Campus Event and Fund Management System: A Centralized Role-Based Web Platform for Extracurricular Activity Coordination and Financial Transparency

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Abstract - *The management of extracurricular events in colleges involves several activities, including event creation, student registration, participant management, and financial tracking. These activities are often handled using separate platforms such as messaging applications, online forms, and spreadsheets. Managing information across different platforms can make coordination difficult and lead to problems in maintaining organized records. The proposed Campus Event and Fund Management System aims to provide a centralized web based platform for managing college events and their related financial activities at the Hyderabad Institute of Technology and Management. The system is designed around three main user roles: students, event coordinators, and faculty members. Students can view available events and register for them online. Event coordinators can create and manage events, monitor student registrations, and maintain records of event related income, allocated funds, and expenses with automated balance calculations. Faculty members can oversee event activities and access consolidated financial and participation reports. The proposed system uses HyperText Markup Language, Cascading Style Sheets, and JavaScript for frontend development, Java and Spring Boot for backend development, and MySQL for relational database management. Java Database Connectivity is used to establish connectivity between the backend application and the database. The main objective of this project is to simplify event coordination, reduce manual work, and improve the organization and transparency of event related financial records through a centralized platform.*

Key Words: Campus Event Management, Fund Allocation and Expense Tracking, Role-Based Access Control, Java Spring Boot, Java Database Connectivity, MySQL Relational Database.

1. INTRODUCTION

College events play an essential role in holistic student development by providing opportunities to participate in technical hackathons, cultural festivals, academic workshops, and extracurricular activities. Organizing these campus-wide events requires seamless coordination among students, event coordinators, and supervising faculty members at the Hyderabad Institute of Technology and Management (HITAM).

1.1 Problem Identification

In many colleges, event-related workflows are managed across disconnected tools such as instant messaging groups, standalone online forms, and manual spreadsheets. Distributing information across separate platforms introduces six major operational challenges: (1) event announcements are scattered across multiple channels, making it difficult for students to discover all active events in one place; (2) student registration records are maintained separately, increasing the effort required to consolidate participant lists; (3) event coordinators struggle to track real-time registration counts and monitor participants; (4) event-related fund allocations and expenses are recorded manually, complicating financial auditing; (5) faculty members lack a centralized executive view of event progress and financial balances; and (6) manual data entry increases the risk of arithmetic errors and duplicate records.

1.2 Objectives and Scope of the Project

Developed as a Project-Based Learning (PBL) initiative, the primary objectives of the Campus Event and Fund Management System are to develop a centralized web platform for college events, enable online student event discovery and registration, empower coordinators to create and update event details, maintain structured participant lists, record event-specific fund allocations and expenses, automatically calculate and display the remaining fund balance, and provide faculty members with real-time monitoring and financial reports. The scope of the system is organized into four cohesive functional modules:

- **Student Module:** Enables students to browse available campus events, inspect schedules and descriptions, register online, and track their registered events.
- **Coordinator Module:** Allows event coordinators to create and update events, link optional registration forms, monitor participant rosters, and log fund allocations and expenses.
- **Faculty Module:** Provides faculty members with read-only oversight of campus-wide event activities, participant counts, and itemized financial reports.
- **Fund Management Module:** Records allocated event budgets, logs itemized expenditures, computes remaining balances automatically, and maintains auditable financial ledgers.

2. LITERATURE REVIEW AND PROBLEM IDENTIFICATION

Existing academic literature highlights the transition from manual event coordination to automated web-based platforms. Dhanasekaran et al. [1] explored an intelligent agent-based university event management system utilizing the Harmony Search Strategy, demonstrating how automated scheduling and digital workflows reduce organizational bottlenecks across university departments. Huyen [2] presented an internet-based event management method and system using Van Lang University as an institutional case study, confirming that centralized web portals significantly improve student engagement and registration accuracy. Furthermore, Thankachan et al. [3] investigated the design and implementation of a comprehensive college event management system, establishing the value of unifying event announcements and participant tracking within a single campus portal.

