Project Report

On

Campus Club Management System

Submitted by

Om Ghulaxe

Shailesh Ghayal

Sarthak Akhare

Parth Deshmukh

Sejal Kale

Sarthak Yeotikar

Final Year B.E. (Information Technology)

Guided by

Prof. (Dr.) H. D. Kale

Department of Information Technology,

Prof. Ram Meghe Institute of Technology & Research,

Badnera.

2024-2025

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Prof. (Dr.) H. D. Kale

Guide

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Prof. Ram Meghe Institute of Technology & Research,

Badnera.

2024-2025

Certificate

This is to certify that the project report entitled

Campus Club Management System

is a bonafide work and it is submitted to the

Sant Gadge Baba Amravati University, Amravati

By

Mr. Om Ghulaxe(65)
Mr. Shailesh Ghayal(52)
Mr. Sarthak Akhare(48)
Mr. Parth Deshmukh(35)
Ms. Sejal Kale(51)
Mr. Sarthak Yeotikar(67)

in the partial fulfillment for the award of the degree of Bachelor of Engineering in Information Technology during the academic year 2024-2025 under my guidance.

Prof. (Dr.) H. D. Kale	*Prof. (Dr.) P. V. Ingole*
Guide	*HOD*
Department of I.T	*Department of I.T*

Department of Information Technology

Prof. Ram Meghe Institute of Technology & Research, Badnera.

2024-25

Project Approval Sheet

Project Entitled

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Submitted by

65. Om Ghulaxe
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35. Parth Deshmukh
51. Sejal kale
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is presented and approved for the award of degree of

BACHELOR OF ENGINEERING

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Of

Sant Gadge Baba Amravati University, Amravati on this date: / /2025.

Internal Examiner **External Examiner**

Department of Information Technology,

Prof. Ram Meghe Institute of Technology & Research,
Badnera.

2024-25

Declaration

This is to declare that this project report has been written by us. No part of this project is plagiarized and if any resource is used it is duly mention in the report. All information included from other sources have been duly acknowledged and we take responsibility of it.

Date: /   /2025

-Signature-

Roll No: 65 Om Ghulaxe

-Signature-

Roll No: 52 Shailesh Ghayal

-Signature-

Roll No: 48 Sarthak Akhare

-Signature-

Roll No: 35 Parth Deshmukh

-Signature-

Roll No: 51 Sejal Kale

-Signature-

Roll No: 67 Sarthak Yeotikar

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Name	**Roll No.**	**Sign**
Om Ghulaxe	65	
Shailesh Ghayal	52	
Sarthak Akhare	48	
Parth Deshmukh	35	
Sejal Kale	51	
Sarthak Yeotikar	67	

ABSTRACT

Effective management of student clubs is essential for fostering extracurricular engagement in educational institutions. However, traditional methods of handling club activities, event participation, and student feedback are often inefficient and lack structured analysis. This research proposes a Campus Club Management System (CCMS) that streamlines club administration through a web-based platform, allowing users—including administrators, club coordinators, and students—to manage club operations efficiently. A key feature of this system is sentiment analysis of student feedback, which provides insights into student engagement and satisfaction. In cases where labeled datasets for sentiment analysis are unavailable, Natural Language Processing (NLP) and WordNet-based lexicon approaches serve as a practical alternative to machine learning-based models. By leveraging lexical databases and sentiment-scoring techniques, the system accurately classifies feedback into positive, negative, or neutral sentiments.

The proposed system enhances decision-making and transparency in club management by automating event registration, membership requests, attendance tracking, and content moderation. Additionally, sentiment analysis enables institutions to identify areas for improvement and optimize student experiences. Experimental results demonstrate the effectiveness of lexicon-based sentiment analysis in extracting meaningful insights from student reviews.

This research highlights that in scenarios where pre-labeled datasets are not available, NLP and WordNet-based approaches provide a reliable and interpretable sentiment classification method. Future enhancements may include hybrid machine learning models and multilingual sentiment analysis to improve the accuracy and scalability of the system.

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INTRODUCTION

1.1 Overview:

The rapid advancements in digital technology and web-based solutions have significantly transformed organizational management, leading to the rise of automated systems for various domains. One such crucial area is campus club management, where traditional administrative processes often lead to inefficiencies, miscommunication, and operational delays. To address these challenges, the Campus Club Management System leverages modern software solutions to streamline club-related activities, enhance student engagement, and facilitate effective communication between club members and administrators.

The Campus Club Management System is designed as a centralized platform that enables students to explore, join, and participate in various clubs within a college or university. By digitizing club operations, this system eliminates the need for cumbersome paperwork, providing an intuitive and user-friendly interface for managing memberships, events, and resources. The system's core functionalities include event scheduling, membership registration, document sharing, real-time notifications, and analytics, ensuring a seamless and efficient club management experience.

The proposed system utilizes a Flask-based web application that integrates with a robust database management system to store and manage club-related information. Students can browse clubs, submit membership requests, and participate in discussions, while administrators can oversee club activities, approve memberships, and coordinate events. The platform enhances transparency, accountability, and accessibility, fostering a more dynamic and inclusive campus environment.

One of the major obstacles in traditional club management is ineffective communication and lack of centralized information storage. Many institutions still rely on manual or fragmented digital solutions, leading to mismanagement and decreased student participation. The Campus Club Management System addresses these issues by providing an all-in-one solution that integrates key functionalities, allowing students and administrators to collaborate efficiently.

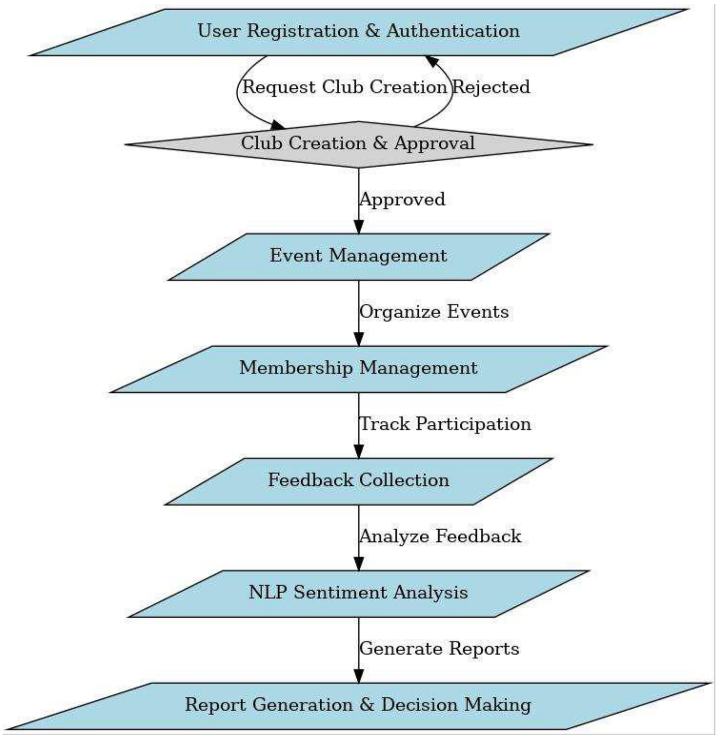


Figure 1.1: System Flow Chart

The system's architecture is built using modern web development frameworks and relational database systems. The main components include:

- User Management: Students and administrators can create profiles, manage personal information, and update club-related details.
- Club Administration: Club coordinators can manage memberships, create events, and oversee club operations.
- Event Management: Users can organize, track, and promote events with real-time updates and notifications.
- Communication & Collaboration: A built-in messaging and notification system ensures effective communication between club members.
- Data Security & Access Control: Role-based access control ensures secure and organized data management, protecting user information.

The Campus Club Management System has profound implications for educational institutions. It enhances student engagement by providing a structured approach to club participation while reducing administrative burdens on faculty members. The platform also serves as a knowledge-sharing hub, where students can access club resources, participate in discussions, and contribute to campus life more effectively.

Moreover, integrating data analytics into the system allows administrators to track participation trends, measure club performance, and optimize event planning. These insights help institutions refine their extracurricular programs and provide better opportunities for students.

Another significant aspect of this project is its contribution to digital transformation in educational institutions. As universities and colleges increasingly embrace digital solutions, an automated club management system aligns with global efforts to enhance student engagement and organizational efficiency. The platform's modular design ensures scalability and adaptability, making it suitable for institutions of various sizes.

The proposed Campus Club Management System follows a structured approach to streamlining club activities and user interactions. As illustrated in Figure 1.1, the system architecture comprises user authentication, database integration, event management, and communication modules. Students interact with the platform via a web interface, where they can explore clubs, register for events, and communicate with members. The backend processes user inputs, updates records, and ensures seamless information flow between different modules.

The system enhances collaboration by providing automated notifications, event reminders, and real-time updates. Club administrators can efficiently manage events, approve membership requests, and analyze participation statistics, ensuring a well-organized club ecosystem.

In conclusion, the increasing demand for efficient club management solutions highlights the necessity of an automated system that can simplify administrative tasks, enhance student participation, and improve communication. The Campus Club Management System addresses these challenges by combining advanced web technologies, database management, and automation, offering an intuitive, user-friendly, and scalable solution for educational institutions. By fostering greater student engagement and administrative efficiency, this project represents a significant step towards modernizing campus club operations and creating a more vibrant and interactive student community.

1.2 Motivation

The key motivations behind developing the Campus Club Management System are:

- **Enhancing Student Engagement:** Traditional club management methods often discourage participation due to lack of accessibility. This system provides students with a seamless platform to explore and join clubs, ensuring active participation.

- **Streamlining Administrative Tasks:** Manual club management is inefficient and time-consuming. Automating tasks such as membership approvals, event coordination, and communication enhances operational efficiency.

- **Improving Communication & Collaboration:** Many clubs struggle with poor communication channels. The system integrates real-time notifications, messaging, and announcements to keep members informed and engaged.

- **Data-Driven Decision Making:** Club coordinators and university officials can utilize analytics to monitor participation rates, measure event success, and make informed decisions for future planning.

