Major Project Report

On

INVENTORY MANAGEMENT SYSTEM

Submitted By

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CERTIFICATE

This is to certify that the project work titled " **INVENTORY MANAGEMENT SYSTEM**" is a Major project work submitted by **Yarragoti Raju** in the department of **Computer Science And Engineering** in partial fulfillment of requirements for the award of degree of Bachelor of Technology in Computer science and engineering for the year 2022-2023 carried out the work under the supervision. The report has not been submitted previously in part or in full to this or any other University or Institution for the award of any degree or diploma.

B.LINGAMURTHY — PROJECT INTERNAL GUIDE

SATYANANDARAM N — HEAD OF THE DEPARTMENT

DECLARATION

I **Yarragoti Raju** hereby declare that this report entitled "**INVENTORY MANAGEMENT SYSTEM**" submitted by me under the guidance and supervision of B.Lingamurthy is a bonafide work. I also declare that it has not been submitted previously in part or in full to this University or other University or Institution for the award of any degree or diploma.

Date:30-04-2023 Yarragoti Raju

Place :R.K Valley (R170726)

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of any task would be incomplete without the mention of the people who made it possible and whose constant guidance and encouragement crown all the efforts success.

I am extremely grateful to our Director.Prof. **K. SANDHYA RANI** for fostering an excellent academic climate in our institution.

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I would like to convey thanks to our guide at college **Mr.B.LINGAMURTHY** for his guidance, encouragement, co-operation and kindness during the entire duration of the course and academics.

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ABSTRACT

1.Inventory Management System(IMS):-

An inventory management system is a software-based solution that enables businesses to track and manage their inventory levels, orders, sales, and shipments. The system is designed to optimize inventory levels and ensure that the company has the right products in the right quantities at the right time, while minimizing waste and reducing costs.

The system works by keeping track of inventory levels, orders, and shipments in real-time, and generating reports and alerts when inventory levels fall below certain thresholds or when orders are placed. The system can also track sales data and trends, enabling businesses to forecast demand and make informed decisions about when and how much to reorder.

An inventory management system also enables businesses to generate accurate sales reports. The system can track sales data and generate reports that provide insights into sales trends, product performance, and customer behavior. This information can be used to make informed decisions about product pricing, promotions, and inventory management.

INTRODUCTION

1.Inventory Management System(IMS):-

An inventory management system is a software-based solution that enables businesses to track and manage their inventory levels, orders, sales, and shipments. The system is designed to optimize inventory levels and ensure that the company has the right products in the right quantities at the right time, while minimizing waste and reducing costs.

Effective inventory management is crucial for businesses of all sizes, as it impacts several aspects of operations, including cash flow, profitability, customer satisfaction, and competitiveness. A well-designed inventory management system can help businesses streamline their inventory management processes, reduce errors and inefficiencies, and improve their overall performance.

One of the key benefits of an inventory management system is real-time inventory tracking. The system enables businesses to track their inventory levels in real-time, which is crucial for maintaining optimal inventory levels and preventing stockouts or overstocking. The system also enables businesses to track their inventory across multiple locations, which is important for businesses that have multiple warehouses or retail outlets.

Another benefit of an inventory management system is order processing. The system enables businesses to process orders quickly and accurately, by automating order processing and providing real-time order tracking. This improves customer satisfaction and reduces errors and delays in order processing.

An inventory management system also enables businesses to generate accurate sales reports. The system can track sales data and generate reports that provide insights into sales trends, product performance, and customer behavior. This information can be used to make informed decisions about product pricing, promotions, and inventory management.

In addition to these benefits, an inventory management system can also help businesses reduce costs and minimize waste. By optimizing inventory levels, businesses can reduce their inventory holding costs and avoid stockouts and overstocking. The system can also help businesses identify slow-moving or obsolete inventory, which can be sold off or disposed of to avoid waste.

Overall, an inventory management system is an essential tool for businesses that want to improve their inventory management processes, reduce costs, and improve their overall

performance. With the right system in place, businesses can achieve greater efficiency, accuracy, and productivity, while also improving customer satisfaction and competitiveness.

The system works by keeping track of inventory levels, orders, and shipments in real-time, and generating reports and alerts when inventory levels fall below certain thresholds or when orders are placed. The system can also track sales data and trends, enabling businesses to forecast demand and make informed decisions about when and how much to reorder.

There are several benefits of implementing an Inventory Management System, including:

1. Improved efficiency: By automating inventory tracking and management, businesses can streamline their operations, reduce errors, and improve overall efficiency.

2. Cost savings: The system helps businesses minimize waste and reduce inventory costs by ensuring that they have the right products in the right quantities.

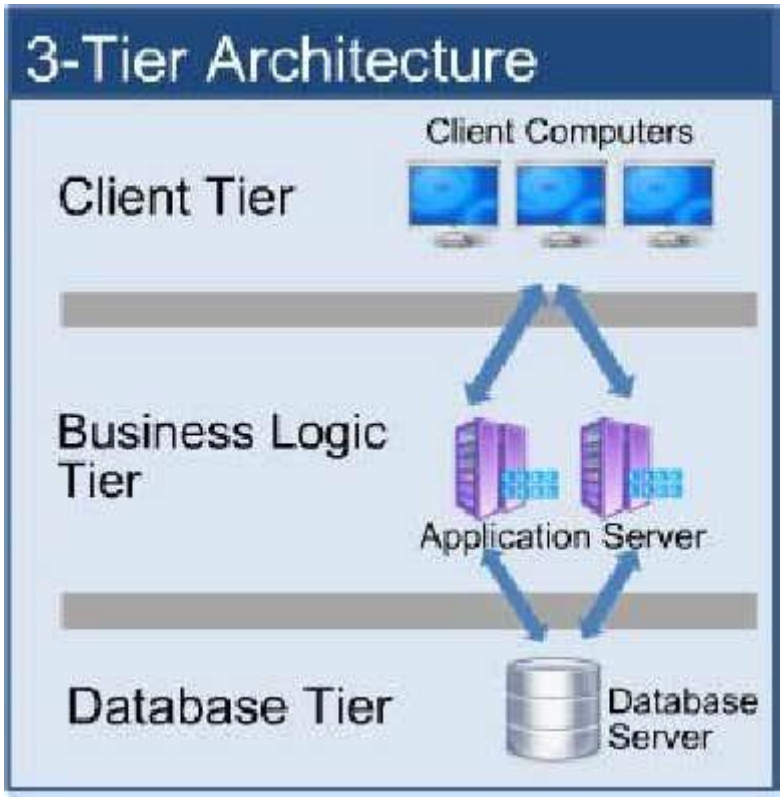
3. Increased accuracy: The system provides real-time inventory data, reducing the risk of stockouts or overstocking, and enabling businesses to make more accurate forecasting and ordering decisions.

