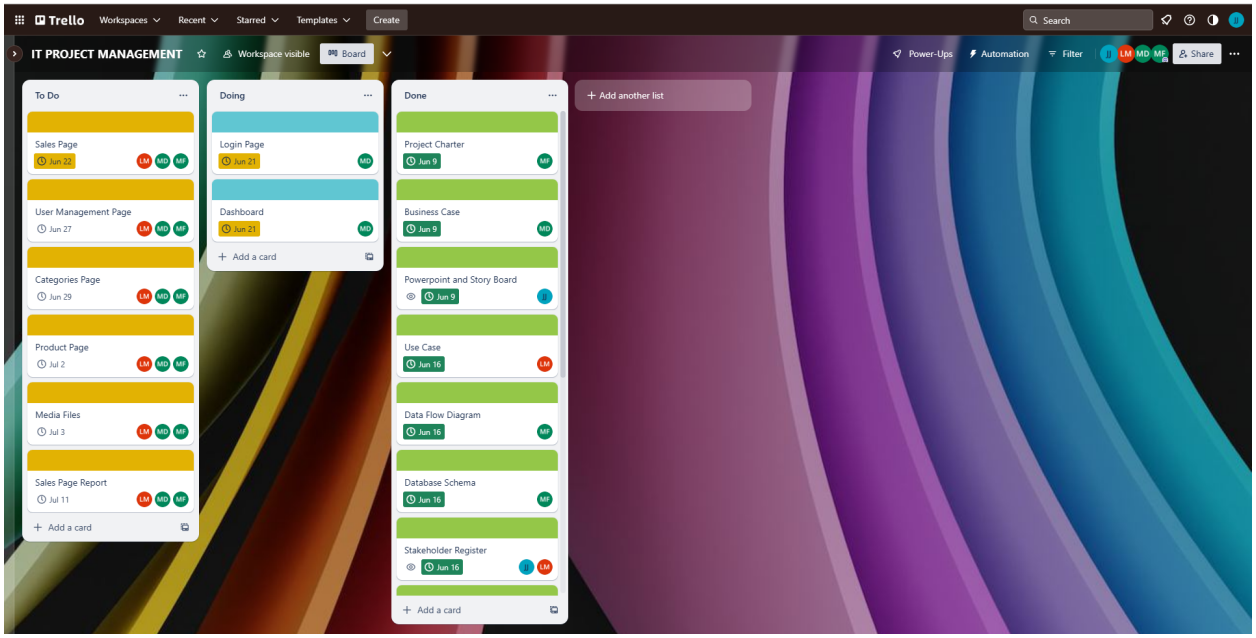
Project Changes:
Change the gantt chart
Add more task in trello

Show evidence (Screenshot of your system progress) that you have these progress. (Please include in the template)

