

COLLEGE TIMETABLE AND ACADEMIC MANAGEMENT SYSTEM

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Abstract: The College Timetable and Academic Management System is a web-based application developed using PHP and MySQL, deployed on the XAMPP server, to automate and streamline academic and administrative processes within a college. The system provides a centralized platform with three user roles: Admin, Faculty, and Student, each with dedicated dashboards and functionalities. The admin module manages departments, subjects, faculty, students, rooms, and time slots, all stored in a structured database. It includes automated timetable generation for classes and mid-examinations, along with export options. Additional features include placement management with statistical analysis, activity and event management, notice board, and complaint handling. The faculty module enables secure login, timetable access, assignment management, and placement insights. It incorporates a location-based attendance system using QR code and OTP verification to ensure authenticity. Faculty can also handle student grievances, view institutional activities, and participate in the Lost and Found system. The student module provides access to attendance tracking with calendar visualization, timetables, assignments, placement details, and institutional updates. Students can raise complaints, engage in activity modules, and use the Lost and Found feature for item recovery. A key highlight of the system is the integration of real-time communication, graphical analytics, and email notifications for efficient information flow. Overall, the system enhances operational efficiency, transparency, and user interaction, making college management more organized and user-friendly.

Key Words: College Management System, Timetable Generation, Academic Automation, PHP, MySQL, QR Code Attendance, OTP Verification, Placement Management, Student Information System, Web Application

1. INTRODUCTION

In recent years, the rapid growth of digital technologies has significantly transformed the education sector, leading to the adoption of smart systems for managing academic and administrative activities. Traditional manual methods of handling timetables, attendance, student records, and communication are often time-

consuming, error-prone, and inefficient. To overcome these limitations, various automated systems such as e-notice boards, attendance systems, grievance portals, and timetable management solutions have been developed [1], [5], [6].

Several research works have focused on specific modules like notice board systems [1], attendance management [7], assignment handling [8], placement systems [9], and lost and found portals [4]. Similarly, college management systems have been proposed to digitize administrative tasks and improve efficiency [2]. However, most of these systems operate independently and lack integration, resulting in fragmented management and reduced effectiveness.

To address these challenges, this research proposes a comprehensive College Timetable and Academic Management System, which integrates multiple academic and administrative modules into a single web-based platform. The system is developed using PHP and MySQL and provides role-based access for Admin, Faculty, and Students. It includes features such as automated timetable generation, secure location-based attendance using QR code and OTP, assignment management, placement tracking with statistical analysis, and grievance handling.

Additionally, the system enhances communication through modules like official notice boards, activity management, and event galleries. A unique feature of the proposed system is the Lost and Found Item Management System, which enables efficient item tracking and recovery through automated email notifications [4].

By integrating all these functionalities into a centralized platform, the proposed system aims to improve operational efficiency, transparency, and user interaction within educational institutions, thereby overcoming the limitations of existing standalone systems.

1.1 Research Objective

The primary objective of this research is to design and develop a comprehensive web-based College Timetable and Academic Management System that automates and

integrates academic and administrative activities into a single platform.

The specific objectives of the study are:

- To develop a centralized system that efficiently manages departments, subjects, faculty, students, rooms, and time slots using a structured database.
- To implement an automated timetable generation system for both class schedules and mid-examinations, reducing manual effort and scheduling conflicts.
- To design role-based dashboards for Admin, Faculty, and Students, ensuring secure access and user-specific functionalities.
- To develop a secure attendance system using location verification, QR code, and OTP to ensure authenticity and prevent proxy attendance.
- To provide assignment management features that enable faculty to upload assignments and students to interact through acknowledgement and discussion.
- To integrate placement management modules for tracking student placements, company drives, and analyzing hiring trends using graphical representations.
- To implement a grievance management system that allows students to raise complaints and faculty/admin to resolve them efficiently.
- To enhance communication through modules such as official notices, activity management, and event galleries.
- To develop a Lost and Found Item Management System with automated email notifications for efficient item tracking and recovery.
- To improve overall efficiency, transparency, and user interaction within the college by providing a unified and user-friendly platform.

1.2 Project Scope and Direction

The scope of the proposed College Timetable and Academic Management System covers the complete automation and integration of academic and administrative activities within a college environment. The system is designed as a web-based platform using PHP and MySQL, supporting three primary users: Admin, Faculty, and Students.

The project includes modules for department management, course handling, faculty and student

information management, room allocation, and time slot scheduling. It supports automatic generation of class timetables and mid-exam schedules based on available resources. The system also incorporates advanced features such as location-based attendance using QR code and OTP verification, assignment management with interactive discussion, and placement tracking with graphical analysis.

