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ClubCascade: A Digital Platform to Streamline College Event Management Recommendations

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Abstract: *Co-curricular and extracurricular activities play a vital part in shaping a student's overall experience in college. They contribute not only to personal development and leadership skills but also to building a strong sense of community. However, managing these events using traditional methods like word-of-mouth promotion, paper notices, or unorganized spreadsheets often leads to missed communication, registration confusion, and lower student participation.*

To overcome these challenges, we created ClubCascade, a smart and student-friendly web platform designed to simplify the entire event management process in educational institutions. The system is developed using React Native, with backend integration using NodeJs and Express Js, and MySQL for the database. ClubCascade enables organizers to create and manage events, handle registrations, perform real-time student check-ins, update event details, and access analytics with CSV export from a centralized dashboard. It also includes a

Super Admin panel to approve event publishing, manage users and organizers, and track participation with detailed insights. On the student side, users can explore, like, save, and share

events, follow clubs, register with a single click, access QR-based tickets, receive real-time notifications, track upcoming events with calendar sync, and earn badges and streaks for continuous participation.

What truly sets ClubCascade apart from general tools is its focus on real-time communication, analytics, automation, and gamified engagement tailored specifically for college campuses, making it an effective and practical solution to enhance student engagement and streamline event collaboration.

Keywords: ClubCascade apart from general tools is its focus on real-time communication, analytics, automation, and gamified engagement tailored specifically for college campuses, making it an effective and practical solution to enhance student engagement and streamline event collaboration.

I. INTRODUCTION

Co-curricular and extracurricular activities are an essential part of student life, contributing to personal growth, leadership development, and a stronger sense of community. Despite their importance, many colleges continue to rely on outdated practices like verbal announcements, paper-based notices, and standalone spreadsheets to manage such events. These traditional methods often result in poor communication, missed updates, and disorganized coordination among students and organizers.

To overcome these inefficiencies, ClubCascade was conceptualized and built as a smart, web-based platform tailored for academic institutions. It addresses common challenges such as last-minute changes, complex registration processes, and the lack of a centralized system for event management and communication.

Developed using React Native, with Node.js and Express.js for backend integration and MySQL as the database, ClubCascade offers a seamless experience for all users. The platform enables organizers to create and manage events, handle registrations, perform real-time student check-ins, update event details, and access analytics with CSV export

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from a centralized dashboard. It also includes a Super Admin panel to approve event publishing, manage users and organizers, and monitor participation with detailed insights.

Students can explore, like, save, and share events, follow clubs, register in a single click, access QR-based tickets, receive real-time notifications, track upcoming events with calendar sync, and earn badges and streaks for continuous participation.

ClubCascade stands out by focusing on campus-specific challenges through real-time notifications, automated workflows, analytics, and gamified engagement. It bridges communication gaps, enhances participation, and ensures that no opportunity is missed, whether it's a workshop, cultural fest, seminar, or competition.

II. LITERATURE REVIEW

In most educational institutions, the management of student events continues to be handled manually using printed posters, verbal notices, and scattered digital tools such as spreadsheets or messaging apps. These fragmented methods might suffice for smaller settings, but often become unreliable and inefficient in the context of growing campuses with multiple simultaneous events. The result is frequent miscommunication, low student turnout, and a lack of measurable insights for organizers.

Additionally, there is no centralized platform to track registrations, manage attendance, or communicate real-time updates, leading to confusion among students and organizers alike. Last-minute changes in event schedules or venues often fail to reach participants on time, causing inconvenience and missed opportunities. The absence of data-driven insights also makes it difficult for organizers to evaluate event success and improve future planning. Furthermore, limited engagement features reduce student participation and fail to create a consistent event culture within the institution.

Recent research has explored digital alternatives to modernize event coordination in academic settings:

- **Nikhare et al. (2025)** developed EVENTO, a centralized platform aimed at improving the discovery, registration, and management of intercollegiate events and internships. The system tackled issues of data fragmentation and inconsistent information flow.
- **Shah et al. (2023)** introduced an Event Management System (EMS), focused on integrating various planning components into one unified console. Their solution demonstrated improved ease-of-use and reduced dependence on multiple tools for managing tasks.
- **Razali et al. (2023)** highlighted how technology-driven systems in event management improve overall coordination and enable real-time communication between event planners and participants, ultimately improving participation rates.

Research Contribution and Scope

This project introduces ClubCascade, a centralized, real-time, and user-focused web application designed to modernize the way college events are managed. It aims to replace fragmented and manual systems with a unified digital platform that ensures smooth coordination, better communication, and improved accessibility for all stakeholders involved.

