CSPB 200:

PROJECT – II

ACADBUD

one stop solution for academic needs

Submitted By:

Tanishq Kr. Toliya

Vansh Garg

Branch: CSE 2

Semester: 4th Sem

Department of Computer Science and Engineering

NATIONAL INSTITUTE OF TECHNOLOGY DELHI

2024

INTRODUCTION

- **PROBLEM STATEMENT**

  In college life, the student body and the teachers face a lot of issues to lack of proper communication channel between them.
  Both face a lot of problems on daily basis like proper delivery of resources from teachers to students, attendance management, and issuing of notices at the appropriate time. All of the above problems are manual and time-consuming processes.

- **Purpose**

  The purpose of this document is to define the software requirements for the development of a user-friendly platform tailored for an institute. This platform aims to facilitate seamless sharing of resources among students and faculty members, streamline attendance management for teachers, provide students with easy access to their attendance records, and empower authorized users to disseminate notices effectively to the student body.

- **Scope**

  The scope of the project includes the development of an application that will help bridge the gap between teachers and students by providing a platform to streamline attendance management, share resources and issue notices.

  The software system will include features such as resource sharing, attendance management, notice dissemination, and user management. It will be accessible to students, faculty members, and authorized users.

REQUIREMENTS ELICITATION

- **Stake Holders**

  Stakeholders for the application includes
  - Teachers and Teaching assistants
  - Students from all years

  Interviews have been conducted with the student body of all years both physically and digitally. Later reviews and requirements were also taken as input from the student body using google form.

- **SURVEYS AND QUESTIONNAIRES**

  Surveys and questionnaires were conducted to gather data on particular requirements of the student body, preferences, and to what extent would the platform would be of use to them. To extract the data, we formed questions to cover topics like previously used platforms for resource sharing, attendance recording and to receive notices, their perspective on platform which resolves all these problems in a centralized way, and how likely would they use such a platform.
  Questions are as follows:
  1. How do you receive Updates/Announcements/Notices from your teachers?
  2. How do you access resources such as recommended Books/ PYQs /Study materials from the institute?
  3. How do you check the status of your attendance?
  4. How do you get insights or guidance out of your field of study/ career in future?
  5. Is it a good idea to provide a common platform to all the students of the institute where anyone can post queries for anyone to resolve, or perhaps, people can post some useful experiences for the betterment of the community?
  6. How likely are you to use a centralized solution (such as an app) which can help solve the problems discussed above?

  Supplementary questions:

  7. How do you think resources should be categorized and organized for easy access and sharing among students?

  8. How do you envision the user interface of the system to be, and what design elements do you think would improve user experience?

  9. What additional features or functionalities would you like to see in the system that are not currently included in the project plan?