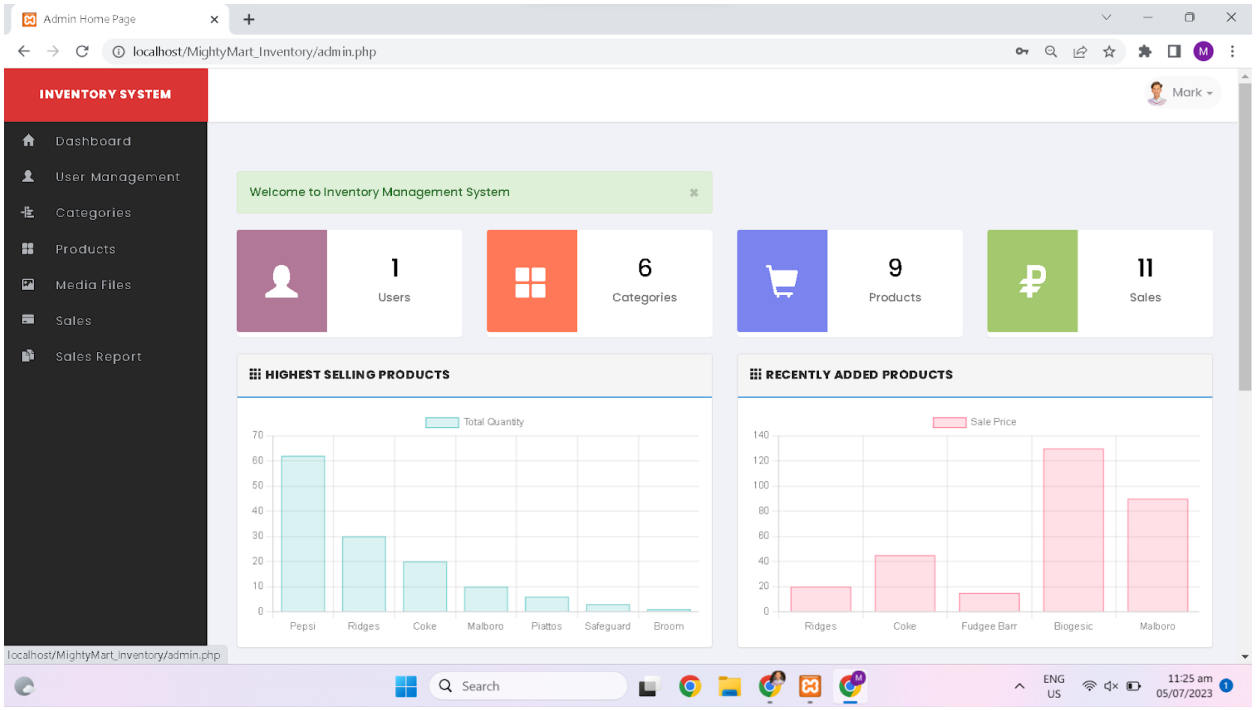
Github

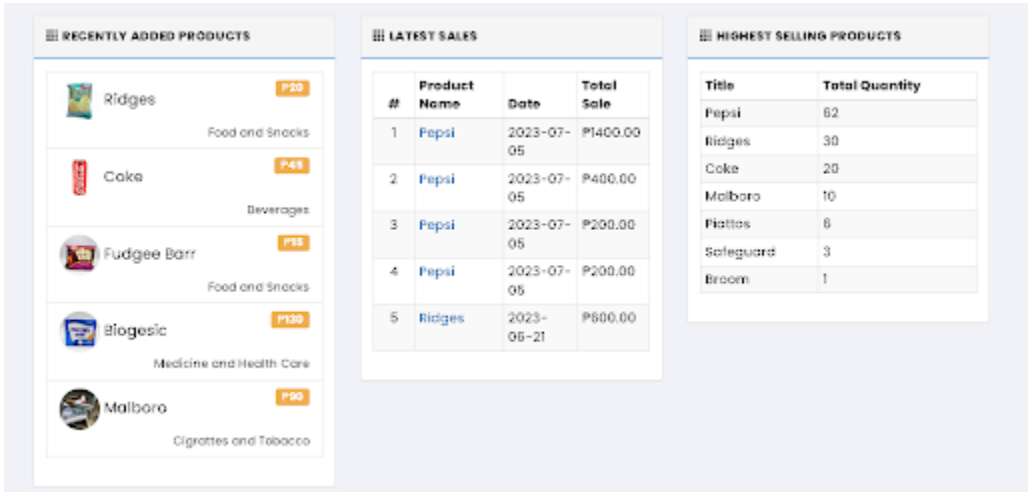


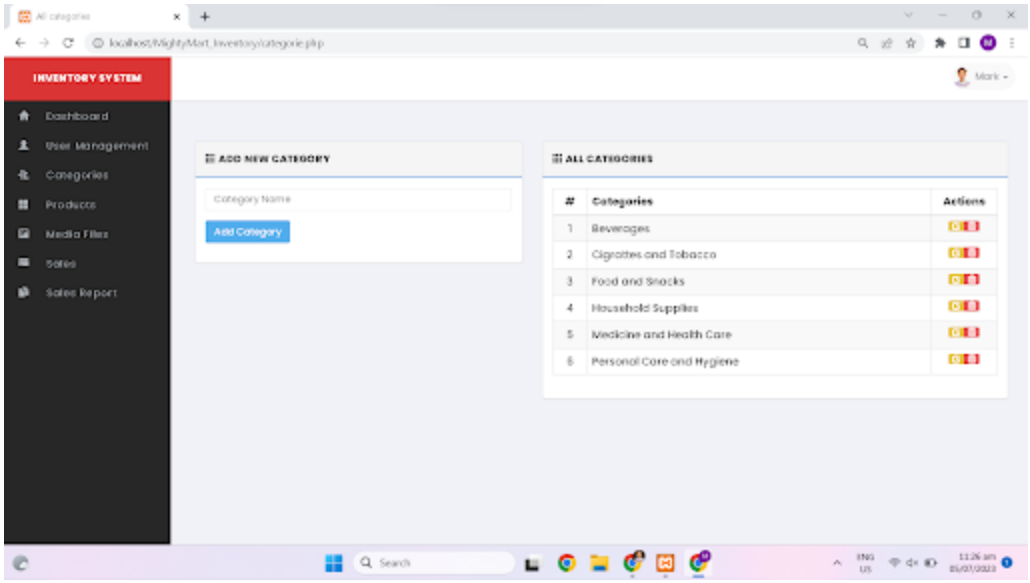
Trello

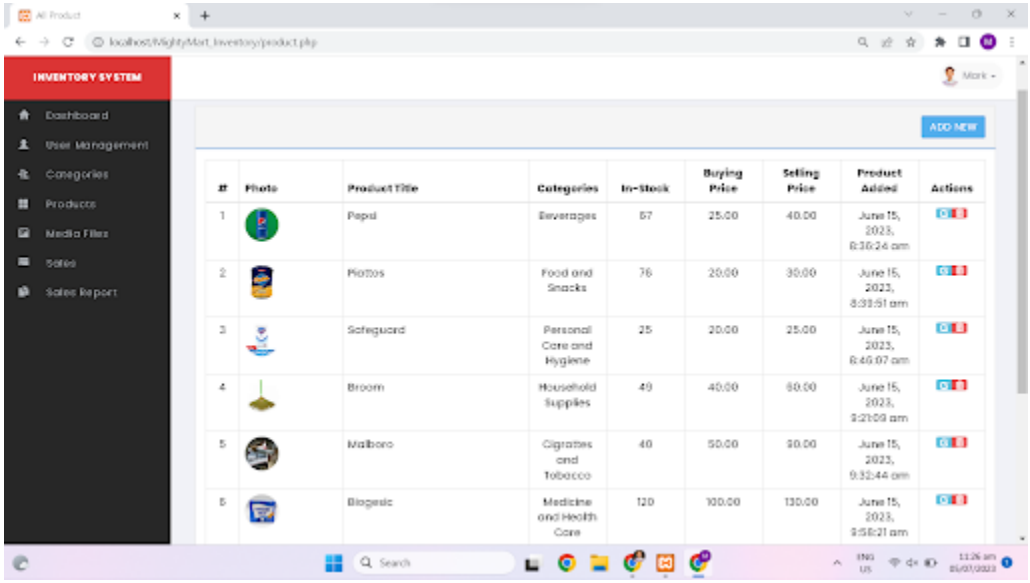

Trello
Workspaces
Recent
Starred
Templates
Create
Search
IT PROJECT MANAGEMENT
Workspace visible
Board
Power-Ups
Automation
Filter
Share
To Do
Sales Page
Jun 22
User Management Page
Jun 27
Categories Page
Jun 29
Product Page
Jul 2
Media Files
Jul 3
Sales Page Report
Jul 11
Add a card
Doing
Login Page
Jun 21
Dashboard
Jun 21
Add a card
Done
Project Charter
Jun 9
Business Case
Jun 9
Powerpoint and Story Board
Jun 9
Use Case
Jun 16
Data Flow Diagram
Jun 16
Database Schema
Jun 16
Stakeholder Register
Jun 16
Add a card
Add another list