2.1 Identified Research Gap and System Design Principles

While prior studies [1]–[3] primarily address event scheduling and student registration, they rarely integrate role-based participant management with real-time event budget allocation and expense accounting within the same relational database. To address this gap, the proposed system is engineered around six core design principles summarized in Table -1.

Table -1: Identified Research Gaps and Corresponding System Design Principles

Design Principle	Identified Institutional Need	Architectural Realization in Proposed System
1. Centralization	Eliminate scattered messaging apps, forms, and spreadsheets.	Maintains event details, registrations, participant lists, and finances in one portal.
2. Role-Based Functionality	Segregate privileges across campus stakeholders.	Provides dedicated dashboards for Students, Event Coordinators, and Faculty.
3. Simplicity and Usability	Ensure rapid adoption without technical friction.	Uses clean HTML5 and CSS3 cards, navigation bars, and intuitive web forms.
4. Data Organization	Prevent duplicate registrations and lost records.	Stores normalized relational entities in MySQL with primary/foreign keys.
5. Financial Transparency	Track event budgets and expenditures accurately.	Computes Remaining Balance = Allocated Amount − Total Expenses automatically.
6. Maintainability	Support modular upgrades and debugging.	Decouples Presentation, Java Spring Boot Application, and MySQL Database tiers.

3. SYSTEM METHODOLOGY AND ARCHITECTURE

The proposed Campus Event and Fund Management System follows a modular three-layer client-server architecture consisting of the Presentation Layer, the Application Layer, and the Database Layer:

- **Presentation Layer:** Developed using HyperText Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript (JS) to structure web pages, style layouts, and handle dynamic client interactions for students, coordinators, and faculty.
- **Application Layer:** Implemented using Object-Oriented Programming (OOP) in Java with the Spring Boot framework to expose Application Programming Interfaces (APIs), process HyperText Transfer Protocol (HTTP) requests, manage role authentication, process registrations, and execute financial balance calculations.
- **Database Layer:** Powered by a relational MySQL Database Management System accessed via Java Database Connectivity (JDBC) to execute Create, Read, Update, and Delete (CRUD) Structured Query Language (SQL)

operations across Users, Events, Registrations, Funds, and Expenses tables, returning JavaScript Object Notation (JSON) responses to the frontend.



Fig -1: Proposed Three-Layer System Architecture and HTTP/JSON and JDBC Data Flow

3.1 Technology Selection and Seven-Stage Development Methodology

The engineering lifecycle was executed across seven structured stages: Stage 1 (Problem Identification), Stage 2 (Requirement Analysis across student, coordinator, and faculty roles), Stage 3 (System Design including Entity-Relationship ER modeling and architecture planning), Stage 4 (Frontend Development in HTML, CSS, and JavaScript), Stage 5 (Backend Development in Java and Spring Boot), Stage 6 (Database Development in MySQL with JDBC), and Stage 7 (End-to-End Integration and Testing). Table -2 summarizes the selected technology stack and development tools.

Table -2: Selected Full-Stack Technology Stack and Development Tools

System Layer / Tool	Selected Technology	Operational Role in System Development
Frontend Technologies	HTML5, CSS3, JavaScript (JS)	Structure web pages, style responsive layouts, and handle API fetch interactions.
Backend Programming	Java (JDK) & OOP Principles	Implement core business logic, modular classes, and financial balance calculations.
Backend Framework	Spring Boot REST APIs	Expose HTTP endpoints, process JSON payloads, and orchestrate role workflows.
Database & Connectivity	MySQL Server & JDBC Driver	Persist relational tables and execute parameterized SQL CRUD operations.
Build & IDE Environment	Visual Studio Code, Apache Maven, MySQL Workbench	Manage project dependencies, author source code, and administer MySQL schemas.