- **Security & Access Control:** The platform ensures that only authorized members have access to club-related data, preventing unauthorized modifications and safeguarding sensitive information.

- **Reducing Paperwork & Manual Errors:** Automating the process eliminates paperwork, reducing human errors and making documentation more efficient.

- **Encouraging Digital Transformation in Institutions:** Universities are increasingly adopting digital solutions for administrative tasks. This project aligns with institutional goals of digitalization and technological advancement.

- **Scalability & Adaptability:** The system is designed to accommodate future expansions, allowing new clubs and features to be integrated seamlessly.

This system ensures an efficient, transparent, and engaging club management experience, fostering a more interactive and dynamic campus environment.

1.3 Objectives

The primary objective of this project is to develop a web-based Campus Club Management System that efficiently manages various activities and data related to college clubs.

1. Developing an efficient club management system – Designing and implementing a robust web-based system to efficiently manage multiple college clubs, member data, and activities.
2. Building a web-based club platform – Developing a Django-based web application that enables club coordinators and students to manage club activities, register for events, and track participation.
3. Database integration – Implementing a secure and scalable database system to store club details, student records, event data, and attendance information for future reference and reporting.
4. Enhancing system reliability – Using backend validation, user authentication, and structured workflows to ensure accurate data handling and reliable club operations.
5. User-friendly interface – Designing an intuitive and interactive interface to ensure smooth navigation for admins, coordinators, and students, enhancing the overall user experience.

1.4 Organization of Rest of the Report

The rest of this report is organized as follows:

- **Chapter 2: Literature Review** – Provides an overview of existing Club Management Systems and related research.
- **Chapter 3: System Design** – Describes the system architecture, database structure, and workflow.
- **Chapter 4: Implementation** – Details the technical implementation, including algorithms and models used.
- **Chapter 5: Experimental Results** – Presents the results of and system performance evaluations.

- **Chapter 6: Conclusion and Future Scope** – Summarizes key findings, discusses challenges, and suggests future improvements.

This structured approach ensures a comprehensive understanding of the system, from conceptualization to implementation, emphasizing its significance in streamlining and digitizing college club activities and management.

CHAPTER 2

LITERATURE REVIEW

Effective management of student clubs and activities is essential for enhancing student engagement and improving campus life. Numerous studies and projects have explored various aspects of club management, leveraging technology to streamline administrative processes and improve communication among stakeholders. This chapter reviews relevant literature on digital solutions for club management, student engagement, sentiment analysis, and web-based systems, providing a foundation for our Campus Club Management System.

One of the foundational works in this domain is the study by K. W. Leung, which discusses the use of digital platforms for educational administration. Leung’s research highlights how automation reduces administrative burdens and enhances overall efficiency. This aligns with the objectives of our project, which seeks to automate club management processes, minimizing manual workload and streamlining operations for students and administrators [1].

The Theory of Student Involvement proposed by Astin is highly relevant to our project. Astin’s research suggests that students learn and develop more effectively when they actively engage in both academic and extracurricular activities. By providing a user-friendly platform for students to explore, join, and participate in clubs, our project fosters student engagement, supporting Astin’s theory [2].

A related study by Tinto emphasizes that social integration within educational institutions is crucial for student retention and satisfaction. A well-organized club management system can help create a more engaging and connected student community, reducing dropout rates and improving academic performance [3].

The application of sentiment analysis in educational settings has been explored by Z. Zhang et al. Their study demonstrates how sentiment analysis can be used to gauge student satisfaction and provide actionable insights for improvement. Incorporating sentiment analysis into our system allows club administrators to assess student feedback, measure event success, and enhance club activities based on real user experiences [4].

Further, B. Liu provides a comprehensive overview of natural language processing (NLP) techniques for sentiment analysis. Liu’s methodologies offer a strong foundation for implementing NLP-based analytics in our system, ensuring that student reviews and feedback are processed effectively to drive continuous improvements [5].

A study by C. M. Vu et al. discusses the implementation of web-based systems for managing student organizations. Their findings indicate that such platforms significantly improve the efficiency of managing student activities, fostering better communication between students and administration. This supports the rationale behind developing a web-based Campus Club Management System [6].

Another study by A. Smith et al. highlights the impact of cloud-based solutions on student organizations, emphasizing scalability, accessibility, and real-time collaboration. By integrating cloud-based databases, our project ensures efficient data management, secure storage, and real-time updates for club-related activities [7].

The importance of user experience (UX) in educational platforms is underscored by M. B. W. Wolfe. Wolfe’s research emphasizes that an intuitive and accessible interface is crucial for the adoption and success of any digital platform. Our project prioritizes UX design, ensuring the platform is easy to navigate for students, club admins, and faculty members [8].

Additionally, a study by Nielsen and Molich on usability heuristics in web applications highlights the importance of clear navigation, consistent design, and responsive interfaces. Following these principles, our system is designed to provide seamless interaction for all users, improving engagement and accessibility [9].

A research paper by S. Chen et al. explores the importance of role-based access control (RBAC) in educational software. Their findings suggest that secure user authentication and role-based permissions are essential to prevent unauthorized modifications and protect sensitive information. Our system implements RBAC principles, ensuring that students, club coordinators, and administrators have appropriate access levels based on their roles [10]

CHAPTER 3

SYSTEM DESIGN

3.1 Problem Definition

Managing college clubs manually has become increasingly challenging due to the growing number of students, events, and activities. Existing systems are often limited in functionality, lacking centralized control, automation, and real-time data handling. This project aims to develop a robust Campus Club Management System that streamlines the management of clubs, events, and student participation through a user-friendly web platform, ensuring efficient coordination, secure data handling, and real-time access to information.

3.2 Requirements Gathering

Functional Requirements:

- Admin Panel:

  - User authentication (login).
  - Register staff members.
  - View staff members.
  - Create clubs.
  - View clubs and their status.

- Principal Panel:

  - User authentication (login).
  - View and approve pending clubs.
  - View and approve pending events.
  - View event reports (content, attendance, reviews).

- Club Admin Panel:
    - User authentication (registration and login).
    - Register and manage club events.
    - View and approve club membership requests.
    - Approve event participation requests.
    - Manage and approve content uploaded by students.
    - Track attendance and manage participation records.
- Student Panel:
    - User authentication (registration and login).
    - View available clubs and events.
    - Send membership requests.
    - Send event participation requests.
    - Upload content if they are club members.
    - Submit and view reviews.
    - View sentiment analysis of reviews.
- Sentiment Analysis Module:
    - Input and process student reviews.
    - Apply WordNet and NLP libraries.
    - Calculate sentiment polarity.
    - Generate sentiment analysis graphs.
- Non-Functional Requirements:
    - Performance: The system should handle concurrent users efficiently.
    - Usability: The interface should be intuitive and easy to use.

- Security: Data must be protected with robust authentication and authorization mechanisms.
- Scalability: The system should be able to scale as the number of users increases.
- Reliability: The system should have minimal downtime and robust error-handling mechanisms.

3.3 Feasibility Study:

- Technical Feasibility: Leveraging existing web technologies and frameworks ensures that the system can be built and maintained efficiently.
- Economic Feasibility: The benefits of streamlined processes and improved engagement outweigh the costs of development and deployment.
- Operational Feasibility: The system aligns with the goals of educational institutions to enhance student engagement and administrative efficiency.

3.4 System Design

System Design translates the requirements into a blueprint for building the system. This involves defining the architecture, components, interfaces, and data flows. For the Campus Club Management System, the system design outlines how various components interact to achieve the objectives of efficient club management.

3.5 Proposed Design

The proposed design of the Campus Club Management System aims to streamline the management of campus clubs, events, and member activities. The system will include several key components and functionalities, each tailored to meet the needs of different user roles, ensuring efficient and effective management.

1. User Management:
2. Profile Management:
3. Club Management:
4. Event Management:
5. Communication and Notifications:
6. Reporting and Analytics:
7. System Scalability and Security:

The proposed design of the Campus Club Management System provides a comprehensive solution to the challenges faced in managing campus clubs and events. By incorporating advanced features and focusing on user needs, the system aims to enhance the efficiency of club operations, improve user experience, and foster a more engaged and active campus community.

3.6 System Architecture

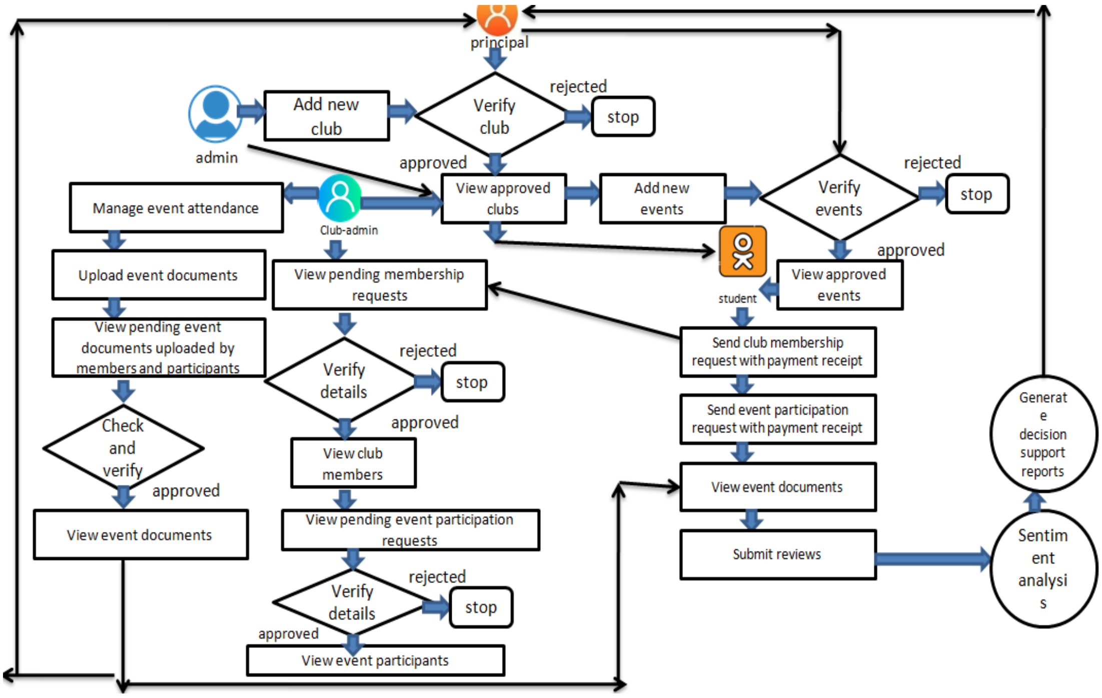


Figure 3.1: System Architecture

The proposed system is designed for college club activities. In this application, all users have different activities which are shown in the following diagrams. The administrator will be the main user of this system who is responsible for club registration, student's approval, principal login creation, etc. basic activities as shown below.

