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## TRANSFORMING INVENTORY MANAGEMENT SYSTEM USING MEAN STACK

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### ABSTRACT

All organizations, large and small, have the challenge of managing and managing information such as customers, inventory, sales, suppliers, and payments. There are solutions on the market to support them, including several software solutions from many software companies. The product is accessible, but very expensive and complex for the general public. It is difficult for providers to handle and provide limited functionality. The goal of retailers is to improve ROI through customer satisfaction and store loyalty by providing personalized service to their customers. However, if the retail store does not have enough inventory, you may lose potential customers. The problem with stores is that there is no proper inventory management mechanism for managing and managing sales and store inventory. This task of providing dealers with a merchandise management system as an alternative to sale & antique guides aims to equip the platform with more flexible shop features. Provides sellers and small businesses with a web application that uses the MEAN stack to develop sales and inventory management systems. You can use the MEAN stack to provide a more sophisticated UI and a dedicated database that works correctly. All organizations, large and small, have the challenge of managing and managing information such as customers, inventory, sales, suppliers, and payments. There are solutions on the market to support them, including several software solutions from many software companies.

The product is accessible, but very expensive and complex for the general public. It is difficult for providers to handle and provide limited functionality. The goal of retailers is to improve ROI through customer satisfaction and store loyalty by providing personalized service to their customers. However, if the retail store does not have enough inventory, you may lose potential customers. The problem with stores is that there is no proper inventory management mechanism for managing and managing sales and store inventory. This task of providing dealers with a merchandise management system as an alternative to sale & antique guides aims to equip the platform with more flexible shop features. Provide sellers and SMEs with web applications that use the MEAN stack to develop sales and inventory management systems. You can use the MEAN stack to provide a more sophisticated UI and a dedicated database that works correctly.

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### I. INTRODUCTION

The retail industry is one of the fastest growing industries, and the number of retailers is constantly increasing to meet the needs of customers in specific regions. From hypermarkets to convenience stores, there are a variety of retail stores to choose from to suit your needs. The maximum number of stores is in residential areas and streets. Basically, retailers continue to sell a wide range of products and services for wholesale or personal stopovers. For this reason, due to the nature of retail stores, effective inventory management was required to meet customer demands.

Traditional business keeps revenue and inventory details in spreadsheets, but it becomes less efficient as the business grows. This is because the store has a large inventory of additional items, which complicates monitoring the revenue generated from the store's inventory and is time consuming for the store. The situation is exacerbated if the retailer lacks the right technology to decide which device to buy with the customer's assets. With the recent development of the digital generation, developers around the world do not have the massive and free time to install new internet packages. It's better than the traditional "catabook", improving the quality and scope of data and inventory management, reducing time and redundancy, and creating opportunities to grow your business. It's a really ambitious resource management system.

The era of the MEAN stack has become the device used to create sales and inventory management systems. This is one of the robust full stack technologies used to increase the efficiency of most trafficking websites. As the potential and demand for mobile operations grows, such systems need to incorporate customizable designs and web-based methods into their operations. While many systems still use the rich client architecture, our warehouse management system uses a web-based front end that works only in a normal browser environment. This white paper describes four implicit stack additives (MongoDB, ExpressJS, Angular, NodeJS) and how they work together to build an appropriate inventory management system.

## II. LITERATURE SURVEY

"The inventory management system is a rule of thumb for analyzing which items are sold and which shelf space clutters the shelves of businesses, small businesses, and suppliers," Tim Crosby (2012) said. It is described in the article "Mechanism of inventory management system". This strategy balances retailers' economic needs to keep inventories as low as possible with the goal of ensuring that customers always have what they need (Tim Zierden, 2009). As a result, modern warehouse management systems need to be able to track sales and on-hand inventory, connect to suppliers in near real time, and collect and integrate additional data such as seasonal demand.

