Project Proposal Report on,

Inventory Management System

Prepared by,

Nafiul Aziz

Southeast University

Department of Computer Science and Engineering

Executive Summary:

In today's rapidly evolving business landscape, effective inventory management plays a pivotal role in the success of organizations across various industries. The Inventory Management System (IMS) project addresses the growing need for a robust, streamlined, and technologically advanced solution to tackle the challenges associated with inventory control. Traditional methods often result in inefficiencies, inaccuracies, and increased operational costs. Recognizing the critical role that optimized inventory processes play in achieving business objectives, our organization has undertaken the development of an advanced Inventory Management System.

This project aims to revolutionize the way businesses handle their inventory by providing a comprehensive and user-friendly system. The Inventory Management System will leverage state-of-the-art technologies, including real-time tracking, automated reordering, and integration with barcode scanning and RFID technology. The system is designed to offer businesses a centralized platform to monitor, analyze, and manage inventory levels across multiple locations, ensuring that they can respond swiftly to market demands, minimize carrying costs, and improve overall supply chain efficiency.

The decision to embark on this project is rooted in our commitment to helping organizations overcome the challenges associated with manual and outdated inventory management processes. By developing a sophisticated and adaptable solution, we aim to empower businesses to make data-driven decisions, reduce operational complexities, and ultimately enhance their competitiveness in the marketplace. The project aligns with our vision of providing innovative tools that drive efficiency, profitability, and sustainability for businesses navigating the complexities of modern supply chain management.

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Introduction:

1.Project Introduction:

The Inventory Management System (IMS) is a robust and efficient solution designed to streamline and optimize the control, tracking, and management of goods within an organization. With the rapid pace of business operations and the increasing complexity of supply chains, maintaining an accurate and up-to-date inventory is crucial for ensuring smooth operations and customer satisfaction. The IMS provides a centralized platform that automates key processes such as stock monitoring, order fulfillment, and replenishment, thereby minimizing human errors and enhancing overall efficiency. This system not only facilitates real-time visibility into stock levels but also offers insightful analytics to aid strategic decision-making. By integrating advanced technologies like barcode scanning and RFID, the IMS ensures precision in inventory tracking and reduces the likelihood of stockouts or overstock situations. Ultimately, the Inventory Management System serves as a pivotal tool for organizations seeking to optimize their supply chain processes, enhance inventory accuracy, and achieve operational excellence in today's dynamic business landscape.

2.Team Introduction:

- **Nafiul Aziz**
  ID: 2020200000009
  Responsibility: Frontend, Backend, Database Connection
  and Tech Lead

- **Yousuf Khan**
  ID: 2020200000007
  Responsibility: Frontend and Backend

- **Farhana Yeasmin**
  ID: 2020200000008
  Responsibility: Project Design, Frontend and Backend

- **Jannatul Alam**
  ID: 2018000000120
  Responsibility: FrontEnd and Backend

Background of the Study:

In today's fast-paced business environment, efficient management of inventory is crucial for the success of any organization. Inventory serves as a vital asset that directly impacts a company's financial health, customer satisfaction, and overall operational efficiency. However, many businesses still grapple with manual and outdated inventory management processes, leading to challenges such as overstocking, stockouts, increased carrying costs, and inaccurate financial reporting. Recognizing these issues, the proposed project aims to develop a comprehensive Inventory Management System (IMS) to streamline and optimize inventory control processes.

Problem Statement:

The current scenario in many organizations involves the use of manual methods or disparate systems for tracking inventory. These traditional approaches are prone to human errors, lack real-time insights, and often result in inefficiencies that can lead to financial losses and operational bottlenecks. Common issues faced by businesses include: inaccurate inventory data, Stockouts and Overstocking, Order Processing Delays etc.

Proposed Solution:

The proposed Inventory Management System aims to address these challenges by providing a centralized, automated, and real-time platform for managing all aspects of inventory. We have included in the system :

- Real-time Inventory Tracking
- Automated Order Processing
- Forecasting and Demand Planning
- User-Friendly Interface
- Reporting and Analytics
- Mobile Accessibility

Objective:

1. Primary Objective:

Managing Warehouse:
Managing a warehouse using an Inventory Management System (IMS) involves implementing efficient processes to handle the storage, movement, and tracking of inventory within the warehouse.

2. Secondary Objective:

1.Improve Order Fulfillment:
Enhance the efficiency of order processing and fulfillment.
Reduce lead times and improve customer satisfaction.