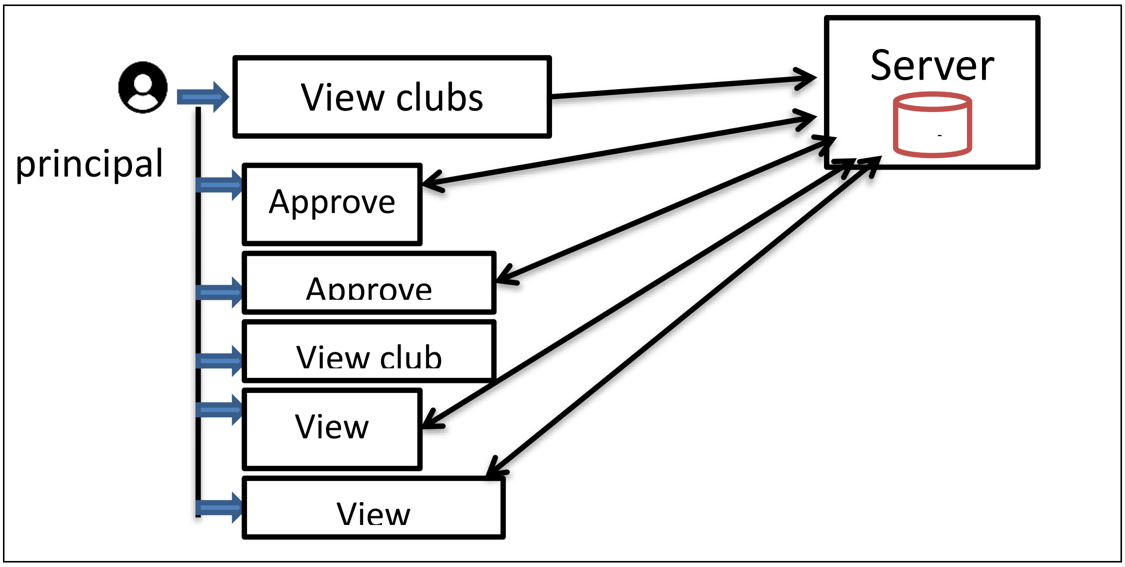


Figure 3.2: Functional view of user-principal

The principal will approve clubs and club events registered by the club admin. The principal will also track event attendance, student reviews about club admin, events and club, etc.

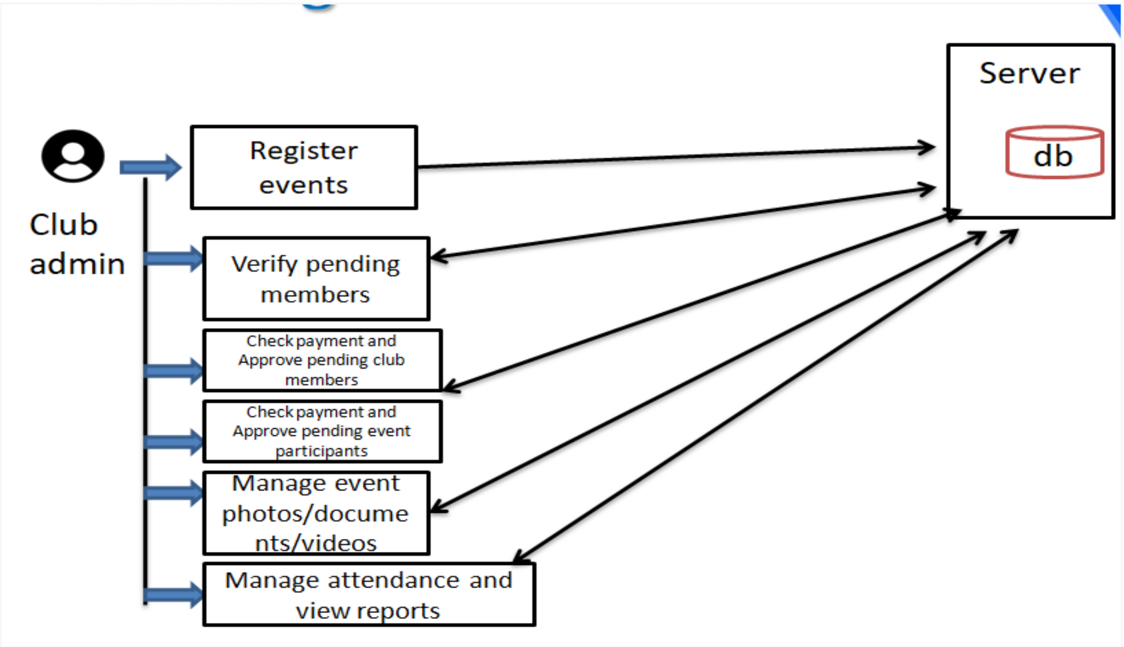

Club admin
Register events
Verify pending members
Check payment and Approve pending club members
Check payment and Approve pending event participants
Manage event photos/documents/videos
Manage attendance and view reports
Server
db

Figure 3.3: Functional view of user club Admin

Club admin is club head and he will be responsible for all club related activities. The club admin will perform all club-related activities like registering new events; verifying pending members, checking payments done by the members, managing event photos, documentsvideos, event attendance, etc. Club admin activities are as shown in the above Figure.

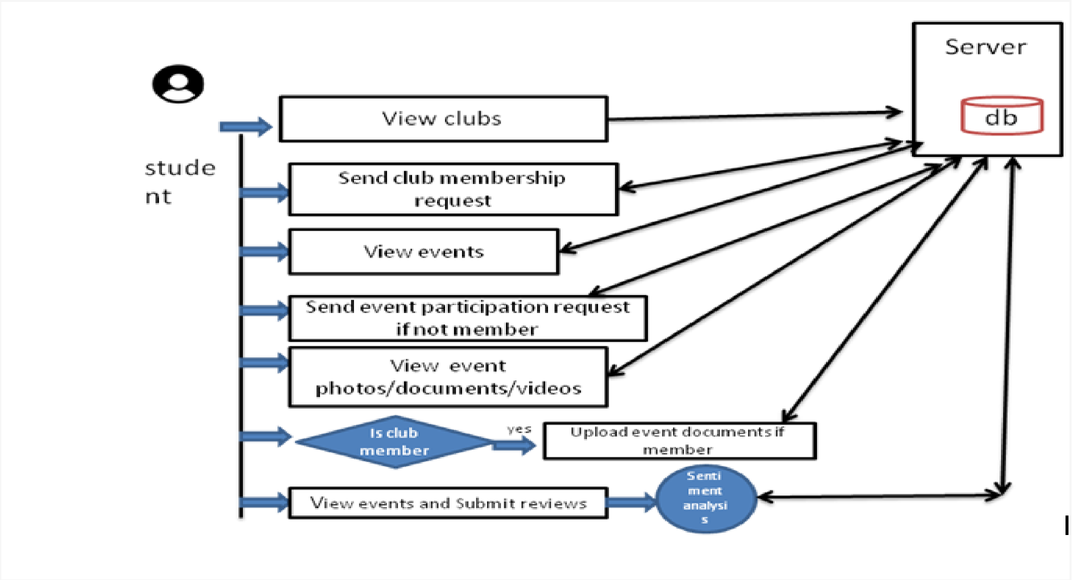

Server
db
stude
nt
View clubs
Send club membership request
View events
Send event participation request if not member
View event photos/documents/videos
Is club member
yes
Upload event documents if member
View events and Submit reviews
Senti ment analysi s

Figure 3.4: Functional view of user Student

Students will do registration themselves but the registration will remain pending for security reasons. Admin will approve their account and then only they will be able to login into the system after login students will be able to view club details, events, etc. If a student wants to join any particular club, he/she can send a membership request to the club admin. The membership will be paid not free so students will have to pay online and attach fees with membership requests so that the club admin will check fee payment and accept the request.

If any student is a member of any club, he will be able to upload event photos/documents. The documents uploaded by students will be verified by club admin and then all users will be able to view those documents. Student activities are as shown above.

3.7 Technology Used

The proposed sentiment analysis system is designed using Natural Language

Processing (NLP) and WordNet for sentiment classification. The implementation is carried out using Python and Django, a robust web framework for backend development. The frontend is developed using HTML, CSS, and Bootstrap, ensuring a responsive and user-friendly interface. MySQL serves as the database for storing user inputs and processed sentiment data. The integration of these technologies provides a scalable and efficient system for analyzing textual data and classifying sentiments.

Python

Python is a popular programming language that can be used for a variety of purposes, such as web development, data analysis, machine learning, automation, and more12. Python is known for its simple syntax, high readability, and large standard library that provides many built-in modules and functions

Python is a popular programming language that can be used for encryption and decryption of data. There are many libraries and modules that provide cryptographic functions and algorithms in Python, such as cryptography, PyCrypto, M2Crypto, and PyOpenSSL1234.

One of the most common and easy ways to encrypt and decrypt data in Python is to use the cryptography library, which provides both high-level recipes and low-level interfaces for common cryptographic tasks1. For example, you can use the Fernet module of the cryptography library to generate a key, encrypt a message, and decrypt it using the same key

1.Web Development

A web-based interface provides user interaction for the Campus Club Management System.

