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G.O.Ms. No. 14, Higher Education (UE) Department)

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Department of Computer Science & Engineering

“ Clever Dash ”

Batch No : AD – 141

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Overview

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Title Explanation

Clever-Dash implies that it's clever because it utilizes advanced technologies and libraries like Material UI, Material UI Data Grid, Nivo Charts, Node.js, Express.js, Mongoose, and MongoDB to provide users with an intelligent and insightful dashboard experience. So, essentially, "Clever-Dash" signifies a smart and sophisticated dashboard solution powered by cutting-edge tools and frameworks.

Abstract

“Clever Dash” is a sophisticated admin dashboard application built from scratch using the MERN stack (MongoDB, Express, React, Node.js). This application includes setting up the backend and frontend environments, configuring themes and colors, creating components such as navbar, sidebar, user profile menu, and product pages, handling user data and authentication, ,and integrating data visualization components using libraries like Nivo. This application servers as a great tool for managing financial data. Clever Dash introduces a groundbreaking approach to navigation efficiency with its innovative smart navbar integration. Designed to cater to the modern user's dynamic needs, Clever Dash offers a seamless and intuitive navigation experience across diverse applications and platforms.

Introduction

Clever Dash, the ultimate solution for optimizing your navigation experience across various digital platforms. In today's fast-paced world, efficient navigation is paramount, and Clever Dash is here to revolutionize the way you interact with your devices. At the heart of Clever Dash lies its innovative smart navbar integration. Say goodbye to cluttered screens and cumbersome menus. Clever Dash's navbar , ensures that the tools and features you need are always at your fingertips. Gone are the days of endless scrolling and searching for essential functions. With Clever Dash, you can navigate between tasks seamlessly, access frequently used tools with a single tap. Clever Dash empowers you to take control of your digital environment. Say hello to productivity, simplicity, and convenience – welcome to Clever Dash..

Problem Statement

Clever-Dash addresses the challenge of efficiently visualizing and managing large volumes of data across various domains. It aims to streamline data interpretation and decision-making processes for businesses, organizations, and individuals who grapple with complex datasets and seek intuitive solutions for data analysis and presentation. By providing a unified platform with advanced visualization tools and seamless data management capabilities, Clever-Dash aims to empower users to extract valuable insights, identify trends, and make informed decisions based on their data.

Objectives

1. **Enhanced Data Visualization**: Develop advanced visualization techniques using Nivo Charts to provide users with clear and insightful representations of complex datasets.

2. **Scalability and Performance**: Utilize Node.js and Express.js to create a robust backend infrastructure that can handle large volumes of data while maintaining high performance and scalability.

3. **Data Security and Reliability**: Employ Mongoose and MongoDB to establish a secure and reliable data storage solution, safeguarding sensitive information and ensuring data integrity.

4. **Performance Analytics**: Offer built-in analytics features to track dashboard usage and monitor performance metrics

Methodology

1.Problem Definition and Objectives: **-** Identify the Problem: Understand the specific issues the navbar aims to solve (e.g., user navigation efficiency, accessibility). **-** Set Objectives: Define clear objectives, such as improving user experience, optimizing performance, or ensuring cross-device compatibility.

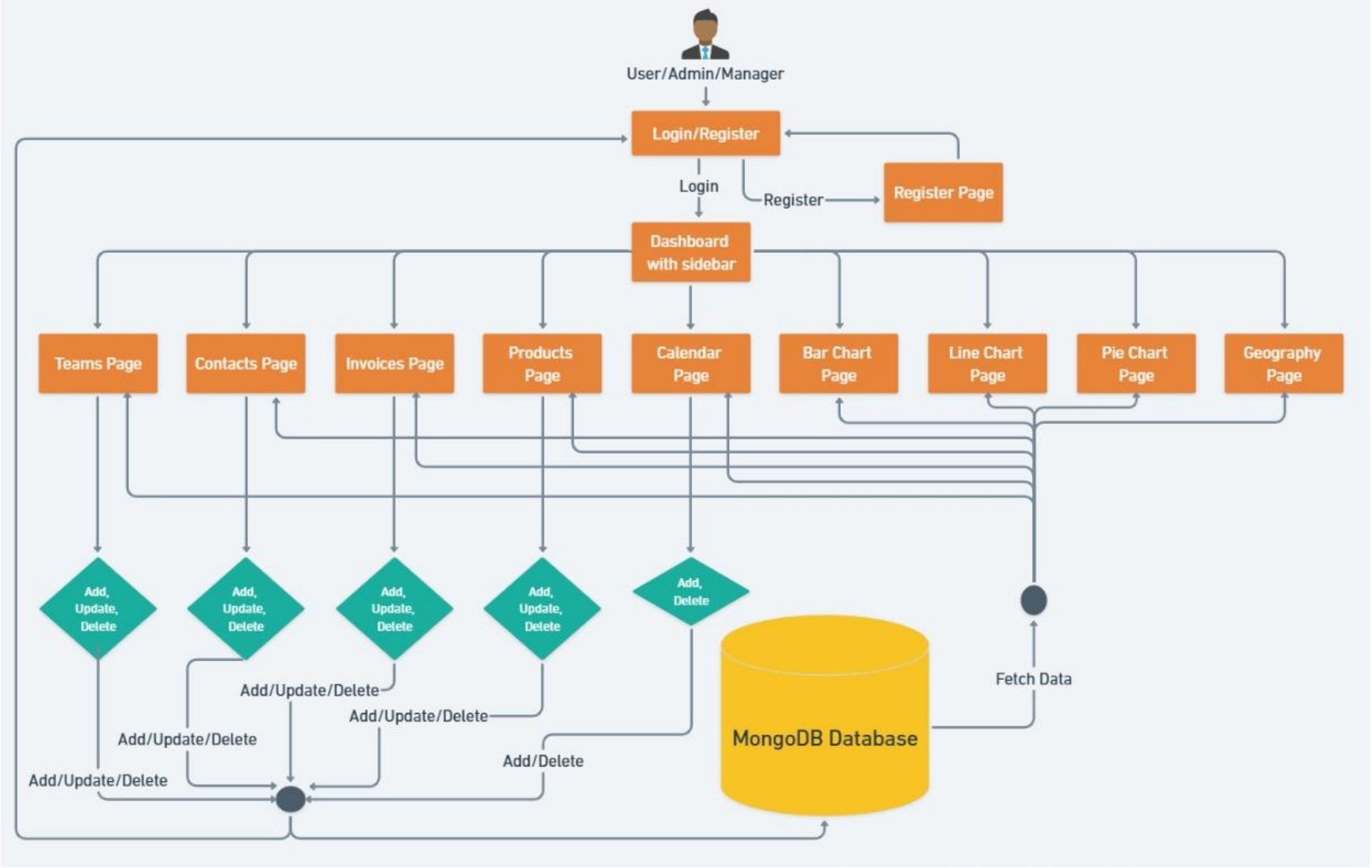
2.Requirement Analysis: **-** User Requirements: Gather user requirements through surveys, interviews, or through referring similar projects to understand their needs and preferences. **-** Technical Requirements: Define technical requirements, including performance, responsiveness, and integration with the rest of the MERN stack.