Additional functionalities include grievance management, official notice board, activity and event management, and a Lost and Found Item Management System with email notifications. The system ensures real-time data updates and centralized access.

Future directions of the project include integrating mobile application support, AI-based timetable optimization, predictive analytics for placements, cloud deployment for scalability, and enhanced security mechanisms such as biometric authentication.

1.3 Impact, Significance and Contributions

The proposed system significantly improves the efficiency and effectiveness of college management by replacing manual processes with an automated and integrated digital platform. It reduces administrative workload, minimizes errors in scheduling, and enhances data accuracy through centralized database management.

The system ensures transparency and accountability by providing real-time access to information such as attendance, complaints, placements, and academic activities. The implementation of secure attendance using location verification, QR code, and OTP helps prevent malpractice and ensures authenticity.

One of the key contributions of this research is the integration of multiple independent modules—such as timetable generation, attendance management, placement tracking, grievance handling, and Lost and Found system—into a single unified platform. This eliminates the need for separate systems and improves overall coordination.

The inclusion of communication-enhancing features like notice boards, activity modules, and event galleries strengthens interaction between students, faculty, and administration. The Lost and Found system with automated email notifications adds practical value by addressing real-life campus issues.

Overall, the system contributes to the digital transformation of educational institutions by providing a scalable, user-friendly, and efficient solution that enhances productivity, decision-making, and user experience.

2. LITERATURE REVIEW

The digital transformation of educational institutions has led to the development of various systems aimed at automating specific academic and administrative functions. Several researchers have proposed solutions targeting individual components of college management.

The concept of digital communication within institutions has been addressed through E-Notice Board systems, which enable quick dissemination of information to students and staff [1]. Similarly, general College Management Systems have been developed to handle student records, faculty details, and administrative processes, improving operational efficiency [2]. However, these systems often lack integration with advanced academic modules.

Department-level activity management systems focus on organizing extracurricular and academic events, improving student engagement and participation [3]. In addition, Digital Lost and Found Item Portals have been introduced to help track and recover lost items within campus environments, enhancing convenience and communication [4].

Grievance management systems play a crucial role in addressing student issues and improving institutional transparency. Studies highlight the importance of structured complaint handling systems for efficient problem resolution [5]. Timetable management has also been widely studied, where automated systems reduce scheduling conflicts and manual workload [6].

Attendance management systems have evolved with the use of modern technologies such as QR codes and smart tracking to ensure accuracy and prevent proxy attendance [7]. Online assignment systems further enhance academic interaction by allowing students and faculty to communicate effectively regarding coursework [8].

Placement management modules have also been proposed to track student recruitment, analyze hiring trends, and manage company drives efficiently [9]. While these systems provide valuable functionalities, most existing solutions are standalone and lack a unified platform that integrates all features.

The proposed system addresses this gap by combining timetable generation, attendance tracking, assignment management, placement analysis, grievance handling, activity management, and lost and found services into a single, centralized web-based application, thereby offering a more comprehensive and efficient solution for college management.

3. METHODOLOGY

The College Timetable and Academic Management System is developed using a modular and structured methodology to ensure efficient integration of academic and administrative processes. The system is implemented as a web-based application using PHP, MySQL, and XAMPP, with role-based access for Admin, Faculty, and Students.

3.1. System Module

The system follows a three-tier architecture consisting of the user interface (frontend), application logic (backend), and database layer. Role-based authentication is implemented to provide secure access to Admin, Faculty, and Student dashboards. All modules are interconnected and operate on a centralized MySQL database.

3.2. Admin Module

The admin module is responsible for overall system control and management. It includes functionalities such as managing departments, subjects, faculty details, student records, rooms, and time slots. Each entity is stored in structured database tables and linked using unique department IDs. The module also supports CRUD operations and allows exporting data into Excel format.

3.3. Timetable Generation Module

This module automatically generates class timetables based on constraints such as subject availability, faculty allocation, room capacity, and time slots. It ensures conflict-free scheduling. Additionally, the Mid-Exam Timetable Generator enables the admin to create exam schedules by selecting department, semester, subjects, rooms, and session timings, with an option to download in PDF format.

3.4. Faculty Module

The faculty module provides secure login and a personalized dashboard. Faculty members can view timetables, manage assignments, analyse placement data, and access activities and notices. The module also allows faculty to handle student grievances and participate in the Lost and Found system.

