**RAJALAKSHMI ENGINEERING COLLEGE,THANDALAM.**



**INTERNET PROGRAMMING PROJECT REPORT**

**“STOCK MANAGER”**

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**ABSTRACT:**

The Inventory Management System is an advanced, web-based application developed to facilitate efficient and seamless inventory control for small to medium-sized businesses. The platform incorporates essential features such as secure user authentication with role-based access, providing tailored functionalities for different users like store managers, inventory controllers, and business owners. The system offers a real-time overview of inventory levels, helping users track product availability, monitor order status, and receive automated alerts for low-stock items.

The intuitive dashboard presents key metrics, including total orders, stock updates, and sales trends, allowing users to make informed decisions swiftly. The system enables users to add, update, and delete product details, ensuring accurate and up-to-date information in the inventory database. Additionally, the platform supports direct order placement for low-stock products, streamlining the restocking process and minimizing the risk of stockouts.

With integrated supplier management, users can maintain comprehensive records of suppliers, track purchase orders, and view order histories, enhancing the procurement process. The platform also features robust reporting and analytics, providing valuable insights into inventory turnover rates, sales performance, and demand forecasting. These analytical tools empower businesses to optimize stock levels, reduce excess inventory, and improve overall operational efficiency.

**INTRODUCTION:**

**I. OBJECTIVE:**

The primary goal of the Inventory Management System is to provide an efficient, reliable, and user-friendly platform for managing inventory. The objectives of the project include:

1. **Real-Time Inventory Tracking**: To allow users to monitor stock levels in real-time, helping businesses respond quickly to changes in inventory status.
2. **Streamlined Order Management**: To enable seamless order processing by allowing users to place orders for low-stock items directly from the platform, reducing delays and preventing stockouts.
3. **Comprehensive Data Management**: To maintain a centralized database of all products, orders, and user information, ensuring accurate data retrieval and streamlined inventory control.
4. **Enhanced Decision-Making**: To provide users with insights on stock trends, helping them make informed decisions about reordering and optimizing inventory levels.
5. **Automated Low-Stock Alerts**: To automatically notify users when product quantities fall below a set threshold, prompting timely restocking and preventing inventory shortages.
6. **Improved User Experience**: To offer a responsive and intuitive interface for both administrators and end-users, making inventory management simpler and more accessible.

**II. TARGET AUDIENCE:**

The Inventory Management System is designed to cater to a range of users who play crucial roles in managing inventory and ensuring smooth business operations. The key target audience includes:

1. **Store Managers**:
   * Role: Store managers are responsible for overseeing the day-to-day operations of retail stores or warehouses. Their primary tasks include monitoring stock levels, placing orders for new products, and ensuring that inventory is well-organized.
   * How They Use the System: Store managers use the system to check current inventory levels, receive alerts for low-stock items, and initiate restocking orders. They can track the status of orders and make adjustments as needed to maintain optimal stock levels.
2. **Inventory Controllers**:
   * Role: Inventory controllers focus on maintaining accurate inventory records, preventing stock discrepancies, and managing stock movements. They are essential in reducing inventory costs and minimizing waste.
   * How They Use the System: Inventory controllers utilize the system to update product information, track inventory changes in real-time, and generate reports on stock levels. They ensure the data in the system matches the physical inventory, helping to identify any discrepancies early on.
3. **Business Owners**:
   * Role: Business owners have a broader perspective on inventory management, focusing on optimizing stock turnover, reducing costs, and improving overall profitability. They make strategic decisions based on inventory data to streamline operations.
   * How They Use the System: Business owners use the system to analyze sales trends, monitor inventory performance, and make informed decisions about purchasing and inventory control. They leverage insights from the system to enhance business efficiency and make data-driven choices to scale operations.
4. **Sales and Procurement Teams**:
   * Role: These teams handle the purchasing of inventory and ensure the availability of products based on demand. Their responsibilities include negotiating with suppliers, managing purchase orders, and maintaining stock levels to meet customer needs.
   * How They Use the System: Sales and procurement teams use the system to review product availability, check low-stock alerts, and place orders with suppliers. The system helps them manage purchase orders efficiently, track order status, and forecast inventory needs based on historical data.
5. **Warehouse Staff**:
   * Role: Warehouse staff are involved in the physical handling of inventory, including receiving, storing, and shipping products. They play a key role in ensuring accurate inventory levels and timely order fulfilment.
   * How They Use the System: Warehouse staff use the system to update stock counts when new inventory is received or dispatched. They can also use it to quickly locate products in the warehouse and prepare them for shipment, helping to streamline the order fulfilment process.
6. **Administrators**:
   * Role: Administrators manage the overall functionality and security of the system. They are responsible for maintaining user accounts, monitoring system performance, and ensuring data integrity.
   * How They Use the System: Administrators use the system to set user permissions, oversee data entry, and resolve any technical issues. They ensure that the system runs smoothly and that all users have access to the necessary features based on their roles