2.Increase Accuracy and Visibility:
Achieve real-time visibility into inventory levels and movements.
Improve data accuracy to minimize errors in order fulfillment and reporting.

3.Cost Reduction:
Streamline processes to reduce operational costs associated with manual inventory management. Minimize the costs of holding excess inventory.

4.Enhance Reporting and Analytics:
Develop comprehensive reports and analytics to gain insights into inventory performance. Use data for strategic decision-making and future planning.

Methodology:

1. Process Model:

We have used the **Scrum Method** from Agile methodology. Here's how we use scrum in our Inventory Management System project:

1. Define Initial User Stories
2. Establish Scrum Roles
3. Create a Prioritized Product Backlog
4. Sprint Planning
5. Sprint Duration
6. Daily Stand-up Meetings
7. Refine and Adjust Product Backlog
8. Review and Adapt
9. Scrum Master Support

The Project:

1. Communication:

    a. **Organization visit:** We have visited the Shamsher Jute Mills. The inventory item of our inventory management system is technical gadgets and the Shamsher Jute Mills get all their computer or technical gadgets supplied by Tech-City, Shamsher Jute Mills recommended us to visit the Tech-City company.

    b. **Communication Client:** We have visited the Tech-City company. It is one of the best IT companies in Bangladesh. We had our conversation with one of the employees who manages the inventory system. The services of their inventory system are:

- The system has a user-friendly interface which enables the admin and user to access the system efficiently.
- Admin has the ability to add, delete and update any inventory items in the system.
- The user/customer has the ability to view all the items in the inventory and place orders as per their need.
- The system will generate reports of low stock inventory items and how many were sold and how many items are in stock.

These are the key features that are in the inventory system of Tech City company.

2. Planning:

A. Gantt Chart/Time chart:

Gantt Chart

PROCESS	MONTH 1				MONTH 2				MONTH 3			
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
Create Group & Project Selection	▨	▨										
Project Proposal & Communication			▨	▨								
Project Planning & Designing					▨	▨						
Project Implementation									▨	▨		
Testing											▨	
Project Submission												▨

B. Project Planning:

1. Project Initiation

- Objective:
  Implement a robust Inventory Management System to optimize inventory control, improve order fulfillment, and enhance overall operational efficiency.
- Scope:
  Define the functionalities and features to be included in the Inventory Management System.

2. Stakeholder Identification

- Key Stakeholders:
  Identify stakeholders including end-users, management, IT staff, and potential external vendors.

3. Work Breakdown Structure (WBS)

- Task Breakdown:
  Break down the project into tasks such as system design, development, testing, and implementation.

4. Roles and Responsibilities

- Team Structure:
  Clearly outline roles and responsibilities for each team member.

5. Quality Standards

- Quality Criteria:
  Establish criteria for data accuracy, system reliability, and user experience.

6. Resource Allocation

- Resources:
  Identify and allocate personnel, hardware, software, and budget for each task.

7. Risk Management

- Risk Identification:
  Identify potential risks related to technology, scope changes, resource constraints, etc.

3. Modeling:

a. Project Features:
1. Inventory Tracking
2. Order Management
3. Product Information
4. Reporting and Analytics
5. Supplier and Customer Management
6. User Access Control

b. Function Definitions:

1. **Inventory Tracking:**
   Real-time Tracking:
   Provides up-to-date information on stock levels.

   Serial Number and Batch Tracking:
   Allows tracking of individual items using serial numbers or batch numbers.

2. **Order Management:**
   Sales Order Processing:
   Manages customer orders from creation to fulfillment.

   Purchase Order Management:
   Creates and tracks purchase orders with suppliers.

3. **Product Information:**
   SKU Management:
   Assigns and manages unique Stock Keeping Units for each product.

Product Attributes:

Stores additional information about products, such as descriptions and specifications.

4. **Reporting and Analytics:**

Inventory Reports:

Generates reports on stock levels, turnover, and other key metrics.

Data Analytics:

Provides insights into trends and helps with strategic decision-making.

