Camp Education Society's
Dr. Arvind B. Telang Senior College
Nigdi, Pune – 411 044

A
PROJECT REPORT
ON

"College Management System"

Submitted to

Savitribai Phule Pune University
In Fulfillment Of

M.Sc. (Computer Science) Sem-III

Academic Year
2023-24

Exam.Seat No. -
Roll. No. -

Camp Education Society's
Dr. Arvind B. Telang Senior College, Pune - 44

DEPARTMENT OF COMPUTER SCIENCE

CERTIFICATE

This is to certify that Mr./Miss. _____ of class M.Sc.(Comp. Sci.) SEM -III has satisfactorily completed Project entitled _____ in Computer Science during the year 2023-2024 as per requirements of the Savitribai Phule Pune University.

Project Guide	Head of Dept
(Prof.Rane Rewati D.)	(Prof.Midgule Vinayak E.)
Internal Examiner	External Examiner

ACKNOWLEDGMENT

I would like to express my gratitude and sincere regards to the following people to whom I am grateful for the support and help. Without guidance I have not been able to do this project **" College Management System"**.

I would like to thank my Project In-charge **H.O.D. (Comp.Sci.) Department Prof. Midgule Vinayak** for providing his guidance during development of this project**.**

I sincerely thank all the faculty members of the Computer Science department for their guidance and support throughout the Project.

Student name

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INTRODUCTION

In this Project, an abstract of the project for College Management System is given along with a full explanation of the College Management System. There are many departments of administration for the maintenance of college information and student databases in any institution. All these departments provide various records regarding students. Most of these track records need to maintain information about the students. This information could be the general details like student name, course, performance, attendance etc. or specific information related to departments like collection of data. All the modules in college administration are interdependent. They are maintained manually. So they need to be automated and centralized as, Information from one module will be needed by other modules. For example when a student needs his course completion results it needs to check many details about the student like his name, registration number, year of study, exams he attended and many other details.

PROBLEM STATEMENT

The dominant form of record keeping is the traditional way. The process of receiving data from students and staff details are done through manual records. This process will take a long time, separate employees need to maintain the databases. All the college details are stored via separate databases. It will take a long time due to this process of time waste, increase in paper work, money waste etc...In this process it is very difficult to maintain the fees and accounting reports of college in a proper way. Lecturers do not maintain the file, documentation, reports (class Wise, section wise) etc. The System has no integrated management system that integrates all of the University's systems and processes into one complete framework, enabling an organization to work as a single unit with unified objectives.

By implementing a CMS, colleges can streamline processes, enhance communication, improve data management, and gain valuable insights, ultimately leading to a more efficient and effective educational institution.

Purpose/ Objectives and Goals

The goal of this project is to design and implement a College Management System for University College that computerizes all the details that are maintained manually.

To create a system that is always available and provides up-to-date Collective Records of student of all Branches and Employees of all department To create a system that will provide easy Query to all related details of student and employee and generate any kind of report and search records, Records can be exported to excel and Reports to PDF, Excel, Word, Crystal report etc.

To create an automated system that Maintain personal,contact,qualification,service history details College Management System will create an easy compilation of exams reports and performance analysis,Integration Null functions of finance and payroll, Maintain fees details based on course, termetc.

Literature Survey

1. College Management Systems

- Overview of college management systems.
- Comparison of features, functionalities, and architectures.
- Identification of strengths and weaknesses.

2. Educational Software

- Exploration of educational software used in academic institutions.
- Analysis of their impact on administrative processes and academic performance.
- Discussion on integration possibilities with the College Management System.

3. Stack

- Examination of technologies commonly used in building management systems.
- Evaluation of programming languages, frameworks, and databases.

Project Scope and Limitations

This Project provides the detailed structure of the college campus and its departments. The College-Management System synchronizes the working of all the departments. It looks at all aspects of a college, its students, faculties, departments, marks, hostels, attendance and other co – curricular activities.

College Management System is the easiest way to manage all functionalities of a college, which facilitates colleges to maintain the functionality related to college employees and their students. Research and analysis will therefore be limited to the case of University College.

The College Management System, within its defined scope, aims to enhance administrative efficiency and communication within the educational institution while acknowledging the outlined limitations.

System Analysis

1. User Requirements

- Conducted interviews with students, faculty, and administrators to gather user needs.
- Users expressed the need for a mobile app, advanced reporting, and streamlined admission processes.

2. Functional Requirements

- Defined specific functionalities, such as online admission form submission, real-time attendance tracking, and result notifications.
- Created detailed use cases for each functionality, outlining steps and system responses.

3. Non-Functional Requirements

- Established performance criteria, requiring the system to handle 500 simultaneous users with a response time of under 2 seconds.
- Security requirements include encryption for sensitive data and regular security audits.

4. Data Analysis

- Examined the database schema to identify critical entities (students, courses, faculty) and their relationships.
- Implemented a data dictionary detailing data types, sizes, and constraints.

Existing System

1. System Overview

- The College Management System (CMS) is a web-based application designed to streamline administrative processes in educational institutions. It caters to student and faculty management, class scheduling, and various administrative tasks.

2. Architecture and Infrastructure

- CMS is built on a MVT architecture, comprising a front-end web interface developed using Jinja template and JS, and a sqlite3 database for data storage.

3. Features and Functionality

- Student Management: Admission processes, attendance tracking, exam management.
- Faculty Management: Information storage, class scheduling, grading.
- Administrative Tasks: Timetable creation, fee collection, reporting.
- Communication: Internal messaging system for staff.

4. User Interfaces

- Planned enhancements include mobile responsiveness, advanced reporting features, and exploring cloud-based infrastructure options.

Limitations

Along with India's Rapid economic development, the construction of college has also developed greatly and university conditions are immensely improved. university colleges have done a series of reforms on the system, structure, management and teaching methods making Difficult to bring too many or too often changes to the system.

While the equipment used to teach, research and administrate have been increased day by day, the assets of colleges are large increasingly, how to manage such a huge asset well and make and make full use of their effectiveness has become a urgent affairs to the management sectors and also the Difficulty, faced during initial planning and implementation. Due to the advancement in technology, the total assurance of security cannot be fully guaranteed.

By understanding these limitations, institutions can approach CMS implementation with caution and set realistic expectations. Focusing on data security, user adoption, ethical considerations, and strategic integration can help colleges harness the true potential of CMS while minimizing potential drawbacks.

Project Perspective Features

- Staff Panel
- Student Panel
- Admin Panel
- Manage Course, Subject, Session
- Student Management
- Staff/Teacher Management
- Student Attendance Management
- Update User Profile
- Exam Result Management
- Send Notifications
- View Notifications
- Present and Absent Percentage
- Student Leave Management
- Staff Leave Management
- Send Feedback

Requirement Analysis

- Staff's Panel, Attendance Management

  Moving towards the staff/teacher's panel allows users to access various features. But before, an admin is also responsible for staff registration. A staff member can manage results for each student. However, each result is only notable by the staff members.

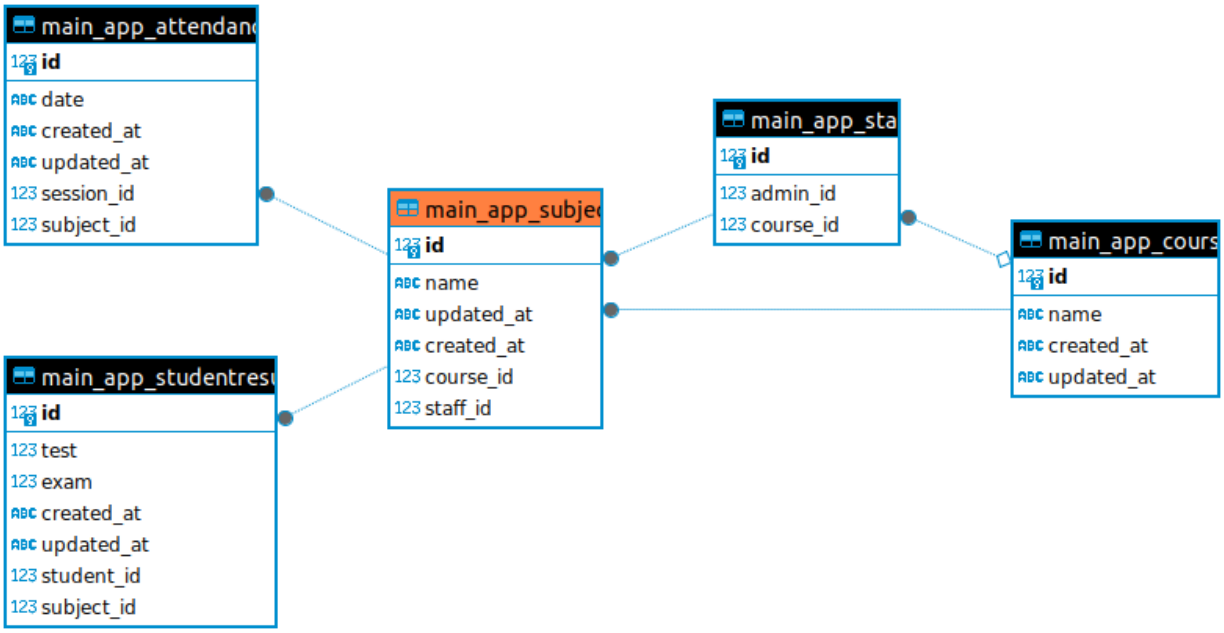
- Admin Panel

  An administrator has full control over the system. He/she can manage courses, subjects, sessions, staff, students, and more. Here, each and every section has its own respective details such as name and other important details

- Student Management, Notifications, and Attendance

  On one hand, the admin can insert students' records by providing various details. Such as name, email, gender, password, image, course, and session. In addition to it, the user can send notifications to each student and staff member. This notification message can be used for anything.