The old manual system had some drawbacks. The process of storing, maintaining, and retrieving information was very tedious and time consuming, as the entire system had to be maintained manually. Records are not in a systematic order, and there are many difficulties in associating a particular transaction with a particular context. Entering and retrieving records always takes unnecessary time. Another problem was that it was very difficult to find the error when entering the record. Breaking these records was also very tedious. The current system is partially automated (computerized), but the existing system is actually very annoying because it requires you to enter the same information in three different locations.<sup>[25]</sup> Electronic and automated invoice processes can result in savings of 60-80% compared to traditional paper based processing. Projects typically result in a payback period of 0.5-1.5 years. This document will give the users useful information and data for achieving these results.<sup>[26]</sup>

Many companies have discovered the benefits of switching to a modern product management system. In his research, Donald Reimer (2008) identified the following benefits of sales and merchandise management systems:

- Inventory management increases profitability
- Inventory management improves cash flow
- Inventory management improves decision-making
- Inventory management increases customer satisfaction. <sup>[27]</sup>

It is superior to the traditional "Katabook", improving the quality and scope of data and inventory management, reducing time and redundancy, and creating opportunities for business expansion. This is a very ambitious resource management and demand forecasting system.

## III. PROPOSED METHODOLOGY

Inventory is one of the important parts that needs to be controlled properly to ensure smooth day-to-day business operations. However, many stores do not realize the importance of inventory management because they are not ready to use computer equipment in the process of their business. As a result, the security level of all information, documents and some things related to day-to-day transactions and inventory can become very low. As multiple documents are kept for each item and each supplier, it is time consuming and ultimately inefficient for future reference. In addition, due to poor sales and inventory management, many people also have difficulty determining sales quantities for each item based on the date and availability of the item units. With an inventory management system, the challenge for organizations is the implementation phase, which can be even more complex and risky, especially for SMEs. Failure factors include high customization efforts, poor business process redesign, poor quality consulting, and lack of senior management support, among others.

There are many inventory management systems on the market but they are either low cost effective or they are complicated to use and are inconvenient for the store owner. Our application includes a database that stores

and retrieves information about each transaction and each device's inventory information in backups, product and garage release control, and summary. Turn off the sales factor. This will create the ability to improvise work faster with less time and effort.

Since the concept of vending machines and inventory management is to reduce unnecessary paperwork and inventory management methods, this utility tends to help make the right decisions in the system. system, handling inventory in accordance with the level of sales in the store.

Day after day, millions of people around the world engage in countless purchases, creating a steady stream of value that serves as the foundation of our economy.

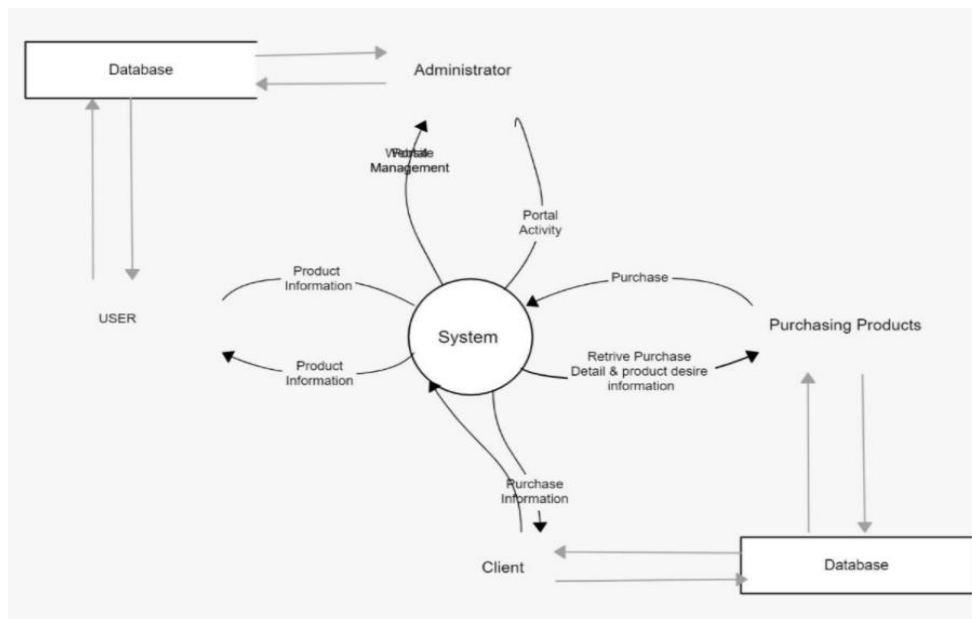
Generally speaking, a sale is a transaction between two parties in which a buyer obtains real or intangible products, services, or assets in exchange for payment. As a result, each side has to give up something in order to gain something beneficial. Inventories refer to raw materials, work-in-progress and finished goods that make up a small portion of a company's total assets sold. Hence, this explains why a business needs inventory to sell products for money, making a profit.