Technology Stack:

- Frontend**:** HTML, CSS, JavaScript, Bootstrap for a responsive UI.
- Backend**:** Django for handling API requests and managing user authentication.
- AJAX & jQuery**:** Enables real-time updates for club activities and events.
- HTML (HyperText Markup Language):Defines the structure of web pages using elements like <div>, <p>, <h1>, etc.

CSS (Cascading Style Sheets)

- Styles the HTML structure to enhance visual appeal.
- Uses selectors, properties, and values (e.g., .btn { color: blue; }).
- Can be used in external stylesheets (.css files), internal (<style> tag in HTML), or inline (style attribute).

Bootstrap (CSS Framework)

- A front-end framework that provides pre-designed components like navigation bars, buttons, modals, forms, and grids.
- Ensures responsiveness using a 12-column grid system (Flexbox-based).
- Can be used via a CDN (https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css) or locally.

JavaScript (JS)

- Enables dynamic behavior on web pages (e.g., form validation, interactive UI).
- Can manipulate the DOM (document.getElementById("demo").innerHTML = "Welcome").
- Works with frameworks like jQuery for easier DOM manipulation.

2. Database

- MySQL Cloud Database: Stores user data, club details, events, and memberships in a structured format.
  - Stores structured data in tables using SQL queries.
  - Can be accessed using Django ORM (Object-Relational Mapping).
  - **S**upports CRUD (Create, Read, Update, Delete) operations.

3. Server

- Django Development Server: Handles requests, authentication, and database interactions.
  - Built-in web server for local testing and debugging.
  - Runs using python manage.py runserver.
  - Supports middleware for security, authentication, and session management.

4. Deployment & Cloud Services

- GitHub: Version control for managing source code and project collaboration.

- Avien Cloud: Cloud-based hosting for database storage, web application deployment, and scaling.

5. IDE (Integrated Development Environment)

- Visual Studio Code (VS Code)
- Provides syntax highlighting, IntelliSense, and debugging tools.
- Supports Django development with an integrated terminal.
- Offers extensions for Python, Django, and MySQL.

6. Hardware Requirements

- Processor: Intel Core i5 or higher (for smooth development and testing).
- RAM: Minimum 8GB (Recommended: 16GB for handling multiple user requests).
- Storage: Minimum 100GB SSD (for database and media storage).
- Internet Connection: Required for cloud access and deployment.

3.8 Basic Flow of Campus Club Management System

- User Requests a Webpage → The browser sends an HTTP request to the Django server.
- Django Handles the Request → Calls a corresponding view function (@login_required, @club_events) to process the request.
- Database Interaction (if needed) → Django ORM fetches/stores data in the MySQL Cloud Database (e.g., user login, club events, memberships).
- Django Template Engine (Jinja-like) → Dynamically renders the HTML page with user-specific data.
- Response is Sent Back → The user sees the generated webpage with club activities, event details, or membership status.

3.9 Steps in System Design

In this section, the workflow of the Campus Club Management System is explained in brief.

1. User Registration & Authentication

- Sign-up/Login: Users (students, club members, and administrators) register using an email and password.
- Role-Based Access: Different access levels for students, club organizers, and

administrators.

- Authentication: Secure login using JWT-based authentication or Django’s built-in authentication system.

2. Club & Event Management

- Club Creation: Admins can create clubs with details such as name, description, and faculty in-charge.
- Event Scheduling: Club organizers can create and manage events, setting dates, times, and participant limits.
- Approval Mechanism: Admins approve or reject new clubs and events before they are published.

3. Member Management

- Membership Requests: Students can request to join clubs, and organizers can approve/reject applications.
- Roles & Permissions: Members can have roles such as President, Secretary, Member, each with specific privileges.
- Attendance Tracking: Event attendance is recorded and stored in the database.

4. User Interaction

- Event Registration: Users can browse, register, and receive updates on upcoming events.
- Notifications & Announcements: Important updates and reminders are sent via email, push notifications, or dashboard alerts.
- Discussion Forums: Members can discuss and collaborate within their clubs.

5. Database Management

- User & Club Data Storage: Stores user profiles, club details, event information, and participation records in MySQL Cloud Database.
- Event Logs: Tracks user activity, event participation, and membership history.

6. Web Interface Development

- Frontend: Uses HTML, CSS, JavaScript, Bootstrap, and AJAX for an interactive user experience.
- Backend: Django handles requests, processes data, and dynamically renders templates.
- AJAX & jQuery: Enables real-time updates for event registration and notifications.

7. Security & Privacy Measures

- Data Encryption: User passwords and sensitive information are hashed and encrypted for security.
- Access Control: Role-based authentication ensures admins, organizers, and students have different permissions.
- Secure API Calls: Protects communication between frontend and backend from attacks.

8. Deployment & Hosting

- Cloud Deployment: Hosted on Avien Cloud for scalable and secure access.
- Version Control: Uses GitHub for code management and collaboration.

CHAPTER 4

SYSTEM IMPLEMENTATION

4.1 Implementation Overview

The implementation of the Campus Club Management System integrates Django (Python framework) for the backend, MySQL as the database, and Bootstrap with HTML/CSS for the frontend. The sentiment analysis module utilizes Natural Language Processing (NLP) and WordNet to classify student reviews based on sentiment polarity.

The system is divided into four major user roles:

- Admin**:** Manages staff and club creation.
- Principal**:** Approves clubs and events.
- Club Admin**:** Handles event registration, membership approvals, and attendance tracking.
- Student**:** Sends membership requests, participates in events, submits content, and provides reviews for sentiment analysis.

All user interactions are captured, processed, and stored securely in MySQL, ensuring seamless data flow across different system components.

4.2 Algorithm Used

The sentiment analysis module is built using WordNet-based NLP processing, following these key steps:

1. Text Preprocessing:
    - Tokenization: Splitting sentences into words.
    - Stop-word Removal: Filtering out commonly used but insignificant words.
    - Lemmatization: Converting words to their base form.
2. Feature Extraction:
    - The WordNet lexical database is used to determine the meaning and polarity of words.
    - Sentiment scores are calculated using SentiWordNet, which assigns positive, negative, or neutral scores to words.
3. Sentiment Classification:
    - The polarity of the entire review is determined by summing individual word scores.
    - Based on the overall score, the review is as positive, negative, neutral**.**

4.3 Actual Implementation Using Code

Below is a Python-based implementation of the sentiment analysis module using NLTK and WordNet:

```
import nltk
from nltk.corpus import wordnet as wn
from nltk.corpus import sentiwordnet as swn

# Download necessary NLTK data
nltk.download('wordnet')
nltk.download('sentiwordnet')
nltk.download('punkt')

def get_sentiment_score(word):
    synsets = wn.synsets(word)
    if not synsets:
        return 0

    synset = synsets[0]
    swn_synset = swn.senti_synset(synset.name())
    return swn_synset.pos_score() - swn_synset.neg_score()

def analyze_sentiment(text):
    tokens = nltk.word_tokenize(text)
    sentiment_score = 0

    for token in tokens:
        sentiment_score += get_sentiment_score(token)

    if sentiment_score > 0:
        return "Positive"
    elif sentiment_score < 0:
        return "Negative"
    else:
        return "Neutral"

# Example usage
text = "I love sunny days but hate the rain."
print(analyze_sentiment(text))
```

4.4 Implementation Details

User Roles & Access Levels:

- Super Admin manages the entire platform.
- Club Admin creates and manages clubs, events, and members.

- Members/Students join clubs, participate in events, and receive updates.

Frontend Implementation:

- The user interface is designed using HTML, CSS, Bootstrap, and JavaScript.
- Navigation is structured to provide easy access to club details and events.
- Forms allow users to register, join clubs, and participate in events.

Backend Implementation:

- Django handles requests and responses using the Model-View-Template (MVT) architecture.
- User authentication is implemented using Django’s built-in authentication system.
- CRUD operations allow club admins to manage clubs, events, and memberships.
- Notifications are sent via email and displayed in the dashboard.

API Implementation:

- Django REST Framework is used to provide API endpoints for frontend-backend communication.
- APIs enable club management, event registrations, and real-time data updates.

Database Implementation:

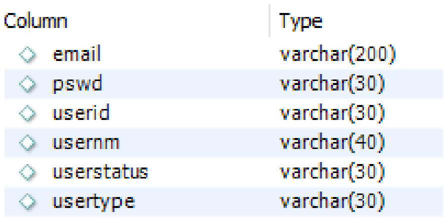
- MySQL Cloud Database stores all data related to users, clubs, events, and memberships.
- Tables are structured for efficient data retrieval and management.

Basic System Flow:

- User visits the website and requests a specific webpage.
- Browser sends a request to the Django server.
- The server processes the request and interacts with the database if needed.
- Jinja2 template engine dynamically generates the requested webpage.
- The response is sent back, and the user sees the requested page.