ER Diagrams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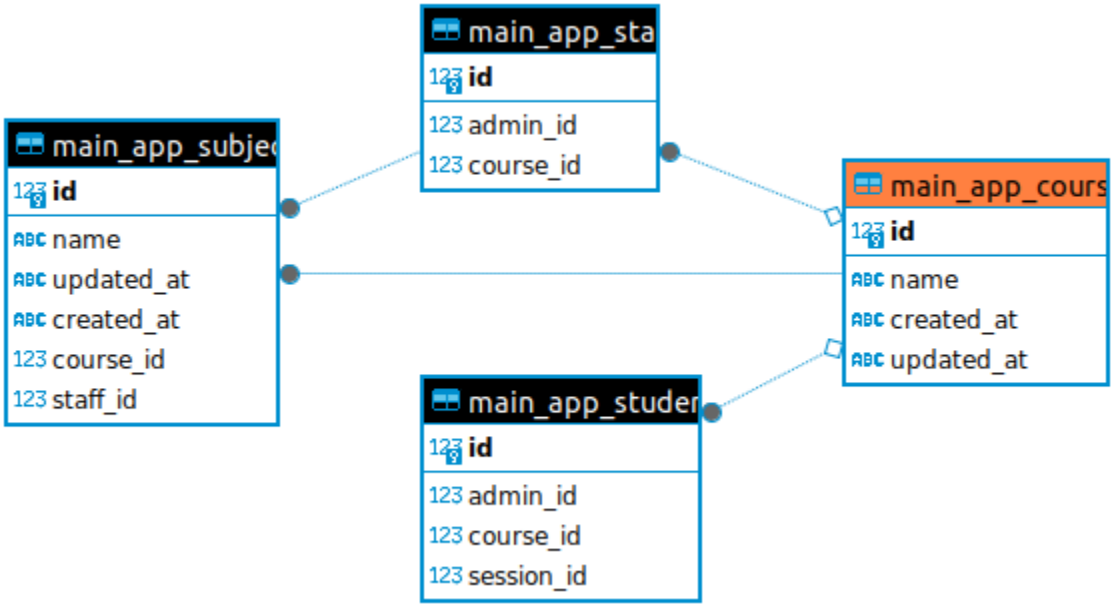
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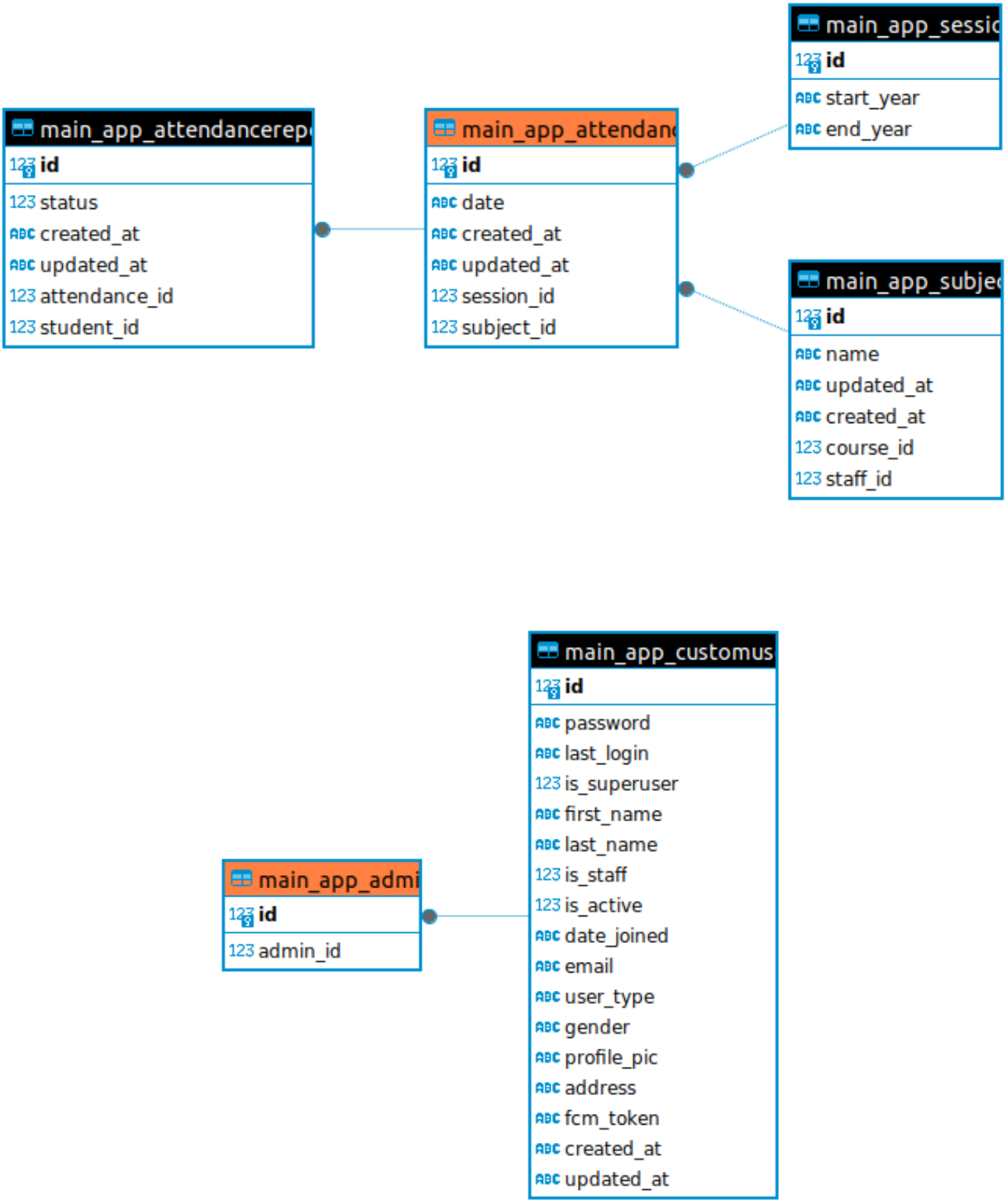
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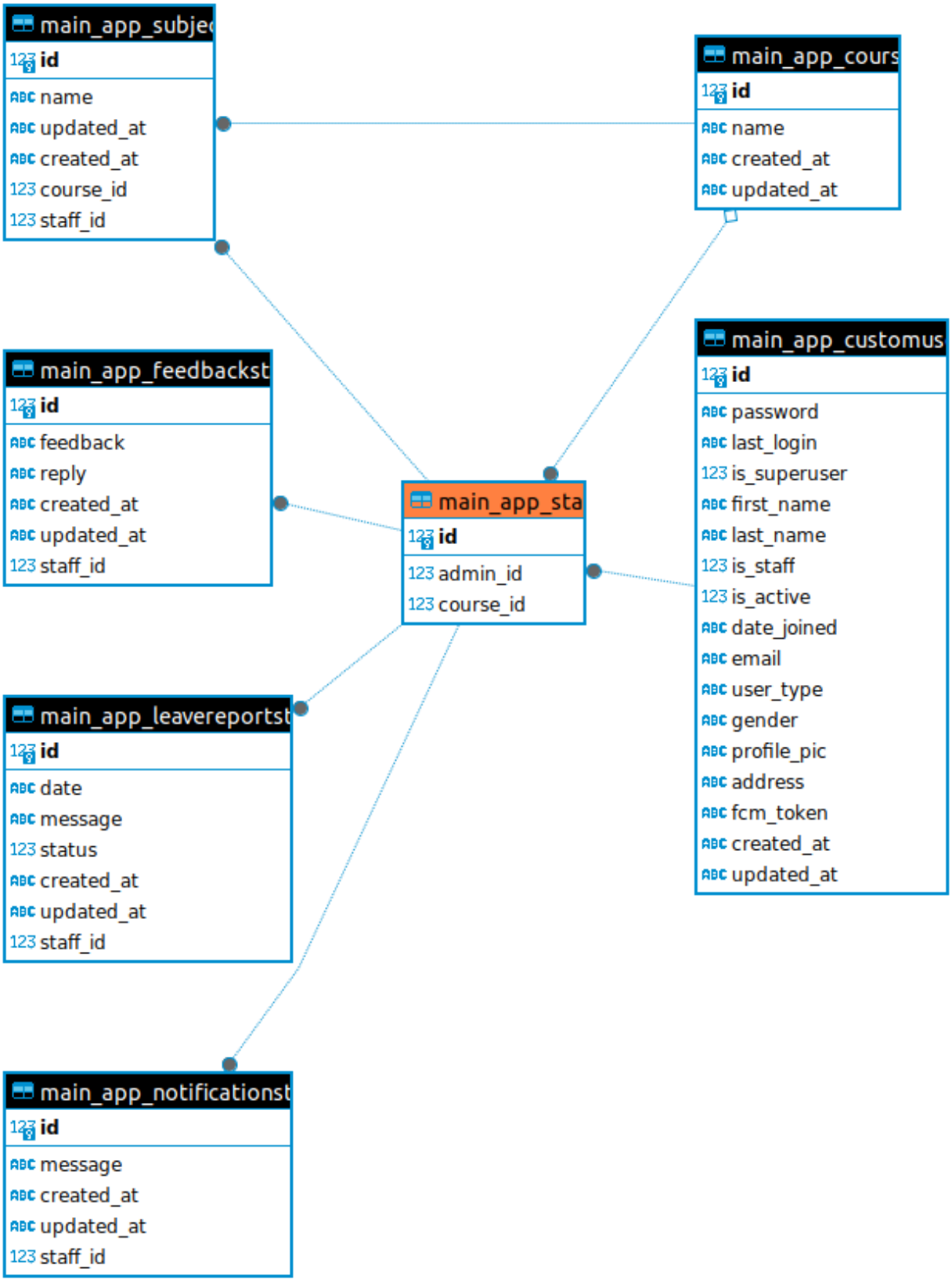
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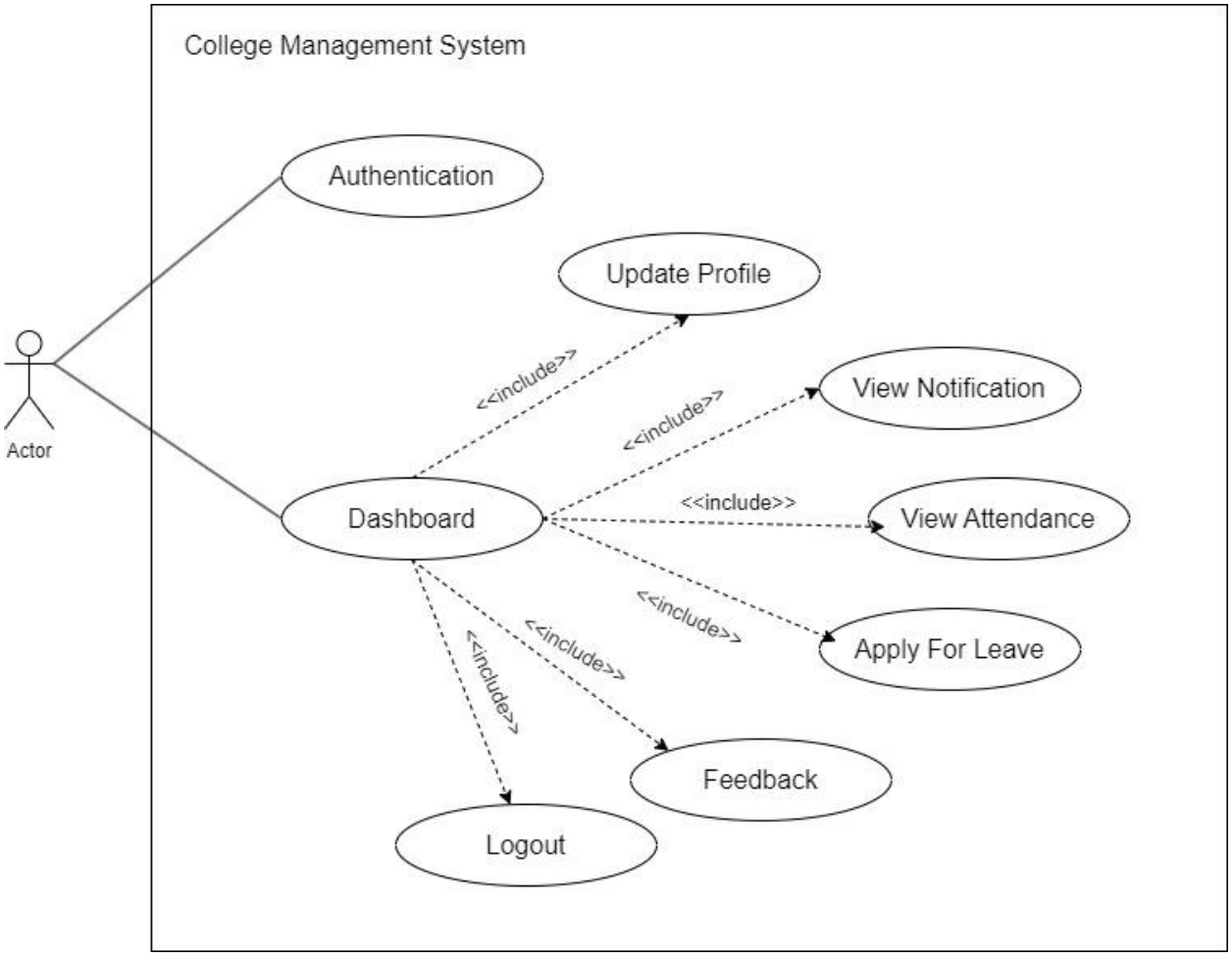