  10. How do you think the system can encourage more active participation and engagement among students and teachers?

Survey Result

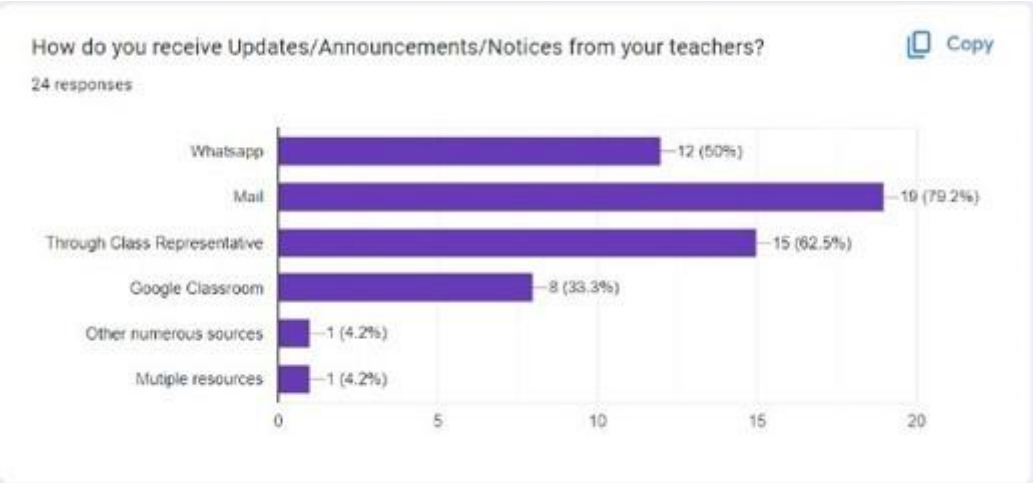


Figure 1

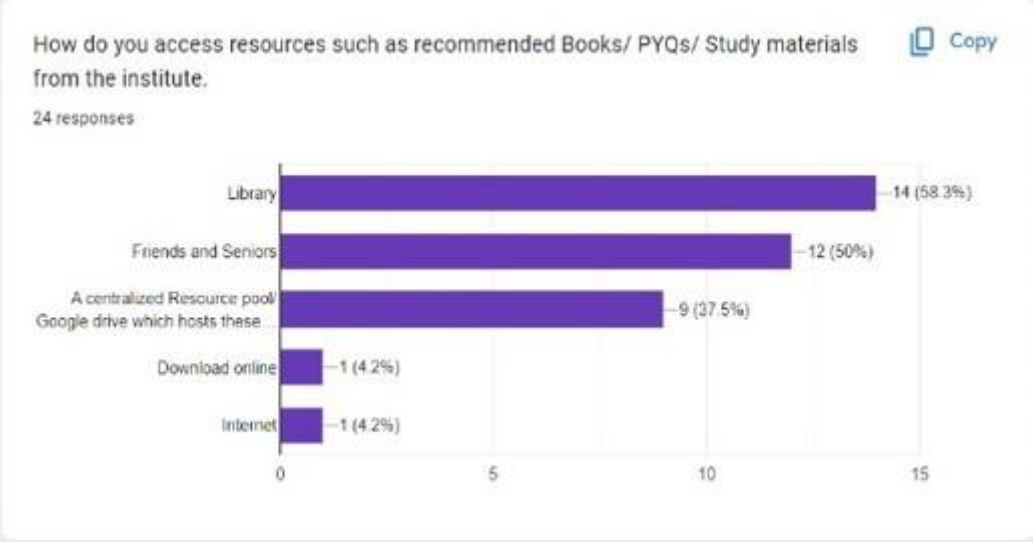


Figure 2

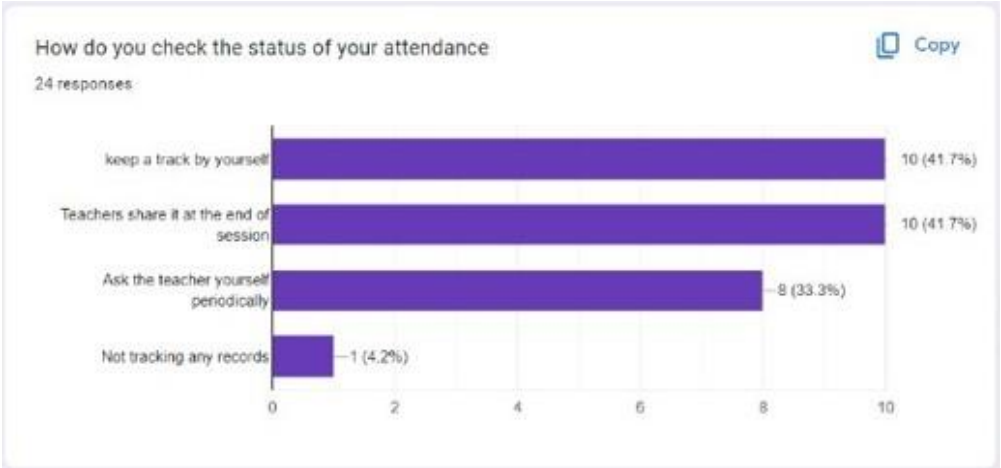


Figure-3

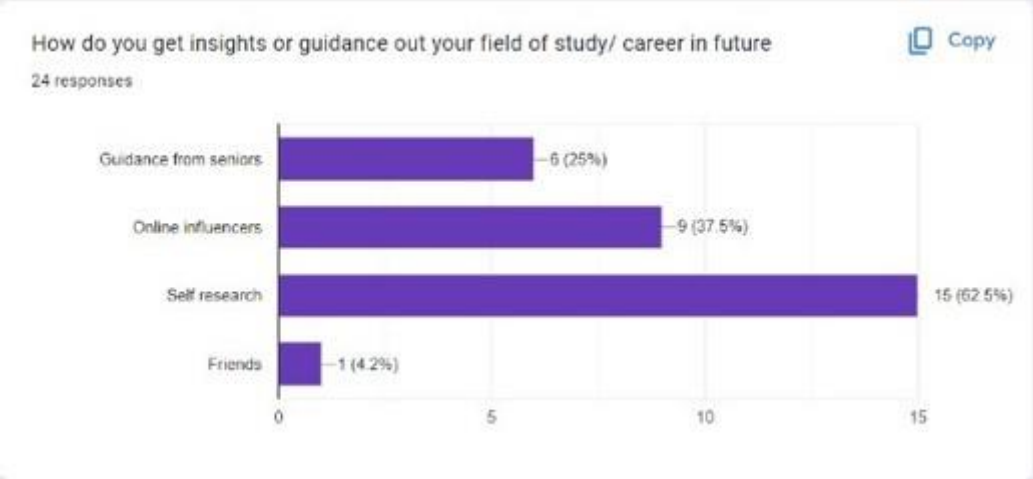


Figure 4

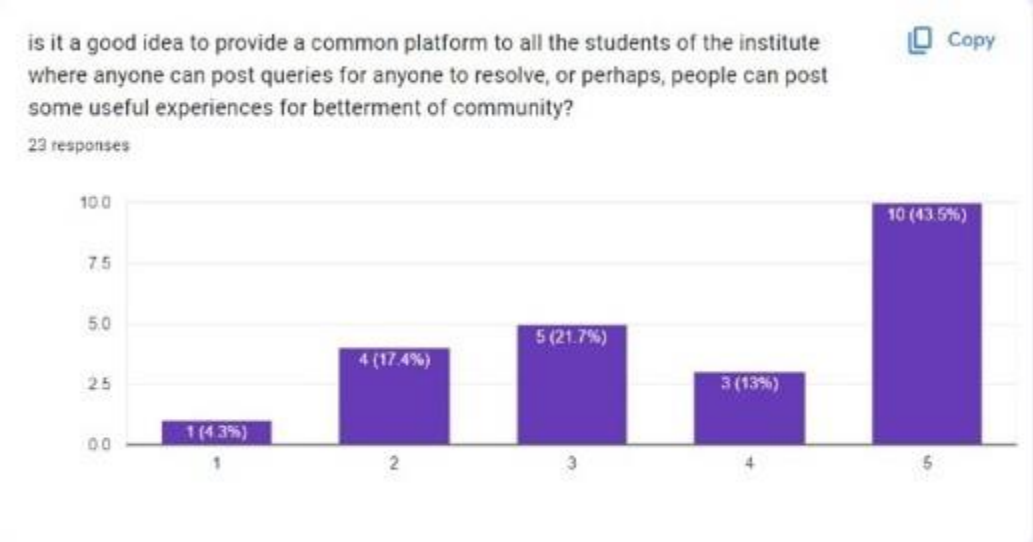


Figure -5

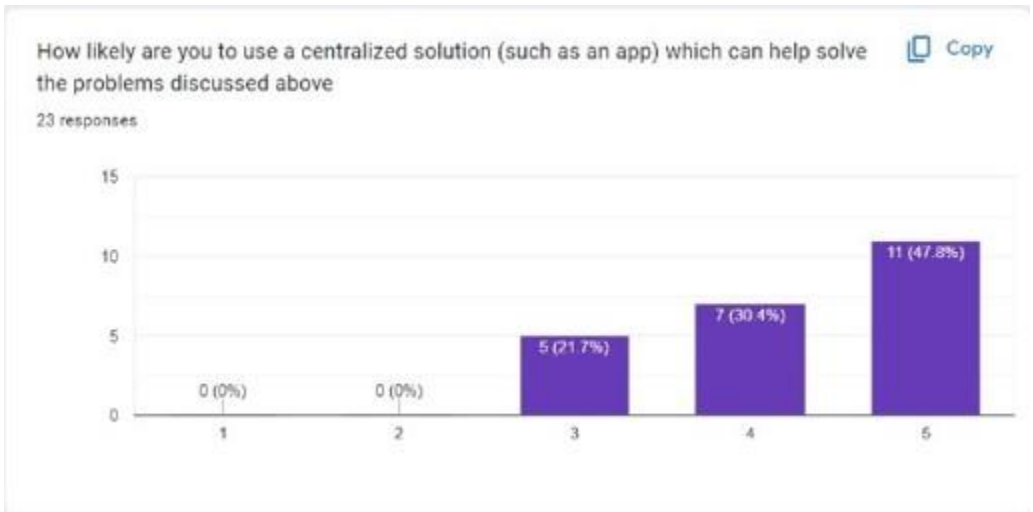


Figure 6

GENERAL DESCRIPTION

- **Product Perspective**
  The software system will function as a standalone platform tailored for the institute.

- **Product Functions**
  - **Resource Sharing**: Enable users to upload, share, and access resources such as documents, presentations, and multimedia files.
  - **Marks Dissemination**: Allow teachers to record and manage student marks records efficiently.
  - **Attendance Records**: Provide students with access to their attendance records, including attendance history and statistics.
  - **Notice Dissemination**: Enable authorized users to create and publish notices for the student body.

- **User Characteristics**
  Users of the platform will include students, faculty members, and authorized users such as Teaching staff or administrative staff. They may have varying levels of technical expertise and familiarity with similar systems.

FEASIBILITY STUDY

- **Market Analysis**:

  The demand for such a platform is evident in educational institutions worldwide, where there is a growing need for digital solutions to enhance collaboration and streamline administrative processes. Competitor analysis reveals that while some institutions have developed similar platforms, there is still room for innovation and improvement

- **Technical Feasibility**:

  The development of the platform requires expertise in web and mobile application development, database management, and user interface design. Necessary technologies and tools are readily available, and the institute can leverage existing infrastructure for *hosting and maintenance.