3. **Design and Prototyping**: - Wireframing: Create wireframes to visualize the layout and functionality of the navbar. - Prototyping: Develop interactive prototypes using tools like Figma or Sketch to refine the design based on user feedback and refer to documentation of component design libraries like Material UI.

4. **Technology Stack Analysis**: - MongoDB: Assess the data storage needs for user preferences and settings related to the navbar. - Express.js: Determine how server-side logic will manage and serve navbar-related data. - React.js: Plan the implementation of the navbar as a React component along with the components of other pages, considering state management and reusability. - Node.js: Outline how backend services will support the navbar's functionality, including API endpoints.

5. **Implementation Strategy**: - Development Plan: Create a detailed development plan with milestones and deliverables. - Component Design: Design React components for the navbar, ensuring modularity and maintainability. - Integration: Plan the integration of the navbar with other parts of the application, ensuring consistency and coherence.

Design


User/Admin/Manager
Login/Register
Login
Register
Register Page
Dashboard with sidebar
Teams Page
Contacts Page
Invoices Page
Products Page
Calendar Page
Bar Chart Page
Line Chart Page
Pie Chart Page
Geography Page
Add, Update, Delete
Add, Update, Delete
Add, Update, Delete
Add, Update, Delete
Add, Delete
Add/Update/Delete
Add/Update/Delete
Add/Update/Delete
Add/Update/Delete
Add/Delete
MongoDB Database
Fetch Data

Implementation

CleverDash is a comprehensive business management application that provides various features to streamline operations and facilitate decision-making. Below are the implementation details for each page of CleverDash:

1.Dashboard Page: The dashboard serves as the central hub for accessing key metrics, insights, and summaries of business performance. The features Displays customizable widgets and cards for monitoring important KPIs such as sales, revenue, and customer acquisition.

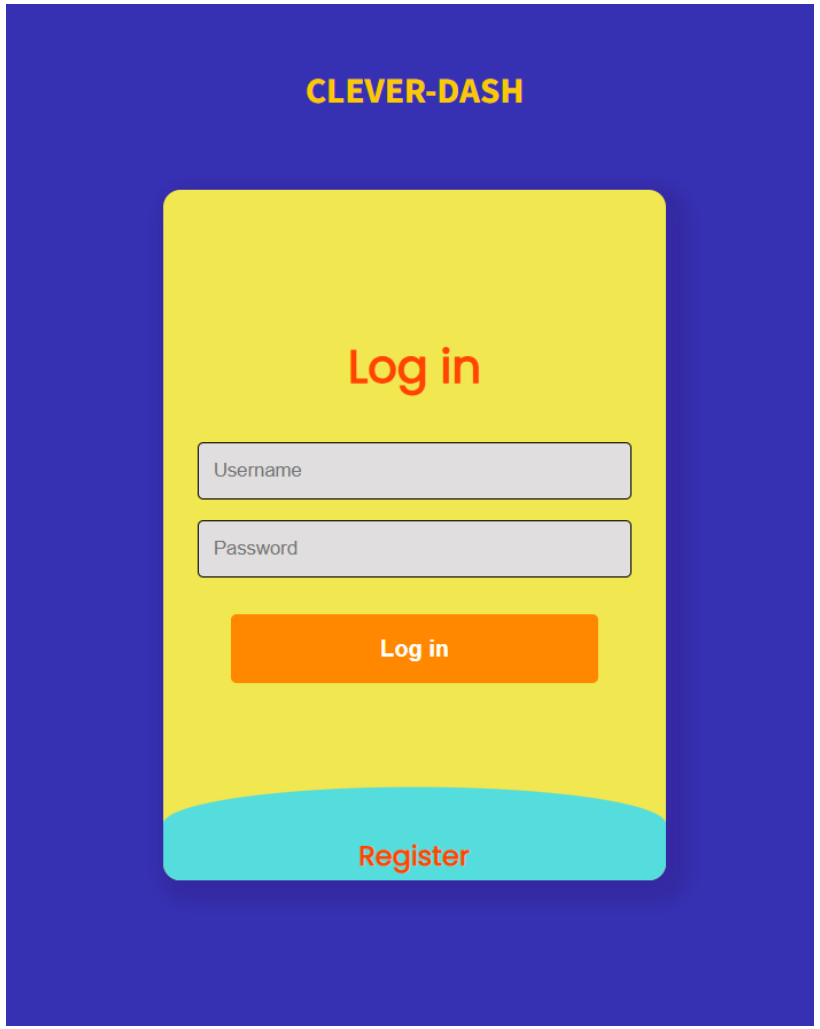
2.Teams Page: The teams page provides tools for managing team members, assignments ,and collaboration within the organization. It has User management functionalities such as adding, editing, and removing team members.

3.Contacts Page: The contacts page enables users to manage customer and client information, facilitating relationship management and communication. It has Contact databases for storing customer details including names, contact information, and interaction history.