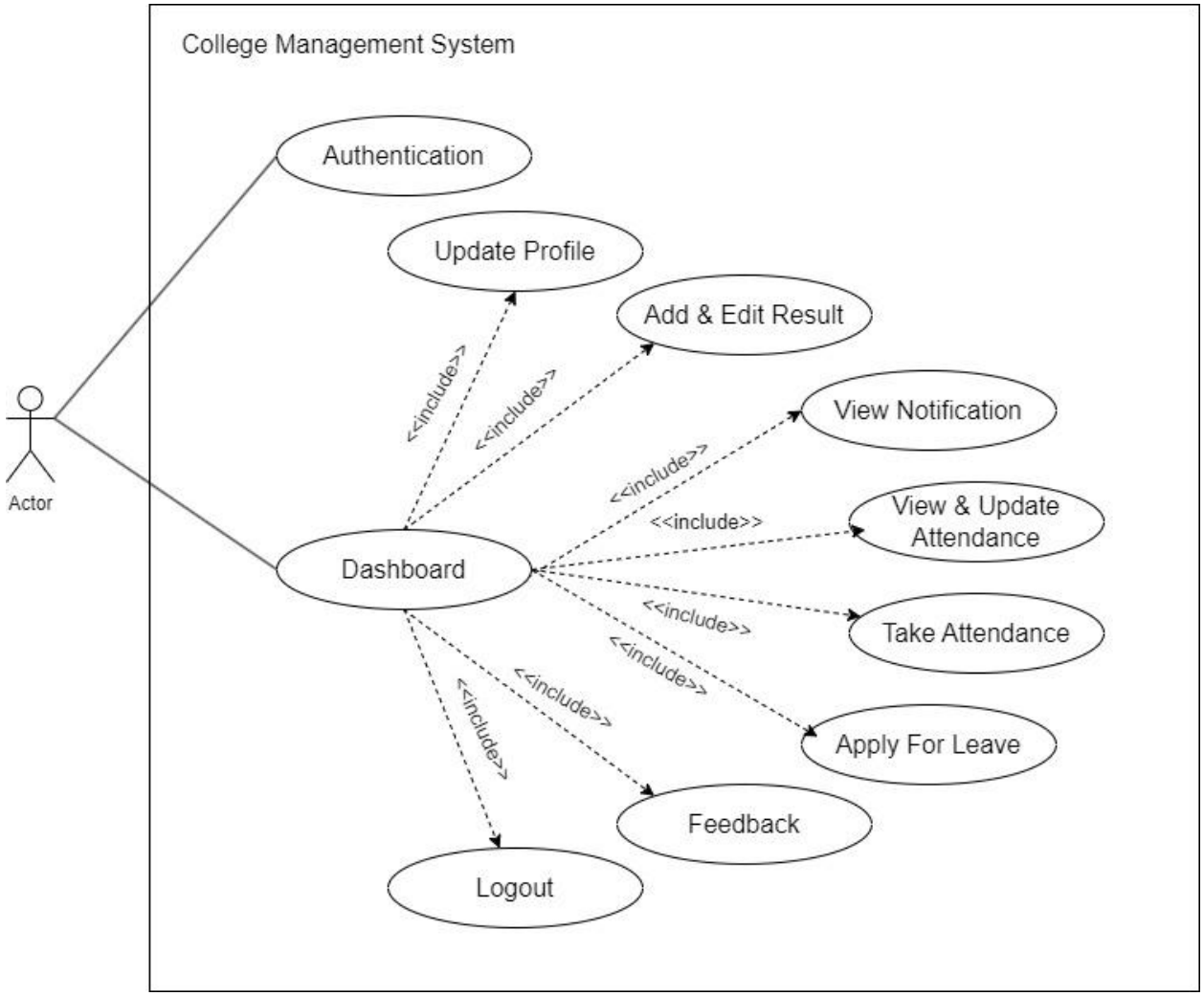
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View & Update Attendance
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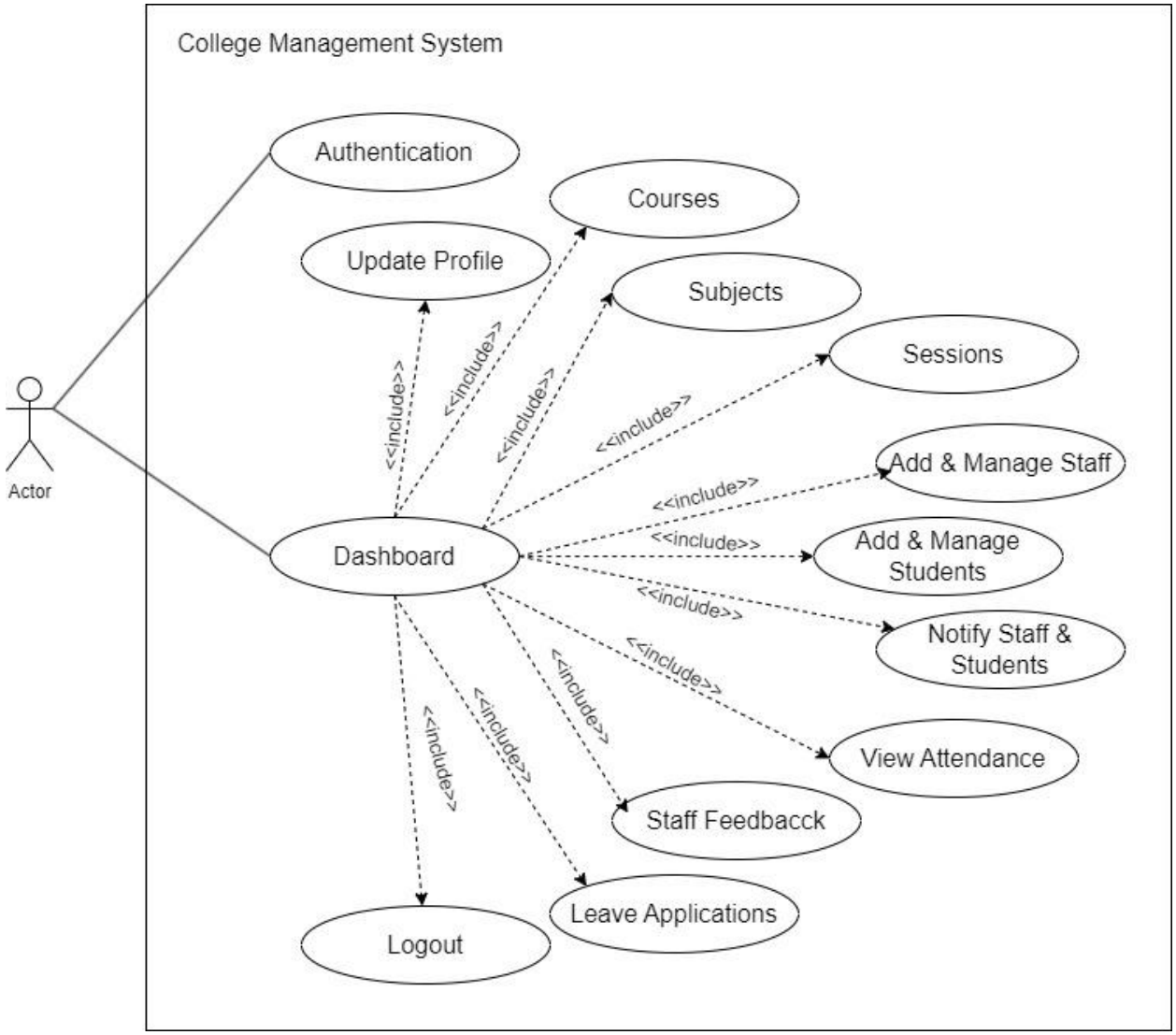