High and low inventories are two types of problems businesses face when managing inventory levels. Due to the high cost of inventory holding, devaluation, and deterioration, holding large amounts of inventory for long periods of time is often not a sound decision for a business. On the other hand, unnecessarily low inventory levels when a business begins to lose valuable sales and market share.

Since the goal of a sales and inventory management system is to reduce paperwork and inefficient inventory management methods, this technology is ready to help make the best choice in the system , by managing inventory based on store sales levels.

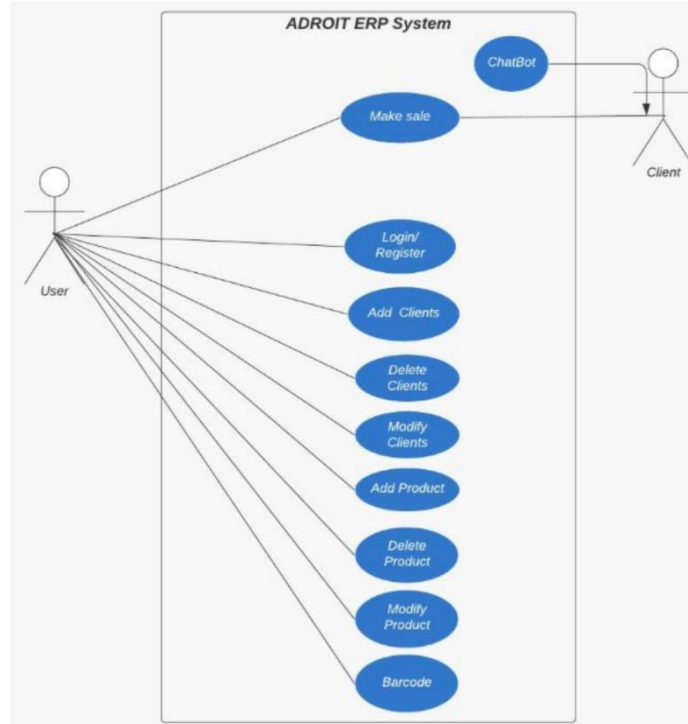
**A. DFD**

This refers to the context diagram, detailed data flow diagram, use case diagram of this system. A. Data flow diagram. A DFD is a diagram that describes the "flow" of a student information system. The representation of data processing can also be done using data flow diagrams. DFD describes the interaction of the system with external entities. This context-level DFD is then "exploded" to reveal more information about the system being used. A data flow diagram (DFD) describes the flow of data through a system. Data flow diagrams are often used for problem analysis.