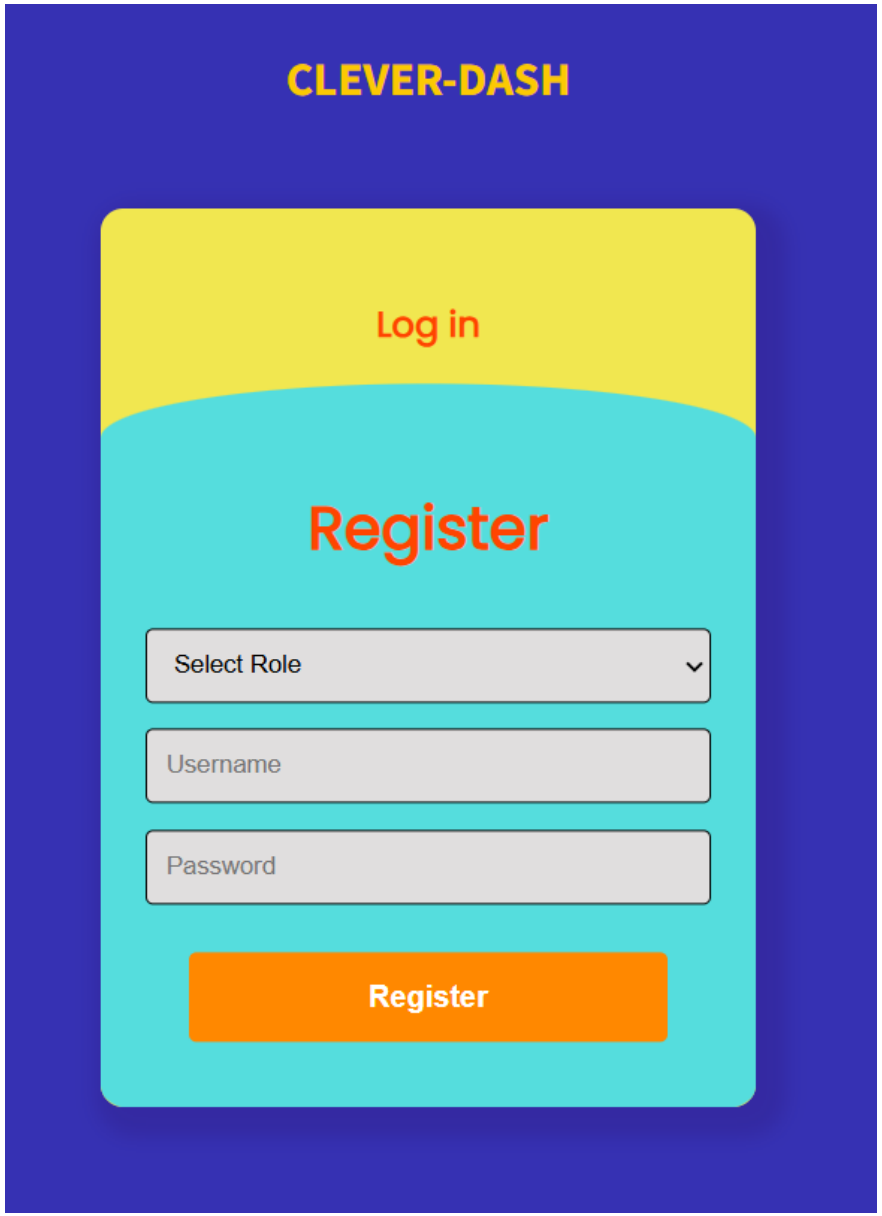
- 4. **Invoices Page**: The invoices page allows users to create, send, and manage invoices for billing and payment processing. It has Invoice generation with customizable templates and fields.
- 5. **Products Page**: The products page provides tools for managing inventory, product catalogs, and sales tracking. The Product catalog is for storing product details such as descriptions, prices, and inventory levels.
- 6. **Calendar Page**: The calendar page allows users to schedule, manage, and track events, appointments, and important dates. Has Integration with FullCalendar library for interactive calendar functionality with various views (month, week, day, list).
- 7. **Bar Chart Page**: The bar chart page displays data visualization in the form of a bar chart, allowing users to analyze sales quantity by product category. It Utilizes the ResponsiveBar component from the Nivo library for responsive and interactive bar chart rendering.
- 8. **Pie Chart Page**: The pie chart page visualizes product demand data using a pie chart, providing insights into 13 the distribution of demand across product categories. It Implements the ResponsivePie component from the Nivo library for creating responsive and interactive pie charts.

- 9. **Line Chart Page**: The line chart page visualizes revenue data over time using a line chart, enabling users to track revenue trends and performance. It Utilizes the ResponsiveLine component from the Nivo library for creating responsive and interactive line charts.
- 10. **Geography Page**: The geography page displays geographical data using a choropleth map, allowing users to visualize user distribution or other geographical metrics. It Implements the ResponsiveChoropleth component from the Nivo library for creating responsive and interactive choropleth maps.
- CleverDash provides a user-friendly interface with robust functionalities tailored to meet the diverse needs of businesses, offering efficiency, insights, and control across various aspects of operations and management.