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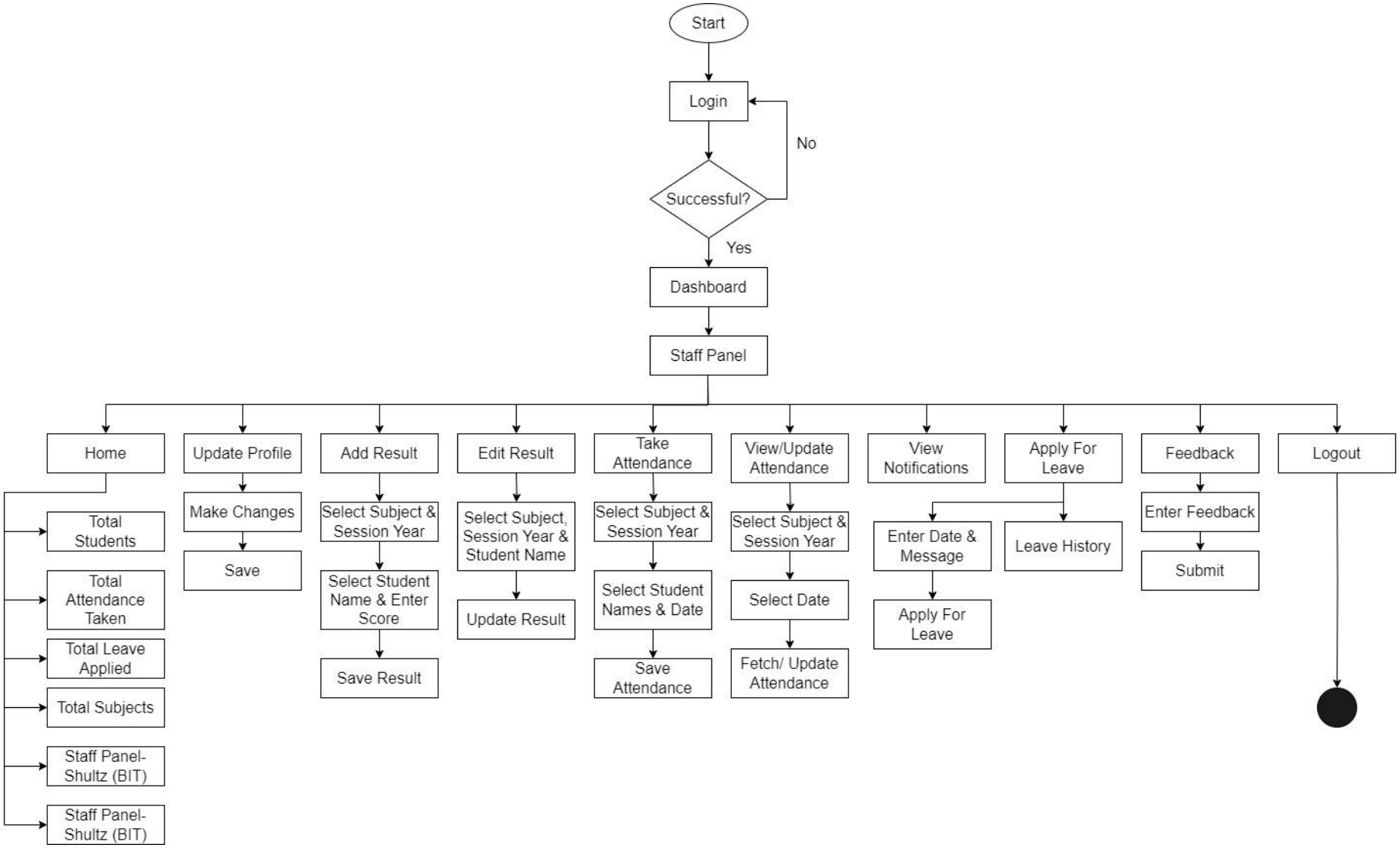
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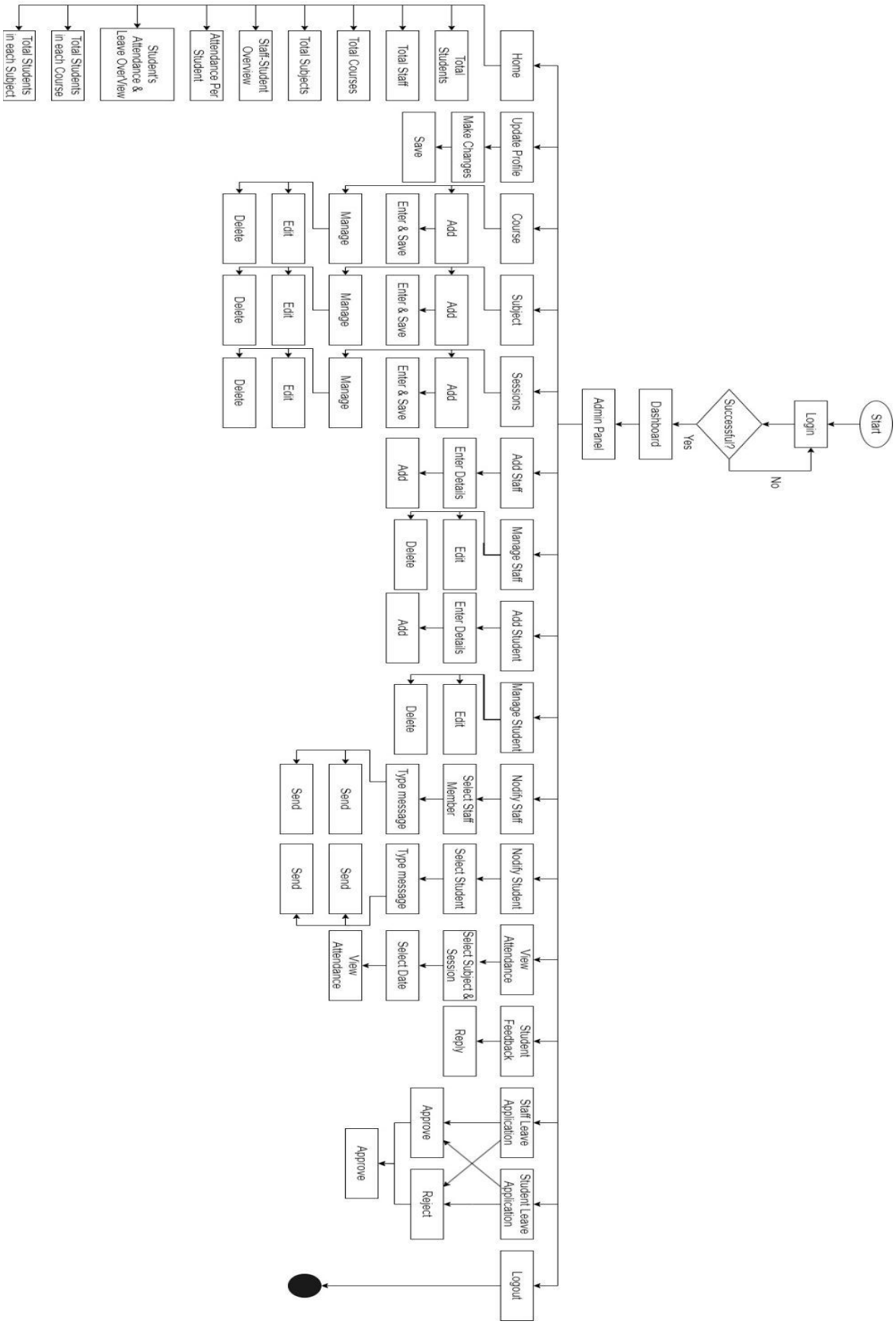