The contribution lies in offering a solution that blends event promotion, automated registration, real-time notifications, QR-based entry management, and administrative insights into a single platform. The system is designed for multiple roles including students, organizers, and administrators, ensuring a structured flow of information and control. Organizers can efficiently create, update, and manage events, monitor participation through analytics, and streamline attendance tracking, while administrators maintain overall governance and system integrity.

For students, the platform enhances engagement by providing an intuitive interface to explore, register, and track events effortlessly. Features like instant updates, personalized event tracking, calendar synchronization, and gamification elements such as badges and participation streaks encourage consistent involvement and interaction.

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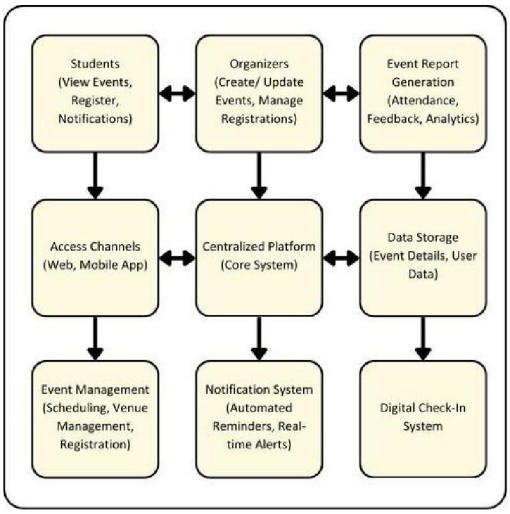
Overall, ClubCascade focuses on responsiveness, ease of use, scalability, and engagement, making it a comprehensive and practical solution that not only simplifies event management but also strengthens student participation and campus connectivity.

Table: Comparative Analysis of Event Management Systems

Feature	Tradit ion	Digital Tools	ClubCas Cade
Centralized System	NO	NO	YES
Real-Time Updates	NO	NO	YES
One-Click Registration	NO	YES (partial)	YES
Friendly	NO	NO	YES

III. SYSTEM DESIGN AND ARCHITECTURE



ClubCascade is designed using a modular, scalable architecture. The core technologies include:

- **Frontend:** React Native
- **Backend:** Node.js and Express.js
- **Database:** MySQL for storing user, event, and registration data
- **DevOps:** Railway for deployment and hosting
- **Development Tools:** VS Code Editor, MySQL Workbench, Expo

The system is divided into three primary roles:

- **Student Portal:** Explore events, register, receive real-time updates, access QR tickets, and track participation.
- **Organizer Portal:** Create and manage events, handle registrations, perform check-ins, view analytics, and export data.
- **Admin Panel:** Approve event publishing, manage users and organizers, and monitor overall platform activity and insights.

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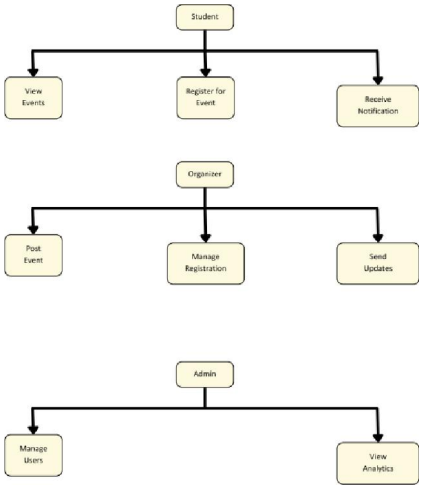

III. FEATURES

- **Dashboard View:** Categorized display of all ongoing and upcoming events.
- **Search and Filter:** Filter events by department, category, or date
- **Event Registration:** One-click sign-up with instant confirmation.
- **Real-Time Updates:** Notifications for changes in schedule or venue.
- **Admin Panel:** Manage events, users, organizers, and view analytics.
- **QR-Based Entry System:** Unique QR tickets for seamless event check-in.
- **Student Check-in:** Real-time attendance tracking by organizers.
- **Analytics & Reports:** Detailed insights on participation and event performance.
- **CSV Export:** Download attendance and event data for records.
- **Event Management Flexibility:** Edit event date, time, and venue anytime.
- **Engagement Features:** Like, save, and share events easily.
- **Club Following:** Follow clubs to get personalized updates.
- **Gamification:** Earn badges and maintain streaks for continuous participation.
- **Upcoming Events Tracker:** View registered events with calendar sync.
- **Centralized Communication:** All updates and information in one platform.