  *Hosting would be most likely done on cloud service platforms (such as appwrite, MongoDB etc.) and therefore, hosting services would not be required from the institute

- **Financial Feasibility**:

  Initial cost estimates include expenses for development, implementation, and ongoing maintenance. Since this is a student project, the development costs would be negligible as open source and/or free services would be prioritized over paid services

- **Risk Analysis**:

  Potential risks include technical challenges, user resistance to change, and competition from existing platforms (such as Gmail, Classroom, WhatsApp)

FUNCTIONAL REQUIREMENTS:

1. **User Registration and Authentication**:

   - Users must be able to create accounts and log in.
   - User authentication should be secure.
   - Provide an option for social media login.

2. **Resource Browser**:

   - Display the resources categorised according to type.
   - Include accompanying images, detailed descriptions about the resources.
   - Allow users to search for particular files(s) by keyword and filter results.

3. **Resource upload portal**:

   - Provide a method to submit resources (such as notes, useful links, PYQs, etc.) to the platform
   - Might require moderation

4. **Marks upload:**

   - Provide faculty users a user-friendly interface to update marks of each class.
   - Display the marks report of student branch-wise.
   - Edit and Delete marks record individually in case of conflicts
   - Student should be able to review his/her marks

5. **Create announcement:**

   - Allow faculty users or elevated accounts (such as accounts of clubs) to issue notices.
   - The announcements would be forwarded only to relevant students or groups

6. **Admin Panel:**

   - Provide an admin panel for managing user accounts.
   - Moderate resource portal periodically.

NON-FUNCTIONAL REQUIREMENTS:

1.**Usability**:

- The website should have an intuitive and responsive design.
- User friendly design is a must
- Tasks should be minimal and time saving and should not seem like a chore

2. **Scalability**

- Design the website to handle increased traffic as database/ number of users grows

3. **Manageability**

- Regular resolution of user queries by Admin.

4.**Compatibility**

- The website should be compatible with most of the devices.
- A web-app would be compatible for this task.

GOALS AND GUIDELINES

Goals:

- ### Efficiency

  The goal is to reduce the time and effort spent on manual attendance tracking and resource sharing, allowing teachers to focus more on teaching and students to access resources easily. This will be achieved by implementing automated systems and user-friendly interfaces.

- ### Communication

  The system aims to improve communication between teachers and students by providing a platform for issuing notices and sending notifications, ensuring that important information reaches everyone in a timely manner. Additionally, features such as messaging and discussion forums will encourage interaction and collaboration among users.

- ### User-Friendly

  The focus of the project will be to design a system which is simple to operate and easy to understand. The project will include all features which helps in making it easy for both teachers and students to navigate and use its features effectively.

- ### Engagement

  By providing a platform for resource sharing and interaction, the system aims to increase student engagement with course materials and activities. Further features like point rewards for helping will also be included to help increase engagement in the platform.

- ### Convenience

  The system will offer convenient features such as mobile access, calendar integration, and reminders to make it easier for users to manage their schedules and stay updated with important events and deadlines. This will enhance overall user experience and satisfaction.

Guidelines:

- Centralized design
  The system will be designed with a focus on the needs and preferences of teachers and students, ensuring that it meets their requirements and enhances their user experience.

- Scalability

  The system will be built to accommodate a growing number of users and data, ensuring that it remains efficient and effective as the user base expands.

- Smooth Accessibility
  Accessibility features will be implemented to ensure that the system is usable by individuals with disabilities, complying with accessibility standards and guidelines.

- Compatible to various environments

  The system will be compatible with a variety of devices and browsers, ensuring that users can access it from any device without any compatibility issues.

- Promotes collaboration

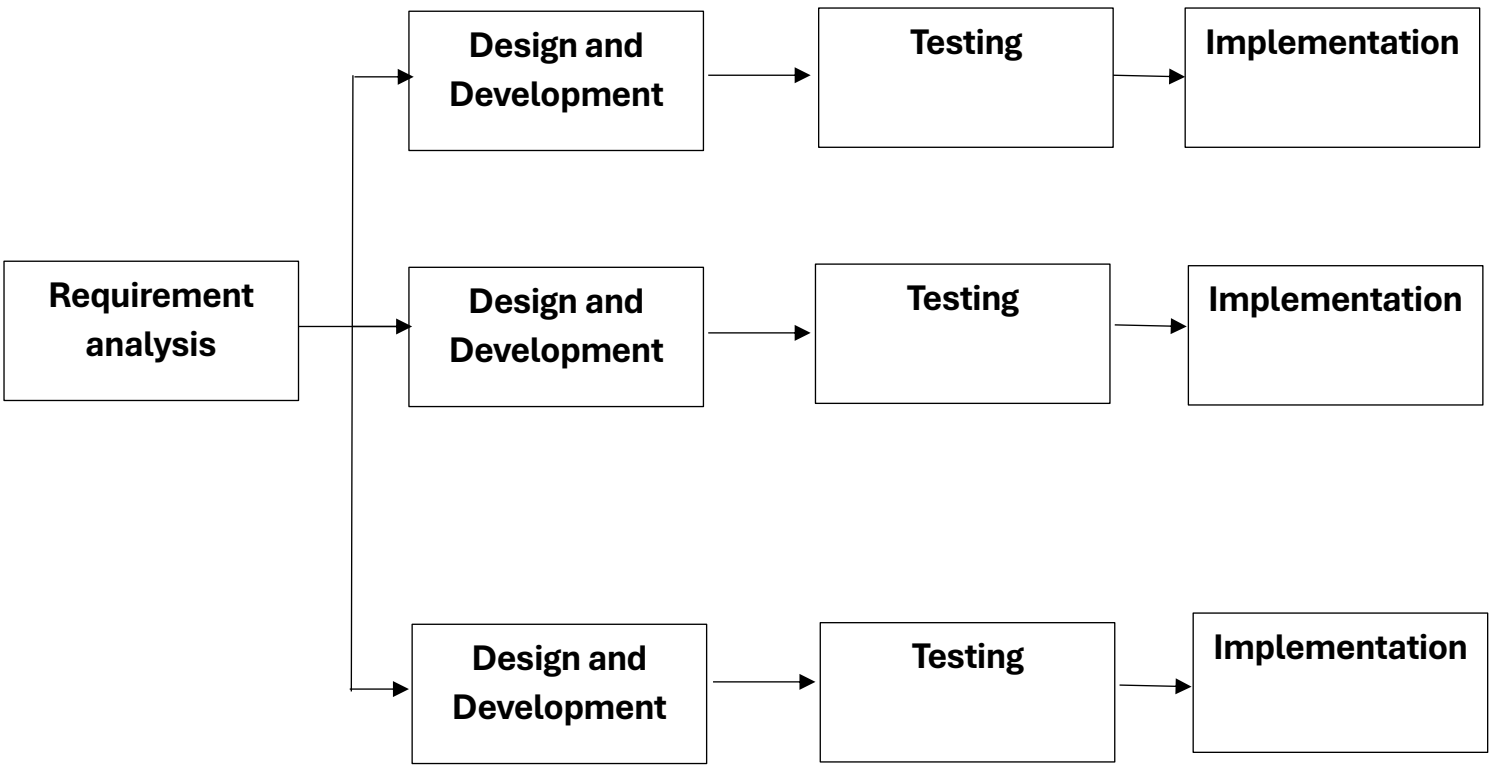
  The system will encourage collaboration between teachers and students by providing features such as group discussions, collaborative document editing, and shared calendars, facilitating teamwork and information sharing.