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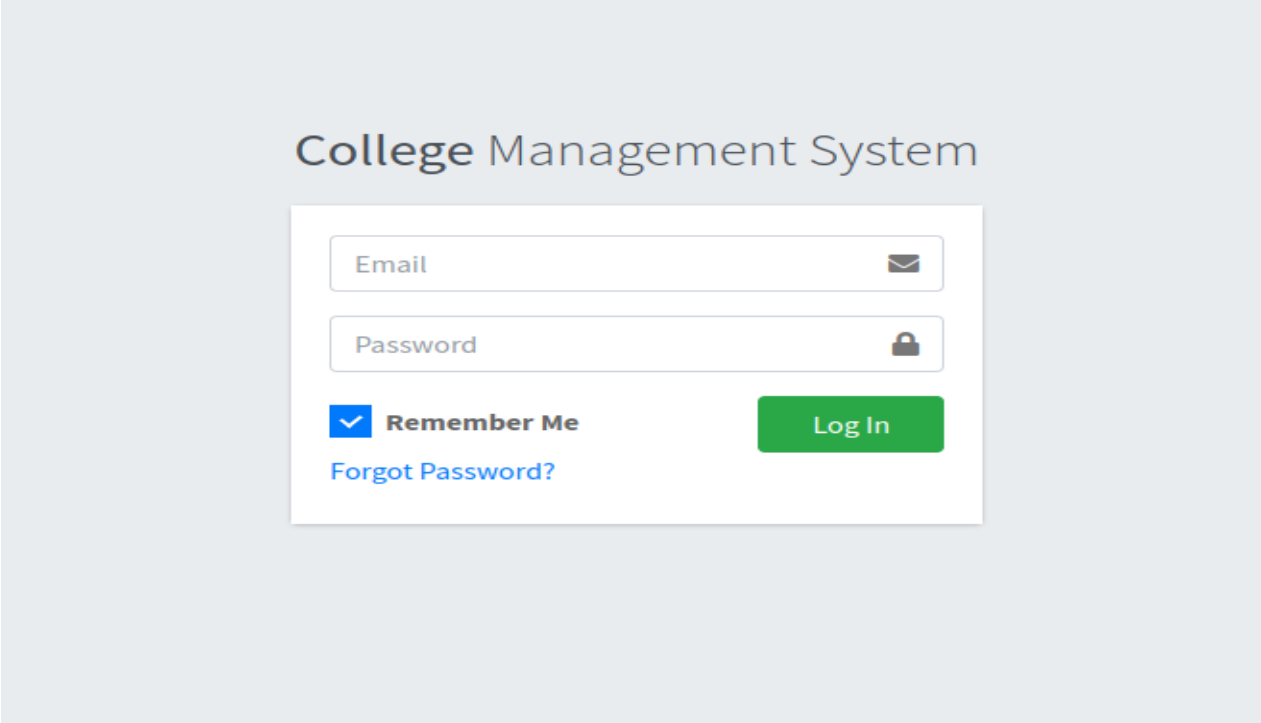
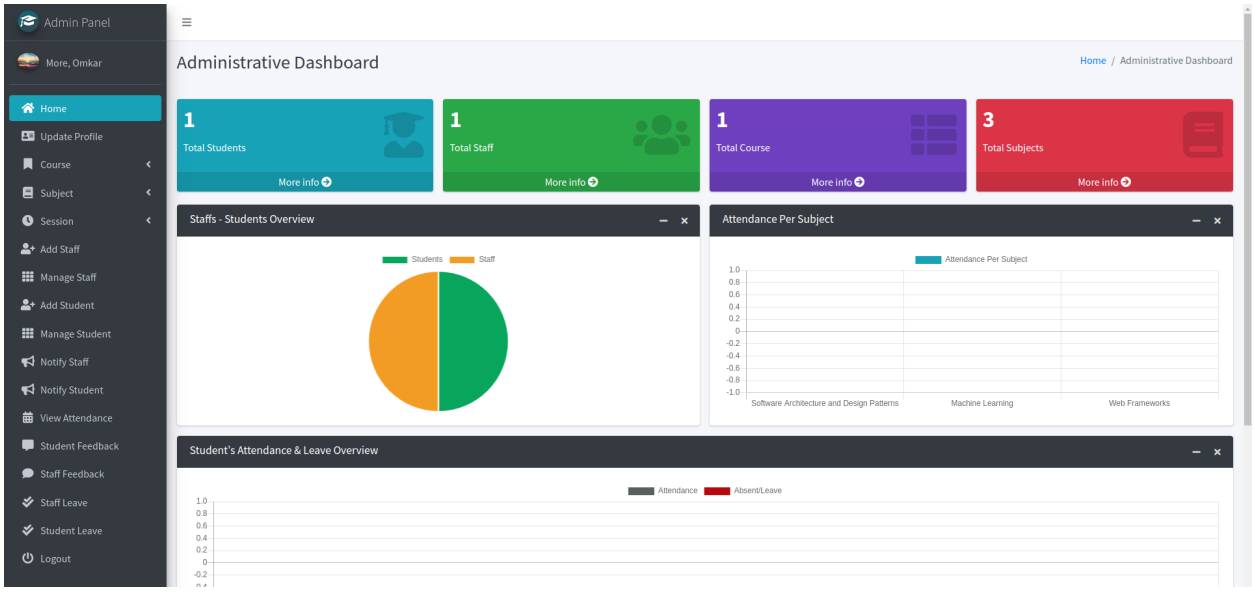
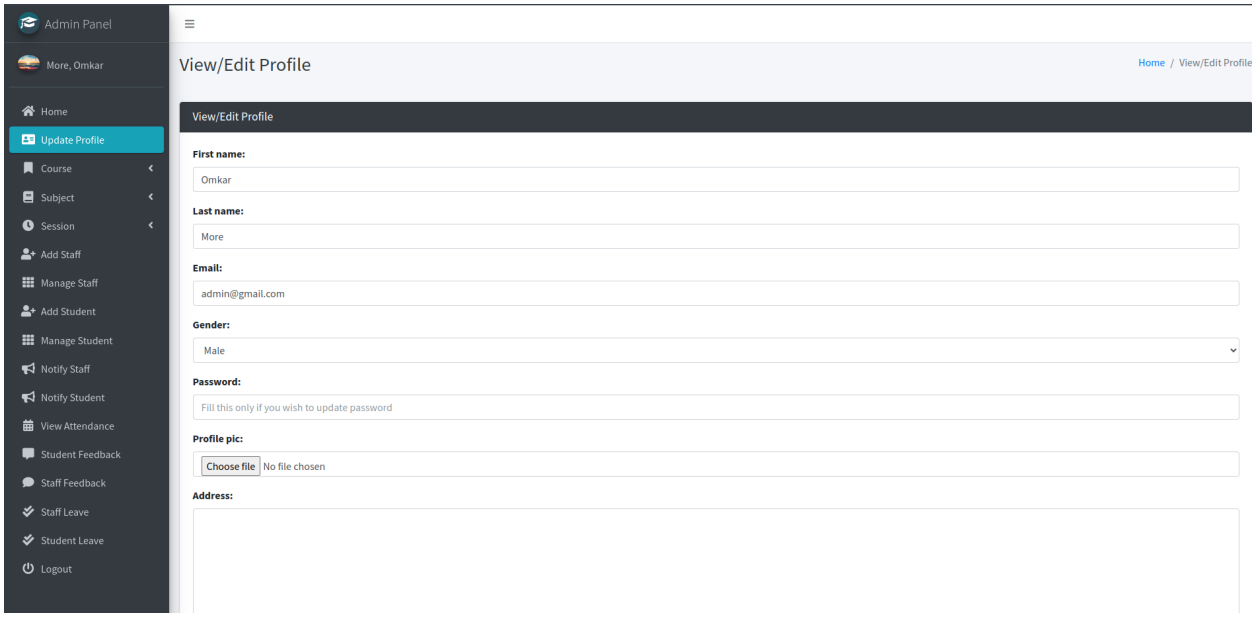
User Interfaces