4. Enhanced customer service: With accurate inventory data, businesses can fulfill orders more quickly and accurately, leading to increased customer satisfaction.

Overall, an Inventory Management System can help businesses improve their operations, reduce costs, and increase customer satisfaction.

Data Tier:

Data layer is also the class which gets the data from the business tier and sends it tothe database or gets the data from the database and sends it to business tier. This is theactual DBMS access layer or object layer also called the business object. The database backend stores information which can be retrieved by using the mysql d atabaseConnectivity. Mysql database connectivity is used to manage the commi=unication between the middle tier and the backend database by issuing co mplex databasequeries.



Purpose

The purpose of an inventory management system is to provide an efficient and effective way to manage and track inventory levels, orders, and sales within a business. By using an inventory management system, businesses can reduce costs associated with overstocking or understocking inventory, improve customer satisfaction by ensuring products are always available, and make data-driven decisions based on real-time inventory data. Additionally, an inventory management system can help streamline business operations by automating certain tasks such as purchase order generation, inventory tracking, and sales order fulfillment. Overall, implementing an inventory management system can result in improved inventory accuracy, increased productivity, and ultimately lead to better business performance.

SYSTEM DESIGN

- **Process Flow Diagram:**

Process Flow Diagram or Flowchart is a diagram which uses geometric symbols andarrows to define the relationships. It is a diagrammatic representation of thealgorithm. The Process flow Diagram of our application is shown below:

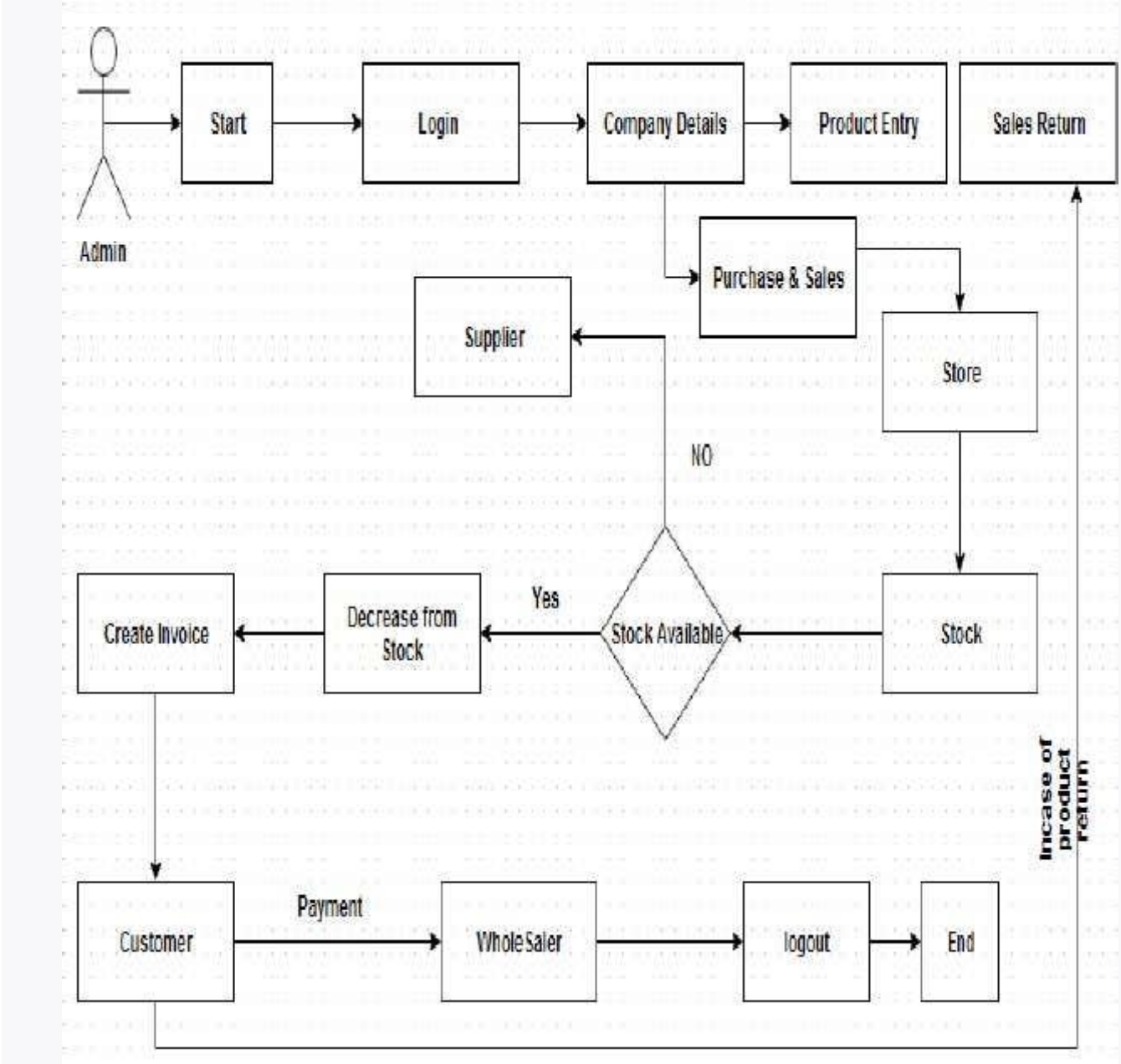


Fig: IMS Process flow diagram

- **Use Case Diagram**

Its purpose is to present a graphical overview of the functionality provided by asystem in terms of actors and their goals.The main purpose of a use case diagram is to show what system functions are performed for which actors.

