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Invoice Management Application

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Abstract: Manual invoice management refers to the process of managing invoices using paper-based or manual methods. In a manual invoice management system, businesses typically create invoices using word processors or spreadsheet software, print the invoices, and send them to customers via mail or email. The manual invoice management process can be time-consuming, error-prone, and inefficient. It often involves manual data entry, which increases the risk of errors and inconsistencies.

Cloud based application is the new trend currently in the digital market. But apart from proving its importance in just the domain of finance it can also be used in the other domains. solution that aims to automate and streamline the process of creating, processing, and tracking invoices. By implementing an online invoice management application, businesses can benefit from increased efficiency, reduced errors, improved cash flow management, enhanced supplier relationships, improved financial reporting, increased visibility and transparency, and cost savings.

Keywords: Invoice, automation, analytics, payment processing, financial reporting.

I. INTRODUCTİON

An Invoice Management Application is a software system designed to automate and streamline the process of creating, processing, and managing invoices. The application allows businesses to manage their invoice-related activities, including invoice creation, approval, payment processing, and reconciliation, in a centralized and automated manner. This system can be used by any organization that generates invoices, such as small businesses, medium-sized enterprises, and large corporations.

The Invoice Management Application provides businesses with several benefits, such as increased efficiency, reduced errors, enhanced supplier relationships, better financial reporting, increased visibility, and transparency. The application can automate the invoicing process, eliminating manual efforts, reducing errors, and enabling businesses to track and monitor invoice-related activities in real-time.

Here the concept of comparison of the hash values are used. The hash value of any document is always unique. Any changes made in the document results in the change in hash value. It can be assumed that instead of blockchain any database can be put to use to store the mark sheets into it along with the roll no., and hash value of the mark sheet. But anyone with the required privileges can access the database and hackers can easily edit such databases. The hash value of a tampered mark sheet can be provided into the database and in such cases if only the mark sheets are compared then one can say that the process of verification of the mark sheet has gone wrong. It will be legitimate only if even the mark sheets are also compared. For such processes human intervention is required.

In blockchain, each block has its own hash address and also the data in the block once added cannot be changed at all. Any changes made in the block will result in the creation of a new block instead of having the already existing block to be changed. Any internal persons in the examination and results section of any university will then be not able to make any changes to the document. Hence this system focuses mainly on just the storage of mark sheets' hash values rather than storing the mark sheet itself.

II. RELATED WORKS

[4] "Pro MERN Stack Full Stack Web App Development with Mongo, Express, React, and Node" is a comprehensive guidebook written by Vesna Subramanian that teaches readers how to build full-stack web applications using the MERN stack, which stands for MongoDB, Express, React, and Node.js. The book provides a hands-on approach to learning, with practical examples and step-by-step instructions. It covers a wide range of topics, including building APIs with Express, using React for client-side development, connecting to MongoDB, and deploying applications to production.

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[5] "Learning React" by Alex Banks and Eve Porcello is a comprehensive guide to learning the React JavaScript library. Published by O'Reilly Media in May 2017, the book covers the fundamentals of React and its key features, such as components, JSX, and the virtual DOM.

The book provides a hands-on approach to learning, with practical examples and exercises to help readers build their own applications. It also covers important topics such as data management with Redux, routing with React Router, and testing with Jest.

[6] "Express in Action: Writing, building, and testing Node.js applications" by Evan Hahn is a comprehensive guide to building web applications using the Express framework in Node.js. Published in 2018, the book covers the basics of Node.js and how to use the Express framework to build robust and scalable web applications.

The book provides a hands-on approach to learning, with practical examples and step-by-step instructions. It covers a wide range of topics, including routing, middleware, view rendering, database integration, testing, and deployment.

[7] The article "How Does React Work?" by Linda Orense-Lerma, published on the Ledger Academy website in October 2022, provides an overview of the React JavaScript library and how it works. The article covers the fundamentals of React, including components, JSX, and the virtual DOM, and how they work together to create modern, interactive web applications. The article also discusses React's unique features, such as its declarative approach to building user interfaces and its ability to efficiently update the DOM. Additionally, the article explains how React works with other libraries and tools in the front-end development ecosystem, such as Redux and Webpack.