3.5. Attendance Management Module

The attendance system uses location-based verification combined with QR code and OTP authentication. Faculty initiate attendance sessions, and students mark attendance by scanning the QR code and entering the OTP within a time limit. This ensures accuracy and prevents proxy attendance.

3.6. Student Module

The student module provides access to attendance records, timetables, assignments, placement details, and institutional updates. Attendance is displayed using a calendar interface with status indicators and percentage calculations. Students can also interact with faculty through assignment discussions.

3.7. Assignment Management Module

Faculty can upload assignments with details such as subject, semester, and deadlines. Students can view assignments, acknowledge them, and communicate with faculty through a discussion chat feature.

3.8. Placement Management Module

This module manages placement data, including selected students, company details, job roles, and salary packages. It provides graphical analysis of placement statistics such as hiring trends, highest salary, and average packages.

3.9. Grievance Management Module

The system includes a complaint management feature where students can report issues related to infrastructure or services. Faculty and Admin can review and resolve complaints, and feedback is provided to students.

3.10. Activity and Communication Module

This module includes features such as official notice boards, workshops, event galleries, and activity management. Users can view updates, images, and descriptions, improving communication and engagement within the institution.

3.11. Lost and Found Item Management Module

This module allows users to report lost items with details and images. The system matches lost and found items through an Instant Matcher feature. When a match is identified, the system sends email notifications via Outlook integration to the item owner for quick recovery.

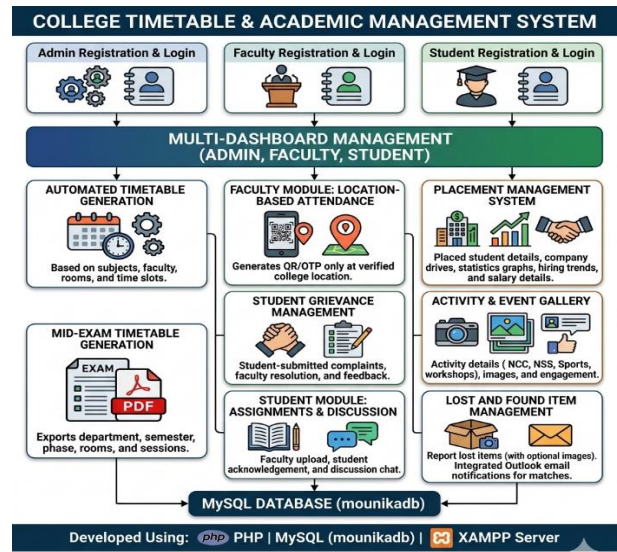


Fig. Methodology: College Timetable and Academic Management System

4. SYSTEM DESIGN AND ARCHITECTURE

The College Timetable and Academic Management System is designed using a **three-tier architecture**, which ensures modularity, scalability, and efficient data handling. The system integrates a user-friendly frontend, a dynamic backend, and a structured database.

4.1 Architecture Overview

The system follows three main layers:

- **Presentation Layer (Frontend):** Developed using HTML, CSS, JavaScript, and Bootstrap, this layer provides interactive dashboards for Admin, Faculty, and Students. It handles user input, displays data, and ensures a responsive interface.
- **Application Layer (Backend):** Implemented using PHP, this layer processes user requests, applies business logic, validates inputs, and communicates with the database.
- **Data Layer (Database):** MySQL database (*mounikadb*) is used to store and manage all system data including users, departments, subjects, timetables, attendance, placements, and complaints.

4.2 System Modules

The system is divided into multiple functional modules:

- **Admin Module**
 - Department, Course, and Subject Management
 - Faculty and Student Record Management
 - Room and Time Slot Allocation

- Automatic Timetable Generation
- Mid-Exam Timetable Generator (PDF export)
- Placement Management and Analytics
- Activity and Notice Management
- Complaint Monitoring System
- Lost and Found Item Management
- **Faculty Module**
- Secure Login and Dashboard Access
- Location-Based Attendance Management (QR + OTP)
- Timetable Viewing and Download
- Assignment Upload and Discussion Chat
- Placement Insights and Company Drives
- Complaint Resolution and Feedback
- Lost and Found Item Reporting
- **Student Module**
- Registration and Login
- QR + OTP-Based Attendance Marking
- Attendance Tracking with Calendar View
- Timetable and Assignment Access
- Placement Information and Statistics
- Complaint Submission and Tracking
- Activity Participation and Feedback
- Lost and Found Item Reporting

- **Subjects Table:** Subject details mapped to departments
- **Timetable Table:** Stores generated schedules
- **Attendance Table:** Records student attendance
- **Placements Table:** Stores placement details and statistics
- **Complaints Table:** Tracks grievances and status
- **Lost and Found Table:** Maintains lost and found item records

Relationships between tables are maintained using **primary keys and foreign keys**, ensuring data integrity.