- **Diagram Building Block**

Use cases: A use case describes a sequence of actions that provide something of measurablevalue to an actor and is drawn as a horizontal ellipse.

Actor

An actor is a person, organization or external system that plays a role in one or moreinteractions with the system

System boundary boxes (optional)

A rectangle is drawn around the use case called the system boundary box to indicatescope of the system.

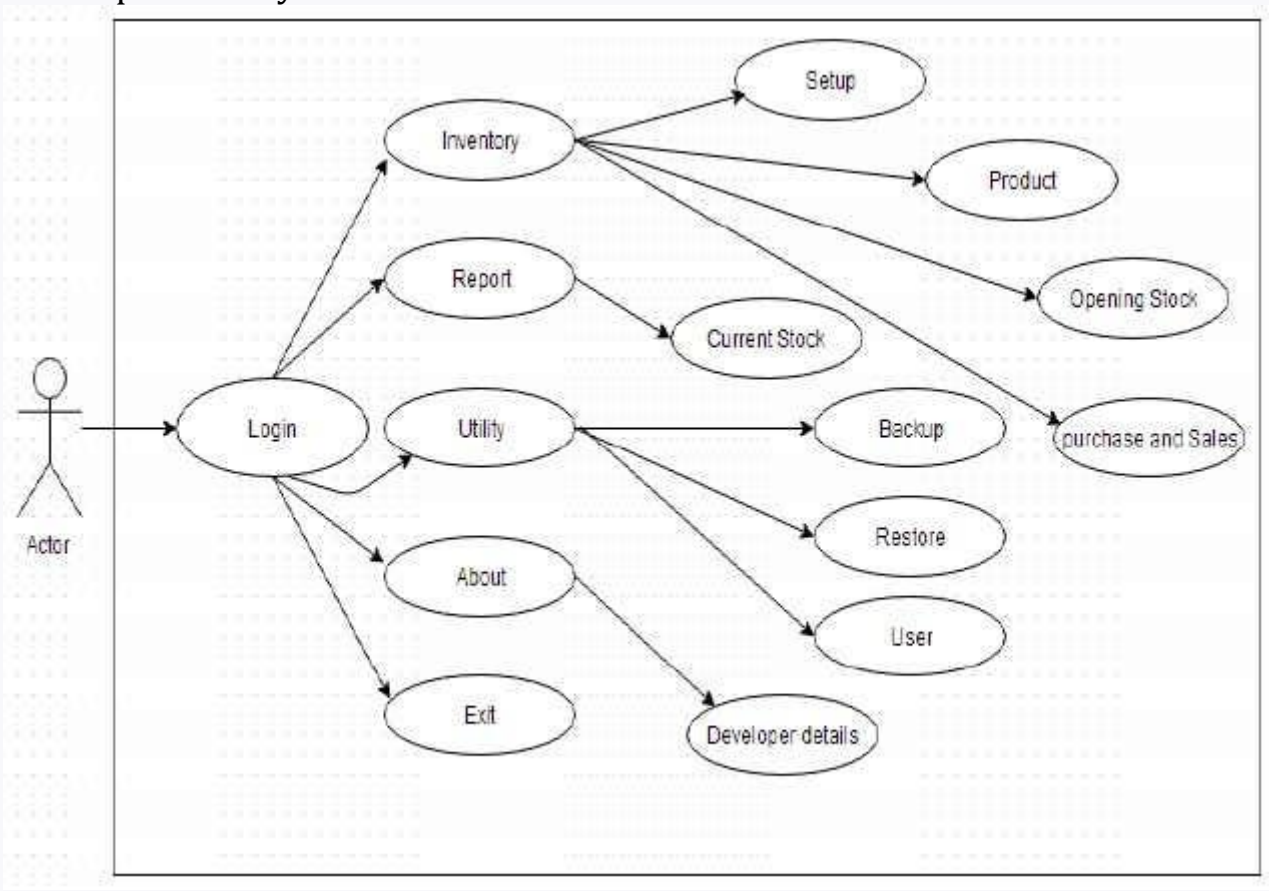


Fig:IMS Use Case Diagram

Technologies Used

An inventory management system is a software-based solution that enables businesses to track and manage their inventory levels, orders, sales, and shipments. The system is designed to optimize inventory levels and ensure that the company has the right products in the right quantities at the right time, while minimizing waste and reducing costs

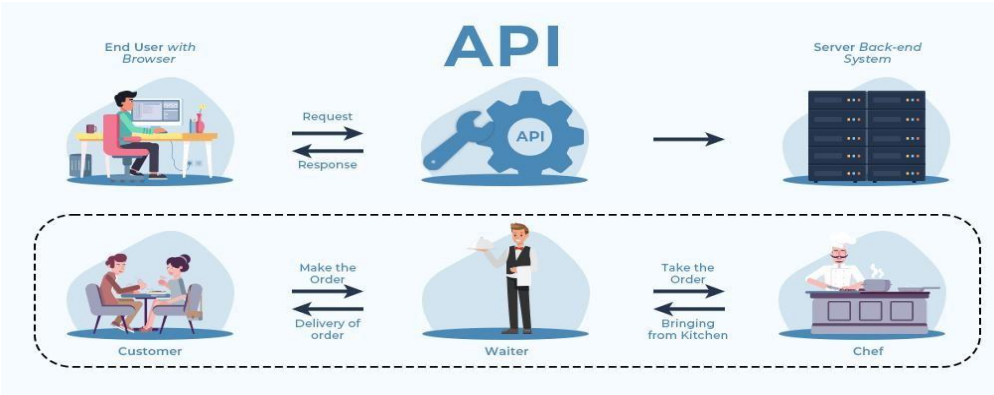
- **MS SQL**

An IMS needs a robust database management system to store and manage data related to orders, inventory, customers, and other aspects of the business.We choose **MS SQL SERVER**which is a popular open-source relational database management system (RDBMS) that is widely used in modern web applications.