5. **Supplier and Customer Management:**

Supplier Information:

Stores and manages details about suppliers, including contact information and pricing agreements.
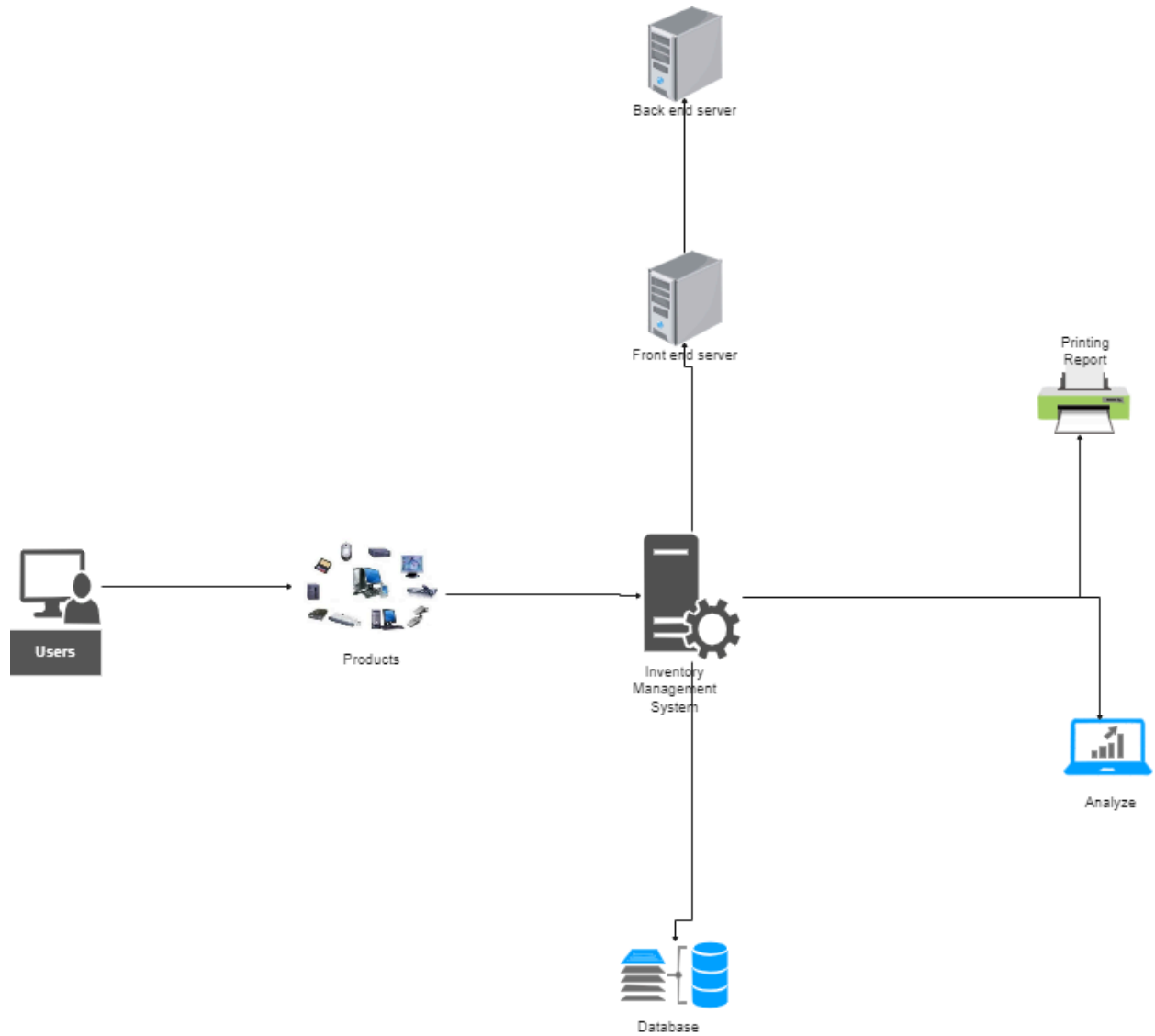
Customer Information:

Manages customer details for order fulfillment and communication

6. **User Access Control:**

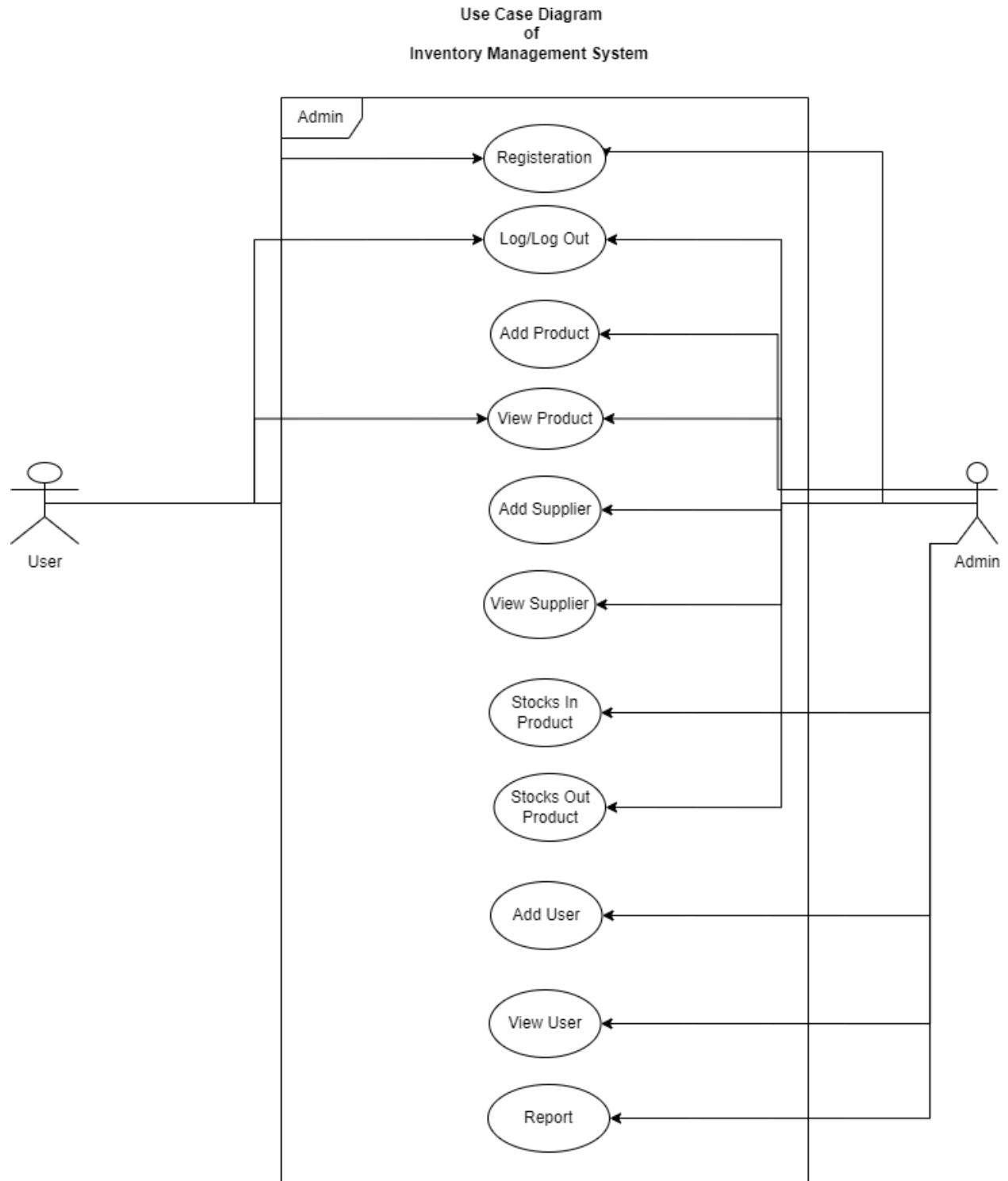Restricts access to system features based on user roles.

c. Architecture Flow Diagram:

Back end server

Front end server

Printing
Report

Users

Products

Inventory
Management
System

Analyze

Database

d. User Stories:

Requirement	User Story
Registration	User can't enter the system unless he is registered. If he is registered can easily login to the system. A registration form will appear and he/she will provide necessary information and register in the system.
Login	User can't enter the system unless he is registered. If he is registered can easily login to the system. A login form will appear and he/she provides email and password to log in the system.
Product View	It will automatically pull the data from the database and show the product information in one place.
Product Add	A form will appear to provide the necessary info in the system. It will take the info and save it in the database. Automatically update in the product view section.
Supplier View	It will automatically pull the data from the database and show the supplier information in one place.
Supplier Add	A form will appear to provide the necessary info in the system. It will take the info and save it in the database. Automatically update in the supplier view section.
User View	It will automatically pull the data from the database and show the user information in one place.
User Add	A form will appear to provide the necessary info in the system. It will take the info and save it in the database. Automatically update in the user view section.
Report	It will automatically pull the data from the database and show all the information in the xls file.
Incoming Goods	It is a property of stock. If a product arrives in our inventory then it will increase in number.
Outgoing Goods	It is a property of stock. If a product is released from the inventory then it will decrease the number. Store in negative value.

e. Use Case Diagram:

Use Case Diagram
of
Inventory Management System

1. Use Case Narratives:

Profile (registration):

Use case id	101
User story	User will register using Name,Email and Password
Goal	User will be registered in the system
Priority	High
Actors	Employee
Pre-Condition	A registration form will appear to fill up the information
Post-Condition	He will be redirected to Login page
Trigger	User try to login in the system
Main-Flow	1. A registration form will appear 2. User provide necessary information 3. Data will be stored in the database. 4. After that he can login in the system make changes

Profile (login):

Use case id	102
User story	User login in the system using Email and Password
Goal	User can use the system by this
Priority	High
Actors	Employee
Pre-Condition	A login form will appear to fill using Email and Password
Post-Condition	He will be redirected to Admin Dashboard page
Trigger	User try to make any changes in the system
Main-Flow	1. A Login form will appear 2. User provide necessary Email and Password 3. Admin Dashboard will appear

Product(view/add):

Use case id	103
User story	User will add product and view in the system
Goal	User can view products in a listed table and add products
Priority	High
Actors	Employee
Pre-Condition	1. A form will appear to add a product 2. In a table we will view the product list
Post-Condition	He will be redirected to Product View page
Trigger	User try to make any changes in the product
Main-Flow	1. A form will appear to take necessary info about the product 2. Then it will save the data in the server 3. Give a message for successful entry 4. Then it will redirect to the product view page 5. We can see the update there

Supplier(view/add):

Use case id	104
User story	User will add supplier and view in the system
Goal	User can add supplier and view the list of suppliers
Priority	High
Actors	Employee
Pre-Condition	1. A form will appear to add a supplier 2. In a table we will view the supplier list
Post-Condition	He will be redirected to Supplier View page
Trigger	User try to make any changes in the suppliers
Main-Flow	1. A form will appear to take necessary info about the supplier 2. Then it will save the data in the server 3. Give a message for successful entry 4. Then it will redirect to the supplier view page 5. We can see the update there

User(view/add):

Use case id	105
User story	User will add user and view in the system
Goal	User can view the user list and add user
Priority	High
Actors	Employee
Pre-Condition	1. A form will appear to add a user 2. In a table we will view the user list
Post-Condition	He will be redirected to User View page
Trigger	User try to make any changes in the user
Main-Flow	1. A form will appear to take necessary info about user 2. Then it will save the data in the server 3. Give a message for successful entry 4. Then it will redirect to the user view page 5. We can see the update there

Stock(In/Out):

| Use case id	106
User story	User will increase or decrease the stock of a product
Goal	User can see the change products quantity
Priority	High
Actors	Employee
Pre-Condition	1. A form will appear to increase product quantity 2. A form will appear to decrease product quantity
Post-Condition	He will be redirected to Product View page
Trigger	User try to make any changes in the product quantity
Main-Flow	1. A form will appear to take necessary info about user 2. Then it will save the data in the server 3. Give a message for successful entry 4. Then it will redirect to the user view page 5. We can see the update there

Report:

Use case id	107
User story	User can see the update in one place
Goal	User can see the update
Priority	High
Actors	Employee
Pre-Condition	
Post-Condition	Download in pdf or excel file
Trigger	User want to see update
Main-Flow	1. Need to select option between PDF or Excel 2. A file will appear 3. You can choose to see or download it

Profile(Logout):

Use case id	108
User story	User want to close the system
Goal	User can not go back to system unless he/she login
Priority	High
Actors	Employee
Pre-Condition	Need to be logged-in in the system
Post-Condition	User can't go back in or execute any operation in the system
Trigger	User click the Logout button
Main-Flow	1. User click the logout button 2. User will be section out 3. User can't go back 4. User will direct to the Login page