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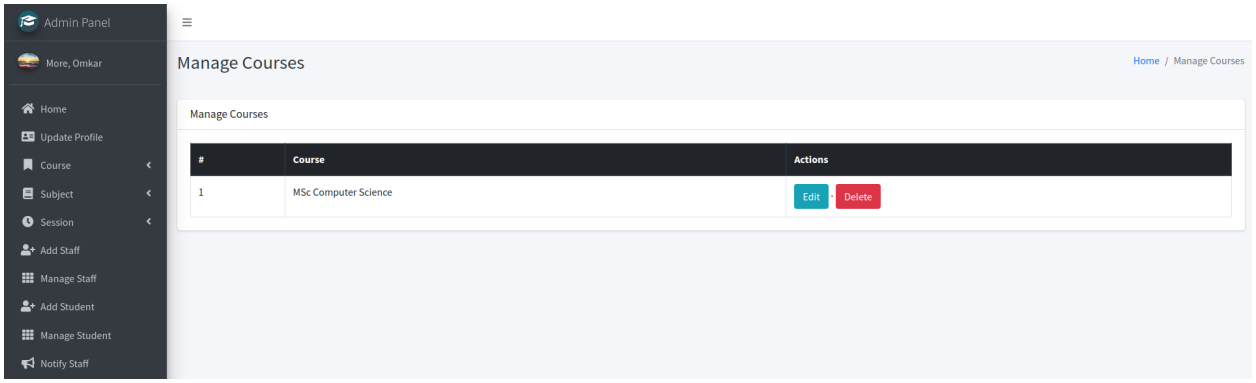
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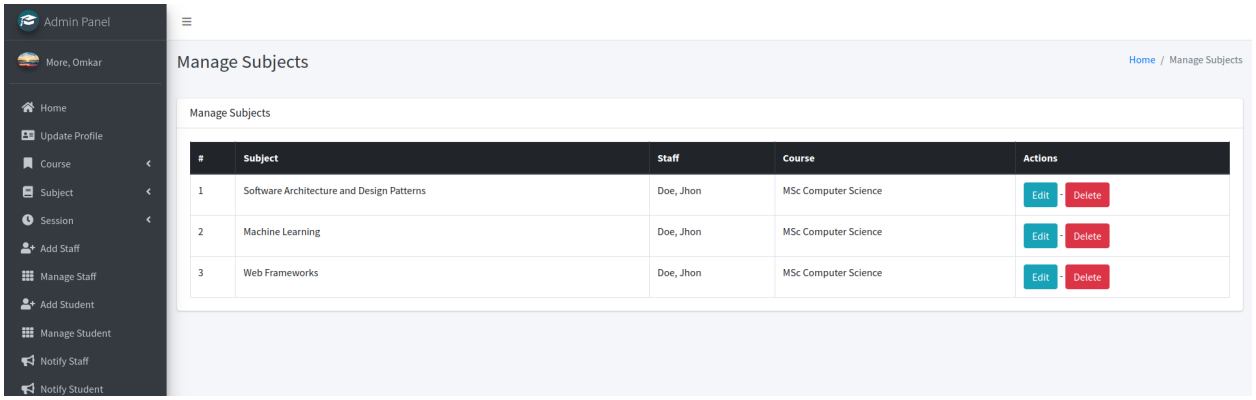
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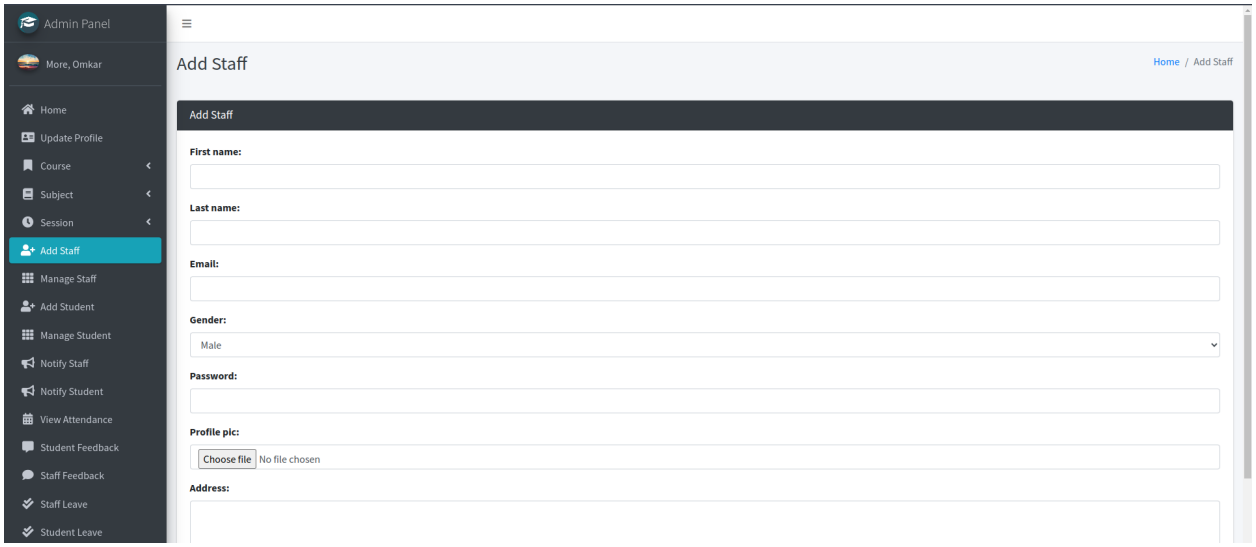
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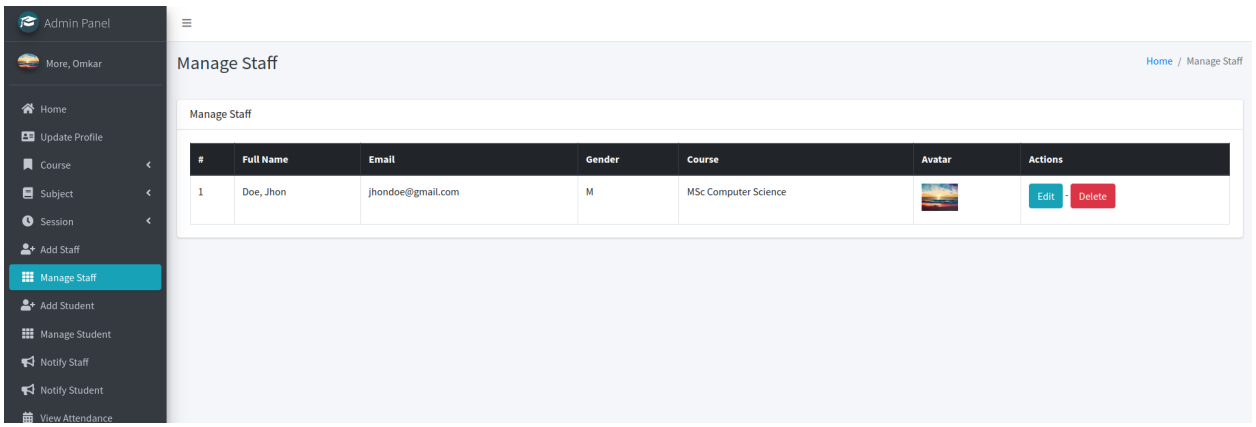
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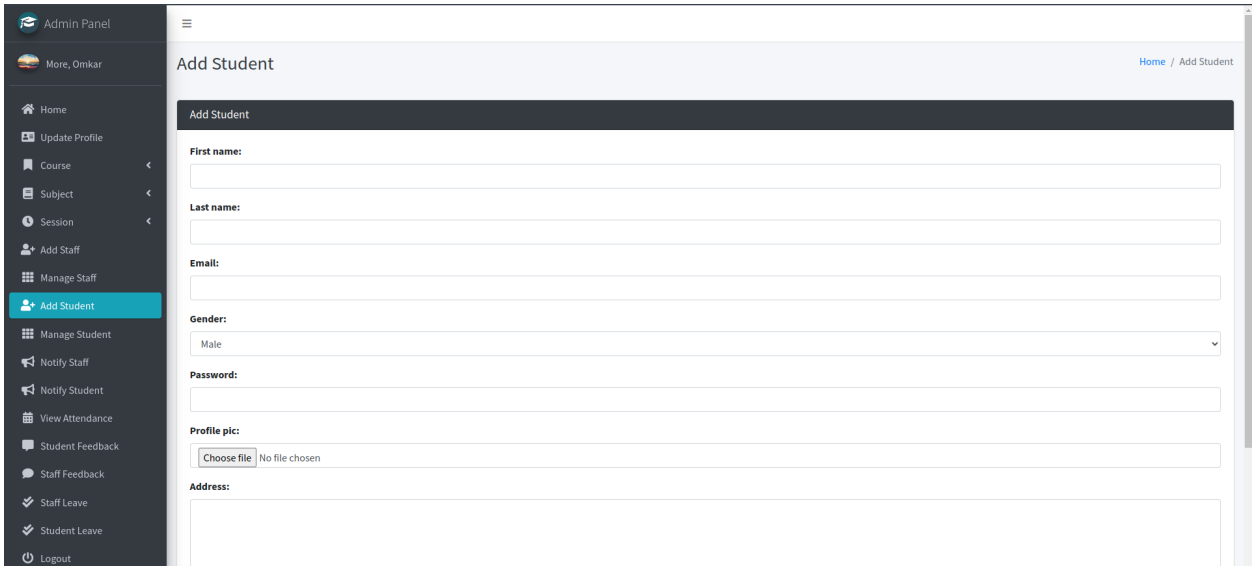