Microsoft SQL Server, commonly known as MS SQL Server, is a relational database management system (RDBMS) developed by Microsoft. It is a powerful, robust, and scalable database management system used by organizations of all sizes to store and manage large amounts of data. MS SQL Server supports transaction processing, business intelligence, and analytics applications.

SQL Server is designed to handle large amounts of data, ranging from small databases to complex data warehouses. It offers a range of features and tools for managing data, including data analysis, data mining, reporting, and integration with other Microsoft products. SQL Server uses the SQL (Structured Query Language) programming language to interact with the database. SQL Server supports both SQL and Transact-SQL (T-SQL), a Microsoft-specific version of SQL that includes additional functionality and features.

- **Application Programming Interfaces (APIs):-**



An IMS needs to integrate with other applications such as **eCommerce platforms**, **payment gateways, shipping carriers**, and **accounting software**. APIs enable the IMS to communicate and exchange data with these applications.

- **Front-end Technologies:-**

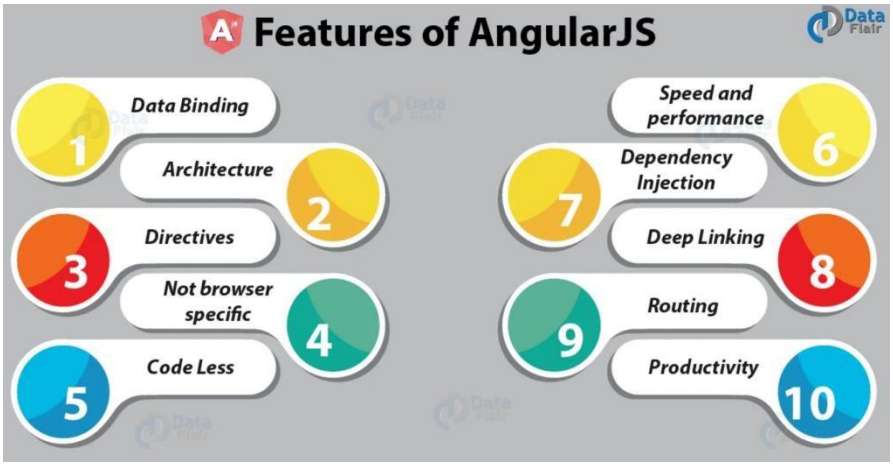
An IMS requires an intuitive user interface that enables users to manage orders, inventory, and other aspects of the business. Common front-end technologies used in the development of an

IMS include HTML, CSS, and JavaScript.We have used Angular JS as Front-end.

- **Angular JS:-**

AngularJS is an open-source, front-end JavaScript framework that was developed by Google. It was released in 2010 and has since gained immense popularity among web developers due to its robustness and versatility. AngularJS uses a Model-View-Controller (MVC)architecture that makes it easy to build dynamic web applications. It simplifies the development process by providing a set of tools and directives that allow developers to build responsive and interactive user interfaces.

AngularJS uses two-way data binding, which allows changes made to the model to be automatically reflected in the view and vice versa. It also provides a rich set of directives that can be used to extend HTML with custom attributes and elements. Dependency injection is another key feature that makes it easy to manage and test components. AngularJS is designed to work seamlessly with other web technologies and libraries, such as Node.js, jQuery, and Bootstrap. It is also highly extensible, with a large and active community of developers constantly creating new plugins, modules, and extensions. Overall, AngularJS is a powerful and versatile framework that provides developers with a range of tools and features for building robust and scalable web applications.



- **Back-end Technologies:-**

The back-end is the server-side of the IMS that processes requests, stores data, and interacts with other systems. The back-end typically includes database management, order processing, inventory management, and integration with third-party systems such as payment gateways and shipping providers. Here we have used **Node Js**and **ExpressJs** framework.

- **Node Js :-**

Node.js is an open-source, cross-platform runtime environment for executing JavaScript code outside of a web browser. It allows developers to use JavaScript for server-side programming, making it a popular choice for building scalable and high-performance web applications.

Node.js uses an event-driven, non-blocking I/O model, which makes it highly efficient and capable of handling a large number of simultaneous connections. It also comes with a built-in package manager called npm, which allows developers to easily install and manage third-party packages and dependencies.

Node.js has a modular architecture, with core modules that provide basic functionality like file system access and networking, and a large ecosystem of third-party modules that can be easily installed and integrated into applications. This modularity and flexibility make Node.js a popular choice for building everything from web servers and APIs to command-line tools and desktop applications.

Node.js also supports asynchronous programming, which allows developers to write code that runs concurrently and avoids blocking the event loop, making it highly performant.

Overall, Node.js is a powerful and versatile technology that has revolutionized the way developers build server-side applications with JavaScript.

- **Express Js:-**

Express.js is a popular web application framework for Node.js that simplifies the process of building web applications and APIs. It provides a set of tools and features for handling HTTP requests, routing, middleware, and more.

One of the key features of Express.js is its routing system, which allows developers to define routes for different HTTP methods (such as GET, POST, PUT, and DELETE) and map them to specific functions or middleware. This makes it easy to handle incoming requests and generate appropriate responses.

Express.js also provides middleware, which are functions that can be executed before or after the main request handler function. Middleware can be used for tasks such as authentication, logging, error handling, and more. Express.js has a rich ecosystem of third-party middleware modules that can be easily integrated into applications.

Express.js supports a variety of templating engines, which can be used to generate dynamic HTML content based on data from a database or other data source. Popular templating engines include Handlebars, Pug, and EJS.

Express.js also has support for various input/output formats, such as JSON, XML, and text, and can handle file uploads and downloads.

Express.js is lightweight and flexible, allowing developers to use only the features they need and easily extend the functionality with third-party modules. It is also widely adopted and has a large community of developers and contributors, making it easy to find support and resources.

Overall, Express.js is a powerful and popular web application framework that simplifies the process of building web applications and APIs with Node.js.

Payment Gateway : Stripe integration with IMS:-

Stripe is a popular payment gateway that allows businesses to accept online payments from customers. It provides a set of APIs and tools that make it easy to integrate payment processing into web and mobile applications.

