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Inventory Management System

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ABSTRACT

Inventory typically means items, goods or material a company has for selling and earning profit via it.It can be a raw material a company holds which is further processed to make a finished product. As this material is a physical thing it must be stored and a place where this material is stored is referred asa warehouse. And storing it in an organized way such that operations like searching, adding, removing, etc. can be performed with ease is called inventory management. Inventory Management System is a website developed for managing the inventories of industries in a way it ensures seamlessoperations and helps industries to maximize their profit. It is an efficient way of managing the inventory. Today, where technology is leading this era, where every person has access to internet thiswebsite, intents to helps industries to reduce the manual work of inventory management which typically involves maintaining of a register or making entries on excel. These conventional ways of inventory management system which has its own drawbacks. This website would be a solution to all those drawbacks with manual or semi-automated ways of inventory management. This website will save time of business.

Keywords: – conventional ways, Inventory, Inventory Management System, maximum profit, operations, register, time saving, Warehouse.

INTRODUCTION

Every organization which deals with the raw materials, put its great efforts in the efficient utilization of its raw material according to its need and requirement. Organizational structure and its design are very important as it decides the success and failure of any Organization. This structure is mainly affected by five key components which are Technology, organizational size, strategy, Organizational life cycle and environment. This software involves the collaboration of two of the above-mentioned key factors i.e., Technology and strategy in inventory management. In this era of technological revolution, tasks like inventory management can be efficiently handled by this website. Inventory management system is a website that allows the management of inventories in an automated way where a lot of manual ways are avoided. This inventory management system with its high performance has an ability to manage a high amount of material incoming and outgoing on daily basis. Thiswebsite avoids the conventional drawbacks of inventory management which used to be carried out in a manual way.

The technological advancement provides this software an ability to perform the task such as addition, deletion and checking stock levels of material in a wink of an eye, which is way better than that manual way of inventory management which was time consuming and hectic. This website provides users with the ability to manage inventory from anywhere from the corner of world. This website allows multiple Inventory managers to work at the same time which saves a lot of time.

The main objectives of this research paper are as follows:

- To study and understand the existing system of inventory management.
- To reduce the disadvantages of exiting system.
- To make a Technological innovation to improve the existing system.
- To make a system compatible with modern conditions and needs.

LITERATURE REVIEW

An inventory of Organization is place, commonly referred as warehouse, where resources of the company are stored. Inventory management refers to the process of keeping track record of ordered, stored, using, and selling an

organization's inventory. This may include the management of raw materials, components, and finished products, as well as warehousing and processing of such items. There are different types of inventory management, each with its pros and cons, depending on a company's needs.

- **Periodic inventory management**

This type of inventory management involves simply counting inventory on a daily, weekly, and monthly basis. This approach is straight forward and requires labor force. This type of inventory management is prone to errors as simple counting mistakes cause wrong inventory measurement**.**

- **Bar code inventory management**

This type of inventory management involves the use of bar code for every item or material in inventory. Barcode uniquely identifies each item or material, hence increases the accuracy and efficiency of management system. Inventory add, moved or removed barcode is scanned to update theinventory.

- **RFID inventory management**

RFID stand for radio frequency identification, here a management uses RFID tags which are small electronic device equipped with unique identifier which is read by RFID reader. These RFID tags are read from a distance to update item or material status automatically.

History of inventory management

In early 1800s, the merchants and trader used to simple techniques like tally sticks, ledger books and simple counting methods for inventory management. Later in 1900s, the stock card, bin card and ledger system were introduced as trade was rising. Later Enterprise Resource System (ERS) was introduced which has inventory management tools in built. In the 2000s the standardization of process and introduction to inventory control charts were introduced. Later development of personal PCs first time introduced desktop-based inventory management. Now cloud computing, artificial intelligence,advancement of mobile technology, IoTs, etc. has taken inventory management to the next level. Thehistory of inventory management denotes remarkable progress and innovation made.

