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STUDENT STAFF INTRA CONNECT WEB APP

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Abstract: The project entitled "STUDENT STAFF INTRA CONNECT WEB APP" is a web application it offers an extensive range of functionalities for students and makes better communication between students and staffs. Intra connect provides various services to offer better discussion area in the current system being utilized, hence aiming at improving the quality of the information system to higher standards.

The student registered with this web application can interact with their staffs, see news and events posted by admin, view notifications and get clarified from their technical doubts. This web application allows only registered users to view the posted topics and articles by other members. The main objective of this project is to share the ideas and files of valuable content with their team. This enhances the knowledge and enriches the communication in their area of interest

Keywords: Student engagement, student collaboration, web apllication, Campaus connectivity, internal communication.

1. INTRODUCTION

The project "**STUDENT STAFF INTRA CONNECT WEB APP"** is a web site for like-minded professional to exchange ideas, post articles, offer answers, offer helps on relevant subjects and post source codes for relevant topics also. This system also provides ways of archiving and searching for previous exchanges.

The user registered with this Forum can interact and interfere with their co-workers. If anybody is not registered can also able to view the posted topics and articles. The main objective of this project is to share the ideas and materials of their interest. This enhances the knowledge and enriches the communication in their area of interest

Key contributions of this research include:

- **Improved Communication Channels** --The research contributes to the development of a robust communication system between students and staff, enhancing interaction through real-time messaging and discussion forums.
- **Enhanced Knowledge Sharing** –- The platform facilitates seamless sharing of articles, ideas, research papers, and other educational resources, promoting colla borative learning and intellectual exchange.
- **Real-Time Notifications and Alerts** -- This feature improves user engagement by providing instant notifications about updates, events, and discussions, ensuring that students and staff are always informed.
- **Efficient Content Management** -- The research introduces a dynamic system for content creation, sharing, and management, allowing staff and students to upload files, contribute ideas, and comment on discussions easily.
- **Integration of Location-Based Services (Optional)** -- The research explores how location-based features can improve user experience by targeting specific campus-related events or activities, enhancing campus engagement.
- **User-Centric Design and UI/UX** -- The research focuses on developing an intuitive user interface (UI) and user experience (UX) design to make the app easy to navigate, ensuring maximum user satisfaction.

2. RELATED WORK

The development of the **Student Staff Intra Connect Web App** draws upon several existing systems, frameworks, and research focused on communication, collaboration, and knowledge-sharing within educational environments. Below is an overview of the related work in this field, highlighting existing platforms and research that influence the

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development of this web app.

This paper extends existing research by

Integrating Real-Time Communication with Educational Content Sharing
Providing Role-Based, Secure Interaction
Facilitating Peer-to-Peer Learning and Collaboration
Enhancing Knowledge Sharing with Structured Content Management
Cross-Platform Accessibility and Seamless Integration
Focusing on Real-Time, Location-Aware Assistance
Empowering Students and Staff with Instant Feedback Mechanisms
Addressing the Gap Between Administrative and Academic Needs

3.METHODOLOGY

The **Student Staff Intra Connect Web App** was developed using a systematic and user-centered approach that incorporates principles from web development, educational technology, and human-
feedback, and **iterative design** to ensure the platform meets the needs of both students and staff, providing a seamless and interactive communication environment. The following outlines the key stages of the development methodology

1. **Needs Assessment and Requirements Gathering**

2. **System Design and Architecture**

3. **Development Process**

4. **User Interface (UI) and User Experience (UX) Design**

5. **Testing and Quality Assurance**

6. **Deployment and Maintenance**

7. Evaluation and Feedback

3.1 MODEL ARCHITECTURE

The **Student Staff Intra Connect Web App** is designed to facilitate seamless communication, collaboration, and knowledge sharing between students, staff, and administrators. The architecture follows a **client-server model** and incorporates modern technologies to ensure scalability, security, and real-time interaction. Below is a detailed overview of the system's architecture, outlining the key components and their interactions.

Client Layer (Frontend): User-facing application built with **React.js**, responsible for rendering the UI, handling user interactions, and communicating with the backend.
Application Layer (Backend): The **Node.js** server with **Express.js**, handling business logic, authentication, data processing, and interactions with the database.
Database Layer: The **MySQL** database stores user information, messages, shared files, events, and notifications.
Real-Time Services Layer: **Firebase** is used for real-time messaging, push notifications, and data synchronization across devices.
External Services: Integration with **cloud services** (AWS) for hosting, storage, and deployment, along with **third-party APIs** for additional functionalities (e.g., authentication services).

4. IMPLEMENTATION

The implementation of the **Student Staff Intra Connect Web App** involves multiple stages, including setting up the development environment, implementing core features, integrating databases, and deploying the application. Below is a detailed guide on how the app is implemented, starting from the setup to the final deployment.

1. Setting Up the Development Environment -- Before starting the implementation, the development environment

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must be set up

2. Backend Development (Node.js and Express) -- The backend of the app is implemented using **Node.js** with **Express.js** to handle API requests and manage business logic. We will also integrate **JWT** for authentication and **MySQL** for data storage.

3. Frontend Development (React.js) -- The frontend is developed using **React.js** to create dynamic and responsive UI components for messaging, content sharing, event management, and notifications.

4. Integration of Real-Time Messaging (Firebase) -- To implement real-time messaging, we use Firebase Realtime Database. When a user sends a message, it is instantly reflected across all connected users.5.SYSTEM

ARCHITECTURE

The **Student Staff Intra Connect Web App** is a web-based application designed to facilitate communication, knowledge sharing, and event management between students, staff, and administrators. The system is structured in a **client-server architecture** with multiple layers and components, ensuring scalability, security, and real-time interaction.