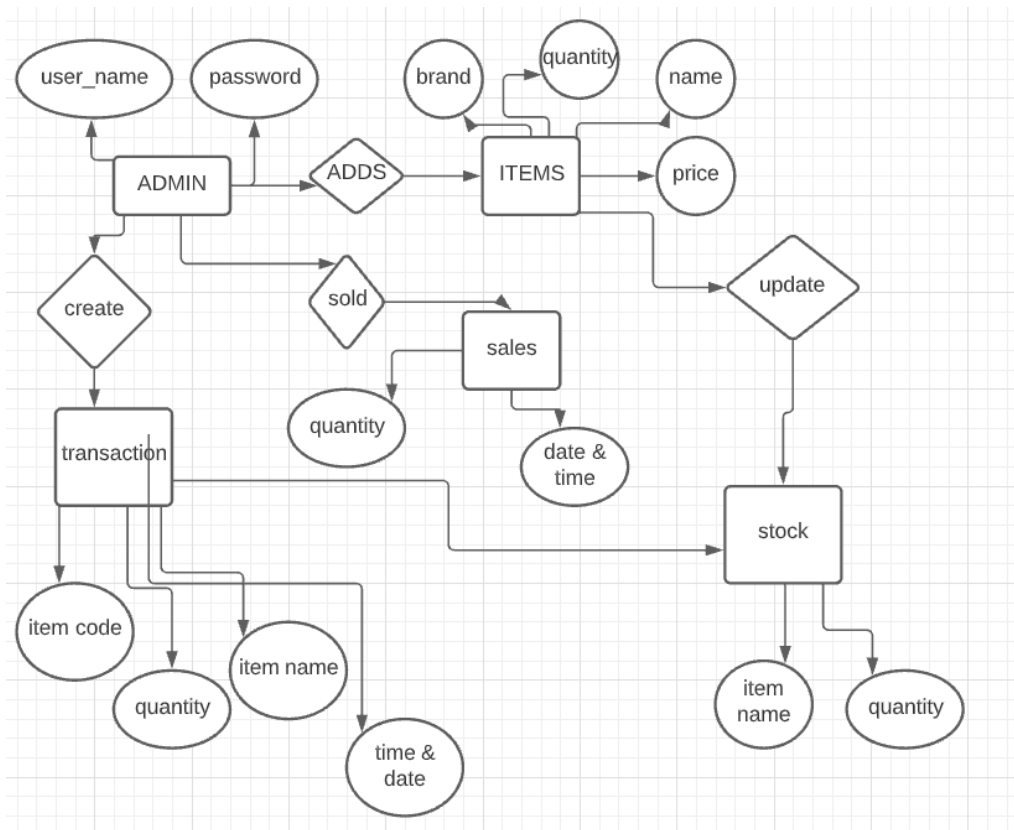
**B. USE CASE**

Users can perform various operations such as log in, register, add customer, delete customer, change customer, add product, delete product, change product, manage barcode, sell, store data, etc. Customers can: Buy products through chatbot systems and get information about previous sales.



**C. ER**

EntityRelationship diagrams are widely used in structural analysis and conceptual modeling. The ER approach is easy to understand, powerful for modeling real-world problems, and easily translated into database schemas. ERD considers the real world to consist of a set of business entities, the relationships between them, and the properties used to describe them. Other ER modeling semantics used in most methodologies include cardinality, participation, and generalization.