Screenshots

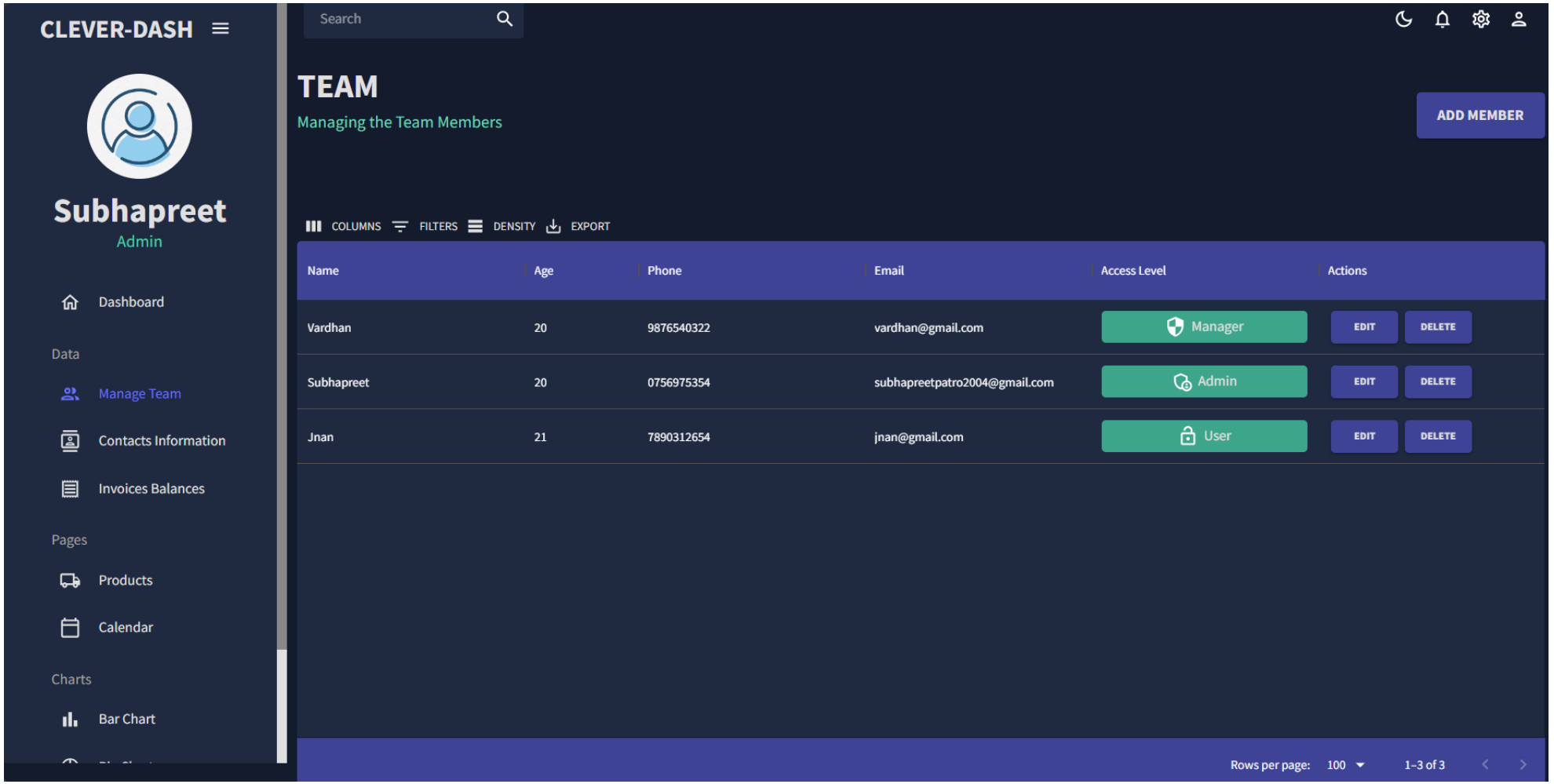


Login Page



Register Page

Dashboard Page


CLEVER-DASH
Search
Subhapreet
Admin
Dashboard
Data
Manage Team
Contacts Information
Invoices Balances
Pages
Products
Calendar
Charts
Bar Chart
TEAM
Managing the Team Members
ADD MEMBER
COLUMNS
FILTERS
DENSITY
EXPORT
Name
Age
Phone
Email