f. UI/UX Design:
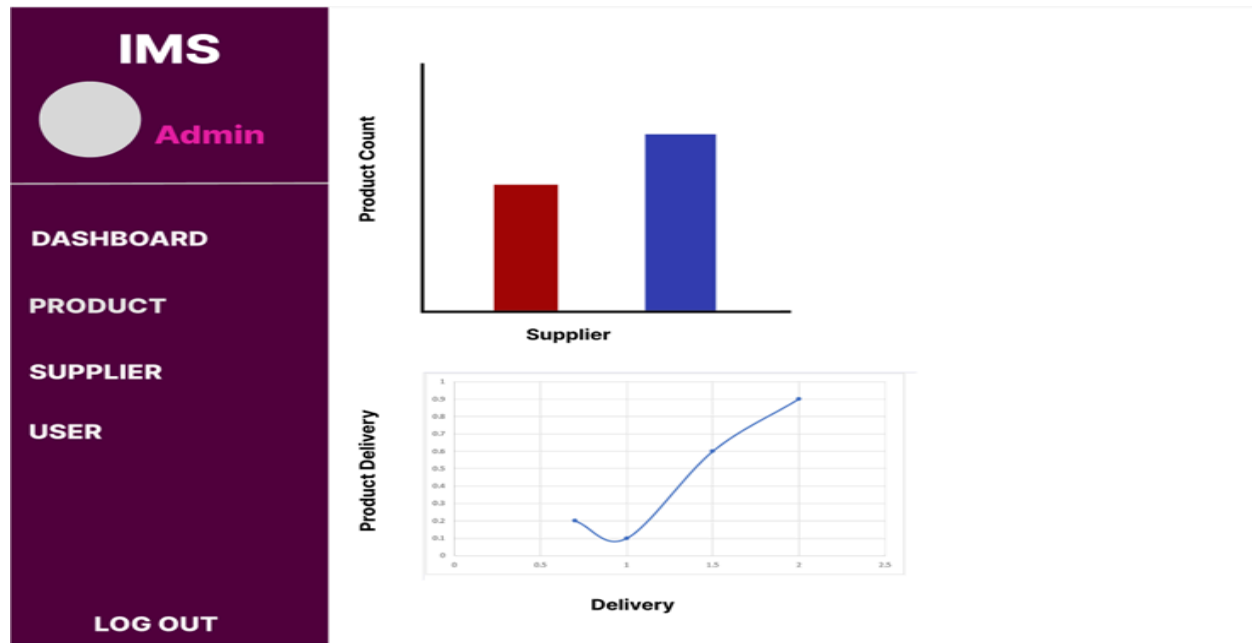
g. List Down Entities and Attributes:

1. **USER -**

   - ID
   - First Name
   - Last Name
   - Create
   - Password
   - E-mail
   - Update

2. **SUPPLIER -**

   - ID
   - Supplier Name
   - E-mail
   - Supplied
   - Create by
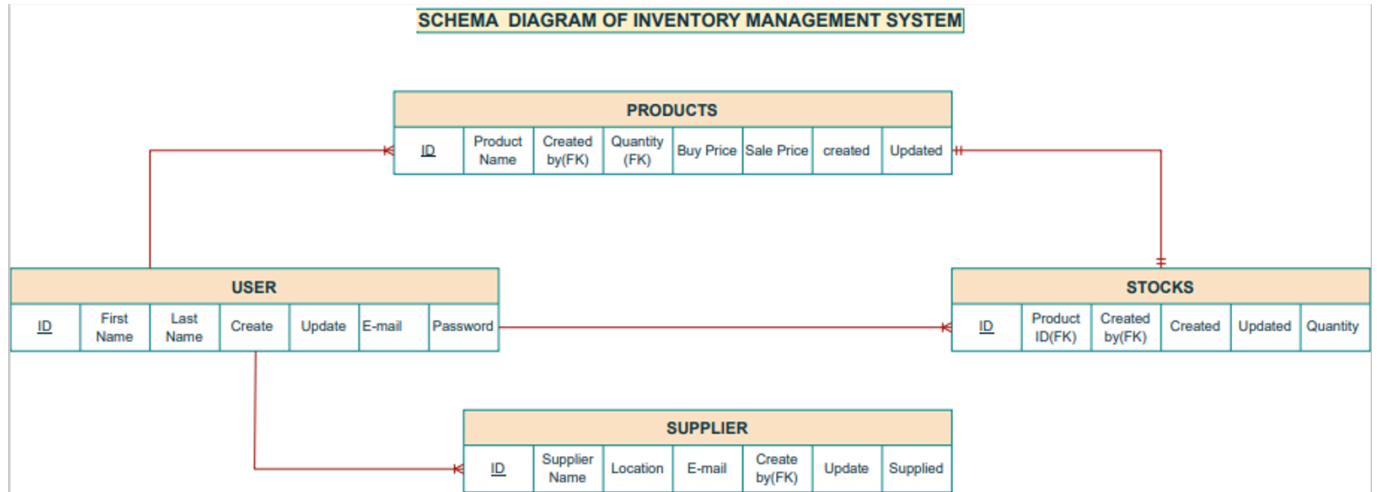   - Update