III. PROPOSED METHODOLOGY

The proposed invoice management application includes all activities related to invoice management, supplier management, reporting, analytics, and integration with existing software systems. It can help businesses optimize their accounts payable processes, reduce manual efforts, and ensure timely and accurate payments.

Invoice Creation: The application should allow users to create invoices easily, either manually or by importing data from other systems. The invoice creation process should include fields for customer information, itemized charges, taxes, and discounts.

Approval Workflow: The application should include an approval workflow that allows invoices to be reviewed and approved by authorized personnel before being sent to customers for payment.

Payment Processing: Payment history section for each invoice with record about payment date, payment method and extra note.

Invoice Tracking: The application should provide a dashboard or other interface that allows users to track the status of invoices, including whether they have been sent, received, approved, paid, or disputed.

Reporting: The application should provide a range of reporting capabilities, including the ability to generate financial reports, track invoice aging, and monitor payment trends.

Diagrammatically the process can be represented as shown in fig. 1:

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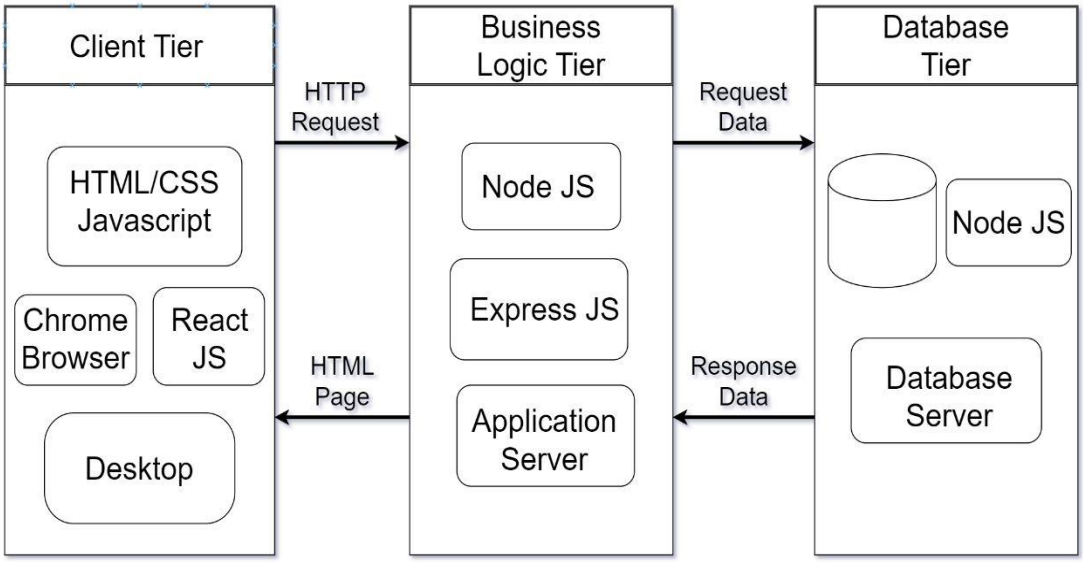

Fig. 1 Architecture of the proposed system

Flow of data in the application is as shown in the fig. 2:

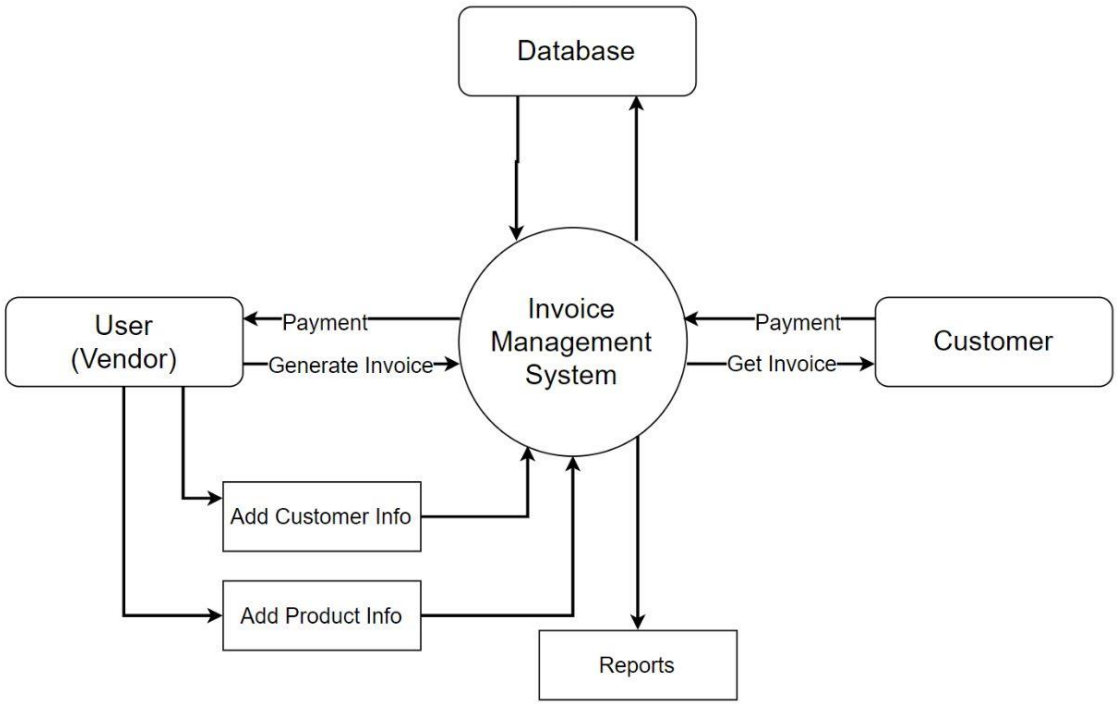

Fig. 2 Data Flow Diagram

Module Description

1. Invoice Creation Module:

This module allows users to create new invoices by entering the relevant details such as customer name, product details, date, and amount.

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- Input: The input for this module includes the relevant invoice details entered by the user
- Process: The data is valuated, errors are handled and processed.
- Output: The output is a newly created invoice that can be saved and processed.

2. Invoice Editing Module:

This module allows users to edit existing invoices if there are any errors or changes in the invoice details.

- Input: The input for this module includes the invoice details to be edited
- Process: The data is valuated, errors are handled and processed.
- Output: The output is an updated invoice with the correct details.

3. Payment Processing Module:

This module allows users to process payments for approved invoices.

- Input: The input for this module includes the approved invoice details
- Process: Payment is recorded and verified by the type of payment
- Output: The output is a record of the payment made.

4. Reporting Module:

This module allows users to generate reports based on the invoices processed, including details such as total revenue, outstanding invoices, and payment history.

- Input: The input for this module includes the relevant invoice data
- Process: The statistics of data is recorded and various reports are genereated
- Output: The output is the generated report.

5. User Management Module:

This module allows administrators to manage user accounts, including creating new accounts, assigning roles and permissions, and resetting passwords.

- Input: The input for this module includes the user account details
- Process: The user permissions and views are managed and processed
- Output: The output is the updated user account information.

IV. OUTCOME

The vendors login or signup providing basic information and their information is validated.