SDLC MODEL USED:

INCREMENTAL MODEL:

The development method used in the project is an incremental model. In this approach, after feasibility study and requirement analysis, the entire project is carefully broken into individual modules which individually undergo further steps like designing, development and coding, testing, and deployment.

The benefit of this model is that the client does not need to wait till the entire project is ready and a particular feature of the project can be implemented.



Reasons to use this model:

- instead of making the entire software at once, we first take some requirements and based on them create a module or function of the software and deliver it to the customer. Then we take some more requirements and based on them add another module to that software
- modules are added to the software in each increment until the complete system is created
- Important functionalities of the software are developed in the initial iterations.
- his model is flexible and less expensive to change requirements and scope.
- It is easier to test and debug during a short iteration.
- Errors are easy to identify

Challenges faced:

- The complete requirements of the software should be clear
- This requires good planning and designing
- The process may be exhausting due to multiple iterations
- Fake sense of completion

ARCHITECTURAL STRATEGIES

The architectural strategies of the project include the languages, frameworks and the various technologies used to develop the platform. The strategies are considered keeping in mind the best interest of the stakeholders.

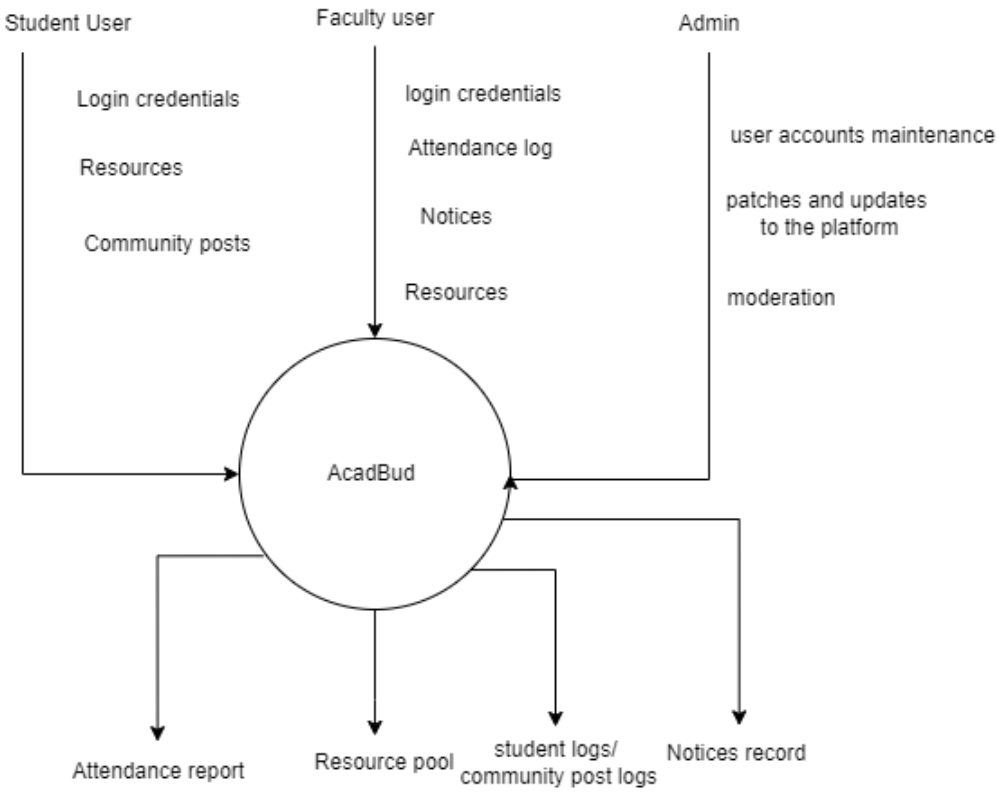
- **Programming Language and Frameworks**
  The platform will be developed with programming languages HTML, CSS AND JavaScript, etc., and will be complemented by frameworks like Django. This choices will ensure scalability, adaptability and compatibility of the platform.
- **Database Management**
  The system will utilize a relational database management system (RDBMS) such as MySQL, which are well-suited for handling structured data efficiently.

Further explaining the purpose of using the language and framework mentioned above:

1. **Frontend**:
   - **HTML, CSS, JavaScript**: These are the foundational technologies for building the user interface of the platform. HTML provides the structure, CSS is used for styling, and JavaScript adds interactivity to the web pages.
   - **Tailwind CSS**: Tailwind is a popular CSS framework that provides pre-designed components and styles, making it easier to create responsive and visually appealing web pages.
2. **Backend**:
   - **Express js**: Express.js is a minimal and flexible Node.js web application framework that provides a robust set of features to develop web and mobile applications. It is designed for building single-page, multi-page, and hybrid web applications.
   - **Node**: Node.js is a free, open-source, cross-platform JavaScript runtime environment that lets developers create servers, web apps, command line tools and scripts.
3. **Database**:
   - **NoSQL:** mongoDB uses NoSQL to store data in the backend, making the database management process easier and efficient
   -