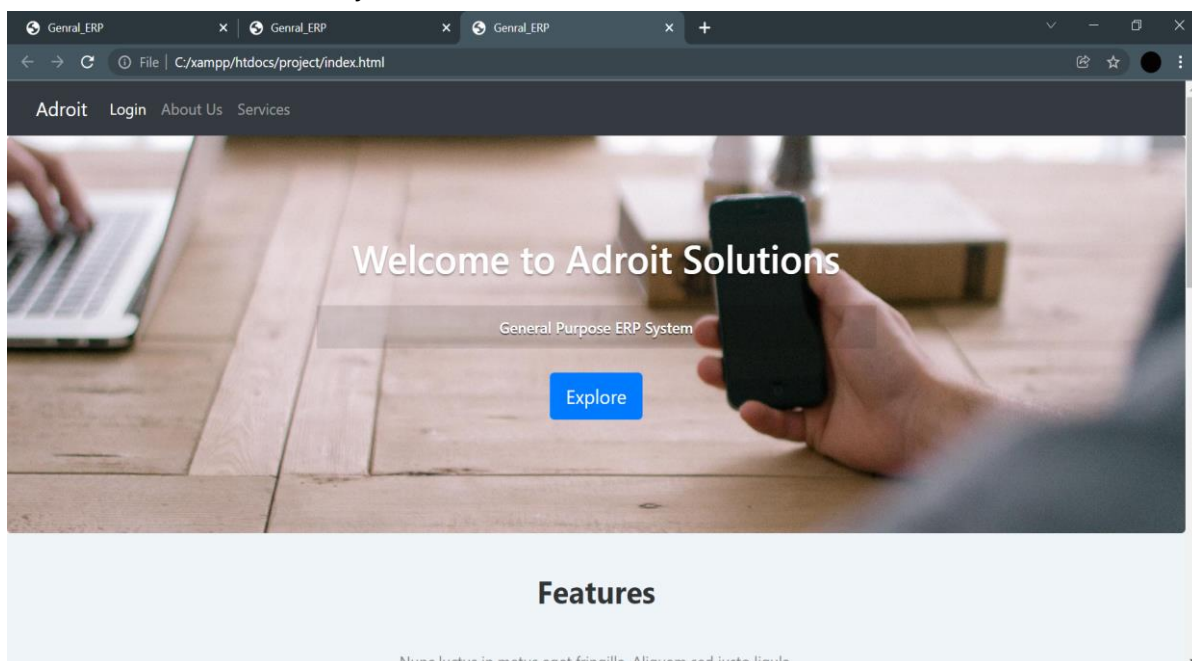


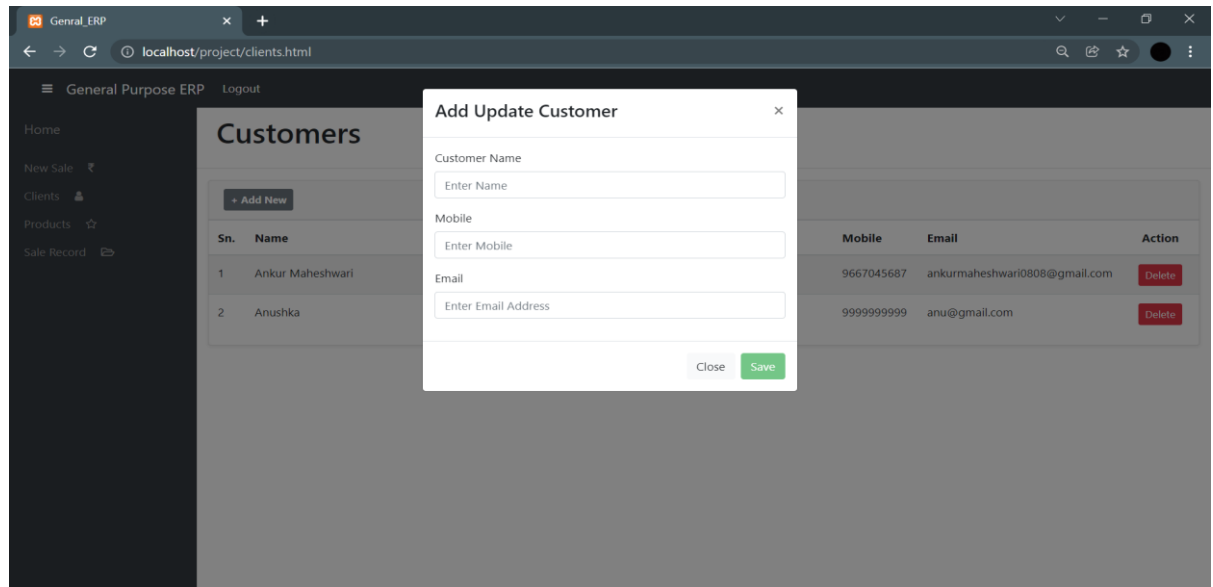
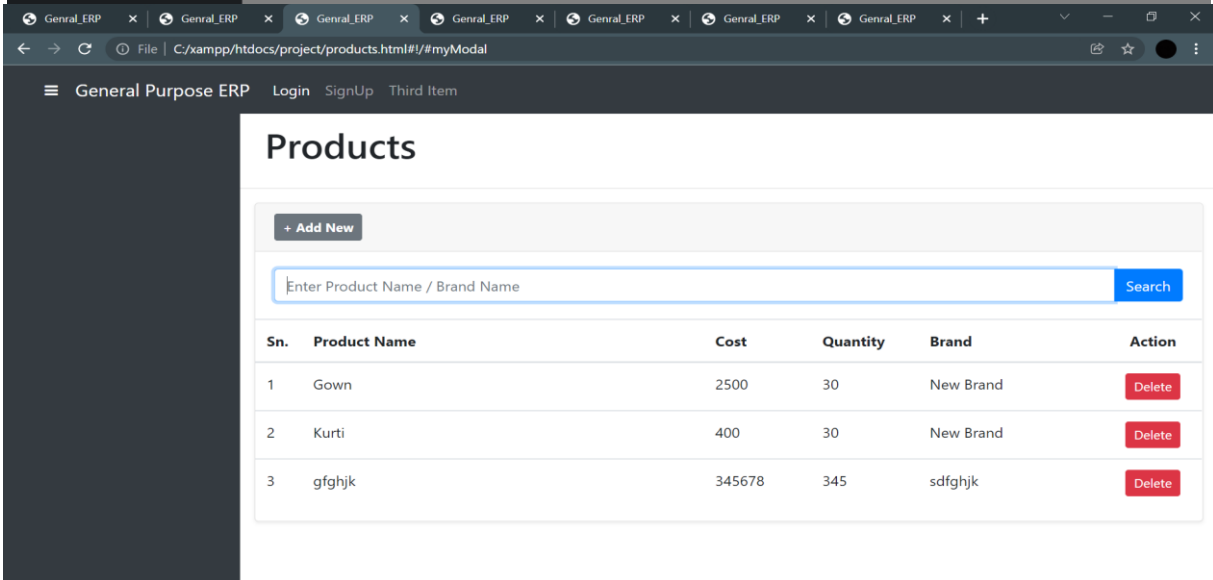
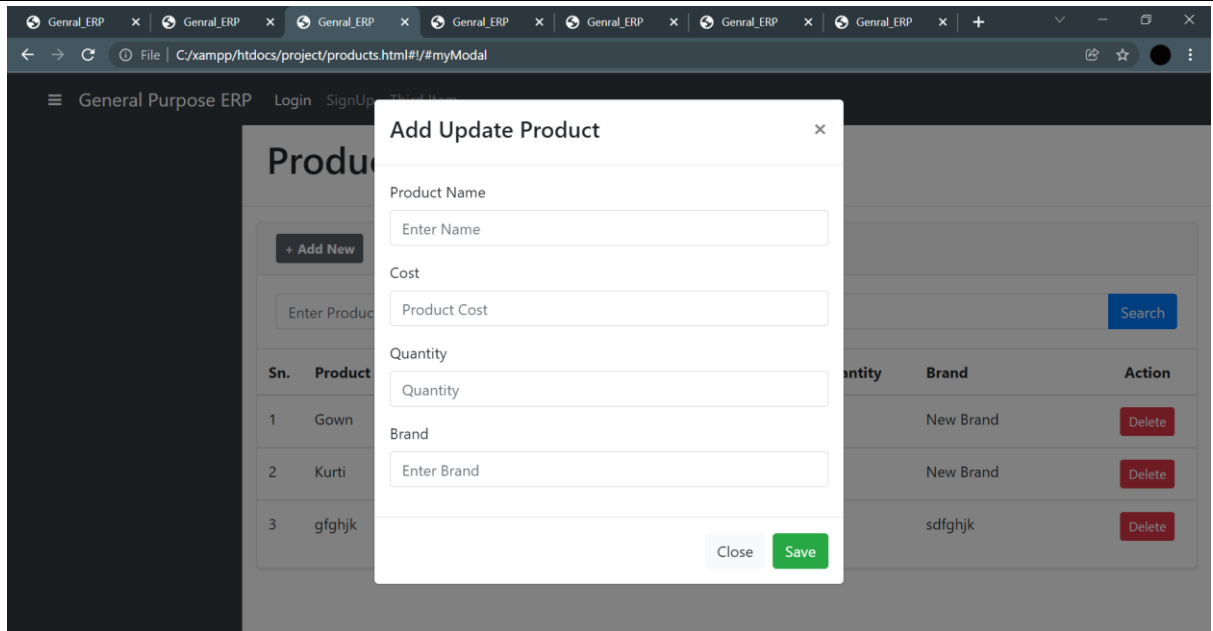
#### IV. RESULT AND DISCUSSION