Some Techniques used in inventory management:

1. Just-in-Time (JIT)

This method by originated in Japan in Toyota motor around 1960s and 1970s. According to this technique an organization maintains the inventory in an amount such that it fulfils the needs of the customer or production line. This technique helps to reduce the wastage of inventory and organizations money on warehouse, but it has a major drawback that is in case of sudden rise in demand of product it causes shortage of inventory which leads to a failure of organization to fulfil the demand and loss of organization reputation and customer trust.

2. Material Requirement Planning (MRP)

This system ensures availability of inventory levels needed for production on time. MRP calculates the quantity and timing of materials required based on production schedules, sales forecasts, and inventory levels. The primary objectives of MRP are to ensure materials are available when needed for production, minimize excess inventory, and optimize production efficiency.

3. Economic Order Quantity (EOQ):

Economic Order Quantity is a formula used to determine the optimal order quantity that minimizes total inventory costs, including ordering costs and holding costs. EOQ takes into account factors such as demand rate, ordering cost per order, and holding cost per unit. The formula calculates the order quantity that minimizes the sum of ordering costs and holding costs, striking a balance between the costs associated with ordering and holding inventory.

4. Days Sales of Inventory (DSI):

Days Sales of Inventory, also known as Inventory Days or Days Inventory Outstanding (DIO), measures the average number of days it takes for a company to sell its entire inventory. It is calculated by dividing the average inventory value by the cost of goods sold (COGS) per day. DSI provides insights into how efficiently a company manages its inventory and how quickly it turns inventory into sales. A lower DSI indicates faster inventory turnover and better inventory management efficiency, while a higher DSI may indicate excess inventory or slow-moving stock.

METHODOLOGY

Introduction:

The purpose of this project is to develop a website for inventory management.Design:

The website has to be developed in the Bottom-up approach in an iterativemodel.Software Requirements Specification (SRS) Document

The purpose of this document is to outline the software requirements for the development of an Inventory Management System. This system will provide functionalities for managing inventory, including adding brands, categories, products, processing orders, generating reports, and managing system settings.

1.1 Scope

The Inventory Management System will be a web-based application accessible to authorized users. Itwill allow users to add and manage brands, categories, products, process orders, generate reports, and manage system settings. The system will provide a user-friendly interface for efficient inventory management.

1.2 Acronyms, and Abbreviations

- SRS: Software Requirements Specification
- GST: Goods and Services Tax

2.1 Product Perspective

The Inventory Management System will be an independent website that interacts with users through a web-based interface. It will be designed to integrate seamlessly with existing databases and systems.

2.2 Website Functions

The system will provide the following functionalities:

- Brand Management: Add, edit, and delete brands.
- Category Management: Add, edit, and delete categories.
- Product Management: Add, edit, and delete products, including image, brand, category, price, and quantity information.
- Order Processing: Add, edit, and delete orders, including client information, product details, quantity, and automatic GST calculation with discount feature.

- Report Generation: Generate reports of orders within specified dates.
- System Settings: Allow admins to change passwords, usernames, and add additional admins.

User Roles and Permissions: Admin: System administrator responsible for managing the entiresystem.

3. Specific Requirements:

3.1 User Interfaces

The system will have a user-friendly web-based interface with the following modules:

- Brand Management Interface
- Category Management Interface
- Product Management Interface
- Order Processing Interface
- Report Generation Interface
- System Settings Interface

3.2 Hardware Interfaces

The system will require standard hardware components, including computers, and networkinfrastructure.

3.3 Functional Requirements

1. Brand Management- Allow admin to add, edit, and delete brands.
2. Category Management- Allow admin to add, edit, and delete categories.
3. Product Management- Allow admin to add, edit, and delete products, including image,brand, category, price, and quantity information.
4. Order Processing- Allow admin to add, edit, and delete orders, including client information, product details, quantity, and automatic GST calculation with discount feature.
5. Report Generation- Allow admin to generate reports of orders within specified dates.
6. System Settings- Allow admin to change passwords, usernames, and add additionaladmins.