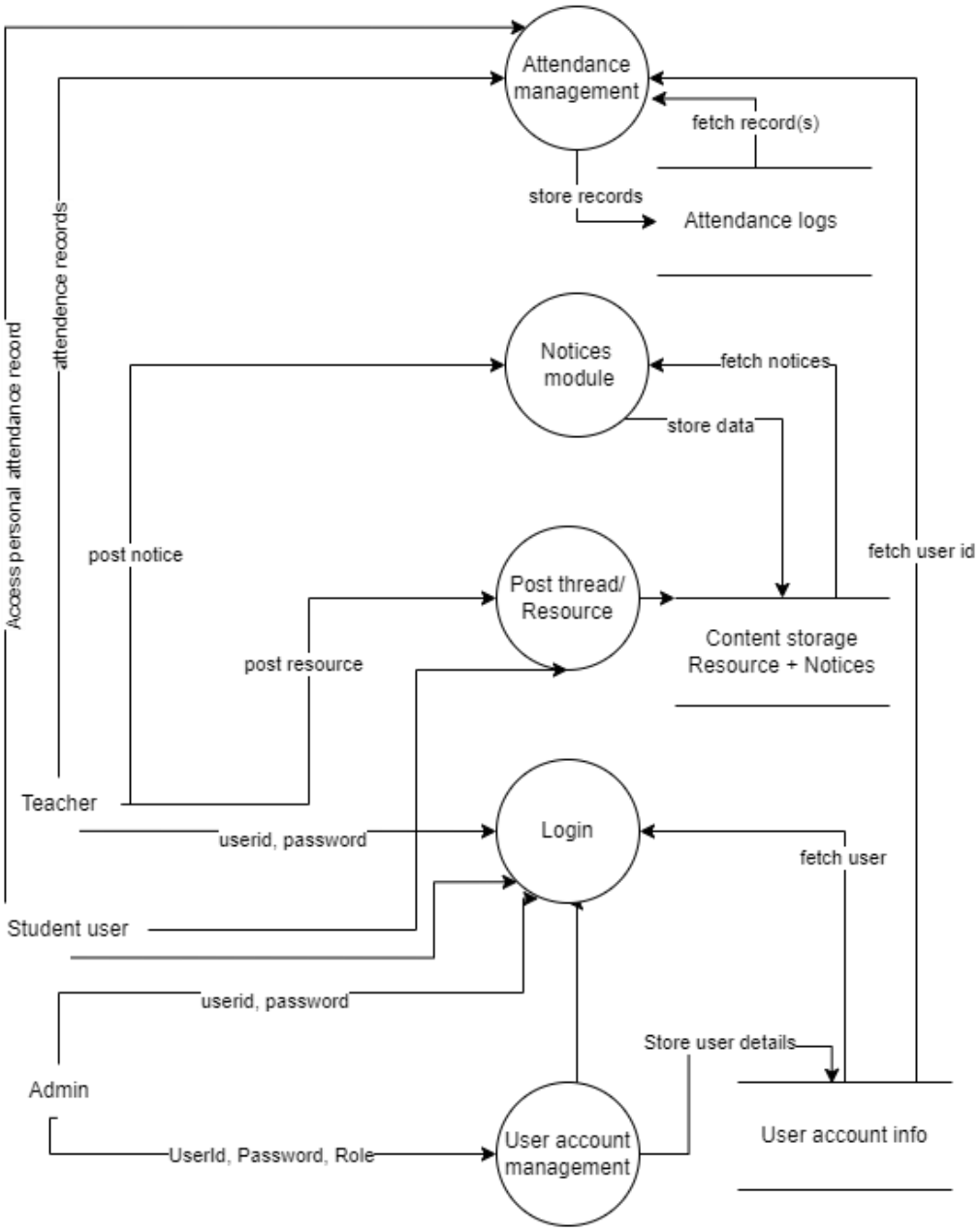
DATA FLOW DIAGRAMS

Level zero DFD:



LEVEL 0 DFD

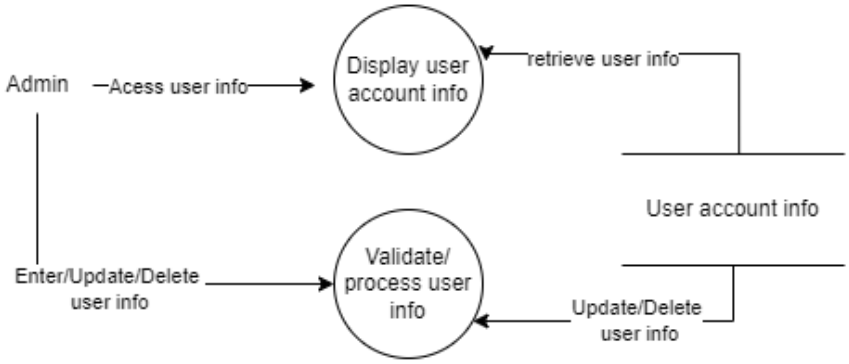
Level One DFD:



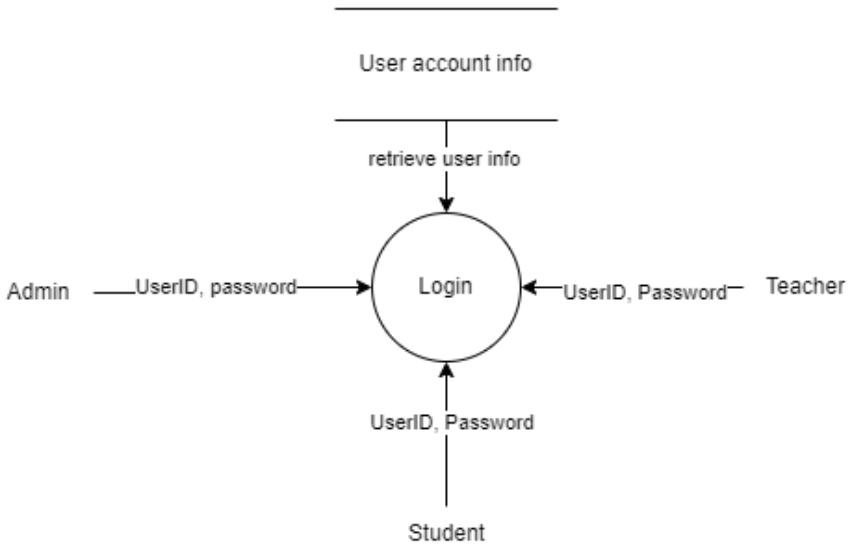
LEVEL 1 DFD

Level Two DFD:

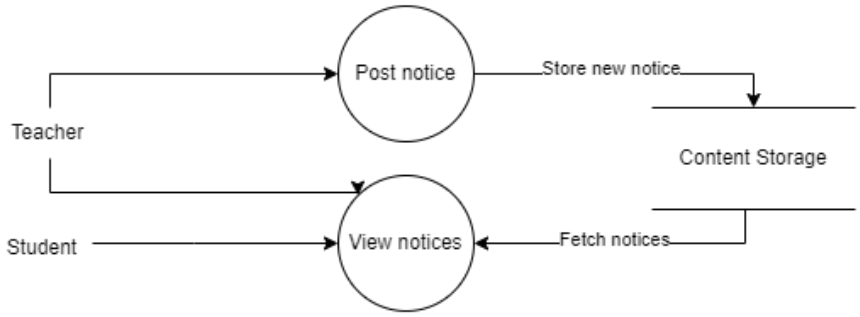
1. User account maintenance



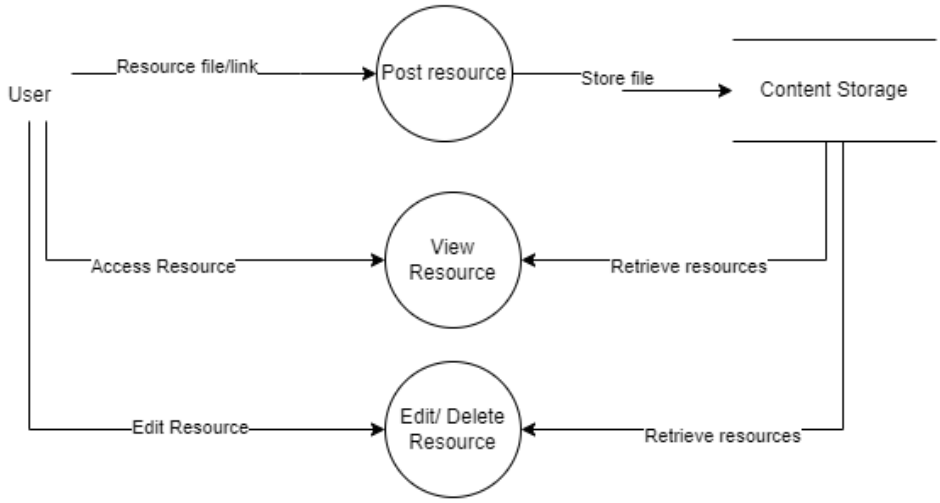
2.Login



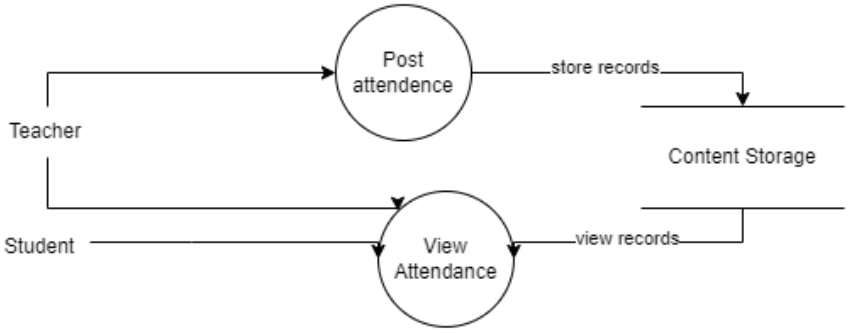
4.Notice Posting



5. Resource Library

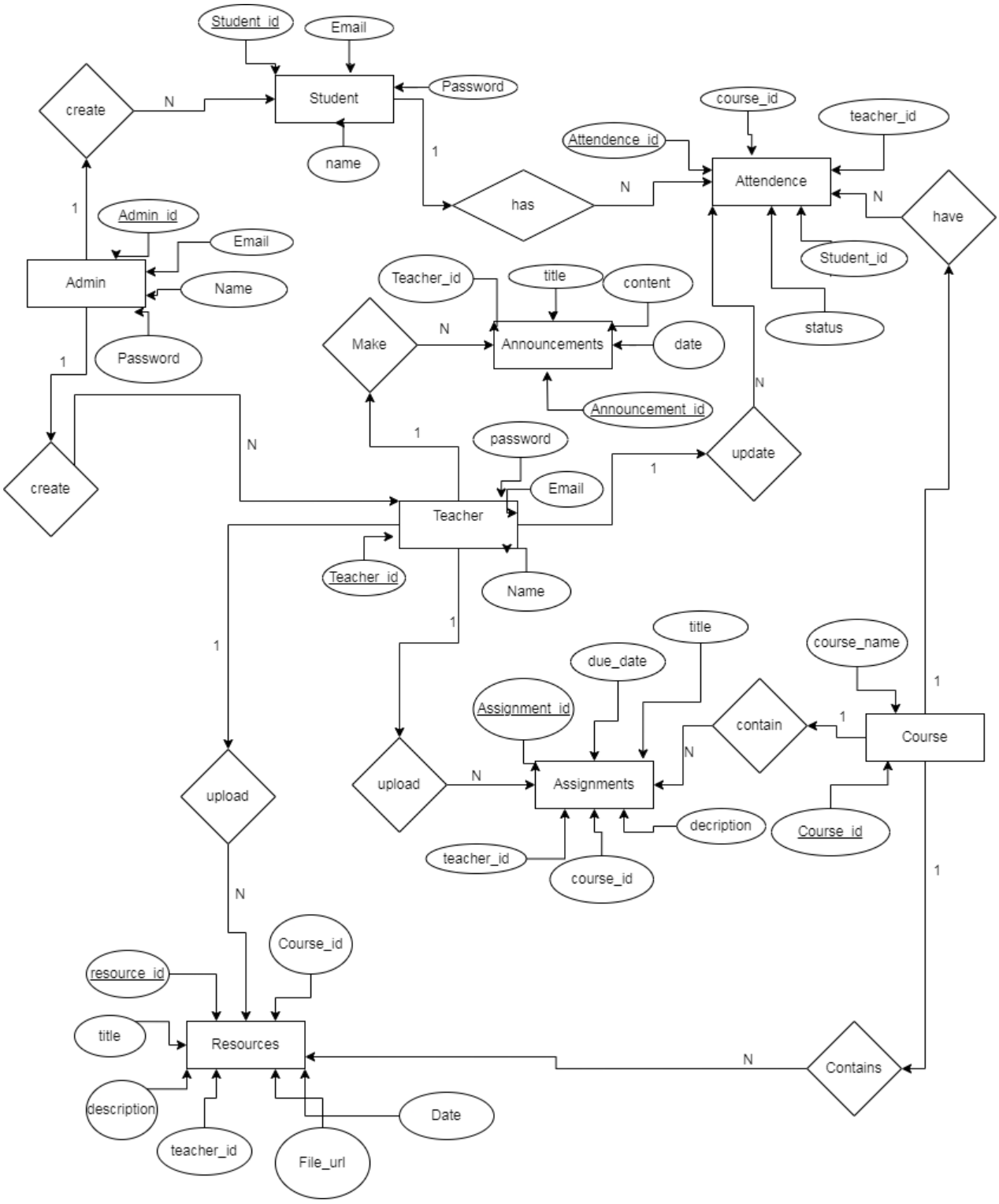


6. Attendance management

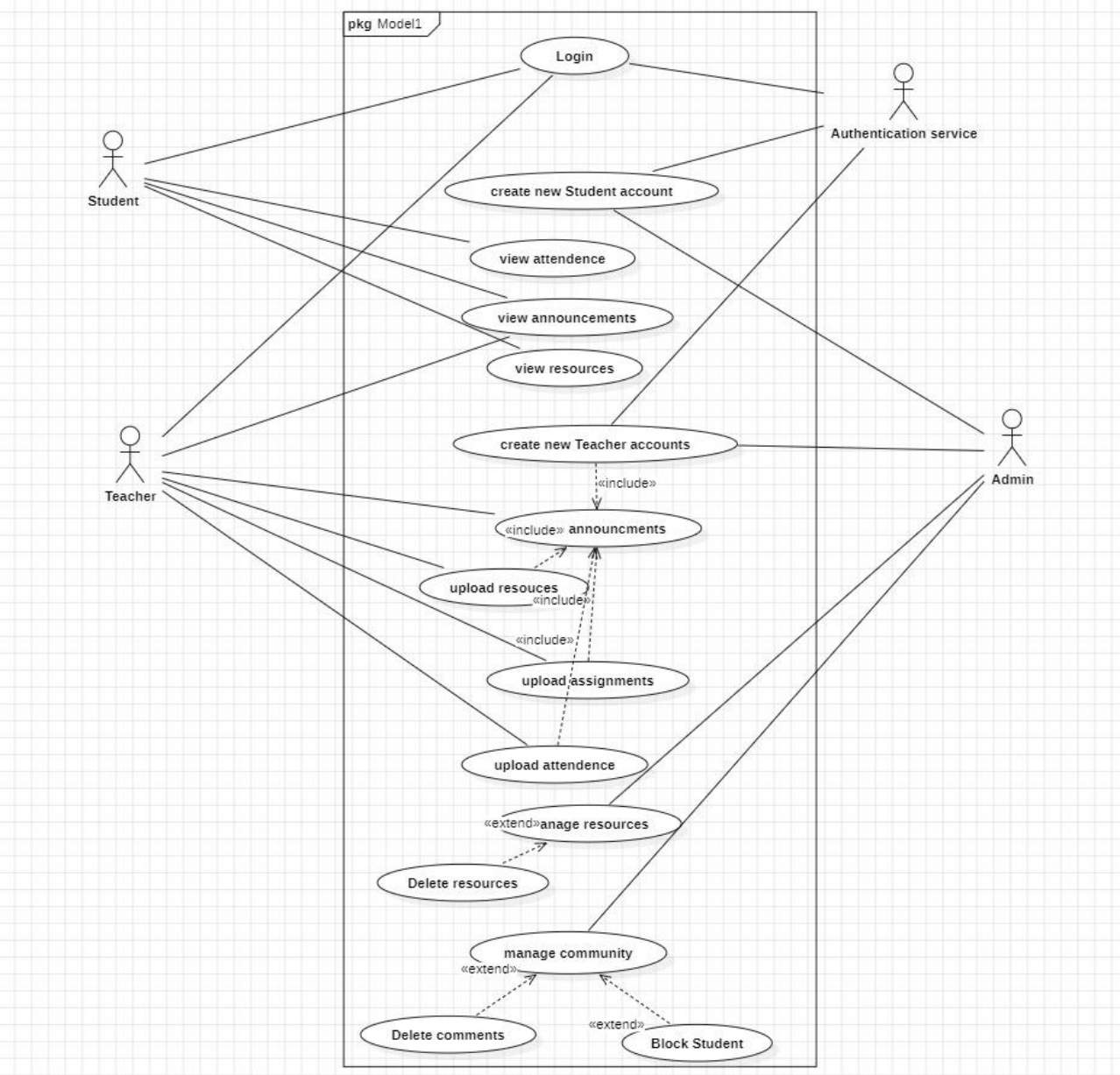


LEVEL 2 DFD

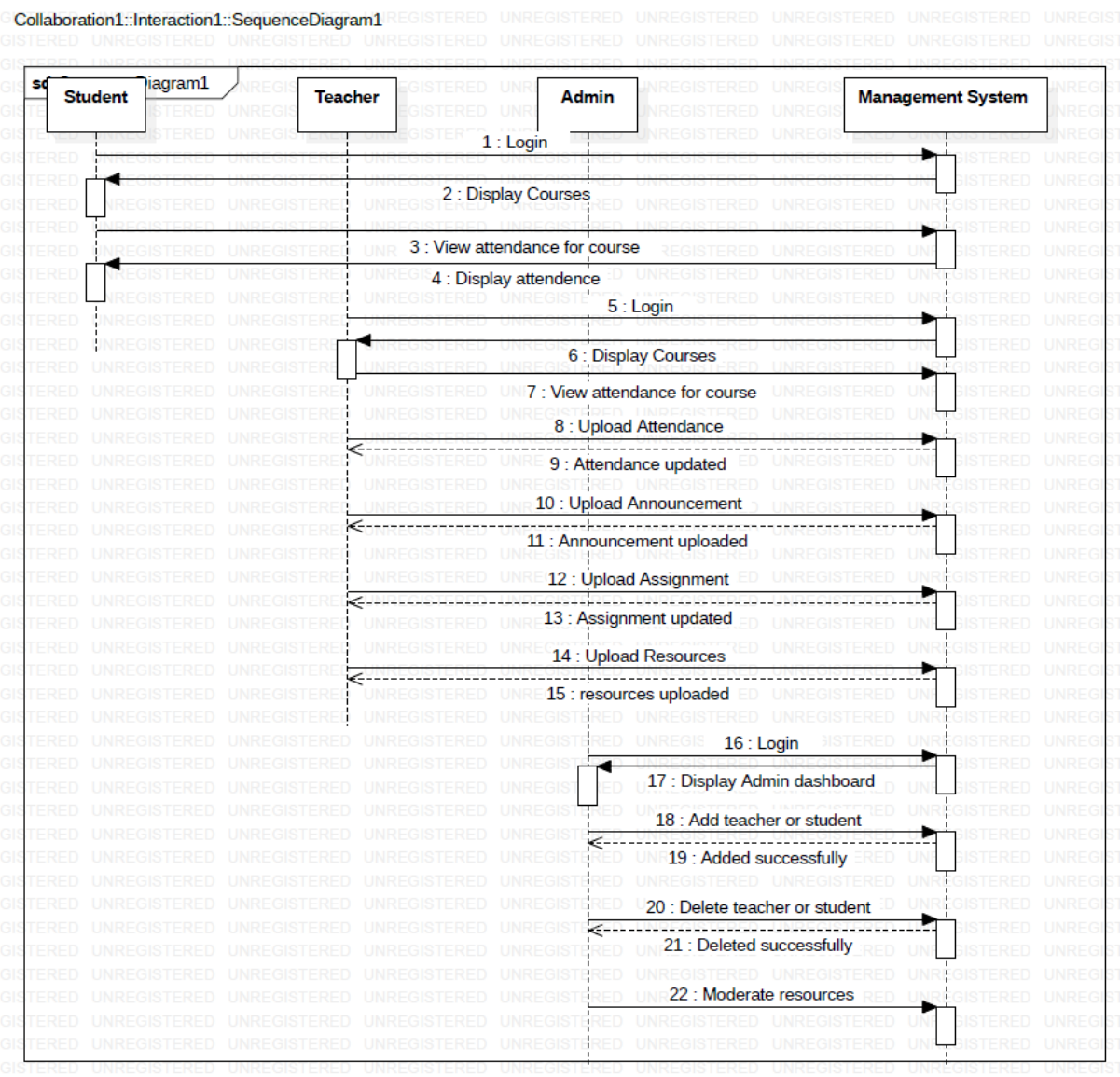
ER DIAGRAM


Student_id
Email
Student
Password
name
create
N
1
course_id
teacher_id
Attendence_id
Attendence
N
N
have
has
1
Admin_id
Email
Admin
Name
Password
Student_id
status
Teacher_id
title
content
Make
N
Announcements
date
Announcement_id
N
1
password
Email
update
1
create
N
Teacher
Teacher_id
Name
1
1
title
course_name
due_date
Assignment_id
contain
1
1
Course
N
upload
upload
N
Assignments
decription
Course_id
teacher_id
course_id
1
N
Course_id
resource_id
title
Resources
N
Contains
description
Date
teacher_id
File_url