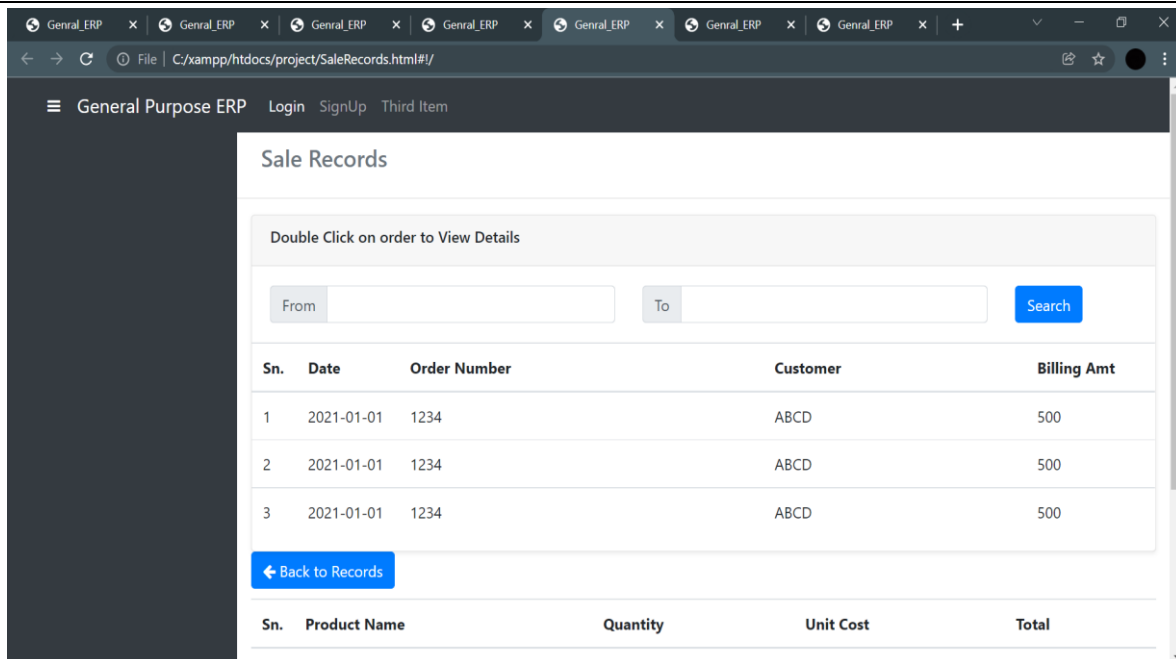
Due to the low implementation of MongoDB, ExpressJS, AngularJS, and Node.JS (MEAN stack) new technology as a unmarried stack, the significance of this observe come to be obvious whilst additives talk internally the use of a unmarried not unusual place language. This will remove the blessings of availing the equal language during the stack. In phrases of developer enjoy, speed, agility, MVC support, scalability, opensource, and cloud deployment, MEAN is cost effective. These advantages are larger in comparison to different technologies. Developers might also additionally initiate deploying apps at once at the server using Node.js, eliminating the requirements for a separate freestanding server. The overheads related to the client server layout are decreased as a result.