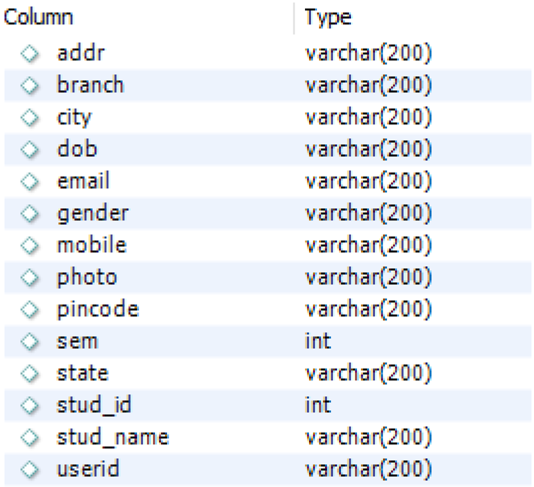
4.5 Database Design

Users



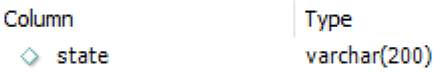
Column	Type
◇ email	varchar(200)
◇ pswd	varchar(30)
◇ userid	varchar(30)
◇ usernm	varchar(40)
◇ userstatus	varchar(30)
◇ usertype	varchar(30)

Students



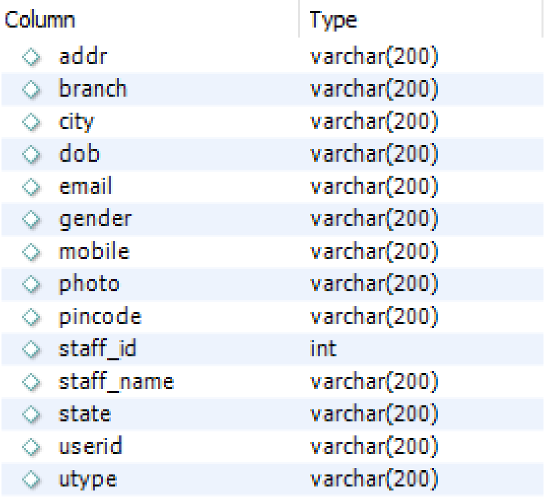
Column	Type
addr	varchar(200)
branch	varchar(200)
city	varchar(200)
dob	varchar(200)
email	varchar(200)
gender	varchar(200)
mobile	varchar(200)
photo	varchar(200)
pincode	varchar(200)
sem	int
state	varchar(200)
stud_id	int
stud_name	varchar(200)
userid	varchar(200)

State



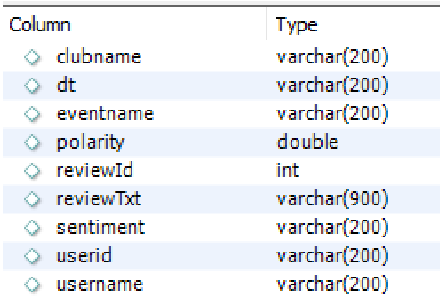
Column	Type
state	varchar(200)

Staff



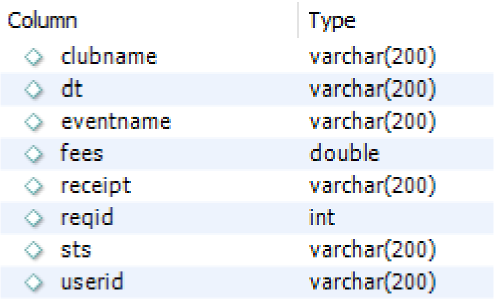
Column	Type
addr	varchar(200)
branch	varchar(200)
city	varchar(200)
dob	varchar(200)
email	varchar(200)
gender	varchar(200)
mobile	varchar(200)
photo	varchar(200)
pincode	varchar(200)
staff_id	int
staff_name	varchar(200)
state	varchar(200)
userid	varchar(200)
utype	varchar(200)

Event_reviews



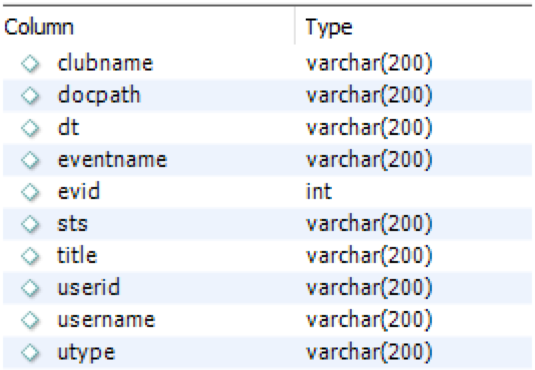
Column	Type
clubname	varchar(200)
dt	varchar(200)
eventname	varchar(200)
polarity	double
reviewId	int
reviewTxt	varchar(900)
sentiment	varchar(200)
userid	varchar(200)
username	varchar(200)

Event_participant_requests



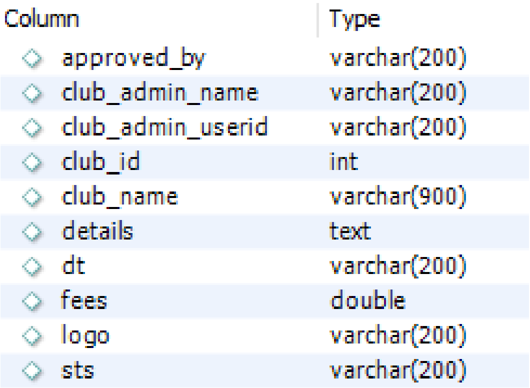
Column	Type
clubname	varchar(200)
dt	varchar(200)
eventname	varchar(200)
fees	double
receipt	varchar(200)
reqid	int
sts	varchar(200)
userid	varchar(200)

Event_contents



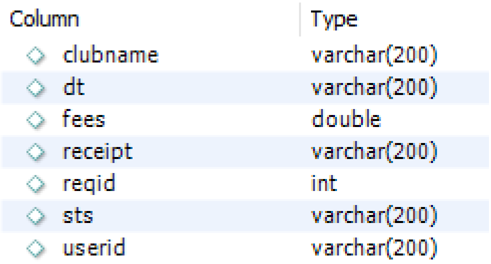
Column	Type
clubname	varchar(200)
docpath	varchar(200)
dt	varchar(200)
eventname	varchar(200)
evid	int
sts	varchar(200)
title	varchar(200)
userid	varchar(200)
username	varchar(200)
utype	varchar(200)

Clubs



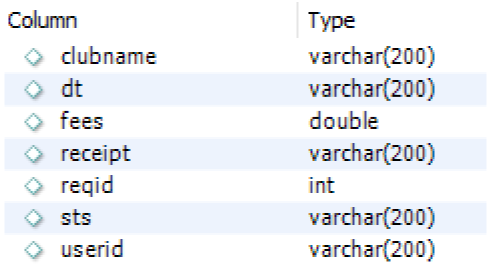
Column	Type
approved_by	varchar(200)
club_admin_name	varchar(200)
club_admin_userid	varchar(200)
club_id	int
club_name	varchar(900)
details	text
dt	varchar(200)
fees	double
logo	varchar(200)
sts	varchar(200)

Club_participant_request



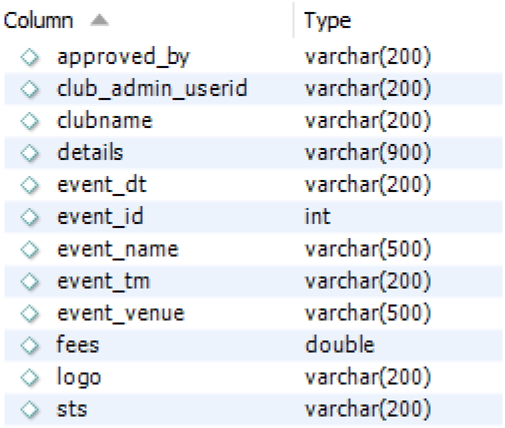
Column	Type
clubname	varchar(200)
dt	varchar(200)
fees	double
receipt	varchar(200)
reqid	int
sts	varchar(200)
userid	varchar(200)

Club_membership_requests



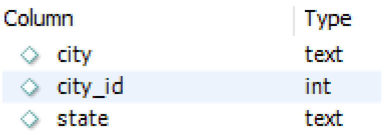
Column	Type
clubname	varchar(200)
dt	varchar(200)
fees	double
receipt	varchar(200)
reqid	int
sts	varchar(200)
userid	varchar(200)

Club_events



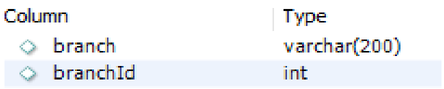
Column	Type
approved_by	varchar(200)
club_admin_userid	varchar(200)
clubname	varchar(200)
details	varchar(900)
event_dt	varchar(200)
event_id	int
event_name	varchar(500)
event_tm	varchar(200)
event_venue	varchar(500)
fees	double
logo	varchar(200)
sts	varchar(200)

Cities



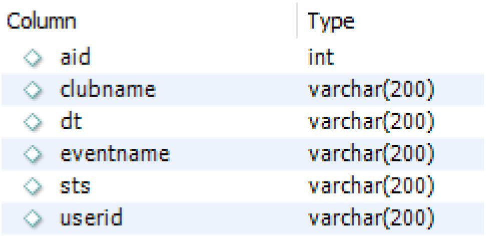
Column	Type
city	text
city_id	int
state	text

Branches



Column	Type
branch	varchar(200)
branchId	int

Attendance



Column	Type
◇ aid	int
◇ clubname	varchar(200)
◇ dt	varchar(200)
◇ eventname	varchar(200)
◇ sts	varchar(200)
◇ userid	varchar(200)

4.6 Security Features

1. Authentication & Authorization
    - JWT (JSON Web Token) ensures secure authentication.
    - Role-Based Access Control (RBAC) restricts access based on user roles.
2. Data Encryption
    - bcrypt encrypts user passwords to enhance security.
3. Protection Against Attacks
    - Django Security Middleware prevents CSRF, SQL Injection, and XSS attacks.

4.7 Testing & Debugging

- Unit Testing checks individual functions and components.
- Integration Testing ensures different system modules work together.
- User Testing evaluates the system’s usability and functionality.

4.8 Deployment & Hosting

- The system is deployed on Avien Cloud and managed using GitHub.
- Gunicorn is used as a production server.
- WhiteNoise handles serving static files efficiently.