One of the key benefits of Stripe is its ease of use. Stripe provides a simple, straightforward API that can be integrated into a wide range of programming languages and frameworks. This makes it easy for developers to quickly add payment processing functionality to their applications without needing to spend a lot of time and effort on integration.

Another key benefit of Stripe is its security. Stripe is fully PCI-compliant and uses a range of security features to protect against fraud and other security threats. For example, Stripe uses two-factor authentication, encryption, and tokenization to protect sensitive data.

Stripe also provides a range of features and tools to help businesses manage their payments. For example, Stripe allows businesses to easily manage subscriptions and recurring payments, issue refunds, and set up customized payment workflows. Additionally, Stripe provides detailed analytics and reporting tools to help businesses track their payment activity and gain insights into customer behavior.

Overall, Stripe is a powerful and popular payment gateway that provides businesses with a wide range of features and tools to manage their payments securely and efficiently. With Stripe, businesses can accept online payments easily and with confidence, making it a popular choice for e-commerce and other web-based businesses.

Java script:

JavaScript is a high-level, dynamic programming language that is commonly used for web development. It was originally developed in the mid-1990s as a way to add interactivity and dynamic behavior to web pages, and has since become one of the most popular programming languages in the world.

One of the key features of JavaScript is its ability to run on both the client-side (in the user's web browser) and the server-side (on a web server). This allows developers to create rich, interactive web applications that can update and respond to user input in real time.

JavaScript is an object-oriented language, which means that it uses objects and methods to represent and manipulate data. It also supports functional programming techniques, which allow developers to create reusable, modular code.

Some of the key features of JavaScript include:

Dynamic typing: JavaScript variables do not have a specific data type, and can be assigned values of any type at runtime.

Closures: JavaScript functions can create closures, which are self-contained environments that retain access to variables from their parent scopes.

Event-driven programming: JavaScript supports event listeners, which allow developers to respond to user actions and other events in real time.

Asynchronous programming: JavaScript supports asynchronous programming techniques, which allow developers to execute code out of order and avoid blocking the user interface

Git & Github:

Git is a distributed version control system that allows developers to track changes to their codebase, collaborate with other developers, and manage different versions of their code.

It was created by Linus Torvalds in 2005 to manage the development of the Linux kernel. GitHub is a web-based hosting service that provides a platform for developers to store their Git repositories and collaborate with other developers. It was founded in 2008 and has since become one of the most popular code hosting platforms in the world. Using Git and GitHub, developers can work on their codebase locally and then push changes to a remote repository hosted on GitHub. This allows multiple developers to work on the same codebase and collaborate seamlessly. GitHub also provides features like issue tracking, project management, and pull requests, which makes it easier for developers to collaborate on

projects and manage their codebase. Overall, Git and GitHub have become an essential part of modern software development and are widely used by developers all over the world.

Git commands:

git init

git clone

git add

git status

git checkout

git new

git commit

git pull

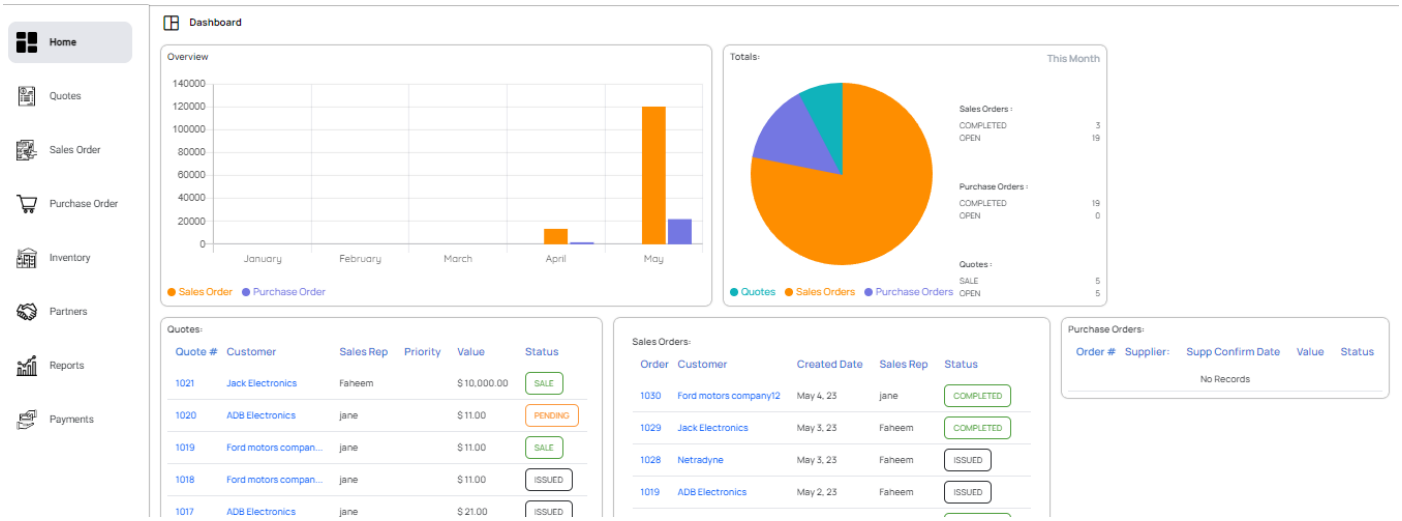
git push

Evaluation

Project URL: https://5xdemo.cortracker.com/ (Demo Url)