Access Level
Actions
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DELETE
Subhapreet
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EDIT
DELETE
Jnan
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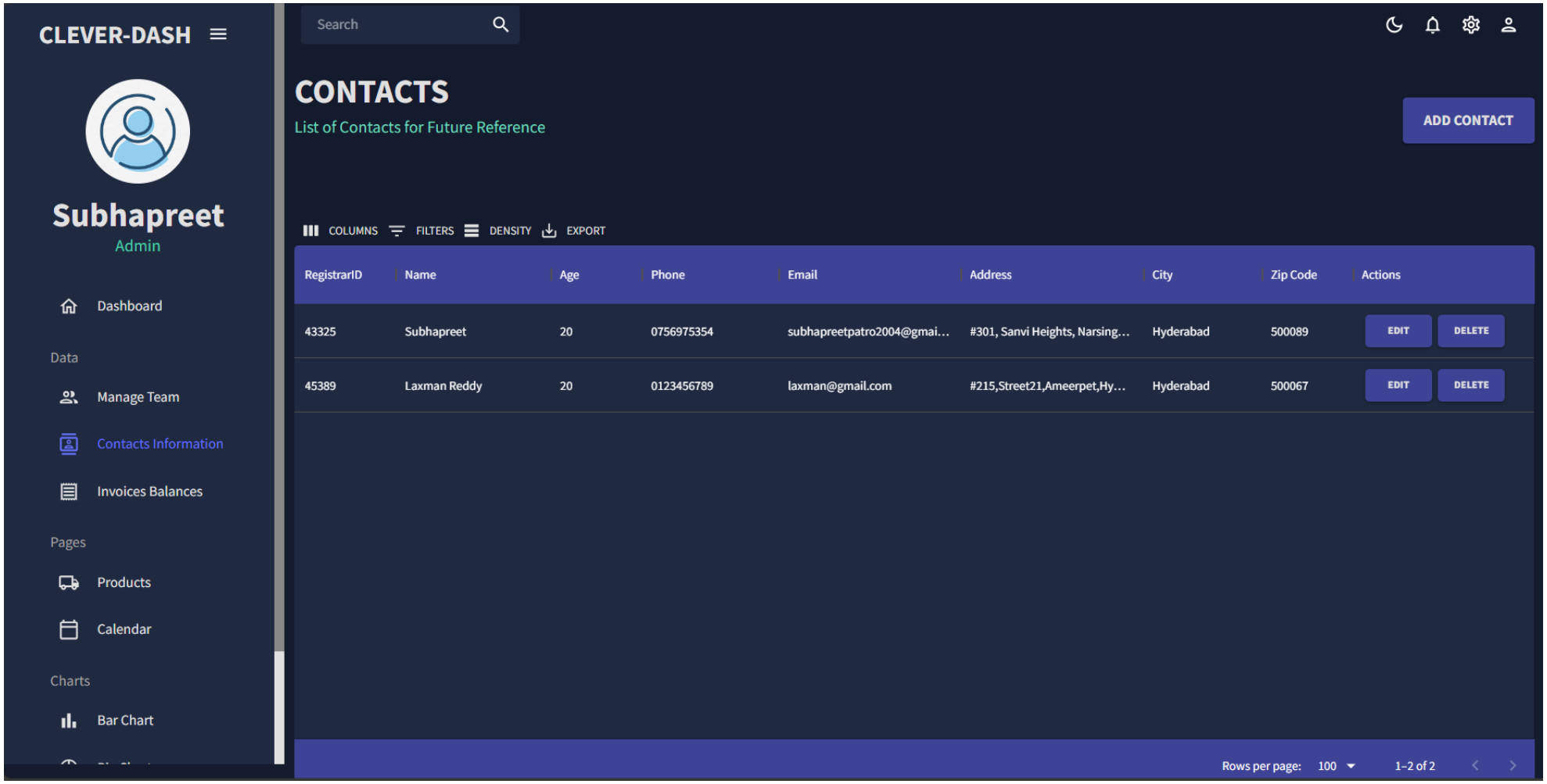
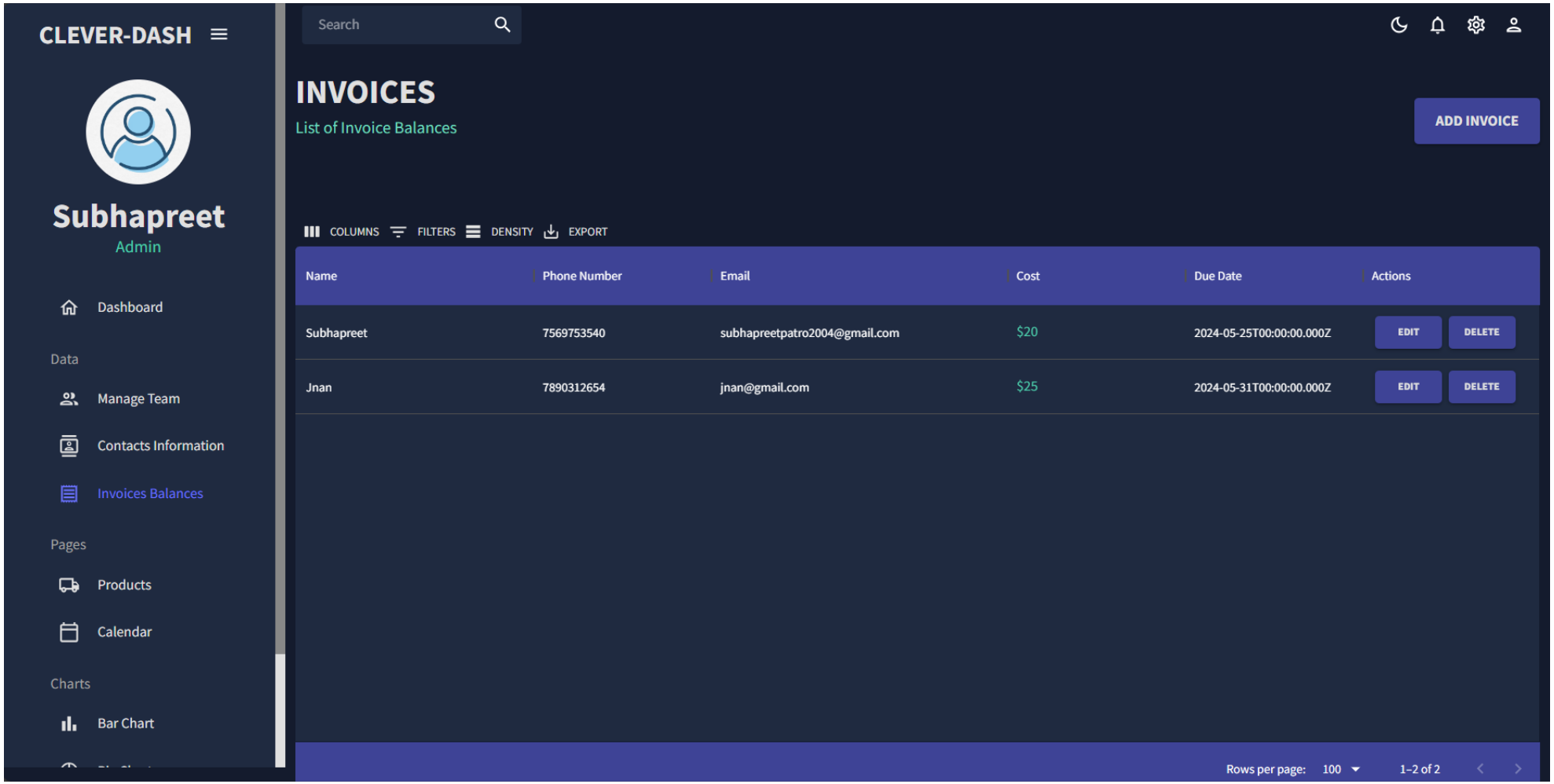
User
EDIT
DELETE
Rows per page:
100
1–3 of 3