3.4 Non-Functional Requirements

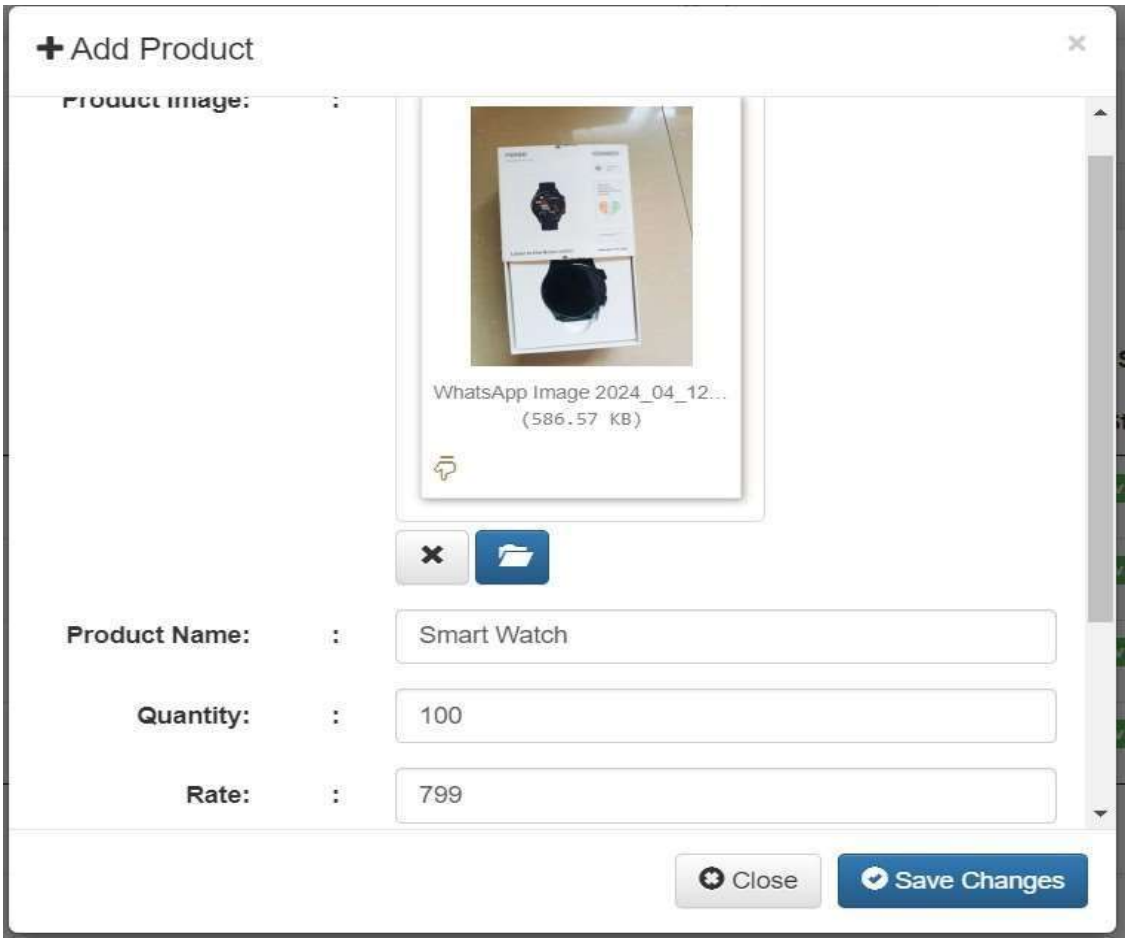
1. Performance - The system should respond to user actions within a reasonable time frame.
2. Security- The system should implement appropriate security measures to protect sensitivedata.
3. Usability- The system should have a user-friendly interface that is easy to navigate andunderstand.
4. Reliability- The system should be reliable and available for use at all times.