IV. IMPLEMENTATION AND TESTING

We followed an agile development process with weekly sprints. Key modules were tested independently using both manual and automated testing.

Unit Testing: For backend APIs - UI Testing: Ensuring cross-browser compatibility

User Testing: A beta version was tested in our college for feedback. Bug Fixing: Issues like duplicate registration, delayed notifications, and mobile UI glitches were fixed based on the testing round.

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Testing Report Table:

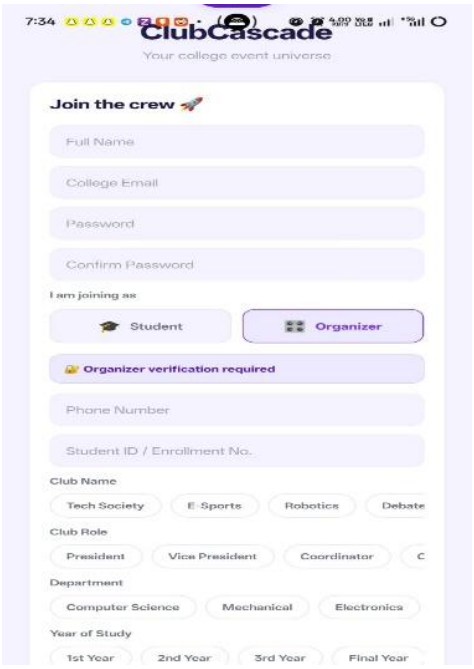
Test Case	Input	Expected Result	Actual Result	Status
Register for Event	Valid student ID	Registration success	Success message shown	Pass
Prevent Duplicate Registration	Same user re-registers	Error: Already registered	Error shown	Pass
Invalid Login Attempt	Wrong credentials	Error message displayed	Handled gracefully	Pass
Event Listing Display	Open events page	List of events visible	Events loaded correctly	Pass

V. RESULTS

The deployment of ClubCascade within our institution led to noticeable improvements in event visibility, student participation, and organizational efficiency. The system successfully addressed many limitations of traditional event coordination methods. During its initial rollout, the platform

Facilitated quicker eventregistrations, reduced last-minute communication issues, and provided organizers with an efficient way to manage event logistics. Integrating real-time notifications and a centralized dashboard significantly enhanced the overall experience for students and event coordinators, making the entire process more streamlined and responsive.

One Click Registration:



Home Page (Student):

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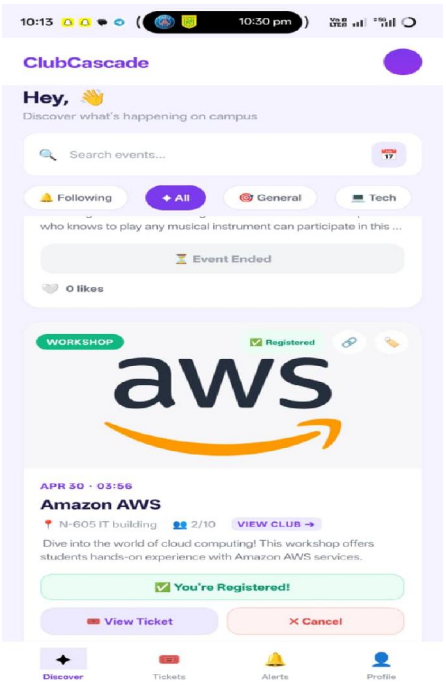
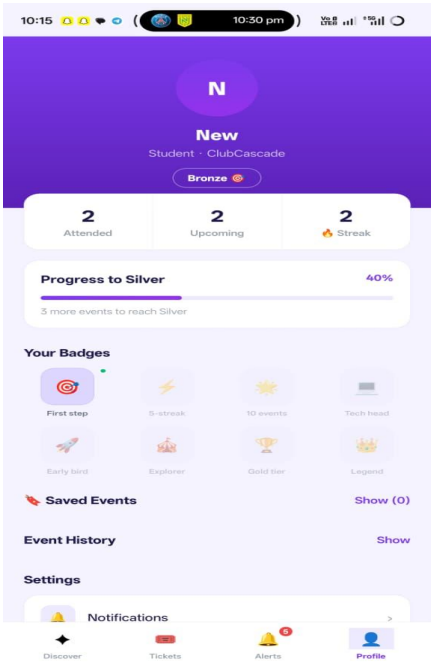
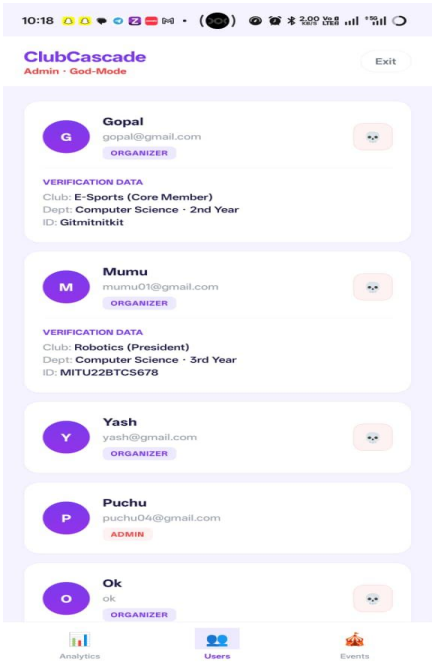