4.4 Key Design Features

- **Role-Based Access Control:** Different dashboards for Admin, Faculty, and Students
- **Location-Based Authentication:** Ensures attendance is marked only within campus
- **Automation:** Timetable and exam schedule generation
- **Real-Time Updates:** Changes in the system are instantly reflected in the database
- **Data Export:** Excel and PDF generation for reports
- **Email Integration:** Automatic notifications for lost and found items

4.3 Database Design

The database is structured using relational tables with proper normalization to avoid redundancy and ensure consistency.

Key Tables Include:

- **Users Table:** Stores login credentials and roles
- **Departments Table:** Contains department details with unique IDs
- **Faculty Table:** Faculty information linked with departments
- **Students Table:** Student data including roll number and department

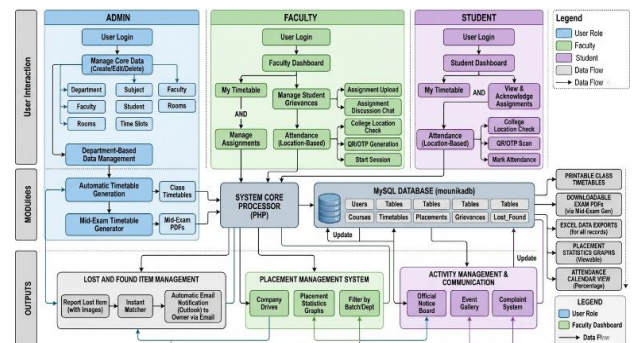


Fig2: System Design and Architecture

5. SYSTEM WORKFLOW

The workflow defines how data flows through the system and how users interact with different modules.

5.1 Overall Workflow

1. User accesses the system through the web interface

2. User registers or logs in based on role (Admin/Faculty/Student)
3. System validates credentials and redirects to the respective dashboard
4. User performs operations (create, view, update, delete)
5. Backend processes the request and updates the database
6. Updated information is reflected in the user interface

5.2 Admin Workflow

1. Admin logs into the system
2. Creates and manages departments, subjects, faculty, and students
3. Defines rooms and time slots
4. Initiates automatic timetable generation
5. Reviews and exports timetables
6. Manages placements, activities, and notices
7. Monitors complaints and lost/found items
8. Generates reports (Excel/PDF)

5.3 Faculty Workflow

1. Faculty logs into the system
2. Views dashboard and timetable
3. Starts attendance session:
 - Location verification
 - Generates QR code and OTP
4. Students mark attendance using QR + OTP
5. Faculty reviews attendance records
6. Uploads assignments and interacts via chat
7. Reviews placement data and company drives
8. Resolves student complaints and provides feedback
9. Reports lost or found items

5.4 Student Workflow

1. Student registers/logs into the system
2. Views dashboard and academic details
3. Marks attendance:

- Location verification
- Scans QR code
- Enters OTP

4. Views attendance in calendar format
5. Accesses timetable and assignments
6. Interacts with faculty through assignment discussions
7. Views placement opportunities and statistics
8. Submits complaints and checks status
9. Reports lost items and receives notifications

5.5 Timetable Generation Workflow

1. Admin inputs:
 - Subjects
 - Faculty availability
 - Rooms
 - Time slots
2. System processes constraints:
 - No faculty conflicts
 - No room over lap
 - Department-wise scheduling
3. Generates optimized timetable
4. Timetable is stored in database
5. Users can view/download timetable

5.6 Attendance Workflow

1. Faculty initiates attendance session
2. System verifies faculty location
3. QR code and OTP are generated
4. Student scans QR and enters OTP
5. System validates:
 - Location
 - QR session
 - OTP correctness
6. Attendance is recorded in database
7. Students can view attendance statistics

5.7 Lost and Found Workflow

1. User reports lost item with details and image
2. Item is displayed on Instant Matcher page
3. Another user marks item as found
4. System matches records
5. Email notification is sent to the owner
6. Item status is updated to "Found"

5.8 Complaint Management Workflow

1. Student submits complaint with description and image
2. Complaint is stored in database
3. Faculty/Admin reviews complaint
4. Action is taken
5. Feedback is updated in system
6. Student checks complaint status

The automatic timetable generation module efficiently creates conflict-free schedules by considering constraints like faculty availability, room allocation, and subject requirements. This has greatly reduced the time required for timetable preparation compared to traditional methods.

