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Development and Working of MERN stack Website Built for NGO

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ABSTRACT: This paper explains the process of creating a website for a non–governmental organization (NGO) using the MERN (MongoDB, Express.js, React.js, Node.js) stack. The website is a platform for NGOs to showcase their work, raise donations, teach students, and publish information about their work and activities. This paper covers the design, implementation, and presentation of the website, as well as the technologies and tools used in the development process.

KEYWORDS: MERN stack, NGO, Website Development, Social-work, Collaboration, Social-Welfare.

I. INTRODUCTION

In today's digital age, non-governmental organizations (NGOs) play an important role in solving social problems and promoting positive change. However, many NGOs face problems in managing their work, resources, and reporting. The emergence of online technology provides an opportunity to improve NGO processes and improve their impact on the communities they serve.

This report explores the use of MERN to develop and deploy a web platform stack (MongoDB, Express.js, React.js and Node.js) for an NGO (Shambhu Raje Shakha). MERN stack is a great combination of JavaScript technologies that can create powerful, scalable, and useful web applications.

The purpose of this article is to provide an in-depth analysis of the work of the MERN group in the context of the work of NGOs. We will discuss the design, layout and key features of a MERN-based website designed for our NGO client. We will also describe the challenges encountered during development and the solutions used to overcome them.

Through this technological research, we aim to demonstrate the potential of the MERN group to help NGOs manage and participate in their activities. They must support stakeholders and encourage significant changes in their communities. We also hope to inspire other organizations to use modern technology to socialize and contribute to a better world for everyone.

II. RELATED WORK

The website of Shambhu Raje Shakha represents a significant advancement in the NGO's digital presence and outreach efforts. Through a modern, multi-tech suite, the website aims to improve interaction with society, increase efficiency and create good impact in the communities in which the organization works. The website was developed using MERN stack and uses MongoDB as a NoSQL database to store and manage information regarding projects, events, and student management. Express.js works as a backend web server that facilitates communication, brokering, and processing of HTTP requests. Node.js enables integration with the front-end by providing an environment for executing server-side JavaScript code. React.js powers front-end user interfaces, allowing the creation of dynamic and interactive components to provide a rich user experience.

Front-end and back-end developers work together to develop features and functionality and perform regular testing and security testing to ensure high performance and usability standards.

The website is served using a cloud hosting service such as Vercel to provide users with availability, reliability and access across devices and regions. Continuous integration and deployment pipelines automate the deployment process so websites can be quickly updated and improved without impacting customers.

III. PROPOSED ALGORITHM

Home Page:

The home page is the first point of contact for visitors and conveys Shambhu Raje Shakha's mission, vision and values. It can include engaging images, helpful quotes and calls to action that direct visitors to explore other areas of the site.

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Example: Visitors to the home page of the Shambhu Raje Shakha website learn that the organization is committed to helping the poor community through education and social care, health. We encourage them to go elsewhere on the website to learn more about specific programs and how they can participate.

Event Gallery:

The Project Gallery showcases Shambhu Raje Shakha's past and ongoing initiatives, with detailed descriptions, photos and videos showing the impact of each community project. Visitors can explore different projects and gain insight into the organisation's work.

Example: A visitor to the project gallery on the Shambhu Raje Shakha website discovered a sanitation project focused on providing clean water and sanitation to villages. They learn about the project's objectives, progress and results through photos and testimonials from beneficiaries.

Admin Panel:

Admin panel has maximum power to create and remove teachers and students. Administrators control access to learning materials and grant access only to authorized users. Administrators are responsible for ensuring the security of the site.

Example: A student wants to enroll himself in a course module. However, it cannot be saved in direct mode. The administrator must use a unique email and password to add the student to the mode.

Teacher Panel:

Teacher Panel includes functions such as creating classes, adding subjects, adding courses and reporting student grades. Teachers reserve the right to change or alter results. Teachers must first register on the website through the administrator.

Example: Teachers can update student grades and publish grades at any time. This work is done by the teacher and no one else is involved in this work.

Student Group:

When a student registers on the website, they can view room details, give grades, print or download room information from the home page, etc.

Example: After the student logs in to the website, he can click on the result button and see the different marks or voluntarily go to the room and download the notes etc.

Thus, Shambhu Raje Shakha's MERN stacked website Includes Home Page, Events Gallery, Study Module, Admin Panel. Portal Key features such as Study module and Admin panel are all designed to enhance the organization's online presence, engage stakeholders, and create a positive impact in the community.

IV. FLOW

Step 1: User opens the website in his/her device.

Step 2: Scrolls to see the events and initiatives. If the user is Teacher/Student he/she logs in

Step 3: Enters the User ID/Mail and password to log in.

Step 4: The user credentials are verified from the database and the user logs in successfully.

Step 5: If the user is student then he/she will see:

- Results page
- Class/Division
- Subjects
- Unit Notes for Each Subject If the user is teacher then he/she will see:
- Results page
- Classes
- Subjects

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- Unit notes for Each subject The difference here is that only teacher will have modification privileges.

Step 6: Log out.

Step 7: End.

V. WORKING

The NGO's MERN-stacked website will work as follows: MongoDB, a NoSQL database, will store all information regarding the organization's activities, student information, and all information regarding Study module and Teachers. Express.js is a web application framework for Node.js that will handle HTTP requests and middleware to enable seamless communication between the frontend and backend of the website. React.js is a JavaScript library for creating user interfaces that will form the front end of the web, allowing the creation of interactive and dynamic objects to enhance the user experience. Node.js is an operating system that runs JavaScript code on the server side. These technologies will work together to create a unified and useful website that will allow the NGO to present its activities, management groups, training modules and publish Good and useful information to a wide audience.