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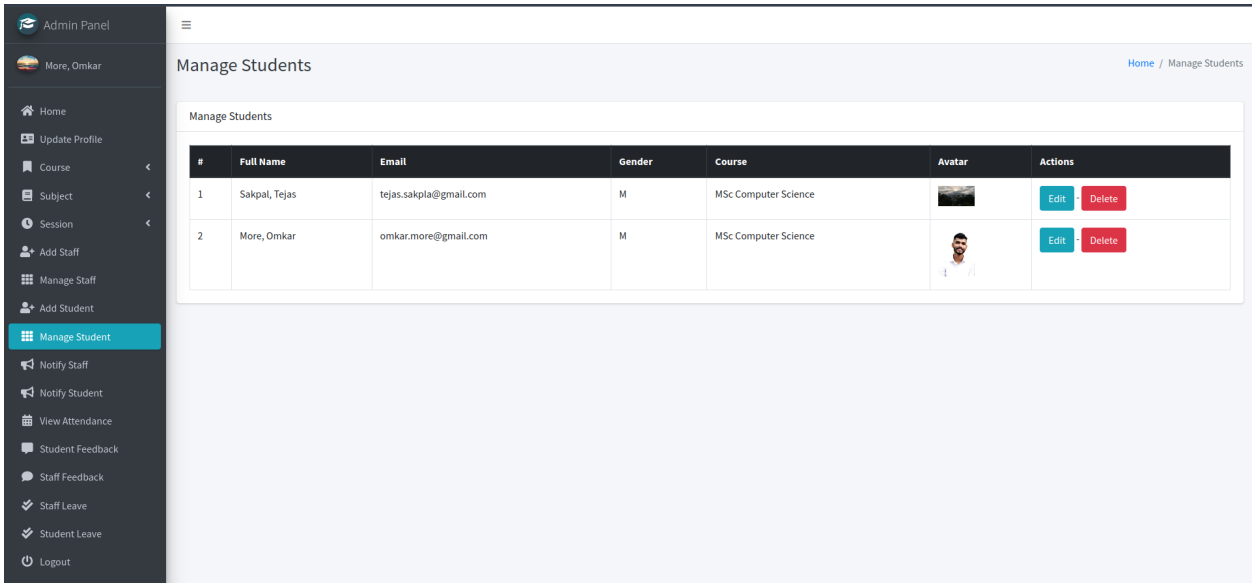
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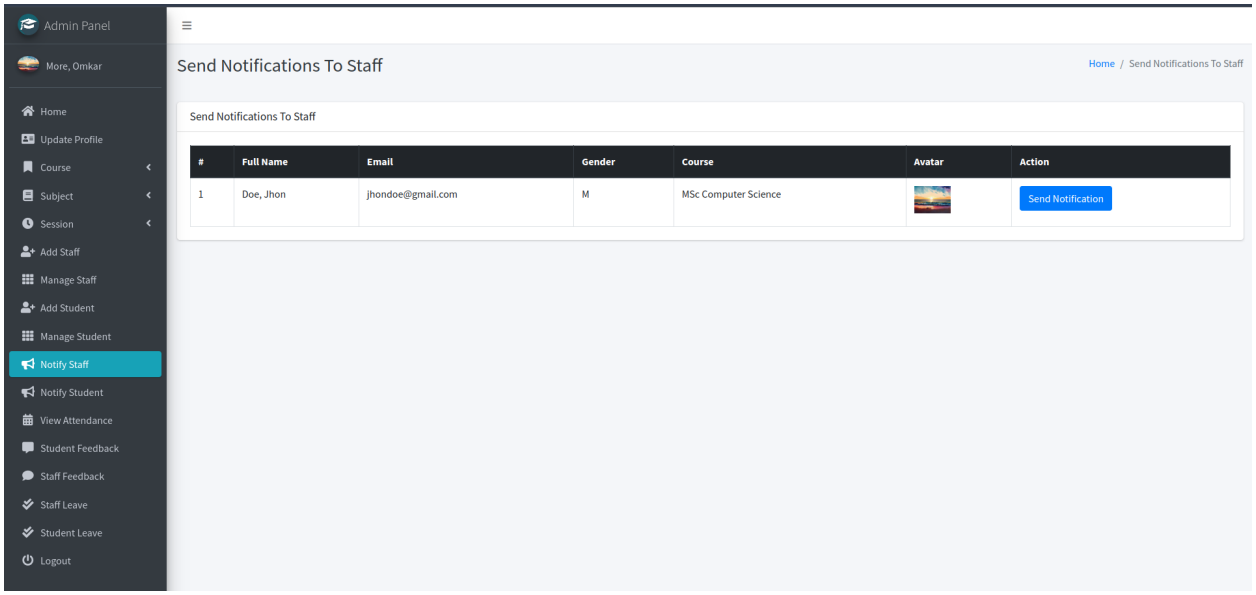
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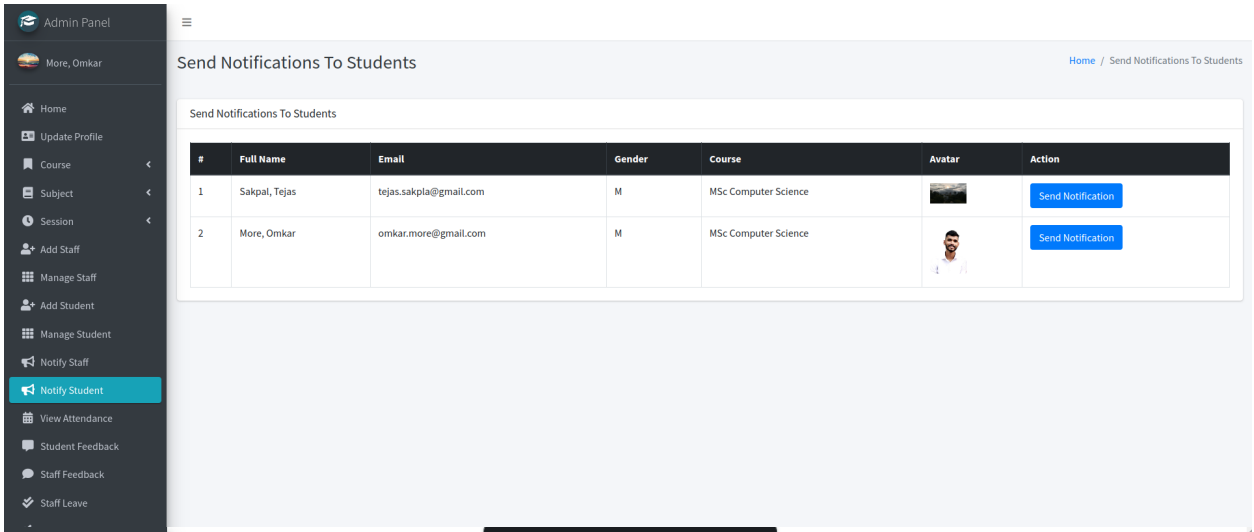
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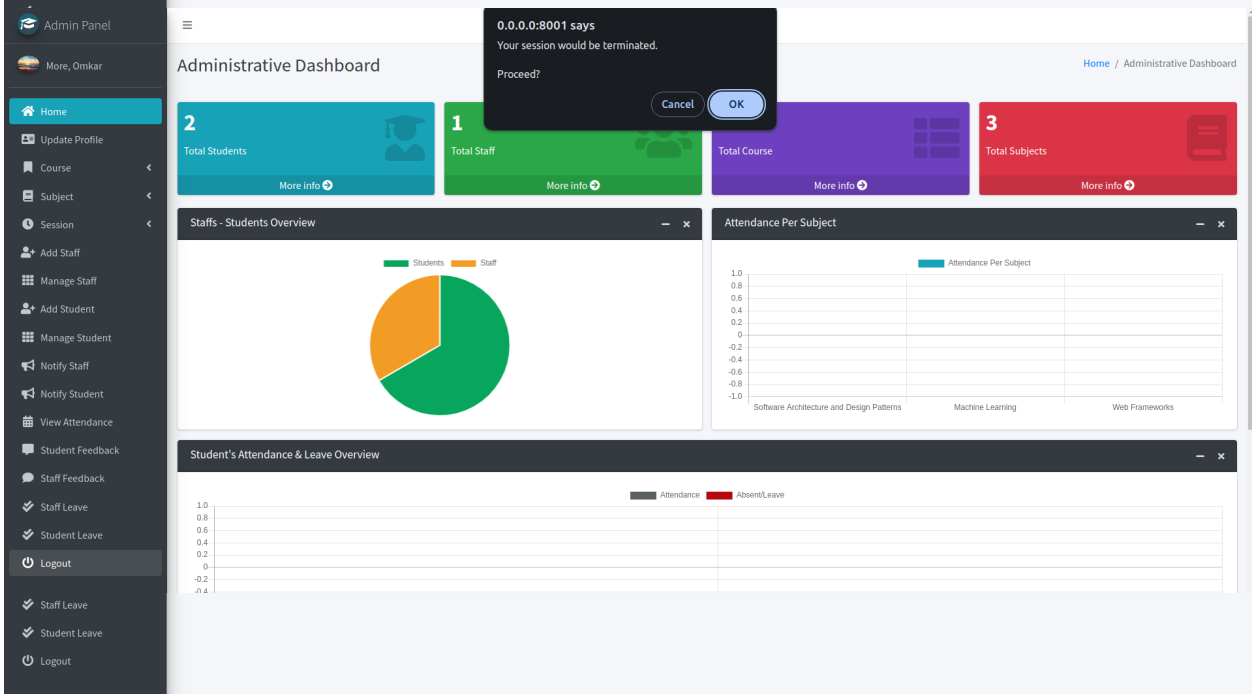
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Web Frameworks
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Absent/Leave