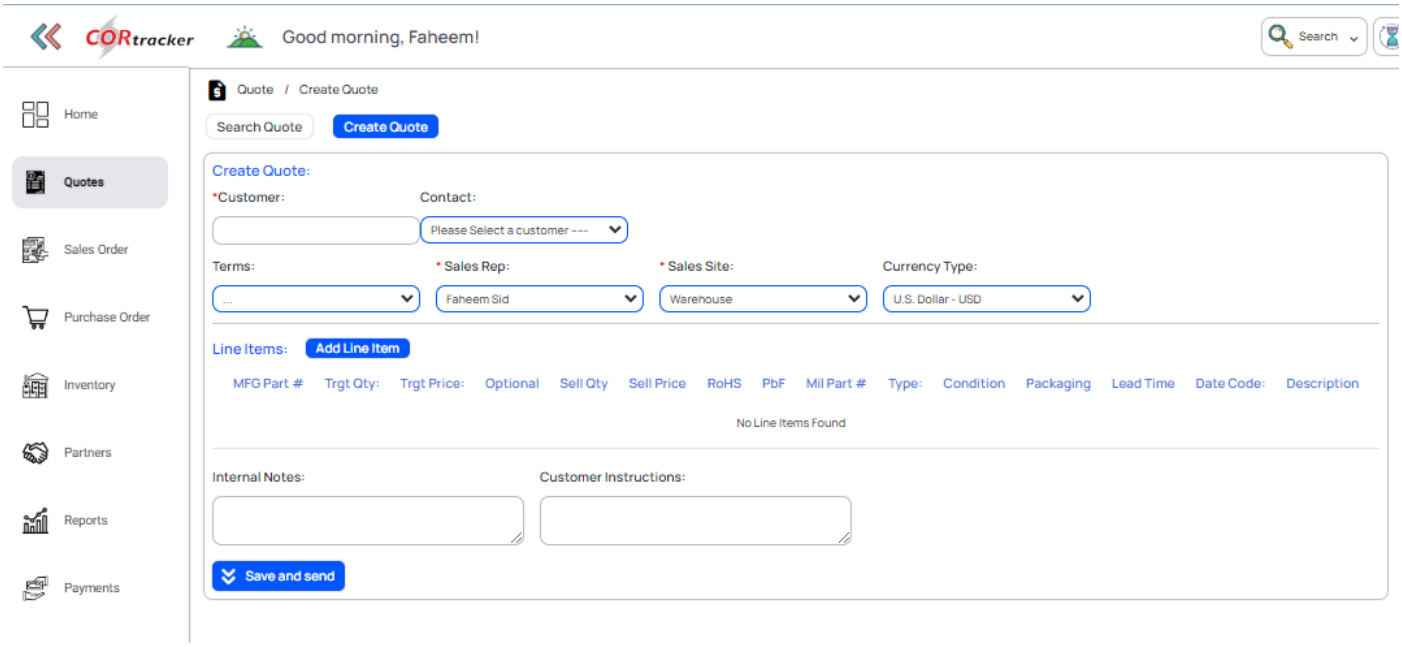
Home Page:

Home: The home section in an inventory management system typically serves as a dashboard or landing page, providing an overview of key information such as inventory levels, recent orders, and sales data.

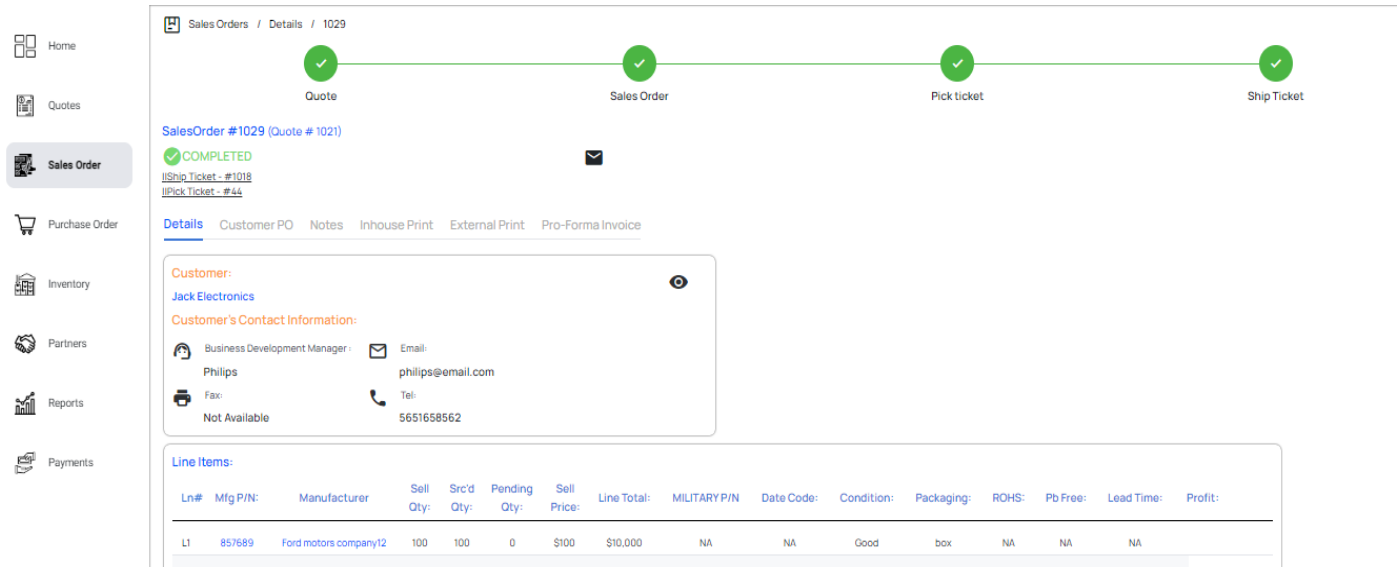


Quotes Section:

Quotes: The quotes section allows users to generate quotes for products or services that a customer may be interested in purchasing. This can help initiate the sales process and can be used to provide customers with pricing information and details about available products.