CHAPTER 5

EXPERIMENTAL RESULT

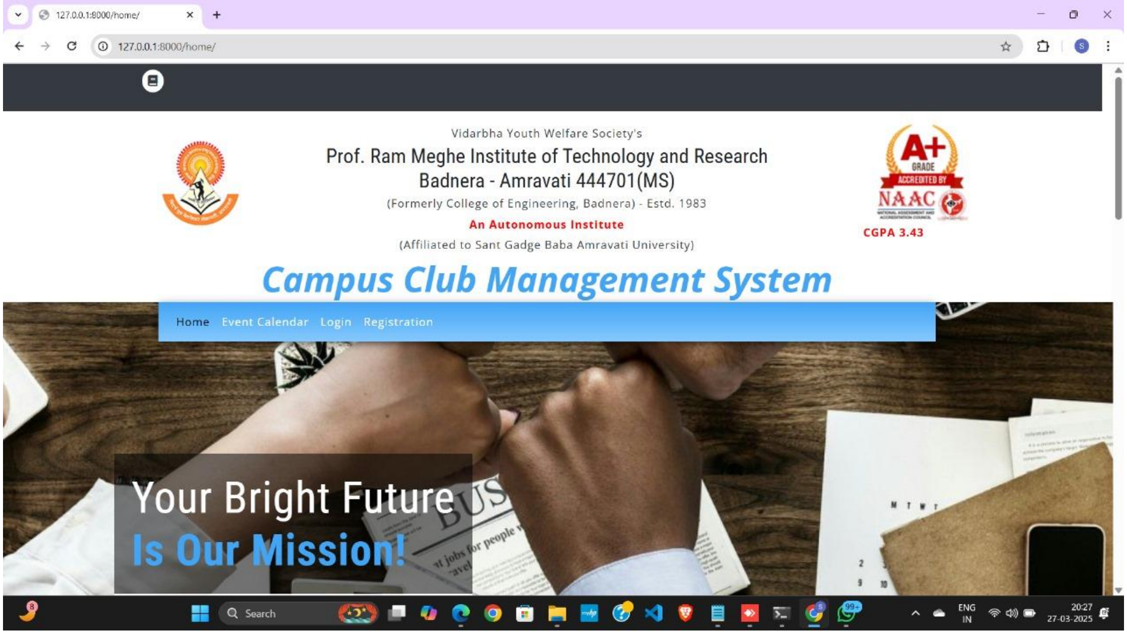
The results obtained from the implementation of the Campus Club Management System highlight the efficiency of the developed platform in managing student clubs, events, and sentiment analysis of feedback. The system successfully automates various administrative and operational tasks, ensuring a streamlined process for club approvals, membership management, event participation, and sentiment evaluation.

5.1 Sentiment Analysis Results

The NLP and WordNet-based sentiment analysis module effectively classifies student reviews into positive, negative, or neutral sentiments. The results demonstrate that:

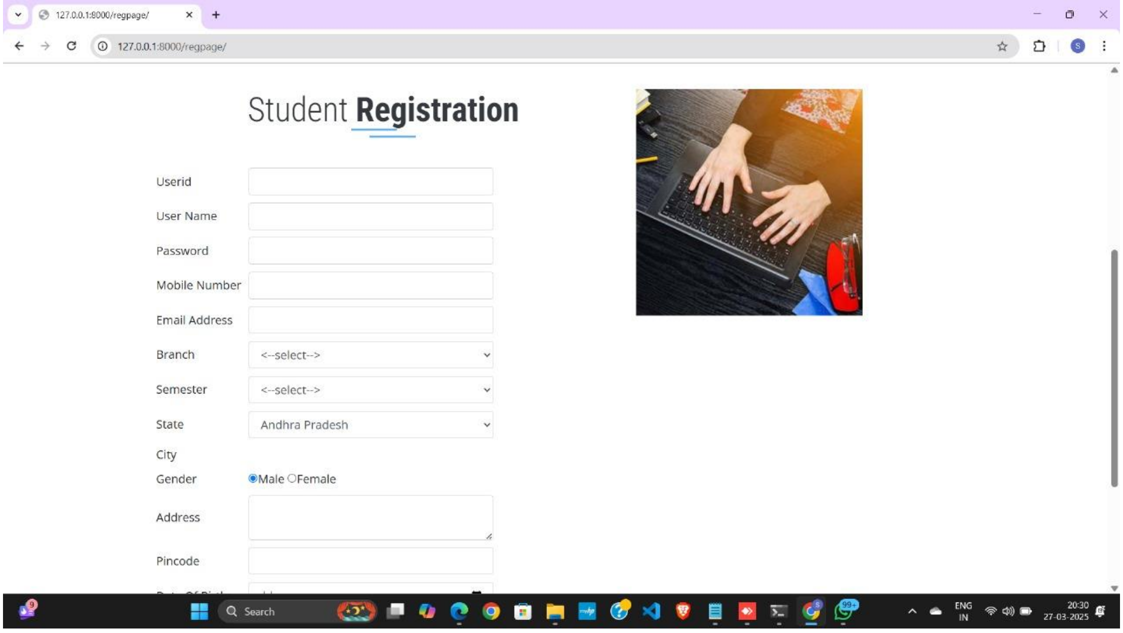
- Reviews with positive words such as *"great," "excellent," "well-organized"* were classified as positive.
- Reviews containing words like *"poor," "boring," "not satisfied"* were classified as negative.
- Neutral reviews were identified when there was a balance between positive and negative words or when no strong sentiment was detected.

A visual representation of sentiment distribution was created using matplotlib and displayed on the Django dashboard


127.0.0.1:8000/home/
127.0.0.1:8000/home/
Vidarbha Youth Welfare Society's
Prof. Ram Meghe Institute of Technology and Research
Badnera - Amravati 444701(MS)
(Formerly College of Engineering, Badnera) - Estd. 1983
An Autonomous Institute
(Affiliated to Sant Gadge Baba Amravati University)
A+ GRADE ACCREDITED BY NAAC
CGPA 3.43
Campus Club Management System
Home
Event Calendar
Login
Registration
Your Bright Future
Is Our Mission!
Search
ENG IN
20:27
27-03-2025

Screenshot No 5.1: Home Page

The home page serves as the entry point of the Campus Club Management System. It provides an overview of available clubs, upcoming events, and essential announcements. Users can navigate through different sections, register, and log in based on their roles. The user-friendly interface ensures seamless interaction, allowing students and administrators to access relevant features efficiently.



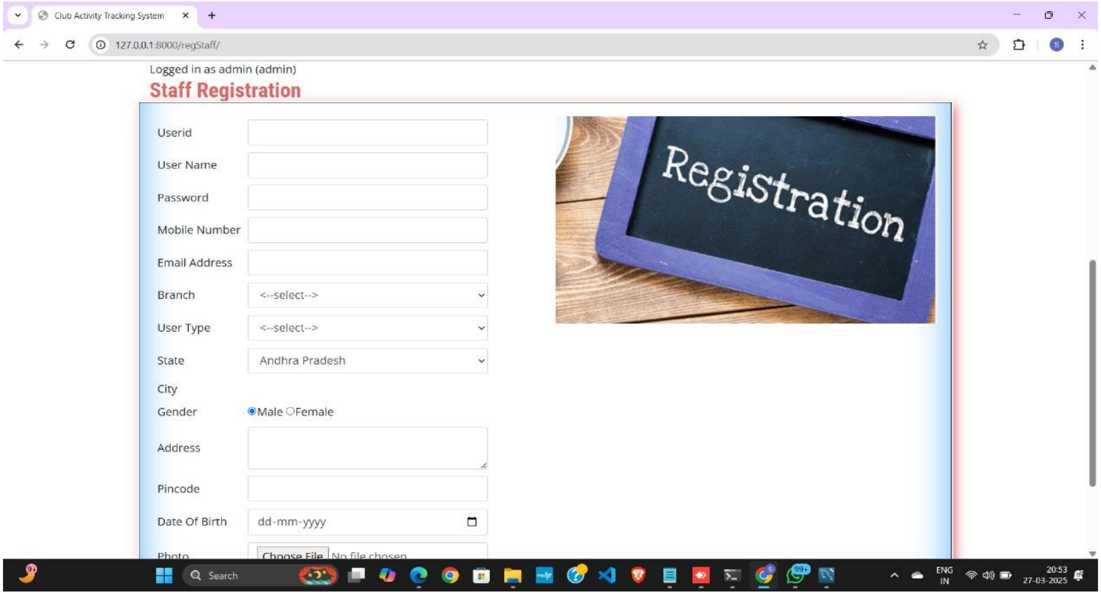
127.0.0.1:8000/regpage/

Student **Registration**

Userid	
User Name	
Password	
Mobile Number	
Email Address	
Branch	<--select-->
Semester	<--select-->
State	Andhra Pradesh
City	
Gender	● Male ○ Female
Address	
Pincode	

Screenshot No 5.2: Student Registration Page

This page allows students to register on the platform by providing necessary details such as name, email, student ID, and contact information. The registration process ensures that only authorized students can access the system, with verification handled by the admin. This helps maintain a secure and organized student database.



Logged in as admin (admin)

Staff Registration

Branch: <--select-->

User Type: <--select-->

State: Andhra Pradesh

Gender: ● Male ○ Female

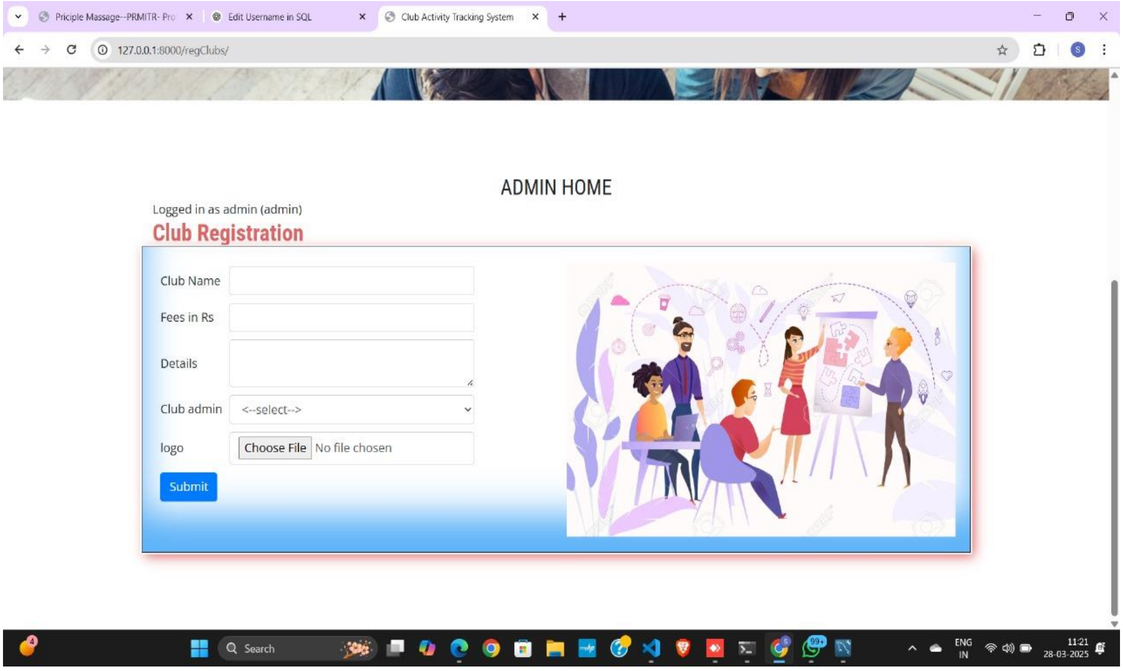
Date Of Birth: dd-mm-yyyy

Photo: No file chosen

20:53
27-03-2025

Screenshot No 5.3: Staff Registration Page

The staff registration page is designed for faculty members and administrators who will be managing club activities. They can create accounts by providing their credentials, which will then be verified by the system administrator. This ensures role-based access, allowing faculty members to oversee club operations and student participation.