**III. SCOPE:**

The **Inventory Management System** encompasses a comprehensive set of features designed to streamline and automate inventory-related tasks. The scope of the project includes the following key functionalities:

1. **User Authentication and Role-Based Access**:
   * The system provides secure login and signup features for different user roles, including store managers, inventory controllers, business owners, and administrators.
   * Role-based access ensures that users have permissions based on their responsibilities, enhancing data security and preventing unauthorized access.
2. **Dashboard Overview**:
   * The platform features an interactive dashboard that gives users a quick overview of key inventory metrics such as total orders, low-stock alerts, product availability, and pending orders.
   * The dashboard provides real-time data, allowing users to monitor the status of inventory and make timely decisions to maintain optimal stock levels.
3. **Product Management**:
   * Users can add, update, and delete product information, including product name, description, price, and quantity.
   * The system maintains an up-to-date catalog of all products, which helps users keep track of inventory efficiently. It also allows categorization of products based on type, supplier, or other attributes for better organization.
4. **Inventory Tracking and Monitoring**:
   * The system offers real-time inventory tracking, providing users with accurate information on stock levels for each product.
   * Automated updates occur when products are received, sold, or dispatched, reducing manual errors and ensuring data accuracy.
   * The system also logs inventory changes, making it easier to audit stock movements and identify discrepancies.
5. **Low-Stock Alerts and Notifications**:
   * Automated alerts notify users when stock levels for any product fall below a predefined threshold.
   * These notifications help prevent stockouts by prompting timely reordering, ensuring continuous product availability and minimizing the risk of lost sales.
6. **Order Placement and Management**:
   * Users can place orders for low-stock products directly through the system, streamlining the restocking process.
   * The platform provides order management features, allowing users to create, view, update, and cancel orders. It also tracks the status of each order, from pending to fulfilled, providing full visibility into the order lifecycle.

**TECH STACK AND TOOLS USED:**

**PHP**: Server-side scripting for handling back-end operations.

**HTML/CSS**: Structuring and styling the website.

**Bootstrap**: For responsive and visually appealing design.

**XAMPP Server**: Running Apache server locally and MySQL for database.

**Database**: Outline the tables and fields you used to store user data, recipes, comments, and likes.

**SYSTEM DESIGN:**

1. **User Table**

* Fields: userid, username, email, password

2. **Product Table**

* Fields: productid, ProductName, quantity, price, threshold

3. **Order Table**

* Fields: orderid, userID, productID, orderDate, status

**USER INTERFACE:**

A screenshot of a computer screen

Description automatically generated

A screenshot of a computer screen

Description automatically generated

A screenshot of a computer screen

Description automatically generated

A screenshot of a graph

Description automatically generated

A graph with blue lines

Description automatically generated

A screenshot of a computer

Description automatically generated

**BACKEND IMPLEMENTATION:**

The **User Interface (UI)** of the Inventory Management System is designed to be intuitive, user-friendly, and responsive, ensuring that users can efficiently manage inventory tasks with minimal effort. The UI focuses on providing a clear and organized layout, with easy navigation and real-time updates. Below are the main components and features of the UI:

**1. Login and Signup Page**

* **Purpose**: To provide a secure entry point for users, allowing them to create accounts and log in with their credentials.
* **Features**:
  + **Signup Form**: A form for new users to register, capturing details like username, email, password, and user role (e.g., manager, inventory controller).
  + **Login Form**: A simple form for existing users to enter their email and password to access the system.
  + **User Role Selection**: During signup, users can select their role (e.g., manager, staff, admin), which determines their access level and permissions within the system.
  + **Password Recovery**: An option for users to recover their passwords through email verification in case they forget their login credentials.