Connecting various technology tools We use Axios (React.js library) to move data from one place to another. Axios works by making HTTP requests from the browser using NodeJS and XMLHttpRequest. If the request is successful, you will receive a response with request information. If the request fails, you will receive an error message. You can also interrupt requests and responses and modify or modify them.

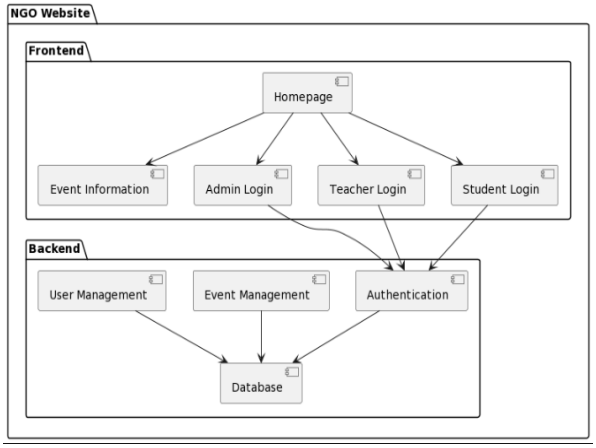

Fig.1. Component Diagram

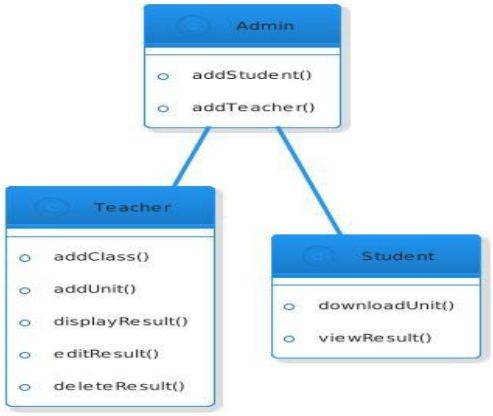

Fig. 2. Class Diagram

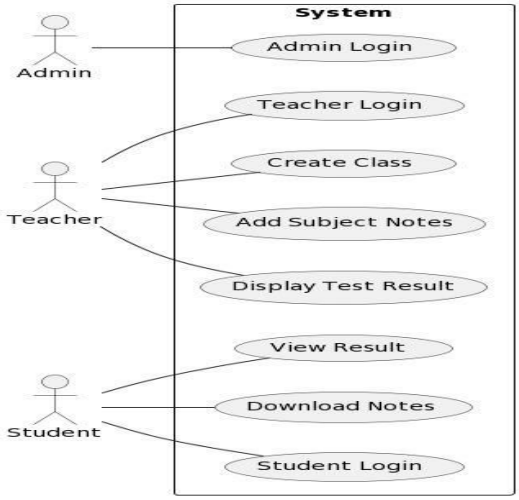

Fig. 3. Use case Diagram

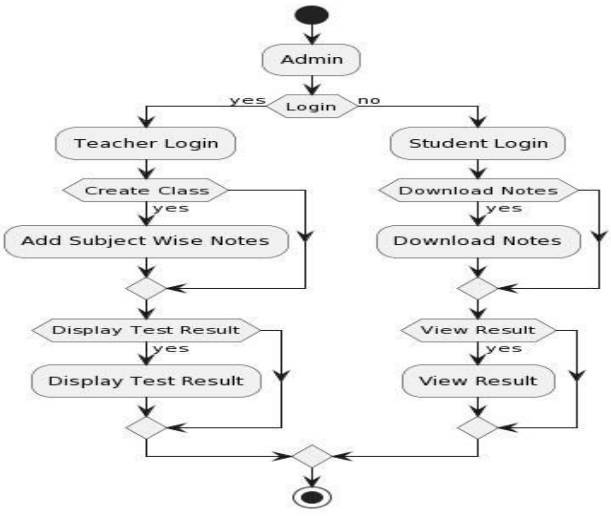

Fig 4. Activity Diagram

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Fig. 1. – Figure 1 showcases the Component Diagram for our website. The component diagram defines the core components of our website.
Fig. 2. - Figure 2 shows the Class diagram for our website. In a class diagram it shows which classes are used along with their methods and how they are connected to each other.
Fig. 3.- Figure 3 shows the Use case diagram for our website. In the use case diagram, we defined how the user will use the website. The use cases are different for each user as shown in the figure.
Fig. 4.- Figure 4 shows the Activity diagram for our website. In the Activity Diagram we define the flow of the system or how the user will navigate from one page to another page.

VI. CONCLUSION AND FUTURE WORK

In summary, creating a website for NGO Shambjuraje Shakha using the MERN (MongoDB, Express.js, React.js, Node.js) cluster turned out to be a good and profitable choice. These modern and versatile technologies have many advantages, such as flexibility, scalability, and simplified development process. Leveraging MongoDB for database management, Express.js for server-side application development, React.js for dynamic user interfaces, and Node.js for high-performance server-side execution, the website is well suited to meet specific needs and design goal of Shambjuraje Shakha.

Additionally, MERN stack facilitates rapid development, allowing for timely updates and improvements to the functionality and content of the website. This speed is essential for NGOs like Shambjuraje Shakha; It allows them to adapt to changing needs, engage effectively with their audience, and better accomplish their jobs.

Overall, the use of MERN stacking has improved Shambjuraje Shakha's ability to build a strong online presence, improve user engagement, and effectively communicate with its customers with causes and plans to a wider audience. As technology continues to evolve, the MERN group ensures that the website remains a key factor in promoting the aims and objectives of the Shambjuraje Shakha brand for the coming year, providing a solid foundation for future growth and innovation.

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