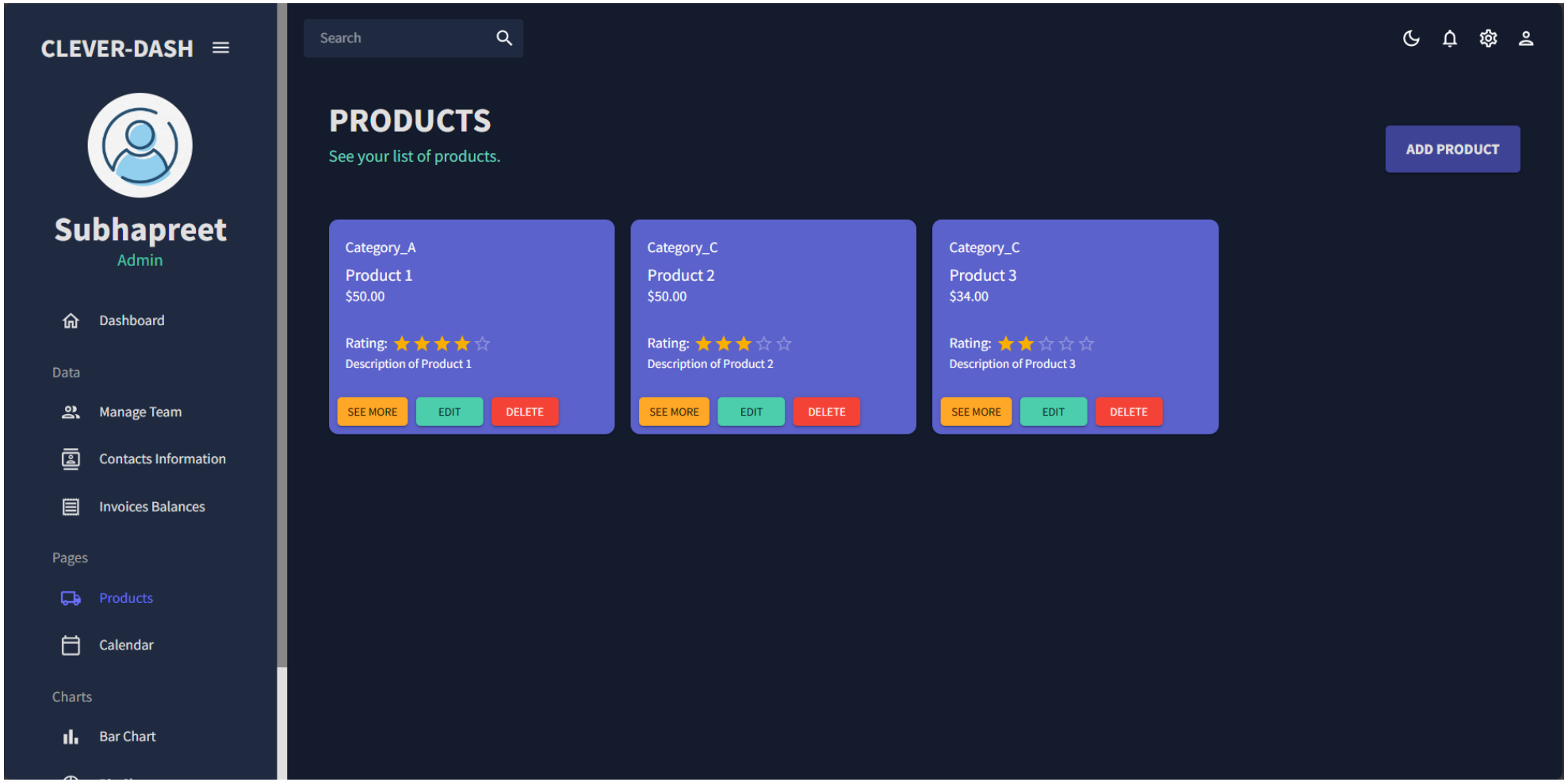
Teams Page



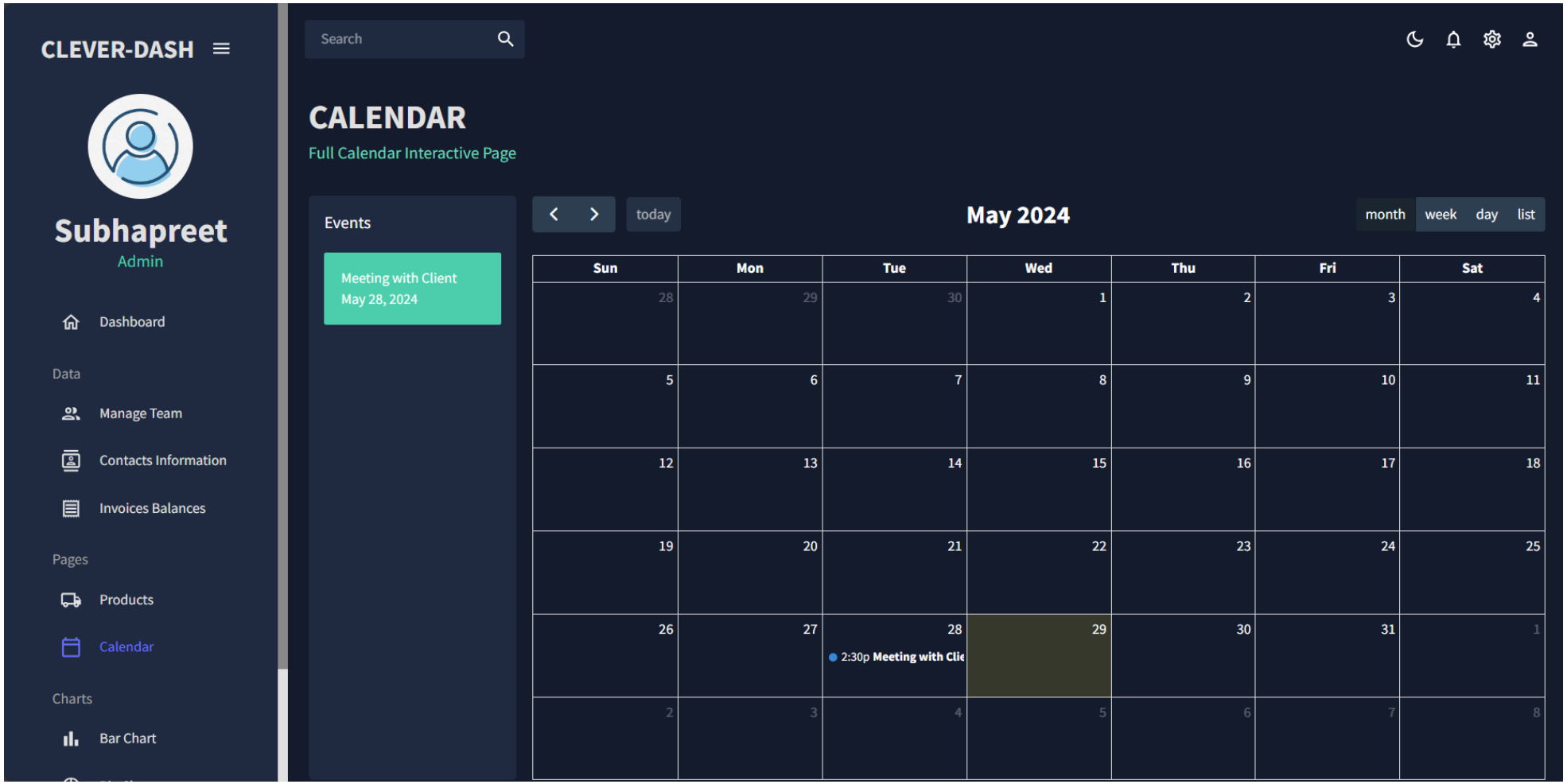
Contacts Page



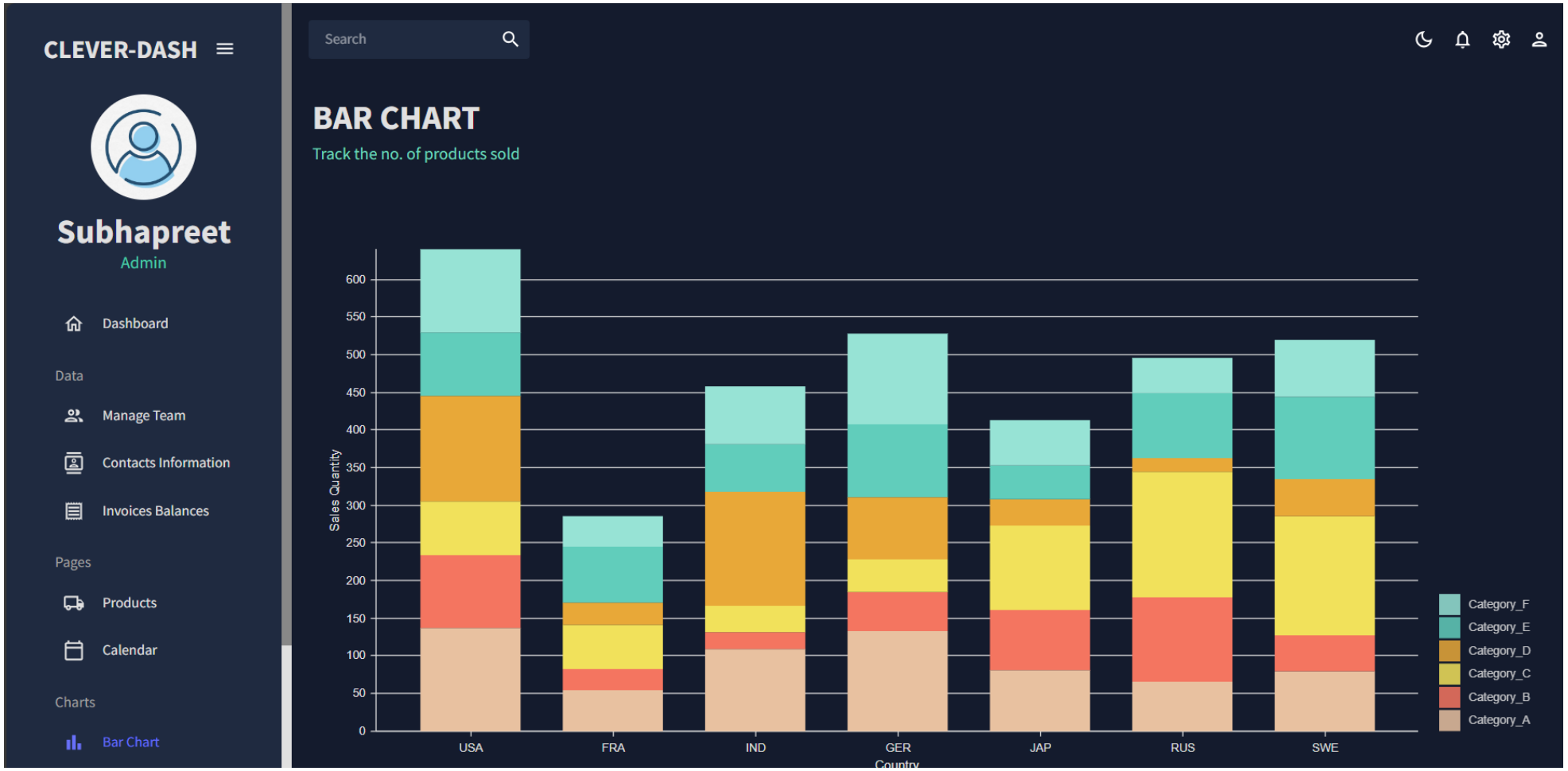
Invoices Page



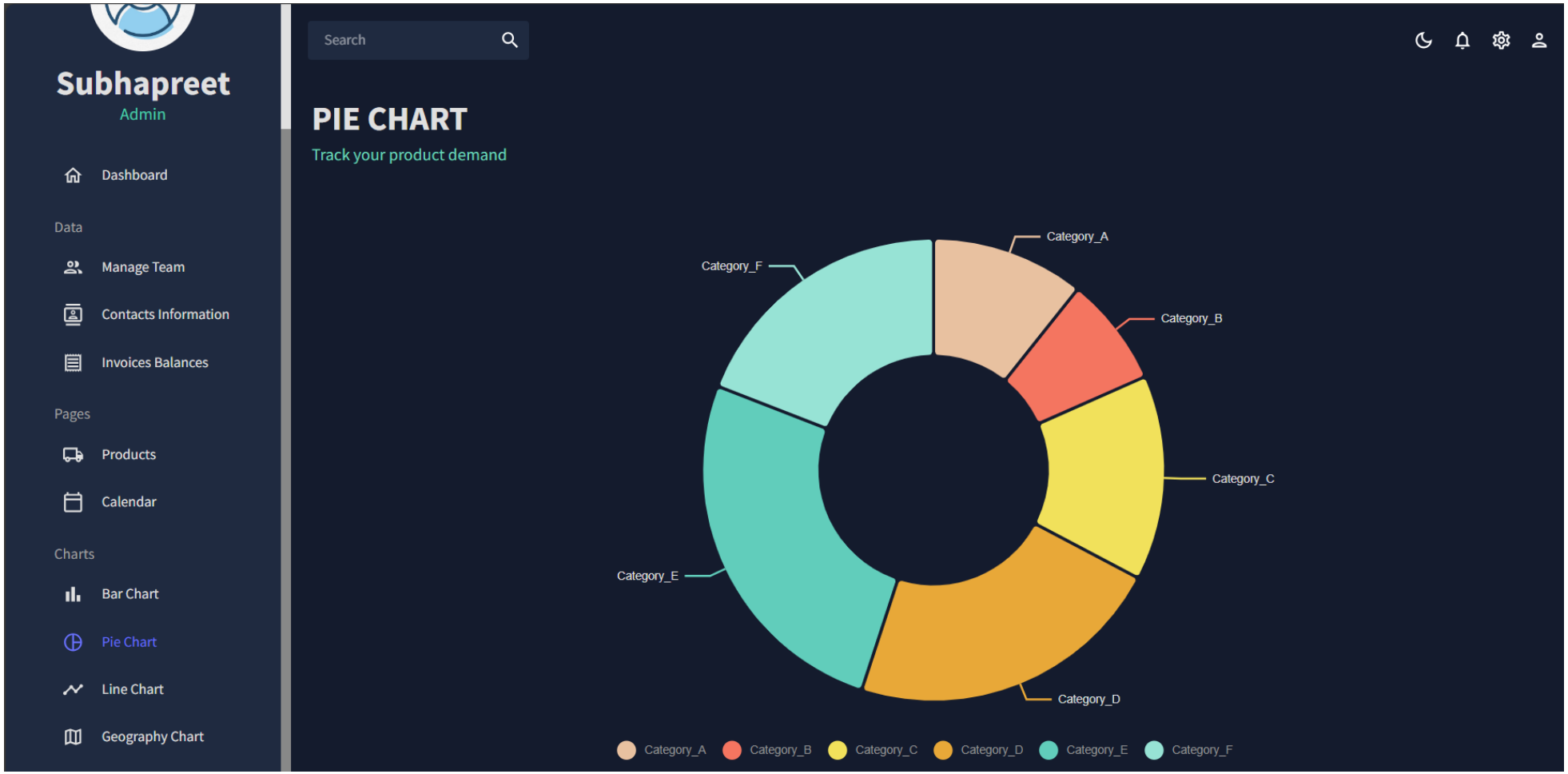
Products Page



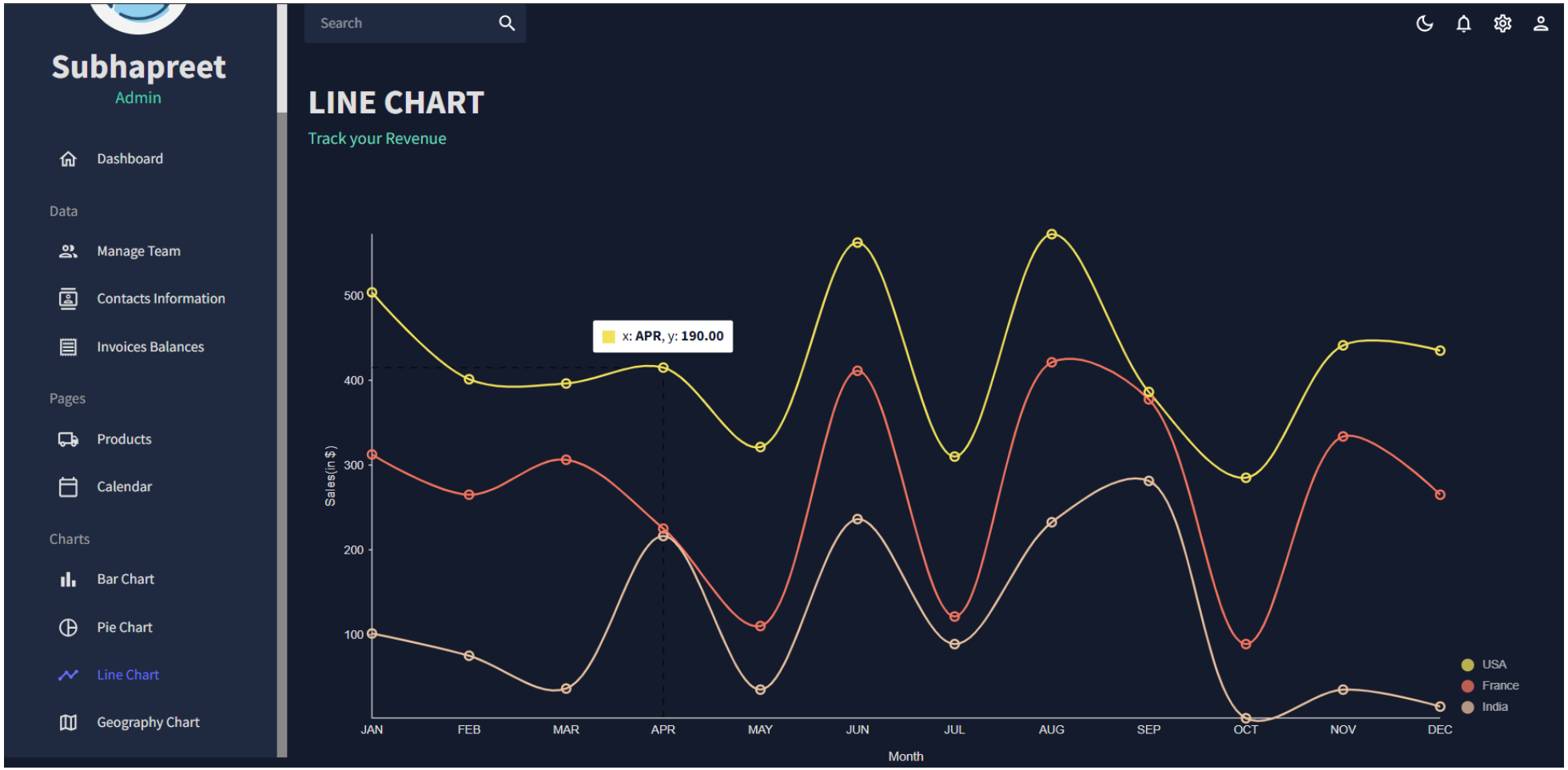
Calendar Page



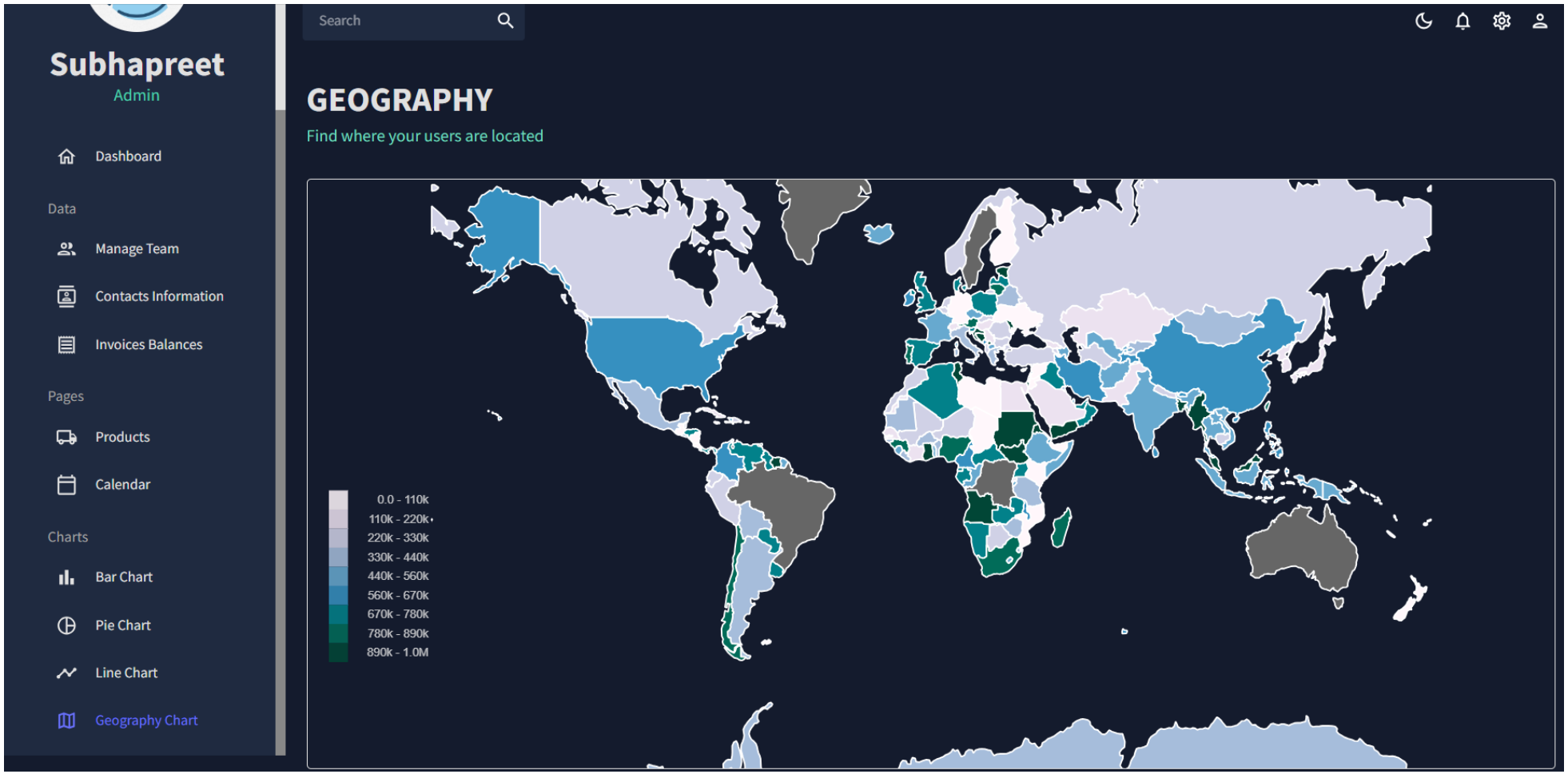
Bar Chart Page



Pie Chart Page



Line Chart Page



Geography Page

Result & Discussion

Implementing the navbar in the CleverDash app using the MERN stack yields a responsive, scalable, and maintainable solution. The combination of React's efficient rendering, Node.js's robust backend capabilities, Express.js's flexible routing, and MongoDB's scalable database infrastructure ensures that the navbar performs well under varying loads while providing a great user experience. The results of developing and implementing the CleverDash app's navbar using the MERN stack (MongoDB, Express.js, React.js, Node.js) can be assessed across various dimensions such as performance, user experience, scalability, and maintainability.