**2. Dashboard**

* **Purpose**: To provide a comprehensive overview of key inventory metrics and give users a quick snapshot of the current inventory status.
* **Features**:
  + **Total Orders**: Displays the number of orders processed, including pending, completed, and cancelled orders.
  + **Stock Status**: Highlights products that are low in stock, out of stock, or have sufficient inventory levels.
  + **Recent Orders**: A list of the most recent orders placed, showing order IDs, product names, quantities, and status updates.
  + **Notifications**: Alerts users about low-stock items, order updates, and any system messages, ensuring timely action.
  + **Search Bar**: Allows users to quickly search for products, orders, or suppliers using keywords.

**3. Product Management Page**

* **Purpose**: To enable users to view, add, edit, or delete product details in the inventory.
* **Features**:
  + **Product Table**: Displays a list of all products with information such as product ID, name, category, quantity, price, and supplier.
  + **Add New Product**: A form that allows users to enter details for a new product, including product name, description, price, quantity, and supplier.
  + **Edit Product Details**: Users can click on a product to update its information, such as adjusting the quantity or changing the product description.
  + **Delete Product**: An option to remove a product from the inventory if it is no longer needed.
  + **Filter and Sort Options**: Users can filter products by category or sort them by name, quantity, or price to find specific items easily.

**4. Order Management Page**

* **Purpose**: To help users track and manage orders efficiently, from order placement to fulfillment.
* **Features**:
  + **Order List**: Displays all orders with details such as order ID, customer name, product ordered, quantity, total price, order date, and current status (e.g., pending, fulfilled, cancelled).
  + **Order Status Update**: Users can change the status of an order to reflect its progress (e.g., mark as shipped or completed).
  + **Place New Order**: A form for users to select products from the inventory, specify quantities, and place new orders directly through the system.
  + **Order Search and Filters**: Options to search for specific orders or filter orders by status, date range, or customer.

**5. Inventory Tracking and Alerts**

* **Purpose**: To provide users with a real-time view of inventory levels and alert them to critical stock changes.
* **Features**:
  + **Real-Time Stock Levels**: Displays the current quantity of each product in stock, updating in real-time as orders are processed or new stock is added.
  + **Low-Stock Alerts**: Highlights products that have fallen below the minimum threshold, prompting users to restock.
  + **Stock Movement History**: A detailed view showing recent stock changes, including additions, sales, and adjustments, with timestamps for tracking purposes.

**6. Supplier Management Page**

* **Purpose**: To maintain and manage supplier information for efficient procurement.
* **Features**:
  + **Supplier List**: Displays all registered suppliers with details such as supplier ID, name, contact information, and product categories supplied.
  + **Add/Edit Supplier**: A form for adding new suppliers or updating existing supplier details.
  + **Supplier Orders**: A view of past and current orders placed with each supplier, allowing users to review order history and performance.

**7. Reporting and Analytics Dashboard**

* **Purpose**: To provide users with insights and detailed analysis of inventory and sales data.
* **Features**:
  + **Sales Reports**: Graphs and charts showing sales performance over time, highlighting top-selling products and sales trends.
  + **Inventory Reports**: Analysis of stock levels, including average inventory turnover rates and time to restock predictions.
  + **Custom Reports**: Users can generate custom reports based on specific criteria such as date range, product category, or supplier, allowing for in-depth analysis.