The attendance system, integrated with location verification, QR code, and OTP authentication, ensures secure and accurate attendance recording, eliminating proxy attendance issues. Both faculty and students can easily access attendance records, improving transparency.

The placement management module provides clear insights into student placements through graphical analysis, helping administrators and faculty track performance and trends effectively. Similarly, the complaint management system ensures that student issues are recorded, monitored, and resolved systematically.

Additional modules such as assignment management, notices, activities, and Lost and Found Item Management System enhance communication and interaction among users. The automated email notification feature ensures timely updates and faster resolution of reported issues.

Overall, the system provides a centralized, efficient, and user-friendly platform, significantly improving productivity, accuracy, and communication within the institution.

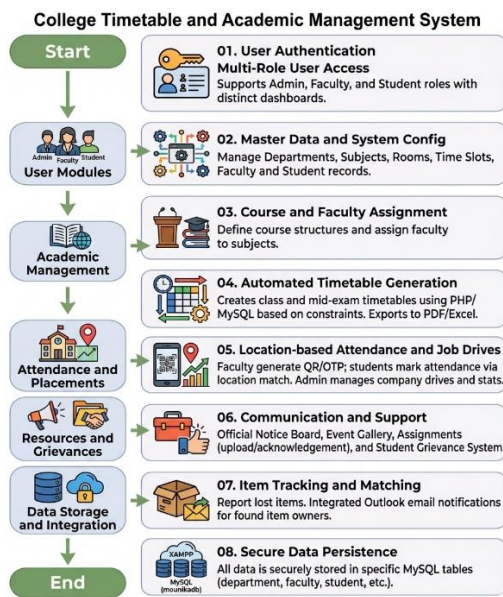


Fig3: System Workflow

6. RESULTS

The implementation of the College Timetable and Academic Management System demonstrates significant improvements in managing academic and administrative activities. The system successfully automates complex processes such as timetable generation, attendance tracking, and data management, reducing manual effort and minimizing errors.

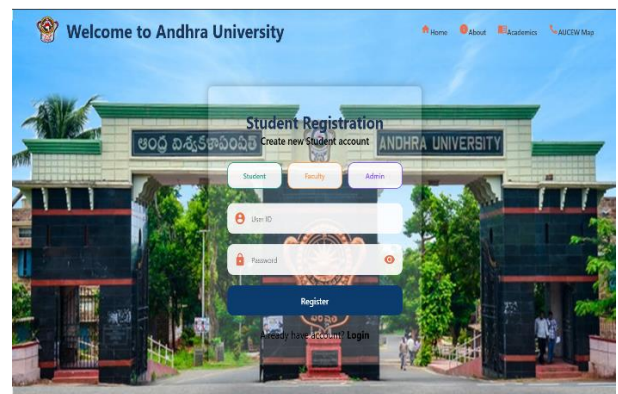


Fig4: Login and Registration webpage

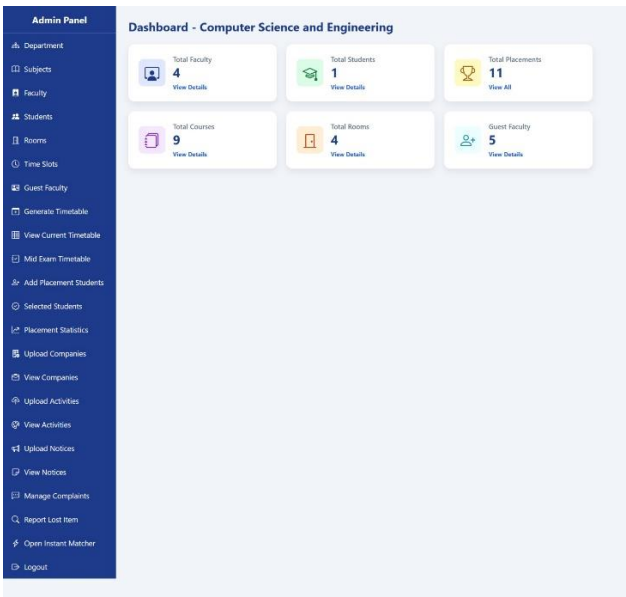


Fig5: Admin Dashboard

Back to Dashboard Year: 2025 Semester: I Session: I Batch: 2022-2023 Print Timetable