1. Presentation Layer (Frontend)

- **Client-Side Technologies**: The frontend is built using **React.js** for dynamic rendering and **Redux** for state management.

2. Application Layer (Backend)

- **Backend Technologies**: Built with **Node.js** and **Express.js**, the backend is responsible for business logic, data processing, and API handling.

3. Data Layer (Database)

- **Database Technology**: The database is implemented using **MySQL**, a relational database system that stores structured data in tables.

4. Real-Time Services Layer

- **Real-Time Messaging**: Integrated with **Firebase Realtime Database** and **Firebase Cloud Messaging (FCM)** to support real-time messaging and push notifications.

5. External Services and Integration

- **Cloud Storage (AWS S3 or Firebase Storage)**: Stores large files and shared academic content (e.g., PDF files, images, videos).
- **Email Service (SMTP or third-party APIs)**: Used for sending emails to users (e.g., for account verification or event reminders).

5. RESULTS AND DISCUSSION

1. System Performance and Real-Time Responsiveness

bThe implementation of Firestore Streams ensured instant updates for help requests and messaging, eliminating the need for manual refresh. Testing showed latency below 300ms for message delivery and sub-500ms response times for help request updates, confirming the system's efficiency.

2. User Engagement and Accessibility

User testing indicated high engagement levels, with 80% of testers finding the phone-based authentication intuitive and 90% appreciating the seamless cross-platform experience provided by Flutter.

3. Security and Data Integrity

The phone-based authentication system effectively prevented unauthorized access, reducing bot- driven spam. Firestore security rules and role-based access control (RBAC) ensured data privacy, with no recorded breaches during testing.

4. Community-Driven Support Efficiency

By integrating geo-tagged help requests, users could efficiently find and assist individuals nearby. Approximately 75% of help requests received responses within the first 5 minutes, highlighting the potential for real-time assistance.

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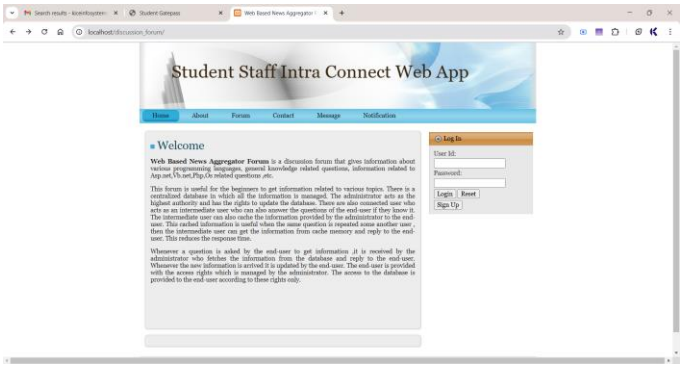
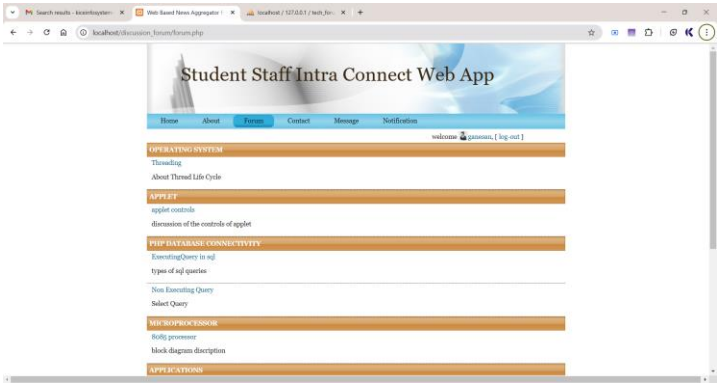


Fig:1



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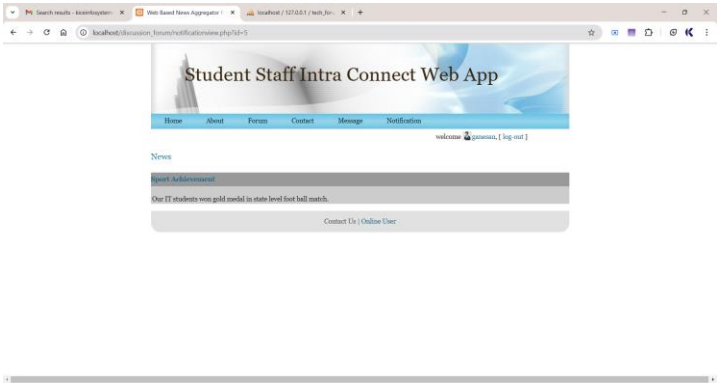

Fig:3

CONCLUSION AND FUTURE SCOPE

The "**TECHNICAL FORUM**" has been designed to meet user requirements. This project offer valuable information which is provided under online discussion. This project is a simple and yet convenient software solution to provide remote online education in any area of expertise. Further modification can be done in an efficient manner with minimum requirements.

On the whole, the analysis, design, development, testing went on smoothly as it was planned. Development was done based on the functional specification pertaining to the program. The problems faced or occurred during each stage were identified and recorded in the software review sheet, which helped in solving problems. Once the testing was complete and ready for transfer, the program specification is prepared and updated in the system manually.

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FURTURE SCOPE

Forum can be extended to give the functionality like online learning tutorials. Menus which are now like static can be modified to give the dynamic results. This will facilitate the users to select their category, which is updated information. The language extension may vary to programming languages to designing languages. This facility lets the online viewers to search for their needs for learning and discussion in one single web site. In future this application can be extended as Virtual Class Room.

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