**8. Responsive Design and Mobile Compatibility**

* **Purpose**: To ensure that the system is accessible on various devices, including desktops, tablets, and smartphones.
* **Features**:
  + **Responsive Layout**: The UI adjusts automatically to fit different screen sizes, providing a consistent and user-friendly experience across devices.
  + **Mobile-Friendly Navigation**: Optimized navigation menus and touch-friendly buttons for users accessing the system on mobile devices.

**9. User Profile and Settings Page**

* **Purpose**: To allow users to manage their personal information and customize their experience.
* **Features**:
  + **Profile Details**: Users can view and update their profile information, including name, email, and password.
  + **Preferences**: Options for users to customize notification settings, such as receiving alerts for low stock or order updates.
  + **Logout Button**: A secure logout option to end the session safely.

**CHALLENGES AND FUTURE SCOPE:**

The design of the **Inventory Management System** is guided by several key principles aimed at ensuring a user-friendly, efficient, and aesthetically pleasing interface. These principles focus on enhancing the usability and overall user experience, making the system accessible and effective for a diverse range of users.

**1. Simplicity**

* **Objective**: To make the interface straightforward and easy to navigate by minimizing unnecessary elements.
* **Implementation**:
  + The UI uses a clean, uncluttered layout, presenting only essential information to the user. This reduces cognitive load, making it easier for users to focus on key tasks like managing inventory, placing orders, and checking product details.
  + Simple navigation menus and clearly labeled buttons help users quickly find what they need without confusion. For example, menu options like "Dashboard," "Orders," "Products," and "Suppliers" are straightforward, leading users directly to the desired functionalities.
  + Avoiding complex animations or excessive graphics ensures that the interface remains fast and responsive, even on lower-performance devices.

**2. Consistency**

* **Objective**: To create a cohesive user experience by applying uniform design elements throughout the interface.
* **Implementation**:
  + Consistent use of colors, fonts, icons, and button styles across all pages ensures a unified look and feel, helping users recognize patterns and understand the interface more easily.
  + The layout of similar elements (e.g., forms for adding products, suppliers, or orders) follows the same structure, making it easier for users to learn and remember how to use different features.
  + Standard design components, such as navigation bars, action buttons (e.g., "Save," "Delete," "Edit"), and input fields, are maintained across the application to avoid confusion and provide a predictable experience.

**3. User-Cantered Design**

* **Objective**: To prioritize the needs, preferences, and abilities of the users in the design process.
* **Implementation**:
  + The interface is designed based on the typical tasks users need to perform, such as tracking inventory, placing orders, or managing suppliers. This task-oriented design helps users complete their actions quickly and effectively.
  + Feedback from potential users (store managers, inventory controllers) was considered during the design phase to tailor the features and layout to their requirements.
  + The UI includes elements like tooltips, hints, and clear error messages to assist users in understanding how to interact with the system, making it accessible even for users with limited technical knowledge.

**4. Feedback and Visibility of System Status**

* **Objective**: To keep users informed about the current state of the system and their actions.
* **Implementation**:
  + The system provides immediate visual feedback for user actions. For example, when a user adds a new product to the inventory, a confirmation message ("Product added successfully!") appears to notify them of the successful action.
  + Loading indicators are shown when data is being fetched or updated, giving users a sense of progress and preventing them from performing duplicate actions.
  + The use of color-coded indicators helps users quickly assess important statuses, such as red for low-stock alerts and green for in-stock items. Order statuses (e.g., "Pending," "Completed," "Cancelled") are displayed with distinct colors for better visibility.

**5. Visual Hierarchy**

* **Objective**: To organize information on the screen in a way that guides users' attention to the most important elements first.
* **Implementation**:
  + The layout is structured with a clear visual hierarchy, using larger fonts and bold text for headings, while subtler, smaller fonts are used for less critical information. This helps users quickly identify key features like order totals, low-stock alerts, and action buttons.
  + Important actions, such as "Place Order" or "Update Stock," are highlighted with prominent buttons that stand out from the rest of the interface, using contrasting colors to draw the user's attention.
  + Key data, such as the number of items in stock or recent order updates, is presented at the top of the dashboard, making it easily visible upon login.