The sensible enjoyment in designing the emailing subsystem with the MEAN stack technology has been described in this paper. The new concept highlights the variations found within the stack of the maximum usual internet software technology, which include LAMP and in advance technology, which have been noticed. When compared to opportunity options, those additives offer higher interplay convenience. The observer's personal interface findings gathered that customers may also join from any location. The software program gives customers flexibility, easy interactions, and the wanted degree of service. The observer discovered that apps constructed using the MEAN stack era are easy to create, deploy, and use, in addition to being fantastically engaging.

Inventory Management System is a sincere internet primarily based online software that is a firststrate proper tool for small agencies. It has all the additives needed for a small business. Our crew has succeeded in growing a software that permits us to edit, insert, and delete gadgets as wanted. This software is suitable for small organizations with multiple warehouses. Despite its limitations, our team is happy that taking advantage of this era can benefit the company. State-of-the-art technologies such as the MEAN stack also ensure correct operation and a more user-friendly interface.







## V. CONCLUSION

This paper began out by summarizing the connection between Sales and Inventory. The control and ideas had been mentioned regarding issues and blessings. The not unusual place blessings of right stock control had been illustrated. With the reference of a Web-primarily based totally self-evolved application, the MEAN stack became defined.

LAMP in addition to its versions are ancient technology which have spawned a plethora of thrilling and beneficial programs all throughout the world, and this can not be overstated. JavaScript, on the other hand, is a frontrunner in internet improvement in cutting-edge technology. Any stack may be used in line with the programmer's wishes and priorities, the MEAN stack has over again proved to be a reliable answer for quick, extensible, and real-time programs. The MEAN stack is a cutting-edge, and sturdy generation that overthrew internet improvement platforms. NodeJS' s non-blocking off technique made concurrency simpler. With the JSON records format, the MongoDB document-oriented, No-SQL database has established better performance, flexibility, and scalability in new technology. Express.JS was created primarily based totally on Node.JS to provide builders an easy framework to work with. Google created AngularJS to sell the MVC framework for growing SPAs and hastily developing lovely interactive consumer interfaces.

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