Testing

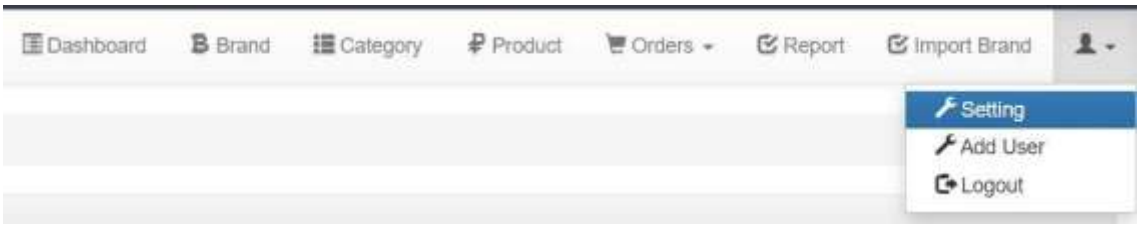
The website testing has to been carried out on the local web server. From this we chose XXAMP, anopensource platform for website testing.

RESULT

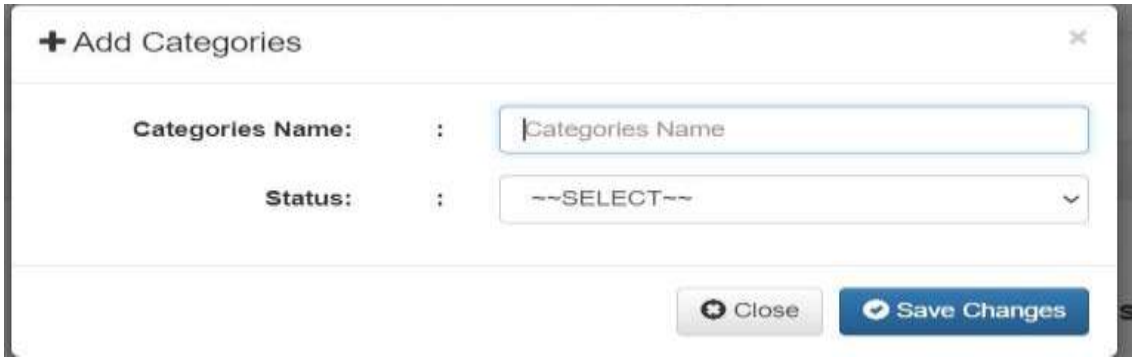
Add product.