ANDHRA UNIVERSITY COLLEGE OF ENGINEERING FOR WOMEN
COMPUTER SCIENCE AND ENGINEERING - CLASS TIMETABLE

DAY	09:00-10:00	10:00-12:00	12:30-01:30	AFTERNOON SESSION (01:30-04:00)
MONDAY	EMBEDDED SYSTEMS DESIGN (2022CSA001)	DIGITAL IMAGE PROCESSING (2022CSA002)	LUNCH	CRYPTOGRAPHY AND NETWORK SECURITY LAB (2022CSA003)
TUESDAY	CRYPTOGRAPHY AND NETWORK SECURITY (2022CSA004)	OBJECT ORIENTED SOFTWARE ENGINEERING (2022CSA005)	LUNCH	MACHINE LEARNING LAB (2022CSA006)
WEDNESDAY	DIGITAL IMAGE PROCESSING (2022CSA002)	OBJECT ORIENTED SOFTWARE ENGINEERING (2022CSA005)	LUNCH	OBJECT ORIENTED SOFTWARE ENGINEERING LAB (2022CSA007)
THURSDAY	MACHINE LEARNING (2022CSA008)	BUSINESS ANALYTICS (2022CSA009)	LUNCH	LIBRARY
FRIDAY	CRYPTOGRAPHY AND NETWORK SECURITY (2022CSA004)	MACHINE LEARNING (2022CSA008)	LUNCH	SPORTS
SATURDAY	BUSINESS ANALYTICS (2022CSA009)	EMBEDDED SYSTEMS DESIGN (2022CSA001)	LUNCH	SEMINAR