3. **PRODUCTS -**

   - ID
   - Product Name
   - Created by
   - Created
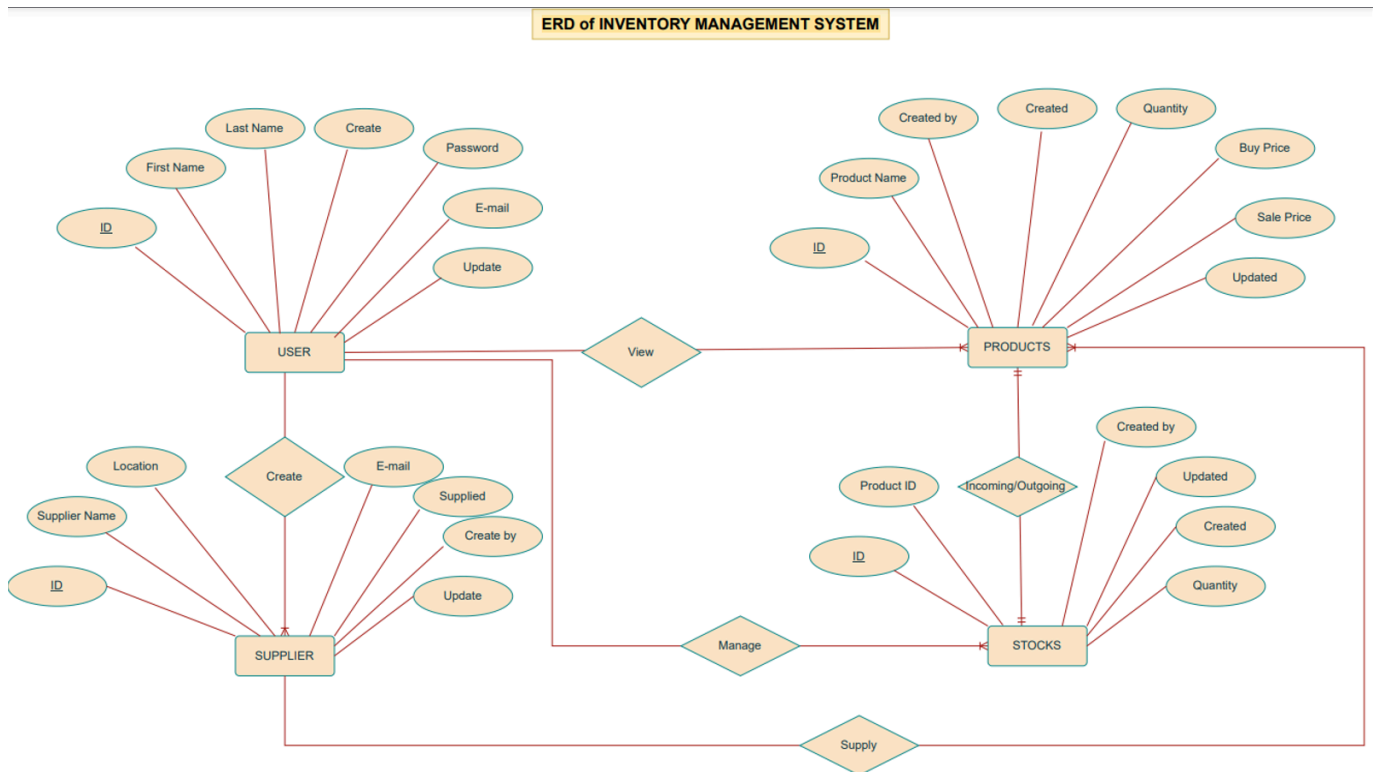   - Quantity
   - Buy Price
   - Sale Price
   - Updated

4. **STOCKS –**

   - ID
   - Product ID
   - Created by
   - Updated
   - Created
   - Quantity

i. Schema Diagram:

SCHEMA DIAGRAM OF INVENTORY MANAGEMENT SYSTEM

PRODUCTS

ID	Product Name	Created by(FK)	Quantity (FK)	Buy Price	Sale Price	created	Updated

USER

ID	First Name	Last Name	Create	Update	E-mail	Password

STOCKS

ID	Product ID(FK)	Created by(FK)	Created	Updated	Quantity

SUPPLIER

ID	Supplier Name	Location	E-mail	Create by(FK)	Update	Supplied

j. Entity Relationship Diagram:

ERD of INVENTORY MANAGEMENT SYSTEM

4. Construction:

a. Development Environment

i. Operating System - Windows

ii. Server - Apache Server

iii. Language - PHP, HTML, CSS, JavaScript

iv. Database - MySQL

v. Tools & Technology -

VS Code -VS16

XAMPP Control Panel Version - 3.3.0

PHP - 8.2.4

Apache Server - 2.4.56

MariaDB - 10.4.28

Figma

5. Deployment:

Considerations for Choosing a Server:

1. Scalability: Choose a server that can scale with your project's growth. Cloud services often provide easy scalability.