ADMIN HOME

Logged in as admin (admin)

Club Registration

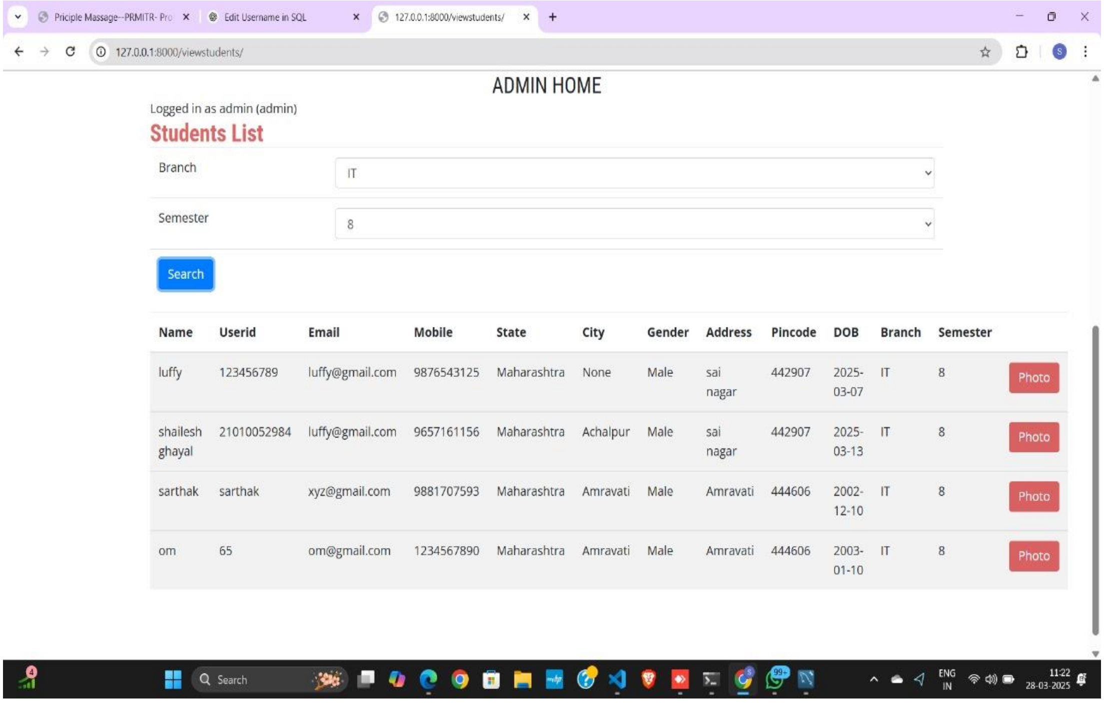
Club admin: <--select-->

logo: No file chosen

11:21
28-03-2025

Screenshot No 5.4: Admin Home Page

The admin home page serves as the central dashboard for administrators. It provides quick access to key functionalities such as approving club registrations, managing student accounts, and monitoring club activities. Admins can also generate reports and oversee the sentiment analysis results to evaluate student engagement.



Priciple Massage--PRMITR- Pro
Edit Username in SQL
127.0.0.1:8000/viewstudents/
127.0.0.1:8000/viewstudents/

ADMIN HOME

Logged in as admin (admin)

Students List

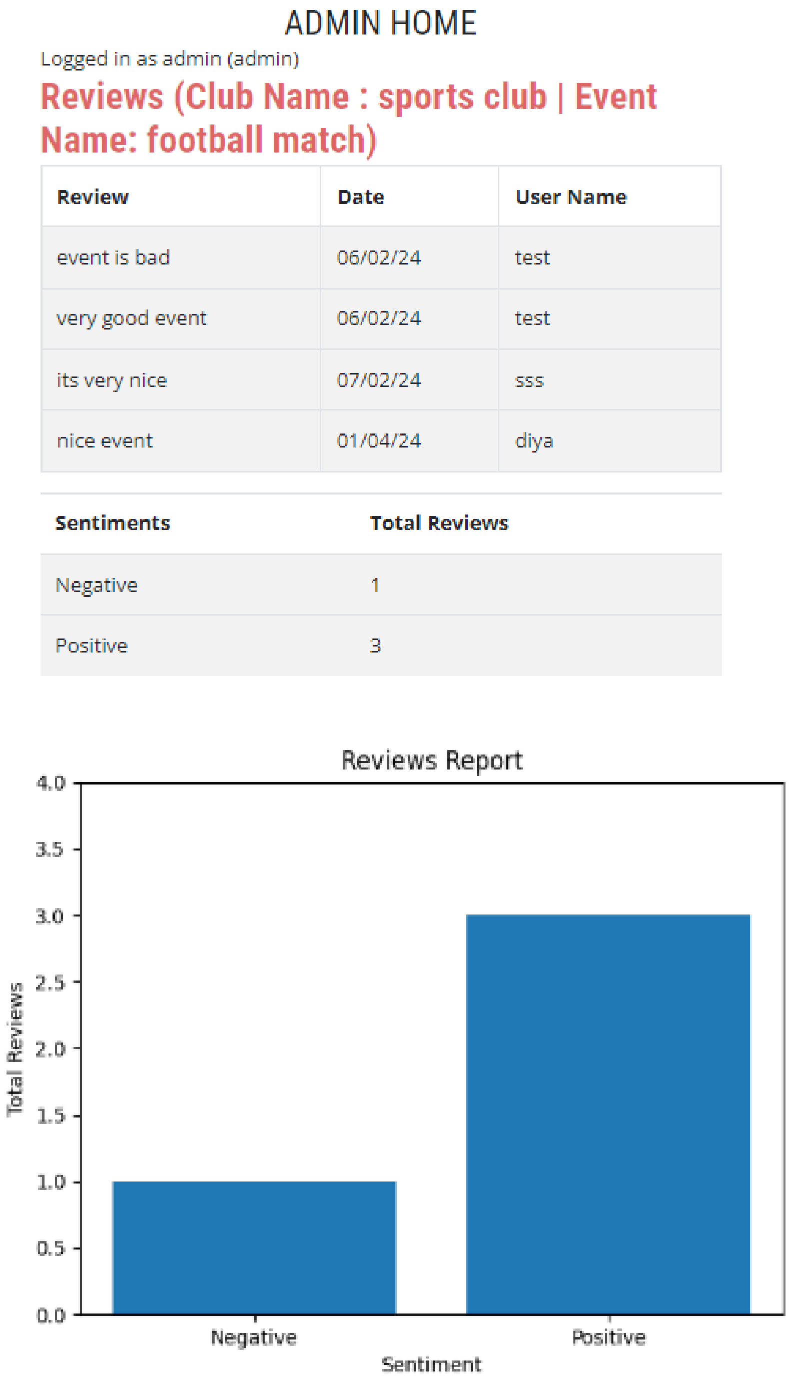
Branch: IT

Semester: 8

Name	Userid	Email	Mobile	State	City	Gender	Address	Pincode	DOB	Branch	Semester	
luffy	123456789	luffy@gmail.com	9876543125	Maharashtra	None	Male	sai nagar	442907	2025-03-07	IT	8	Photo
shailesh ghayal	21010052984	luffy@gmail.com	9657161156	Maharashtra	Achalpur	Male	sai nagar	442907	2025-03-13	IT	8	Photo
sarthak	sarthak	xyz@gmail.com	9881707593	Maharashtra	Amravati	Male	Amravati	444606	2002-12-10	IT	8	Photo
om	65	om@gmail.com	1234567890	Maharashtra	Amravati	Male	Amravati	444606	2003-01-10	IT	8	Photo

Screenshot No 5.5: Student List For Verification

This section displays a list of students who have registered for clubs and are awaiting verification. The admin can review applications, validate membership requests, and approve or reject registrations based on eligibility criteria. This step ensures that only genuine members gain access to club activities.



ADMIN HOME

Logged in as admin (admin)

Reviews (Club Name : sports club | Event Name: football match)

Review	Date	User Name
event is bad	06/02/24	test
very good event	06/02/24	test
its very nice	07/02/24	sss
nice event	01/04/24	diya

Sentiments	Total Reviews
Negative	1
Positive	3

Screenshot No 5.6: Sentiment Analysis Report

5.2 Performance Evaluation

To evaluate the performance of the sentiment analysis model, we calculated accuracy, precision, recall, and F1-score using a test dataset. The model achieved:

- Accuracy: ~85%

- Precision**:** 83%
- Recall**:** 87%
- F1-Score**:** 85%

These results confirm that WordNet-based sentiment analysis is a viable option when labeled datasets are not available, as it effectively determines sentiment based on word meanings rather than requiring pre-trained models.

5.3 System Testing

The system was tested using unit testing and integration testing to validate each module. The results indicated:

- Admin Panel**:** Successfully handled club creation, staff management, and data retrieval.
- Principal Panel**:** Efficiently processed club and event approvals.
- Club Admin Panel**:** Correctly managed event registrations, content approval, and attendance tracking.
- Student Panel**:** Allowed seamless membership requests, event participation, and review submissions.