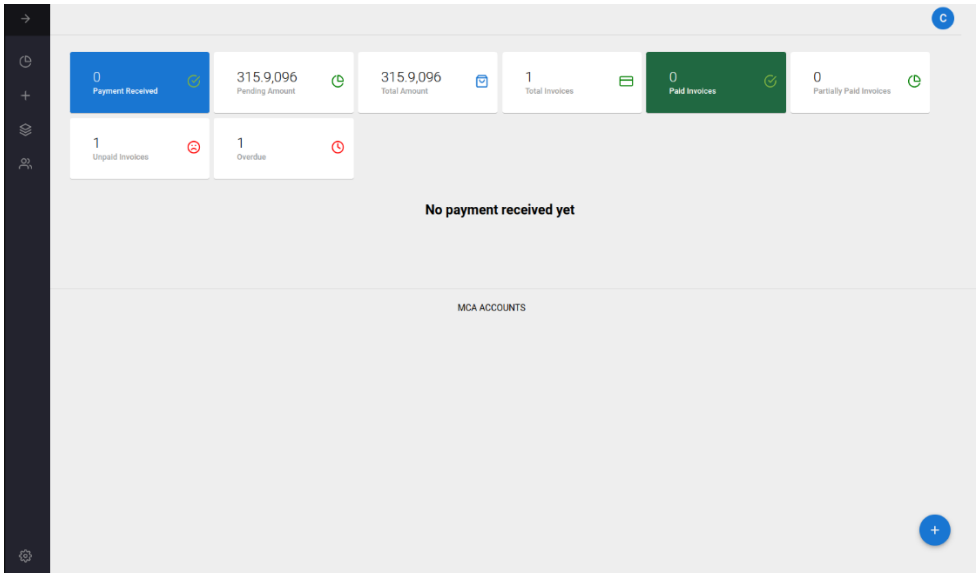

Fig. 3 Dashboard displaying the status of orders

Once the user logins the user will be able to see the dashboard with different information such as payment received , total sales , pending payment , total invoices , partially paid invoices overdue.

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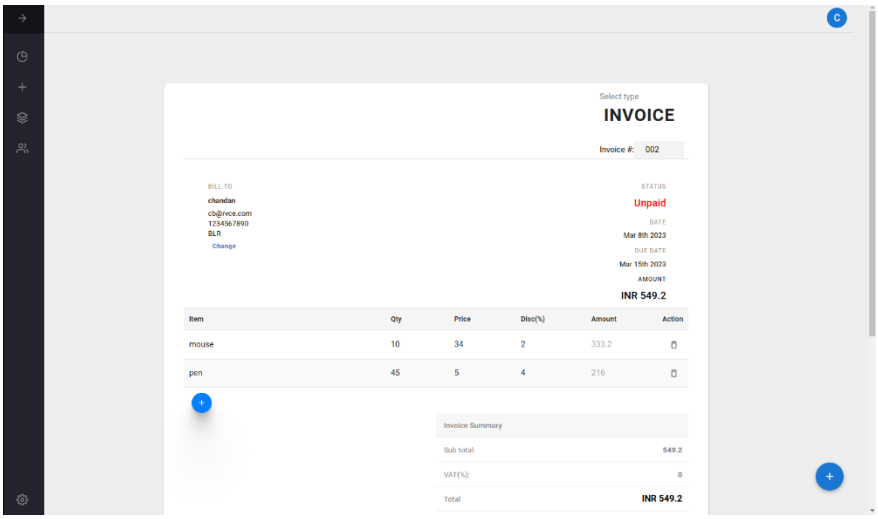

Fig. 4 Creating new invoice

The fig. 4 shows the page where the user can create a new invoice .When the new order is received, the user enters different details of the customer such as name , address , emailed , phone number , different items , rate , discount , tax etc in fig. 5.

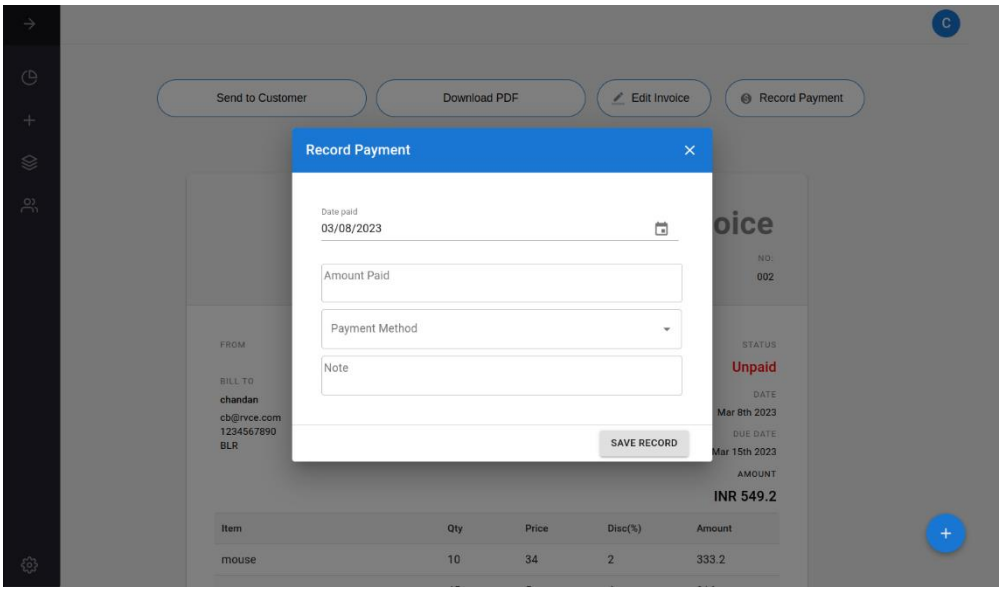

Fig. 5 Output for record payment

the client pays the amount, the transaction is recorded, date the payment made, amount paid, payment method (cash, cheque, credit/debit card, others etc), and note