Conclusion

Clever-Dash offers a user-friendly platform for data visualization and management. With its advanced features and seamless integration capabilities, Clever-Dash empowers users to unlock insights and make informed decisions. It serves as a tool that can be intuitive and also is minimal in complexity that makes it easy for a wider range of users to use

Future Enhancement

1.Cross-Platform Compatibility :

Ensure Clever-Dash works seamlessly across desktop, web, and mobile devices.

2.Expanded Data Visualization Options :

Introduce more chart types and advanced visualization techniques.

3.Personalized Dashboards :

Enhance customization features for tailored user experiences.

4.Enhanced Data Fetching :

Strengthen integration capabilities with external data sources.

References

- Material UI Documentation (https://material-ui.com/): Material-UI is a popular React UI framework that provides pre-designed components following Google's Material Design principles
- Nivo Charts Documentation (https://nivo.rocks/): Nivo is a rich collection of customizable React components for building data visualization charts.
- Node.js Documentation (https://nodejs.org/en/docs/): Node.js is a popular runtime environment for building server-side applications in JavaScript
- Express.js Documentation (https://expressjs.com/): Express.js is a minimalist web framework for Node.js, designed for building web applications and APIs.
- MongoDB Documentation (https://docs.mongodb.com/): MongoDB is a popular NoSQL database that provides flexibility and scalability for storing and managing data. Its document-oriented nature and rich query capabilities make it suitable for MERN Applications

THANK YOU