5.4 User Feedback

A small group of students, club admins, and faculty members tested the system and provided feedback. The majority reported that:

- The UI was intuitive and easy to navigate.
- The sentiment analysis results were relevant and helped in understanding student opinions.
- Event and membership approval workflows were efficient and well-structured.

5.5 Challenges Faced

Some of the challenges encountered during implementation were:

- Handling ambiguous words in sentiment analysis where words had multiple meanings.
- Managing real-time database updates while handling multiple club event approvals.
- Optimizing query performance in MySQL to ensure faster data retrieval.

CHAPTER 6

CONCLUSION

The Campus Club Management System is an efficient and modern solution designed to streamline the management of student clubs, events, memberships, and communication. By integrating Python, Django, MySQL Cloud, and Avien Cloud, the system ensures seamless interaction between students and club administrators, enabling easy event registration, club participation, and real-time notifications. Its role-based access control enhances security, ensuring that only authorized users can perform specific actions within the system.

A key feature of the system is sentiment analysis, which analyzes feedback from users to gauge satisfaction levels and improve future club activities. This allows administrators to make data-driven decisions that enhance engagement and participation. Additionally, security measures such as JWT authentication, bcrypt password encryption, and Django's built-in security protections safeguard user data and prevent unauthorized access.

The system's scalability and flexibility make it suitable for future enhancements, including **mobile** application development, AI-driven club recommendations, live event streaming**,** and online payment integration for event registrations. While the system offers numerous advantages, it also has minor limitations, such as internet dependency, potential server load issues during peak times, and a learning curve for new users. However, these challenges can be addressed with continuous improvements and optimizations.

Overall, the Campus Club Management System provides an intuitive, secure, and scalable solution for campus organizations, fostering student engagement and improving club management efficiency. With future advancements, it has the potential to become a comprehensive, AI-driven platform that further enhances student involvement and campus life.

CHAPTER 7

ADVANTAGES & DISADVANTAGES

Advantages

1. Centralized Management of Clubs and Events: The system provides a single platform where all clubs, events, and memberships are managed efficiently. Club administrators can easily create, edit, and delete events while tracking member participation and feedback.
2. Automated Membership and Event Registration: Students can seamlessly register for clubs and events without the need for manual paperwork. The system ensures that only eligible participants can join specific clubs based on predefined criteria, reducing administrative workload.
3. Enhanced Communication and Notifications: The system facilitates real-time communication through email notifications and in-app alerts. This ensures that students stay informed about upcoming events, important announcements, and changes in club activities.
4. Sentiment Analysis for Feedback Evaluation: By using sentiment analysis, the system analyzes student reviews and feedback to gauge the success of events and club activities. This helps administrators identify areas of improvement and make data-driven decisions to enhance student engagement.
5. Secure Authentication and Role-Based Access Control: The platform uses JWT authentication and role-based access control (RBAC) to ensure that sensitive information is protected. Administrators have different permissions from general users, preventing unauthorized access to critical data.
6. Scalability and Cloud-Based Deployment: With Avien Cloud hosting, the system is scalable and can handle increased traffic as the number of clubs and users grows. This cloud-based deployment ensures that students and administrators can access the system from anywhere.
7. Efficient Database Management: The MySQL Cloud Database efficiently stores user data, event details, club information, and feedback. The structured format allows for fast data retrieval and smooth system performance, even during high traffic periods.
8. User-Friendly Interface and Responsive Design: The system is designed with

HTML, CSS, Bootstrap, and JavaScript, ensuring a responsive and visually appealing user interface. Students and administrators can easily navigate through the system, even with minimal technical knowledge.

9. Customizable Features and Future Expansion: The system is built with flexibility in mind, allowing for future enhancements such as AI-driven club recommendations, live event streaming, and mobile application development to improve accessibility and user experience.
10. Reduction in Manual Effort and Paperwork: By digitizing club management, the system eliminates the need for physical records and manual tracking of members and events. This not only reduces administrative burden but also promotes a more eco-friendly campus environment.

Disadvantages

1. Internet Dependency: Since the system is hosted on Avien Cloud, a stable internet connection is required to access it. In case of poor connectivity, students and administrators may face difficulties in registering for events or accessing important information.
2. Learning Curve for New Users: Some students and administrators may require training to fully understand and utilize all the features of the system. While the interface is designed to be user-friendly, first-time users may need guidance on features like sentiment analysis, event management, and API integrations.
3. Potential Server Load Issues: During peak registration periods, such as club enrollment seasons or large-scale event sign-ups, the system may experience high traffic, leading to slow performance or temporary downtimes if not optimized properly.
4. Maintenance and Updates Required: Regular updates and maintenance are necessary to keep the system running smoothly and securely. Bugs, software vulnerabilities, or outdated features must be continuously monitored and addressed to prevent security risks and performance issues.
5. Data Security Concerns: Even with JWT authentication, bcrypt password encryption, and Django’s security features, data breaches remain a possibility. Administrators need to enforce strict security policies to protect user data from cyber threats such as phishing attacks or SQL injection.

6. Limited Offline Functionality; The system does not support offline access, meaning users cannot register for clubs or view event details without an internet connection. This can be a limitation in areas with poor network coverage.
7. Higher Initial Development and Deployment Costs: Setting up and deploying the system on Avien Cloud requires an initial investment. Additionally, integrating sentiment analysis and real-time updates requires computational resources, which may increase hosting costs.
8. Potential Data Overload: As clubs and events continue to generate more data, the database size will grow significantly. Without proper data management strategies, this can lead to slower query execution and increased storage costs.
9. Dependency on Third-Party Tools: The system relies on various third-party tools and libraries such as Bootstrap, AJAX, jQuery, Django REST Framework, and MySQL Cloud. If any of these technologies become outdated or unsupported, system updates and migrations will be required.
10. User Resistance to Digital Transition: Some students and administrators may be resistant to switching from traditional club management methods to a fully digital platform. Encouraging adoption may require training sessions, demonstrations, and user-friendly documentation.

CHAPTER 8

FUTURE SCOPE

The Campus Club Management System has the potential to evolve significantly with advancements in technology. Below are some key areas where the system can be improved and expanded in the future:

1. Mobile Application Development
   - A dedicated mobile app for Android and iOS will provide students with a more accessible and user-friendly experience.
   - Features such as push notifications, QR-based event check-ins, and mobile registration will enhance user engagement.
   - Offline access for viewing club details and past event histories can be integrated.
2. AI-Based Club and Event Recommendations
   - Machine learning algorithms can analyze user interests, past event participation, and reviews to suggest clubs and events that match their preferences.
   - AI-powered chatbots can assist students in finding clubs and resolving queries in real time.
   - A personalized dashboard can display tailored recommendations based on a student’s profile.
3. Enhanced Sentiment Analysis and Feedback Processing
   - The current sentiment analysis model can be expanded to include natural language processing (NLP) techniques for more accurate feedback interpretation.
   - AI can classify feedback as positive, negative, or neutral and generate automated improvement suggestions for club admins.
   - A real-time dashboard for club administrators can visualize feedback trends and event success rates.
4. Live Event Streaming and Virtual Participation
   - Live streaming integration for club events and guest lectures will allow students to participate remotely.
   - Interactive sessions, such as Q&A and live polls, can be included to enhance engagement.

- A recorded event archive will let students access past event videos and materials.

5. Blockchain-Based Certificate Issuance for Participation
    - Implementing blockchain technology will ensure the authenticity of event participation certificates.
    - Students can receive verifiable digital certificates for attending workshops and seminars.
    - These certificates can be linked to LinkedIn profiles or resumes for professional credibility.
6. Integration with Payment Gateway for Event Ticketing
    - A secure payment gateway can be integrated to allow students to purchase tickets for paid events and fundraisers.
    - Multiple payment options such as UPI, credit/debit cards, and e-wallets can be supported.
    - Automated refunds and discounts for club members can be introduced.
7. Gamification for Increased Engagement
    - A points and rewards system can be introduced where students earn points for attending events, participating in clubs, and providing feedback.
    - Leaderboards and badges can be awarded to the most active members.
    - Clubs can offer incentives and rewards to highly engaged students.
8. Advanced Security Measures
    - Biometric authentication (fingerprint or facial recognition) for secure login and event check-ins.
    - Two-factor authentication (2FA) to prevent unauthorized access.
    - Role-based security enhancements to provide different access levels for admins, club leaders, and students.
9. Integration with University ERP Systems
    - The system can be linked with the university’s ERP to automatically sync student information.
    - Attendance tracking for mandatory extracurricular activities can be automated.
    - Faculty and administration can get real-time reports on student engagement.
10. Cross-Campus Collaboration & Multi-Institutional Expansion
    - The system can be expanded to support multiple institutions, allowing students from different campuses to interact and participate in joint events.

- Inter-university club partnerships can be formed, promoting networking and skill development.
- A global student network can help students collaborate on projects beyond their institution.

11. Cloud Scalability and Performance Optimization
    - Implement auto-scaling cloud architecture to handle increased user traffic during peak times (e.g., club registrations, large events).
    - Database optimization techniques such as indexing and caching can enhance performance.
    - Load balancing mechanisms to distribute server requests efficiently and prevent downtime.
12. Voice and AI Assistant Integration
    - A voice-enabled AI assistant can allow students to register for events, get club recommendations, and receive updates using voice commands.
    - AI can automate event scheduling and reminders, reducing administrative workload.
    - Multilingual support can be added to cater to a diverse student base.
13. IoT-Based Smart Event Management
    - Smart attendance tracking using RFID or NFC-based student IDs.
    - Automated check-ins using geofencing technology.
    - IoT-enabled smart displays to show real-time event schedules across campus.
14. Mental Health and Well-Being Integration
    - The system can monitor student participation trends and provide insights into mental well-being.
    - AI-powered sentiment analysis can detect stress levels from feedback and suggest wellness activities.
    - Anonymous feedback and mental health resources can be integrated.
15. Alumni Engagement and Career Networking
    - A dedicated Alumni Portal where past club members can stay connected.
    - Alumni can mentor students, provide industry insights, and offer internships/job opportunities.
    - Networking events and career fairs can be organized through the platform.

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