Fig8: Class Timetable

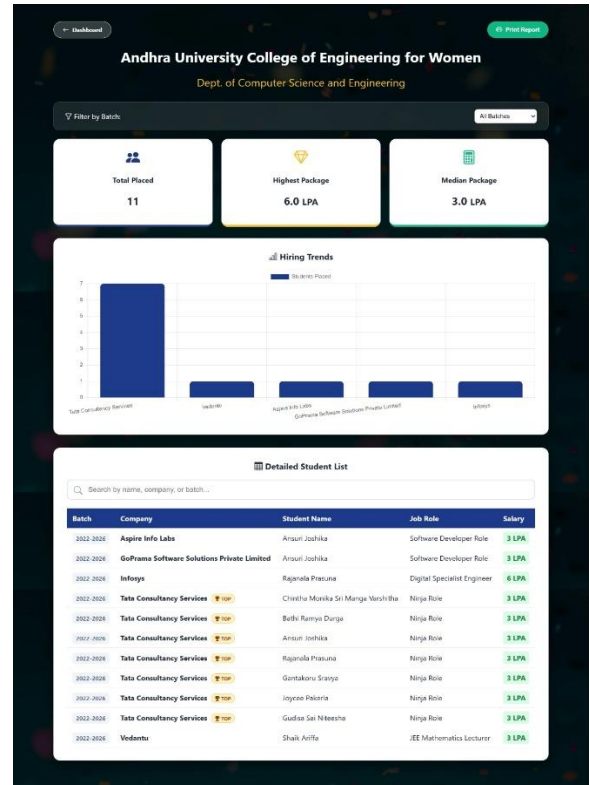


Fig9: Placement Statistics

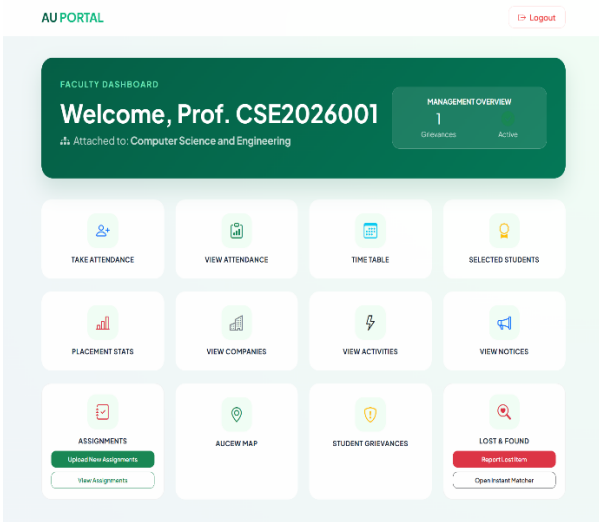


Fig6: Faculty Dashboard

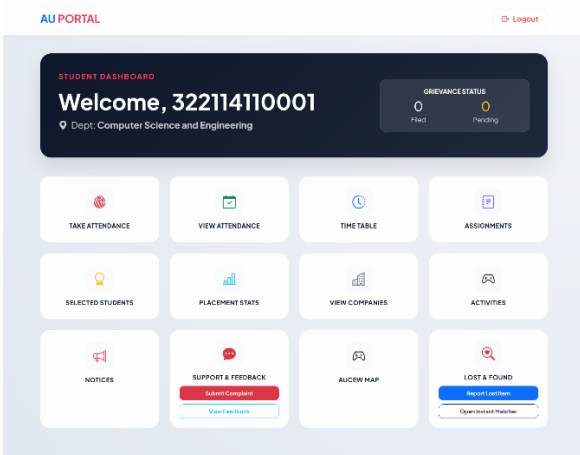
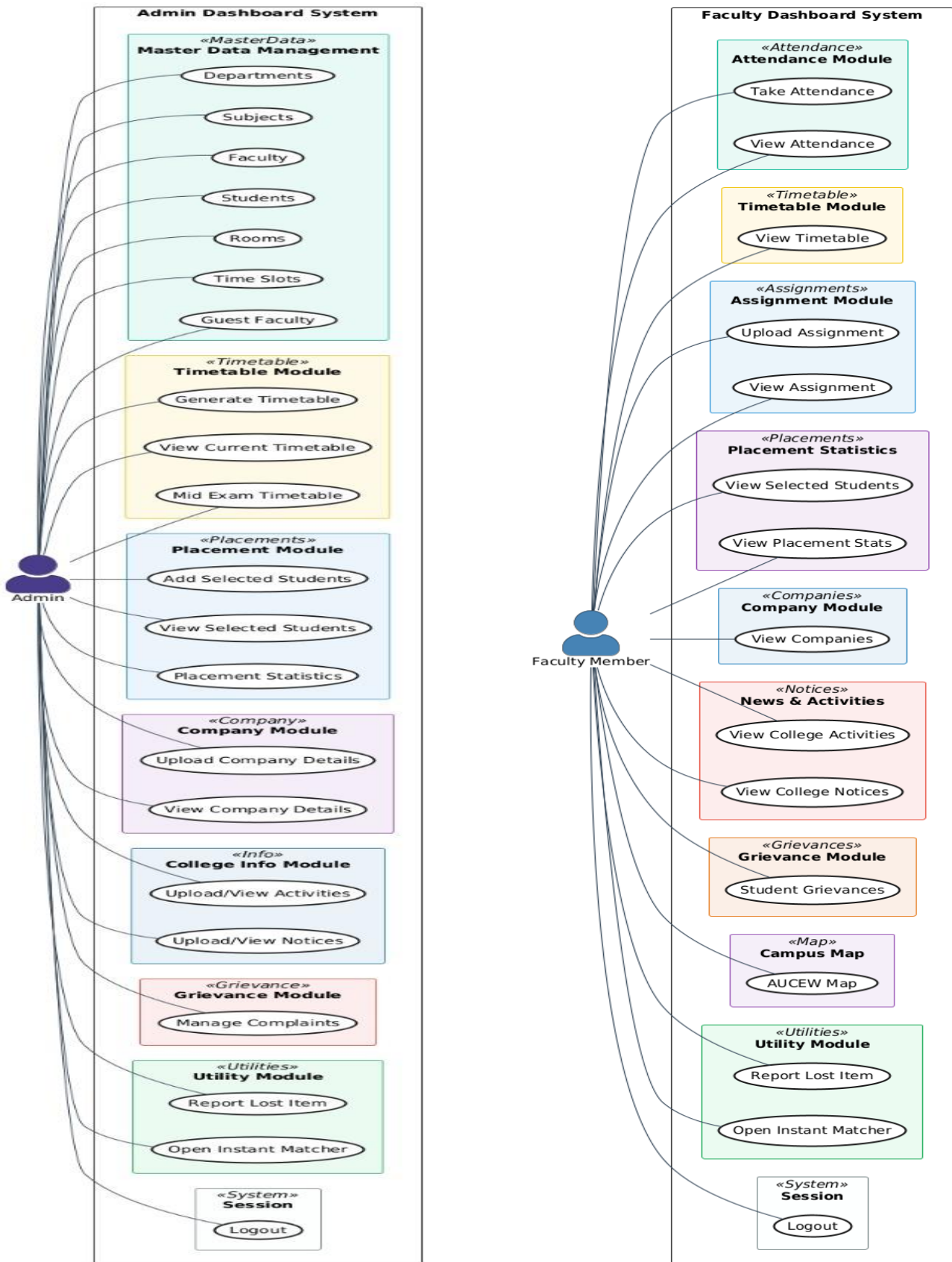
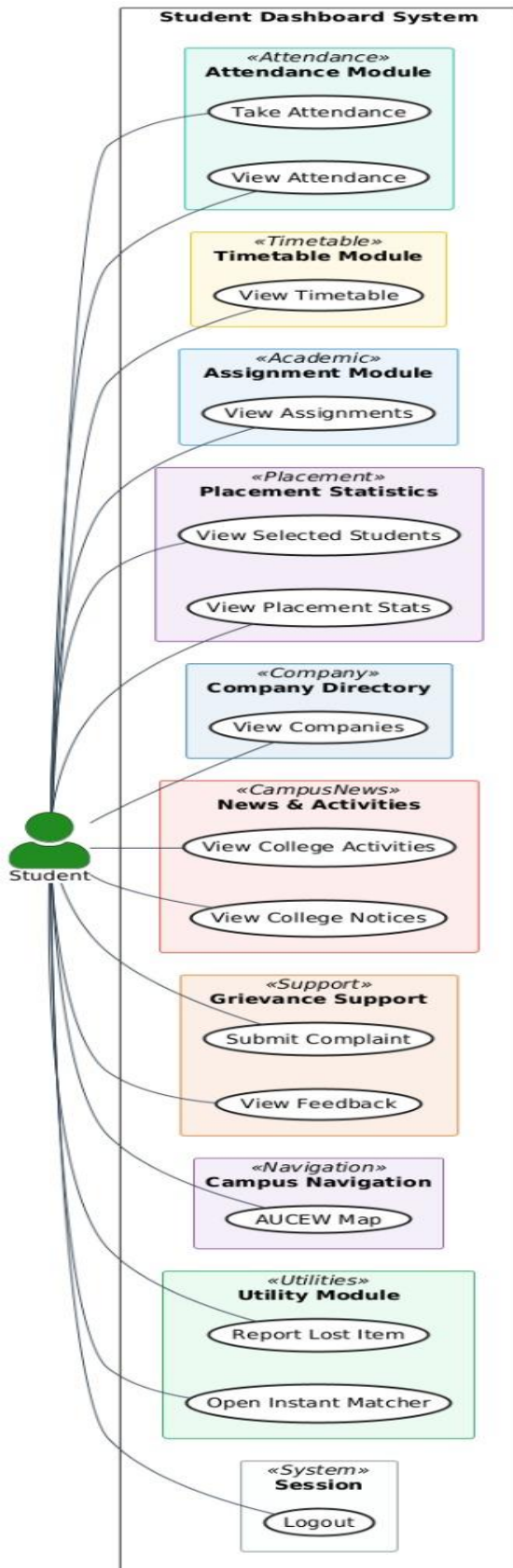