Implementation Details

The system was subjected to a series of comprehensive system testing. This ensures that all system functionalities are performing well when compared to the initial stated requirements and functional specifications. It ensured the system met all the specifications and was capable of handling tasks as robustly as possible.

The system allow admin user to make Staff Panel,Student Panel, Admin Panel, Manage Course, Subject, Session, Student Management, Staff/Teacher Management, Student Attendance Management, Update User Profile, Exam Result Management, Send Notifications, View Notifications, Present and Absent Percentage, Student Leave Management, Staff Leave Management and Send Feedback.

Some of the features examined included the student record search by course & branch test function and reporting functions.

Hardware Specifications

A Computer (i.e. Laptop or Desktop)

Processor : Intel Core Duo 1.8 GHz or more

RAM : 4GB or more

Hard Disk : 20GB or More

Monitor : 14” Color Screen or More 60Hzs

Mouse : 3 Buttons

Printer For Report Printing

Software Specifications

Database: sqlite3

Environment : Python virtual environment

DjangoFramework : Version 3.1.1

Language : Python with Django Framework

System : Windows/ Ubuntu

Front-end: Jinja template

Outputs and Reports

All the above mentioned data are stored in the back end and can be retrieved as reports with filtering options. The Following are the reports that can be taken from this system:

- Staff Panel
- Student Panel
- Admin Panel
- Manage Course, Subject, Session
- Student Management
- Staff/Teacher Management
- Student Attendance Management
- Update User Profile
- Exam Result Management
- Send Notifications
- View Notifications
- Present and Absent Percentage
- Student Leave Management
- Staff Leave Management
- Send Feedback

Testing

Testing is a process of executing a program with the intent of finding an error. Debugging is the process of loading the exact cause of an error in removing that cause. Software testing is a critical element of software quality assurance and represents the ultimate review of specifications, design and code generation.

These techniques provide systematic guidance for designing tests that: Exercise the internal logic of software components, and exercise the input and output domains of the programs to uncover the errors in program function, behavior and performance.

Testing Methods that are used :-

1. Black Box Testing.
2. White Box Testing.
3. Unit Testing.
4. Interface Testing.
5. Interrogation Testing
6. Performance testing.

Conclusion and Recommendation

Last but not least, a clean and simple dashboard is presented with various color combinations for greater user experience while using this College Management System Project in Python Django Framework. For its UI elements, a free open-source CSS framework; Bootstrap is on board with some Vanilla CSS too. Presenting a new Online School Management System Project in Python Django which includes an admin panel with a student and staff panel that contains all the essential features to follow up, and a knowledgeable resource for learning purposes. Based on analysis, discussions and a review of previous chapters, the following have been established.

The College Management System application is a desktop application system with four main user levels namely Staff, Admin and Students . The systems is placed on a centralized server accessible by all registered account holders by the administrator into the system (under a particular user level) at all times. The system allows its data to be shared, so it’s installed on a centralized server and run from client machines at any department.

Future Scope

The future of college management systems (CMS) is brimming with exciting possibilities that will revolutionize the way colleges operate and students learn. Here are some key trends to watch:

1. Advanced Reporting and Data Visualization

- Enhance reporting capabilities with interactive dashboards.

- Implement data visualization tools like Matplotlib or Plotly for comprehensive insights.

2. Blockchain for secure data management and transparency:

- Blockchain technology can ensure secure and tamper-proof storage of student records, diplomas, and transcripts, preventing fraud and data breaches.

3. Predictive analytics and proactive intervention:

Advanced analytics will predict student performance, potential dropouts, and even mental health issues, enabling early intervention and support.

Bibliography and References

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