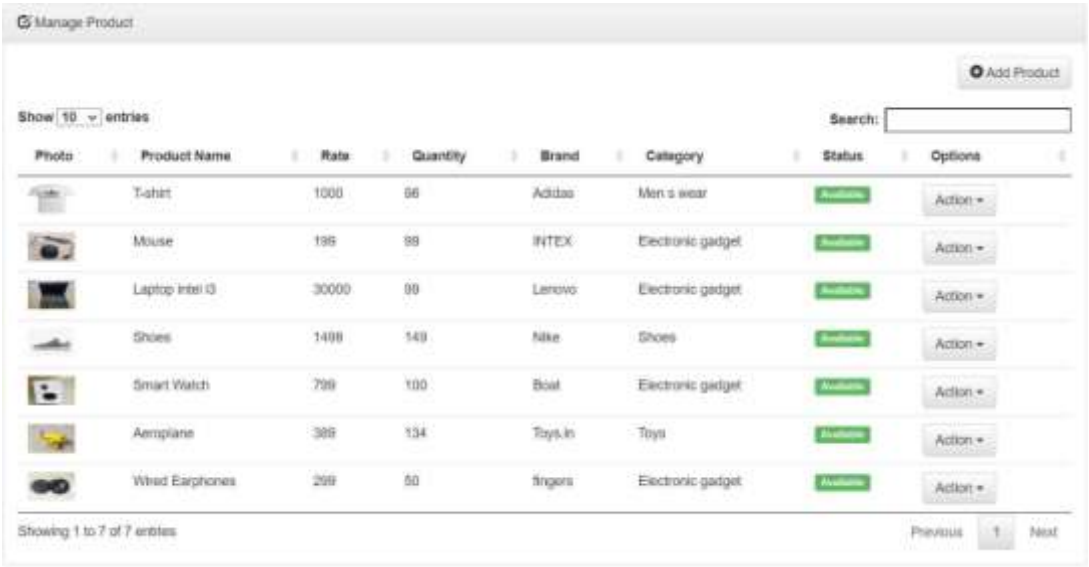
Features



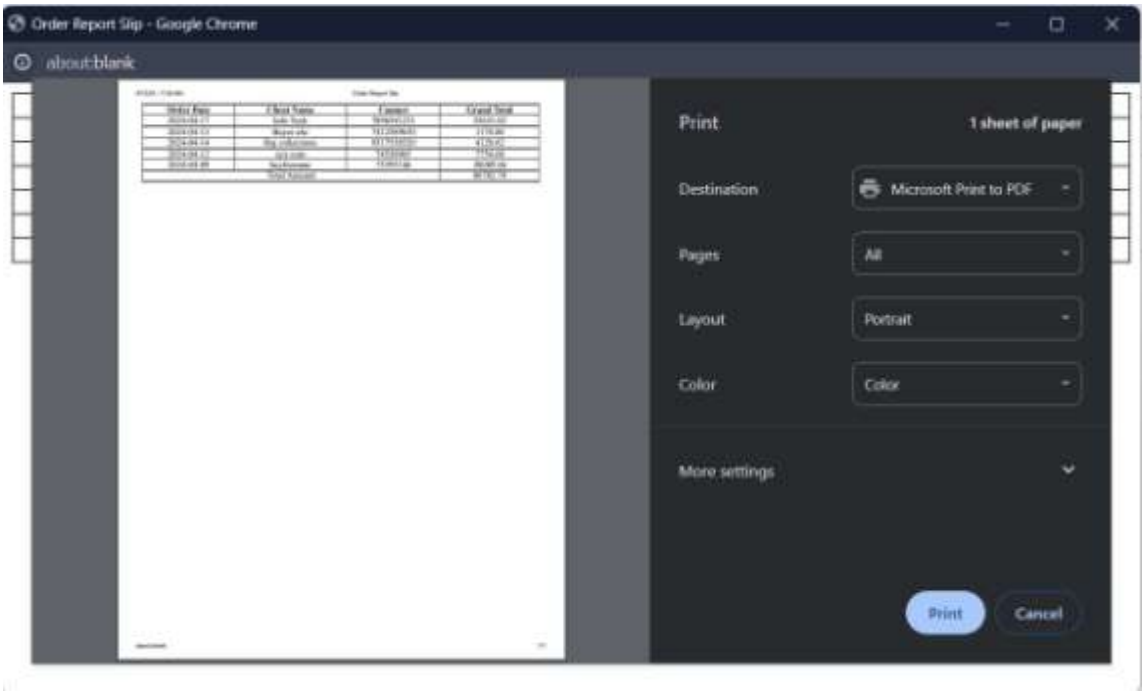
Add Categories



Manage product.



Report Generated



CONCLUSION

The development of the inventory management system website has been successfully completed. Through the hard work of three months, meticulous planning, robust design, efficient development, and rigorous testing, we have created a user-friendly and functional platform that meets the objective of our project. The website provides comprehensive features for managing inventory, including adding brands, categories, products, processing orders, generating reports, and managing system settings. It has been optimized for performance, security, and usability to ensure a seamless user experience. We are confident that this website will streamline inventory management processes, improve productivity, and contribute to the success of our clients' businesses. Moving forward, we will continue to monitor and maintain the website, making necessary updates and improvements to ensure its continued effectiveness and relevance in meeting the evolving needs of our users. We extend our gratitude to all team members,

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