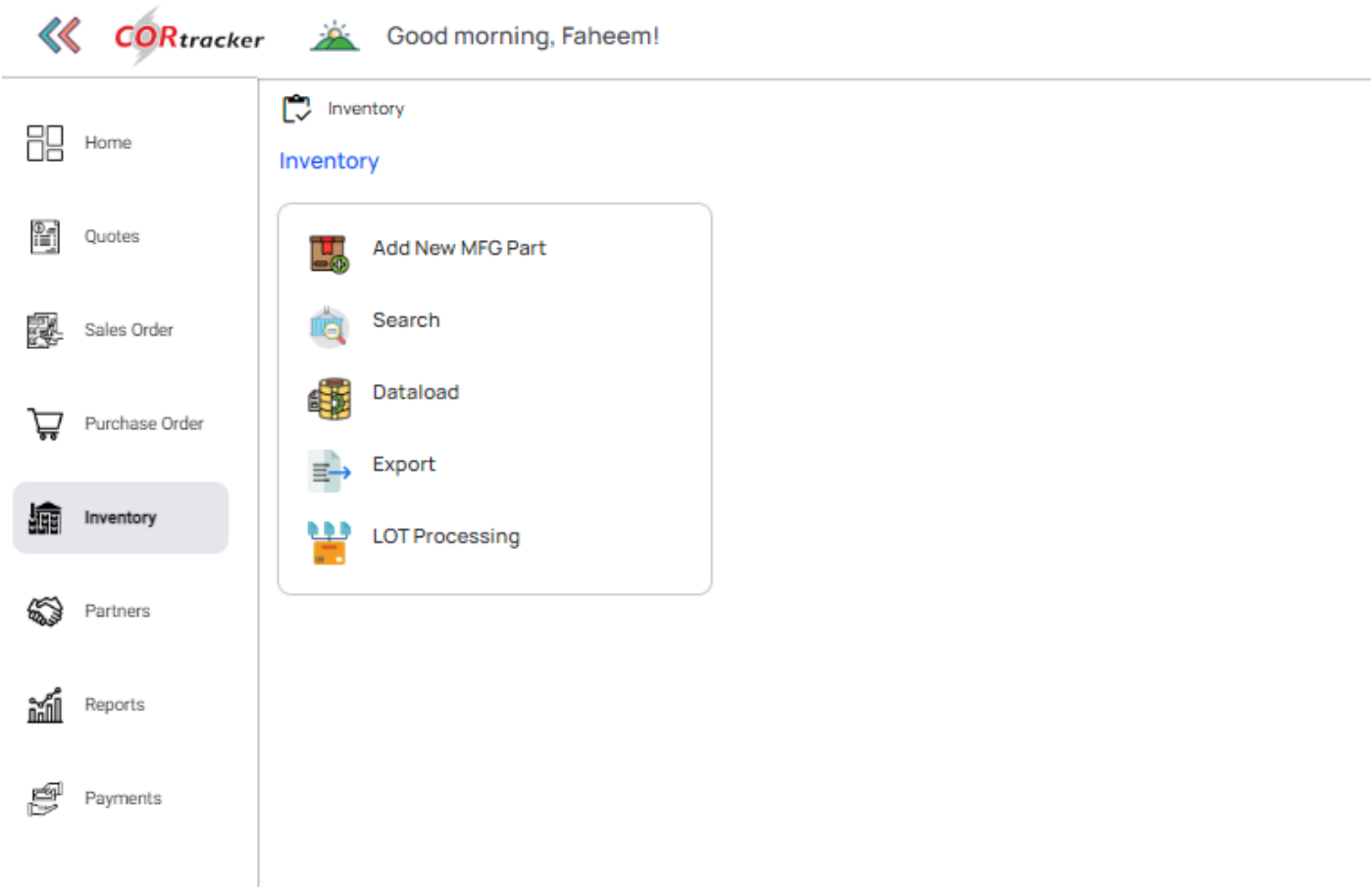


Sales Order: The sales order section allows users to manage and process customer orders. This includes creating new orders, tracking the status of existing orders, and managing customer information.

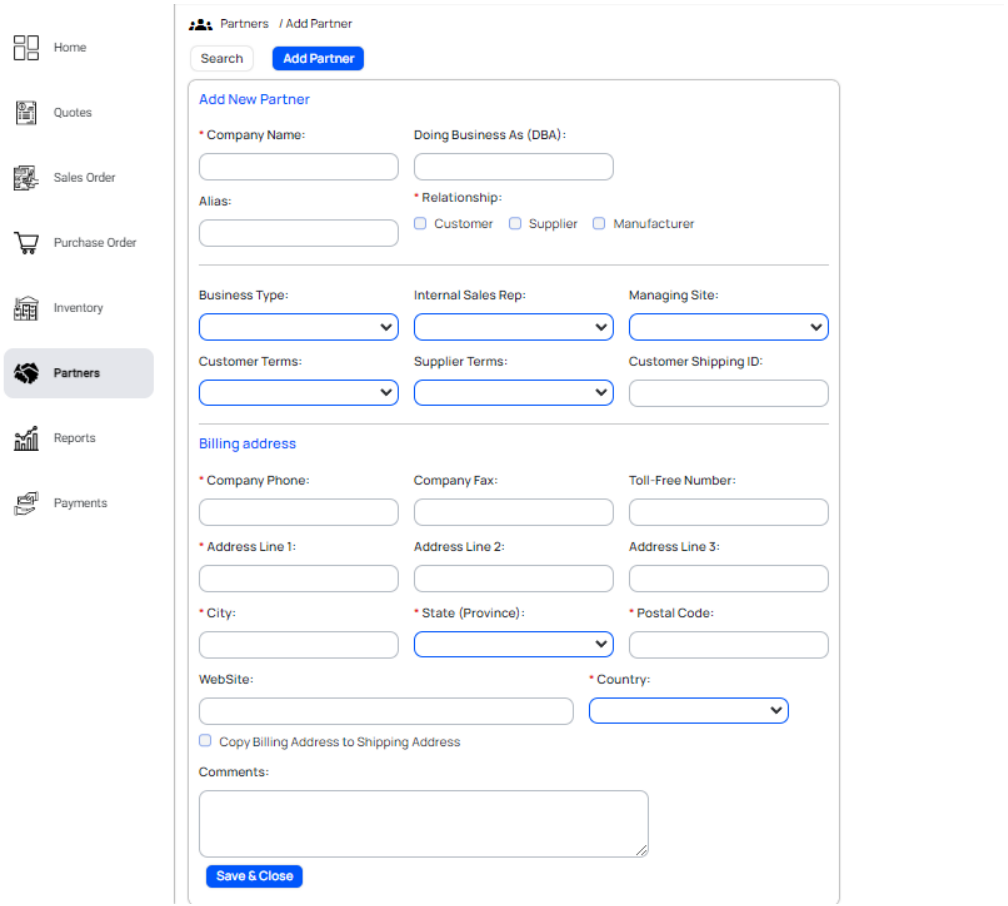


Purchase Order: The purchase order section allows users to manage the ordering of inventory or other supplies from vendors. This includes creating new purchase orders, tracking the status of existing orders, and managing vendor information.