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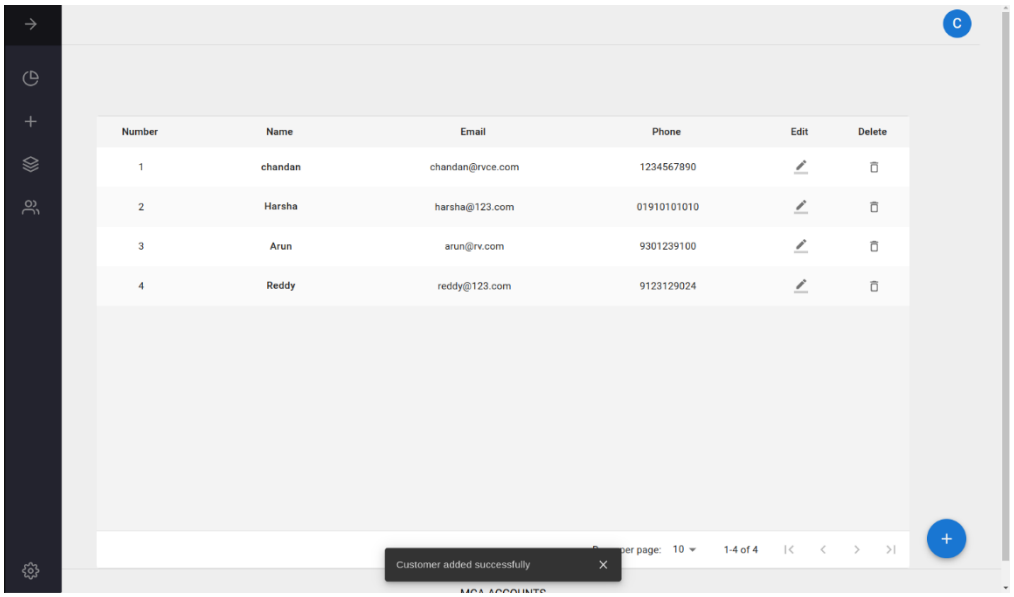

Fig. 6 Output for adding new customers

The user interface component (built using React) will have a form that takes in the details of the new customer, such as their name, email, phone number, and address is recorded. the data is sent to mongo dB to store as shown in fig. 6.

V. CONCLUSİONS

Invoice Management Application is a crucial tool for businesses to manage their invoicing processes effectively. It helps businesses streamline their invoicing processes, reduces manual errors, improves payment tracking, and provides analytics to help businesses make informed decisions. The Invoice Management Application is designed to be user-friendly, with a simple and intuitive interface that makes it easy for users to create and manage their invoices. It also includes a range of features such as automatic invoice generation, invoice tracking, payment reminders, and reporting and analytics capabilities. By adopting an Invoice Management Application, businesses can improve their invoicing processes, reduce payment delays, minimize disputes, and improve their financial management. Overall, an Invoice Management Application is a valuable investment for businesses of all sizes and industries, and it can provide significant benefits in terms of cost savings, operational efficiency, and customer satisfaction.

VI. FUTURE SCOPE

The future scope of an Invoice Management Application is significant, as new technologies such as AI and ML can be used to automate routine invoicing tasks such as data entry, document processing, and payment processing. Blockchain technology can be used to create a secure and transparent ledger of all financial transactions, including invoicing and payment processing. Adding support for multiple languages can make the application more accessible to users around the world. Automating workflows within the application can help businesses to streamline their invoicing processes and reduce the amount of time and effort required to manage invoices. Developing a mobile application for the Invoice Management System can make it easier for users to access the system and manage their invoices on-the-go.

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