4. PROPOSED IMPLEMENTATION AND DATABASE DESIGN

The practical implementation of the platform (branded CampusConnect) organizes the user experience across seven role-aware web views: (1) Homepage ('All The Events, In One Place'), introducing Discover Events, Easy Registration, Event Management, Fund Tracking, and Faculty Overview features; (2) Login Page ('Welcome Back!'), authenticating users by email, password, and role selector; (3) Student Dashboard, displaying available events, personal registration counts, and registered event status (e.g., Elysium on 2026-11-03); (4) Explore Campus Events Page, listing active events (Elysium, Hackaton, AI Tech) with registration fees, team sizes, and one-click registration or Google Form links; (5) Coordinator Dashboard, displaying total events, total registrations, remaining funds (e.g., Rs. 4,20,688), and the Create an Event form; (6) Faculty Overview Dashboard, summarizing total events, registrations, and total expenses (e.g., Rs. 56,000); and (7) Consolidated Event Report and Expense Records table. Fig -2 and Fig -3 illustrate these implemented interfaces.

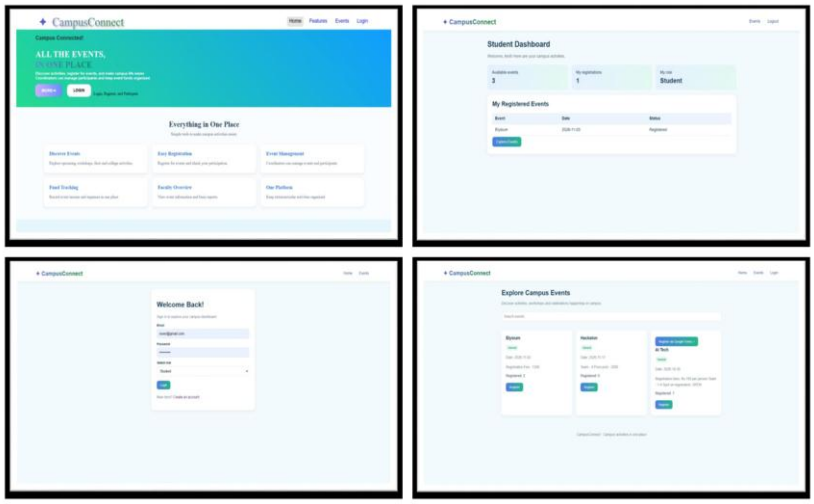


Fig -2: CampusConnect Homepage, Role-Based Login Page, Student Dashboard, and Explore Campus Events Portal

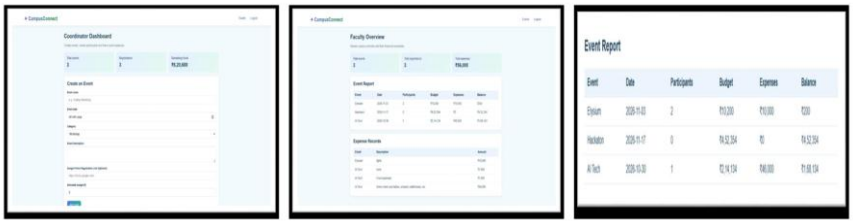


Fig -3: Coordinator Event and Fund Dashboard, Faculty Overview Portal, and Consolidated Event Financial Report

4.1 Fund Allocation Formula and Relational Database Entities

Within the Fund Management Module, coordinators record the allocated budget for each event and log itemized expenses as they occur. The backend automatically computes the remaining balance using the relation: Remaining Balance = Allocated Amount − Total Expenses. All application records are persisted in MySQL across five normalized entities: Users (user credentials and role assignments), Events (event title, date, category, description, and registration link), Registrations (student-to-event mapping), Funds (allocated budget per event), and Expenses (itemized expense descriptions and amounts per event). Table -3 presents the database entities alongside the verified financial ledger captured in the Event Report (Fig 4.7).