Inventory: The inventory section provides users with a view of current inventory levels, allowing them to manage stock levels and track inventory movement.

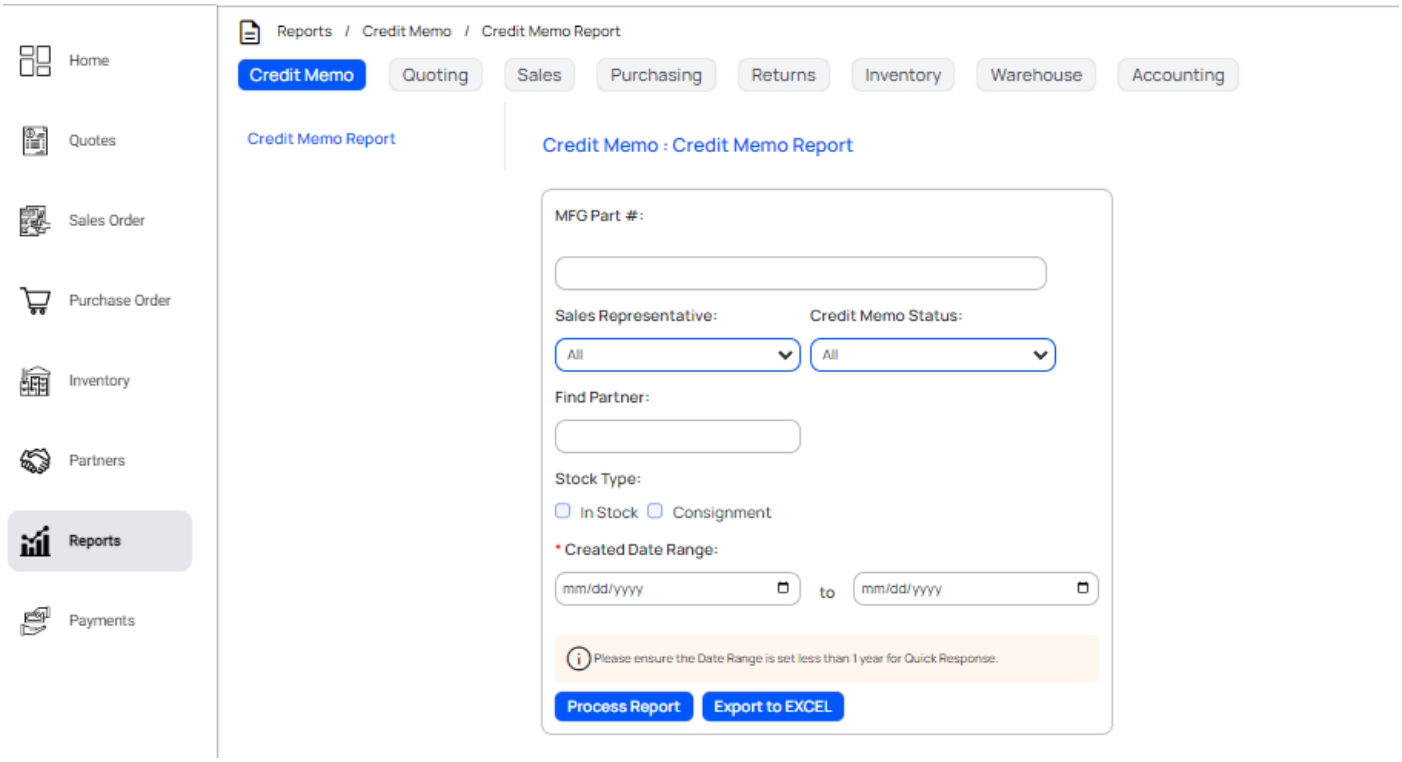


Partners: The partners section allows users to manage information about customers, vendors, and other partners. This includes contact information, order history, and other relevant details.



Reports: The reports section provides users with detailed data and analytics on various aspects of the inventory management system, such as sales trends, inventory levels, and

financial performance.



Payments: The payments section allows users to manage payments and financial transactions, such as processing payments from customers or paying vendors for inventory orders.

Settings: The settings section allows users to configure various settings within the inventory management system, such as user permissions, email notifications, and system preferences.

Features Of Inventory Management System

- Sales
- Purchasing
- Warehouse
- Product Search
- Product Management
- Account Management
- User Management
- Utilities and System Admin
- Reports
- System Documents
- Support
- Delivery Options

Conclusion:

To Conclude my Internship experience in developing an "INVENTORY MANAGEMENT SYSTEM"challengingandrewarding experience.Through this project, I gained hands-on experience in various aspects of software development, including requirements gathering, design, coding, testing, and deployment.The development of the Inventory management System enabled me to understand the complexities involved in managing orders, tracking inventory,and ensuring timely delivery.

Throughout the project, I learned the importance of agile development methodologies, which emphasize collaboration, flexibility, and iterative development. The experience taught me to work in a team environment, communicate effectively with stakeholders, and manage my time efficiently to meet project deadlines.

The project also taught me the importance of collaboration and communication in a team setting. Working with other developers and stakeholders allowed me to better understand how different perspectives and ideas can contribute to the success of a project.

Overall, this internship was a valuable experience that provided me with practical skills and knowledge that will be useful in my future career as a software developer. I am grateful for the opportunity to work on this project and look forward to applying the skills and experience gained to future projects.

References:

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User Manual :

CORtracker V.5.0.1

https://drive.google.com/file/d/1LUyjRIC7ceba552RVfKMA2QjNOplDdpi/view?usp=sharing

Technologies Documentation:

https://developer.mozilla.org/en-US/docs/Web/JavaScript

https://nodejs.org/en/docs

https://docs.angularjs.org/guide

https://expressjs.com/

https://learn.microsoft.com/en-us/sql/sql-server/?view=sql-server-ver16

***************************THANKYOU*************************