Fig7: Student Dashboard





7. CONCLUSION

The College Timetable and Academic Management System successfully addresses the challenges associated with manual academic and administrative processes in educational institutions. The system provides a comprehensive, web-based solution that integrates multiple functionalities such as timetable generation, attendance management, student information handling, placement tracking, and communication modules into a single centralized platform.

The implementation of role-based access for Admin, Faculty, and Students ensures secure and organized system usage. The admin module effectively manages core institutional data including departments, subjects, faculty, students, rooms, and time slots, forming the foundation for automated operations. The automatic timetable generation feature proved to be efficient in creating conflict-free schedules, significantly reducing manual effort and human errors. Additionally, the Mid-Exam Timetable Generator simplifies exam scheduling and enables easy export of schedules in PDF format.

The faculty module enhances teaching and administrative efficiency through features such as location-based attendance using QR code and OTP, assignment management, and student interaction via discussion chats. The integration of placement analytics and complaint resolution systems further supports faculty in monitoring student progress and addressing issues effectively.

The student module offers a user-friendly interface that allows students to access academic resources, track attendance through a visual calendar, participate in placement activities, and communicate with faculty. The secure attendance mechanism ensures authenticity, while the assignment and discussion features promote better academic engagement.

Additional functionalities such as the complaint management system, activity and notice modules, and event galleries improve communication and transparency within the institution. The Lost and Found Item Management System, integrated with email notifications, adds practical value by facilitating efficient recovery of lost items.

Overall, the system demonstrates high reliability, usability, and efficiency in managing diverse college operations. It reduces administrative workload, minimizes errors, improves data accessibility, and enhances communication among stakeholders. The integration of automation and real-time data processing makes the system a scalable and effective solution for modern educational institutions.

In conclusion, the developed system full fills its objective of digitizing and streamlining academic and administrative activities, thereby contributing to improved institutional productivity and a better user experience for students, faculty, and administrators.

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