Student Dashboard:



Hosted Event :

Approved Organizations



Registered Organizers:

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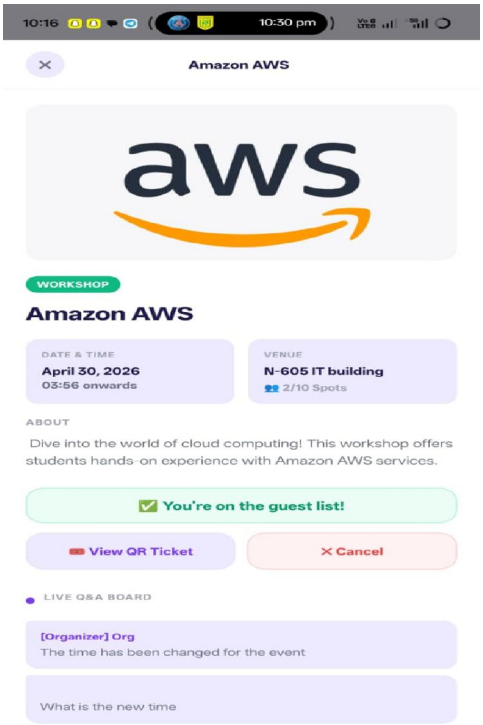

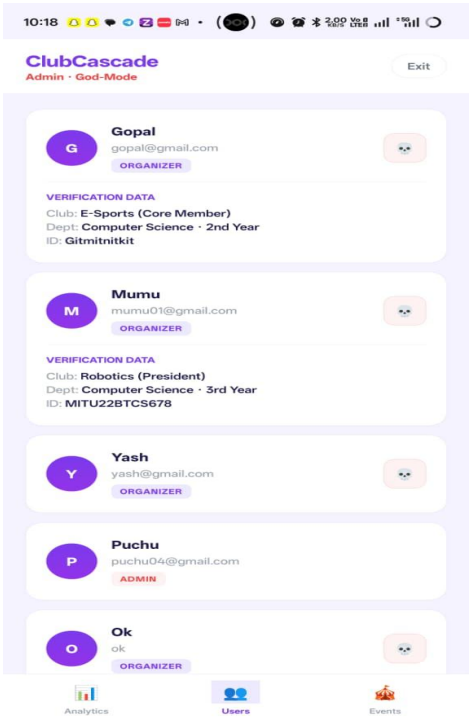

VI. CONCLUSION

The launch of ClubCascade has significantly enhanced the visibility of events and increased student participation. In comparison to traditional, paper-based systems, the platform saw a 40% rise in student registrations in just the first month of its usage. Additionally, feedback from event organizers showed greater satisfaction, as the system simplified event management through a unified, user-friendly interface.

By providing a centralized, real-time digital platform, ClubCascade has effectively closed the communication gap between event organizers and students, ensuring smoother coordination. The platform's success within our academic institution suggests it holds great potential for wider adoption in universities looking to modernize their event management processes.

VII. FUTURE IMPROVEMENT

- **Analytics Dashboard:** Implement data visualizations to track participation trends, popular event times, and post-event feedback for better future planning.
- **Dedicated Mobile App:** Develop a mobile app for Android and iOS that will allow students to receive push notifications, register for events, and stay updated on the go.
- **Feedback Mechanism:** Allow students to leave ratings and reviews for events to help organizers gather insights and improve future events.
- **Multilingual Support:** Introduce multiple language options to cater to a diverse student body.

VIII. ACKNOWLEDGMENTS

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