2. Performance: Consider the server's performance in terms of processing power, memory, and storage. This is crucial for resource-intensive applications.

3. Geographic Location: Choose a server located close to your target audience to reduce latency and improve user experience.

4. Cost: Evaluate the pricing model of the server provider. Some may offer a pay-as-you-go model, while others may require a commitment.

5. Support and Ecosystem: Consider the support and ecosystem provided by the server provider. This includes documentation, community support, and integration with other services.

6. Security: Ensure that the server environment meets security best practices. This includes regular updates, firewalls, encryption, and compliance with industry standards.

Support and Maintenance:

1. Technical Support:

   Provide a dedicated support channel for users to report issues, ask questions, and seek assistance.

   Establish a ticketing system to track and prioritize support requests.

2. Bug Fixes and Updates:

   Regularly address and resolve reported bugs by releasing patches and updates.

   Implement a version control system to manage software versions and changes.

3. Security Maintenance:

   Monitor and respond to potential security threats promptly.

   Regularly update and patch the software to address vulnerabilities.

4. User Training and Assistance:

   Provide ongoing training sessions for users to familiarize them with new features and functionalities.

   Offer assistance to users facing challenges in using the system effectively.

5. Database Maintenance:

   Regularly optimize and maintain the database to ensure efficient data storage and retrieval.

   Implement backup and recovery procedures to prevent data loss.

6. Scalability and Upgrades:

   Plan for scalability by evaluating the system's capacity to handle increased data and user loads.

   Implement upgrades to the software infrastructure to accommodate evolving business needs.

7. Regulatory Compliance:

   Ensure that the IMS software complies with relevant industry regulations and standards.

   Stay informed about any changes in regulations that may impact the software.

8. Vendor Relationships:
   Maintain positive relationships with software vendors, if applicable, for timely access to updates, patches, and support.

9. License Management:
   Keep track of software licenses and renewals to ensure compliance.
   Plan for license upgrades if the user base or system requirements change.

10. Emergency Response Plan:
    Develop a plan for responding to critical issues or system failures promptly.
    Communicate effectively with stakeholders during emergencies.

7. Conclusion:

Our proposed Inventory Management System addresses the critical challenges businesses face in managing inventory effectively. By leveraging technology to automate and optimize processes, our web application will empower businesses to achieve better control, reduce costs, and make strategic decisions that contribute to sustained growth.

References:

https://youtu.be/27p-_QUhsLo?si=UPxqJic4tXReeRoc

Appendix:

1. Screenshot of the Project:

IMS

INVENTORY MANAGEMENT SYSYTEM

Track your goods throughout entire supply chain, from purchasing to production to end sales

Activate Windows

IMS

INVENTORY MANAGEMENT SYSTEM

Login

Email:

_____

Password:

_____

Login	Create an acount

Forget Password

IMS

INVENTORY MANAGEMENT SYSTEM

Forget Password

Email:

Password:

Confirm Password:

Submit

IMS

ADMIN

Dashbord

Product
- ○ View Product
- ○ Add Product

Suppliers

Stocks

Report

User

Products

Product List

ID	Product Name	Quantity	Buy price	Sell Price	Created By	Created At	Updated At	Action
1001	Mouse	80	110	350	Admin	2024-01-21 20:44:18	2024-01-21 20:44:18	Delete
1004	Keyboard	150	560	600	Admin	2024-01-23 13:48:55	2024-01-23 13:48:55	Delete
1005	Monitor	145	11000	13500	Admin	2024-01-24 13:35:12	2024-01-24 13:35:12	Delete
1006	Printer	12	20000	25000	Admin	2024-01-24 13:36:17	2024-01-24 13:36:17	Delete
1007	SoundBox	34	560	720	Admin	2024-01-24 13:37:36	2024-01-24 13:37:36	Delete

IMS

ADMIN

DashBoard

Product

Suppliers

Stock

Report

User

Inventory Reports

Products Report

EXCEL

Suppliers Report

EXCEL

Stocks Report

EXCEL

Activate Windows
Go to Settings to activate Windows.