Table -3: Relational MySQL Database Entities and Verified Campus Event Financial Ledger

MySQL Entity / Event Name	Schema Role / Event Date & Participants	Stored Attributes / Verified Budget, Expenses & Balance
1. Users & 2. Events Tables	Core identity & event catalog entities	user_id, name, email, role | event_id, title, date, category, reg_link
3. Registrations Table	Student-to-event participation junction	reg_id, event_id, student_id, registration_date, status (Registered)
4. Funds & 5. Expenses Tables	Financial allocation & expenditure ledgers	fund_id, event_id, allocated_amt | exp_id, event_id, description, amount
Verified Event: Elysium	Date: 2026-11-03 | Participants: 2	Allocated Budget: Rs. 10,200 | Expenses: Rs. 10,000 | Balance: Rs. 200
Verified Event: Hackaton	Date: 2026-11-17 | Participants: 0	Allocated Budget: Rs. 4,52,354 | Expenses: Rs. 0 | Balance: Rs. 4,52,354
Verified Event: AI Tech	Date: 2026-10-30 | Participants: 1	Allocated Budget: Rs. 2,14,134 | Expenses: Rs. 46,000 | Balance: Rs. 1,68,134

5. RESULT ANALYSIS, CHALLENGES, AND DISCUSSION

The system was evaluated by verifying that all seven core operational outcomes—common event discovery, online student registration, coordinator event creation, organized participant tracking, fund and expense logging, automatic remaining balance calculation, and faculty report generation—functioned accurately across the integrated HTML/JS frontend, Spring Boot backend, and MySQL database. Table -4 summarizes the verification test matrix (combining Table 5.1 and Appendix B test cases).

Table -4: Functional, Role-Access, and Financial Verification Test Matrix

Test No.	Test Case Scenario	Expected and Verified System Behavior
TC-01	Open Website & Student Login	Homepage loads cleanly; valid student login opens the Student Dashboard.
TC-02	Login with Invalid Credentials	Authentication is rejected and an appropriate error message is displayed.
TC-03	Create Event (Coordinator)	New event record and initial budget allocation are saved in MySQL.
TC-04	Student Event Registration	Student registration is recorded and linked to the target event ID.
TC-05	View Registered Participants	Coordinator dashboard accurately lists all students registered for the event.
TC-06	Add Event Expense Record	Expense entry is saved in the Expenses table and linked to the event.
TC-07	Automated Fund Calculation	Remaining balance (Allocated Amount − Total Expenses) updates accurately.
TC-08	Faculty Report Access	Faculty dashboard displays consolidated event participation and financial reports.

During development and testing, five key engineering challenges were addressed: (1) ensuring reliable HTTP/JSON API payload synchronization between the frontend and Spring Boot backend; (2) maintaining referential integrity across Users, Events, Registrations, Funds, and Expenses in MySQL; (3) enforcing role-based access boundaries across students, coordinators, and faculty; (4) preserving arithmetic precision in fund balance calculations; and (5) conducting modular and end-to-end integration testing. As an academic prototype, system effectiveness relies on accurate data entry by coordinators and requires production-grade authentication and cloud hosting before institution-wide deployment.

6. CONCLUSIONS

The Campus Event and Fund Management System successfully provides a centralized, role-based web platform that simplifies the management of college extracurricular events and their associated financial records. By uniting HTML, CSS, and JavaScript frontend dashboards with a Java Spring Boot backend and a MySQL relational database connected via JDBC, the platform eliminates the fragmentation of manual spreadsheets and messaging apps while ensuring real-time financial transparency for students, coordinators, and faculty. Future enhancements include adding automated email/push notifications and registration deadline reminders, generating downloadable PDF financial and participation audit reports, strengthening role-based security controls, incorporating QR-based attendance tracking and participant certificate generation, and deploying the platform on a production campus cloud server.

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