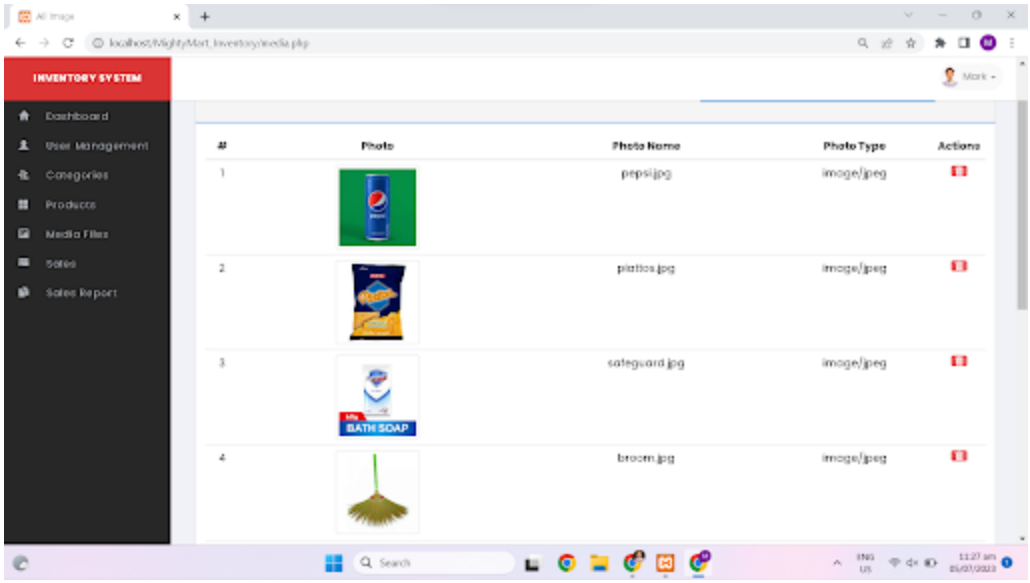
2nd Progress Report:

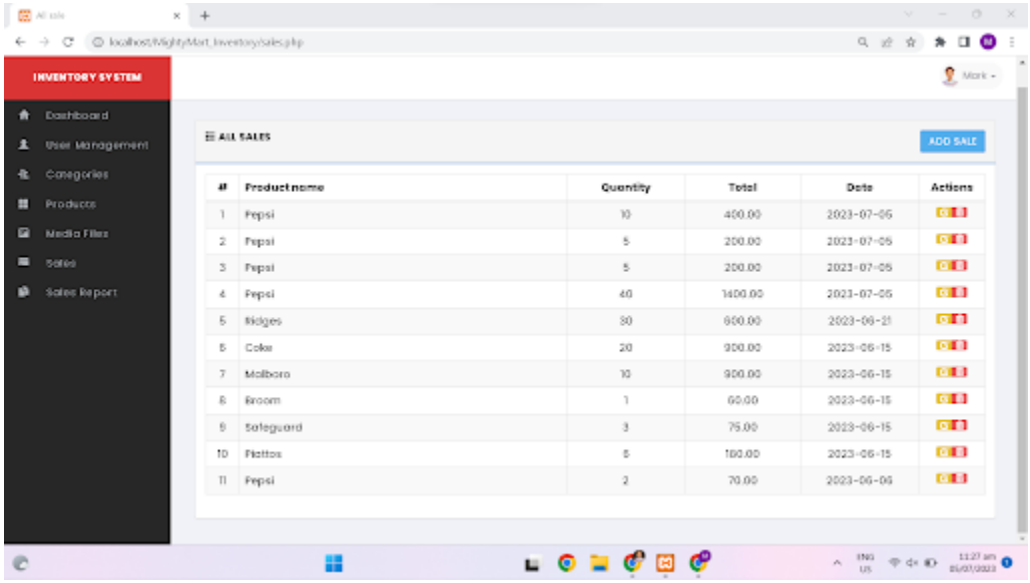


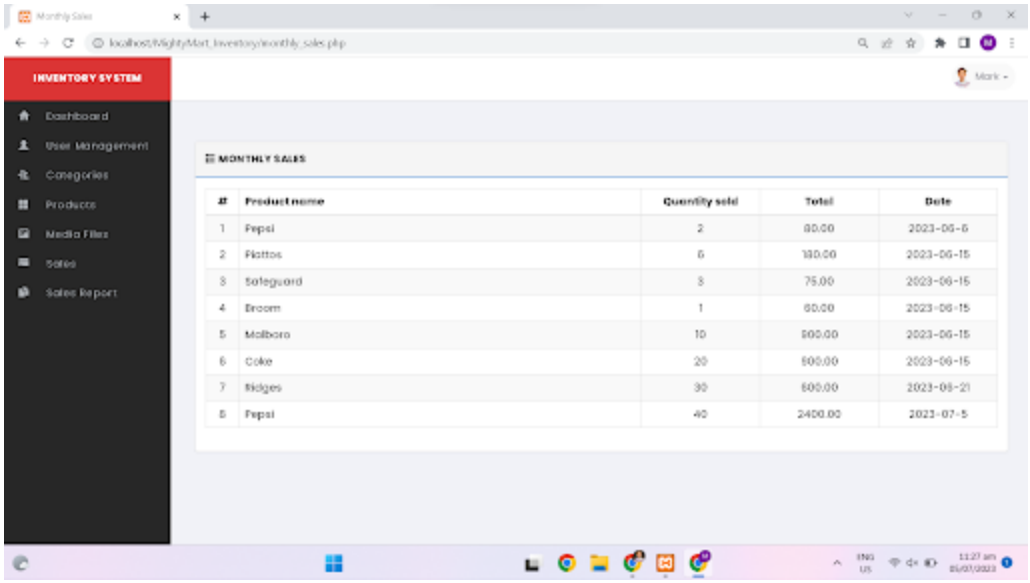



All categories
localhost/MightyMart_Inventory/categorie.php
INVENTORY SYSTEM
Mark
Dashboard
User Management
Categories
Products
Media Files
Sales
Sales Report
ADD NEW CATEGORY
Category Name
Add Category
ALL CATEGORIES
Categories Actions
1 Beverages
2 Cigrattes and Tobacco
3 Food and Snacks
4 Household Supplies
5 Medicine and Health Care
6 Personal Care and Hygiene
Search


All Product
localhost/MightyMart_Inventory/product.php
INVENTORY SYSTEM
Mark
Dashboard
User Management
Categories
Products
Media Files
Sales
Sales Report
ADD NEW
Photo Product Title Categories In-Stock Buying Price Selling Price Product Added Actions
1 Pepsi Beverages 87 25.00 40.00 June 15, 2023, 8:36:24 am
2 Piattos Food and Snacks 76 20.00 30.00 June 15, 2023, 8:33:51 am
3 Safeguard Personal Care and Hygiene 25 20.00 25.00 June 15, 2023, 8:46:07 am
4 Broom Household Supplies 40 40.00 60.00 June 15, 2023, 9:21:09 am
5 Malboro Cigrattes and Tobacco 40 50.00 80.00 June 15, 2023, 9:32:44 am
6 Biogesic Medicine and Health Care 120 100.00 130.00 June 15, 2023, 9:58:21 am
Search


INVENTORY SYSTEM
Dashboard
User Management
Categories
Products
Media Files
Sales
Sales Report
#
Photo
Photo Name
Photo Type
Actions
1
pepsi.jpg
image/jpeg
2
plattos.jpg
image/jpeg
3
safeguard.jpg
image/jpeg
4
broom.jpg
image/jpeg


INVENTORY SYSTEM
Dashboard
User Management
Categories
Products
Media Files
Sales
Sales Report
ALL SALES
ADD SALE
| Product name | Quantity | Total | Date | Actions
1 | Pepsi | 10 | 400.00 | 2023-07-05
2 | Pepsi | 5 | 200.00 | 2023-07-05
3 | Pepsi | 5 | 200.00 | 2023-07-05
4 | Pepsi | 40 | 1400.00 | 2023-07-05
5 | Ridges | 30 | 600.00 | 2023-06-21
6 | Coke | 20 | 900.00 | 2023-06-15
7 | Malboro | 10 | 900.00 | 2023-06-15
8 | Broom | 1 | 60.00 | 2023-06-15
9 | Safeguard | 3 | 75.00 | 2023-06-15
10 | Plattos | 5 | 100.00 | 2023-06-15
11 | Pepsi | 2 | 70.00 | 2023-06-06


Monthly Sales
localhost/MightyMart_Inventory/monthly_sales.php
INVENTORY SYSTEM
Mark
Dashboard
User Management
Categories
Products
Media Files
Sales
Sales Report
MONTHLY SALES
Product name Quantity sold Total Date
1 Pepsi 2 80.00 2023-06-6
2 Flattos 6 180.00 2023-06-15
3 Safeguard 3 75.00 2023-06-15
4 Broom 1 60.00 2023-06-15
5 Malboro 10 500.00 2023-06-15
6 Coke 20 500.00 2023-06-15
7 Ridges 30 600.00 2023-06-21
8 Pepsi 40 2400.00 2023-07-5