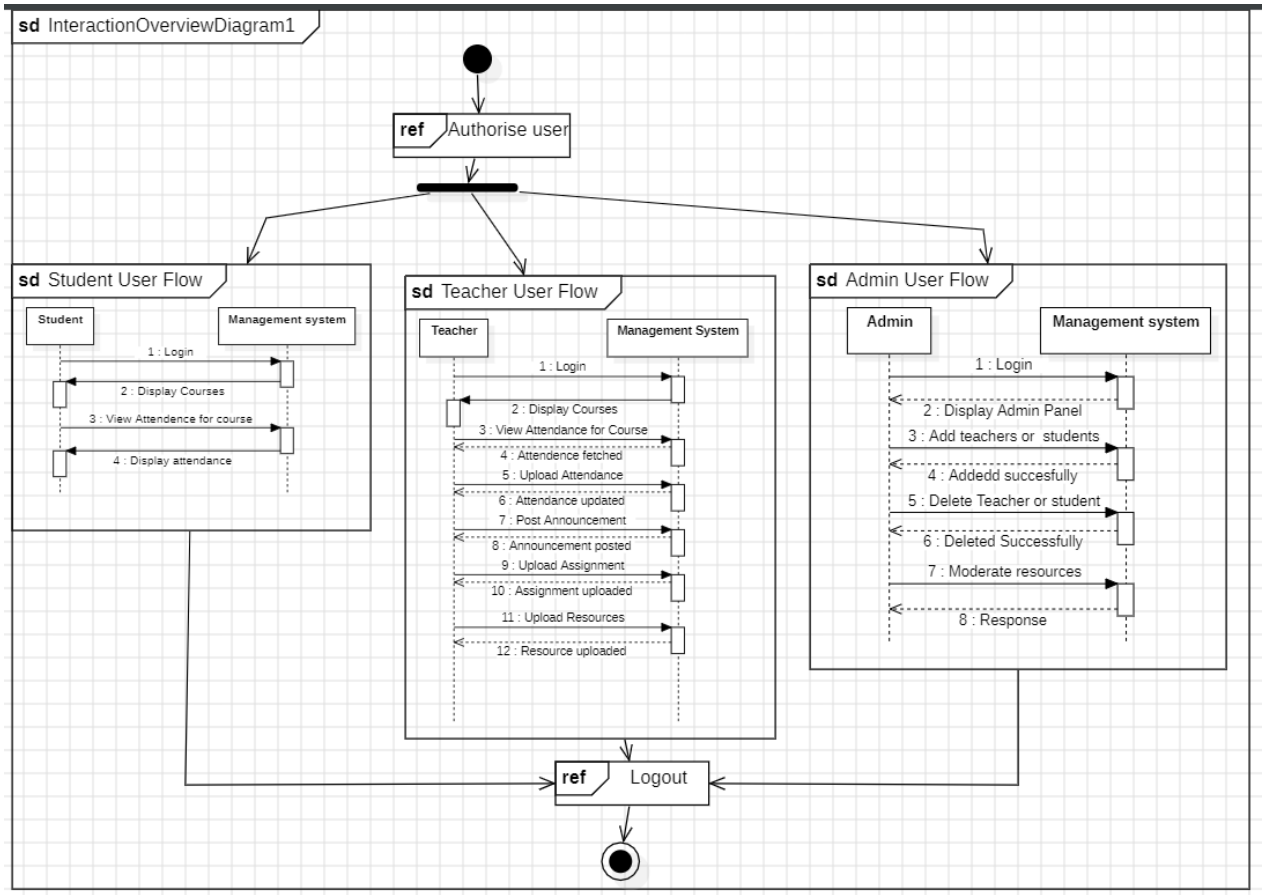
USE CASE DIAGRAM



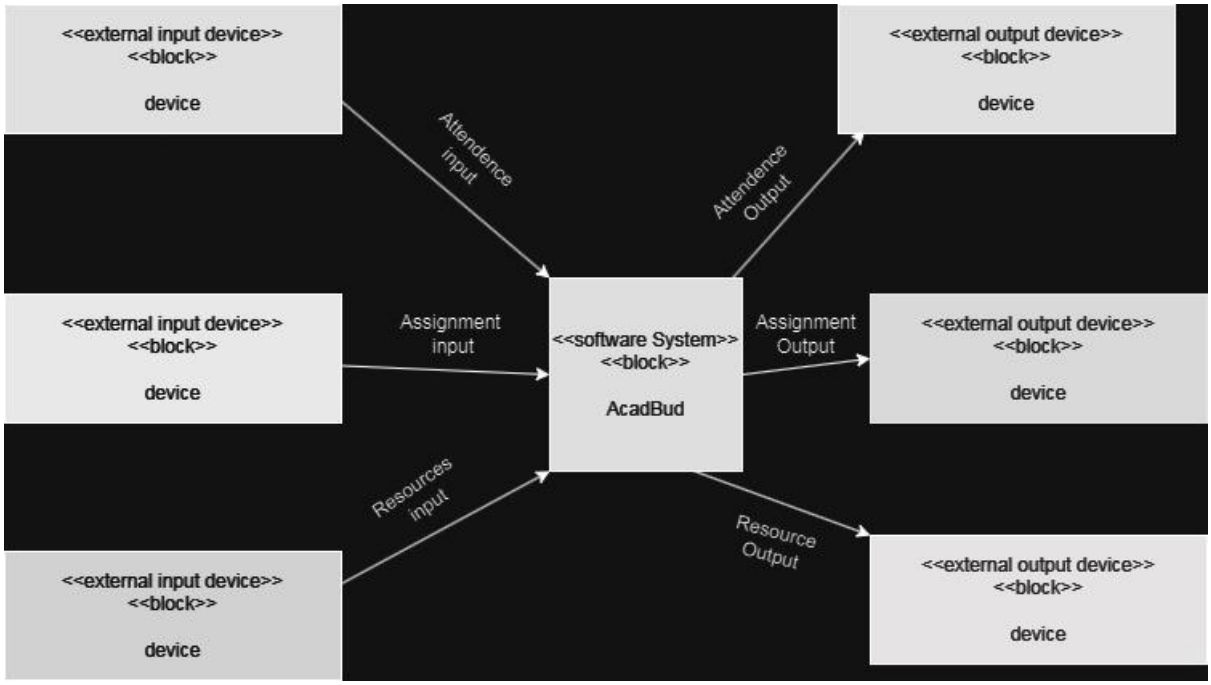
SEQUENCE DIAGRAM



INTERACTION OVERVIEW DIAGRAM

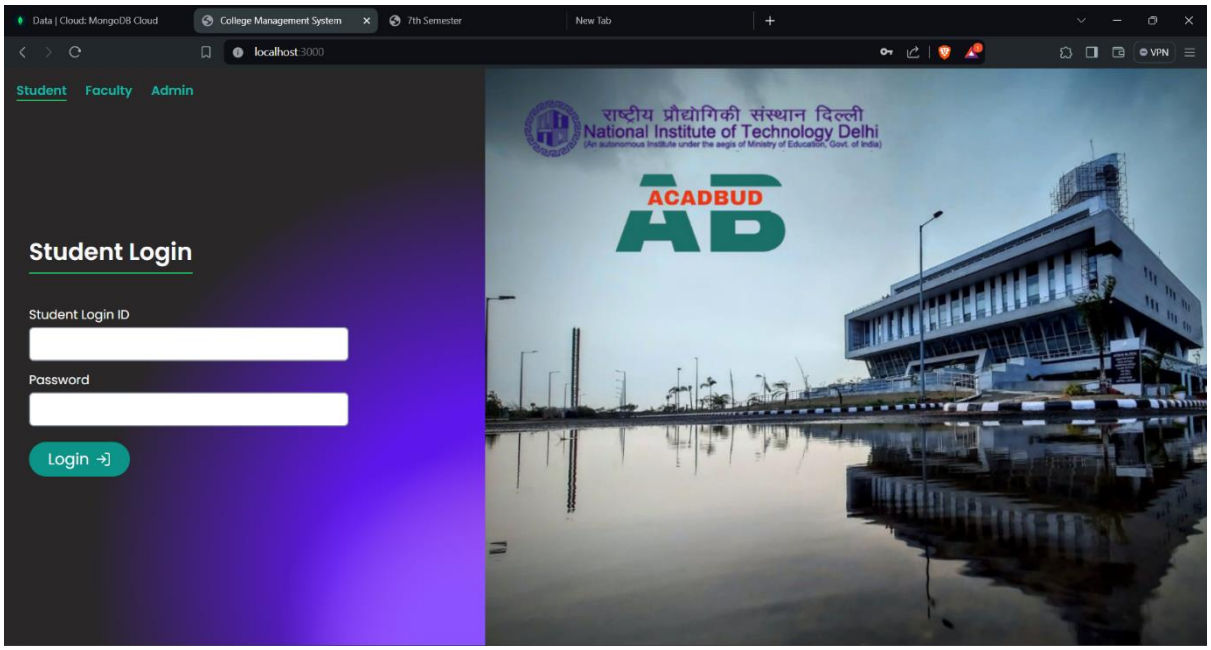


Contextual Model



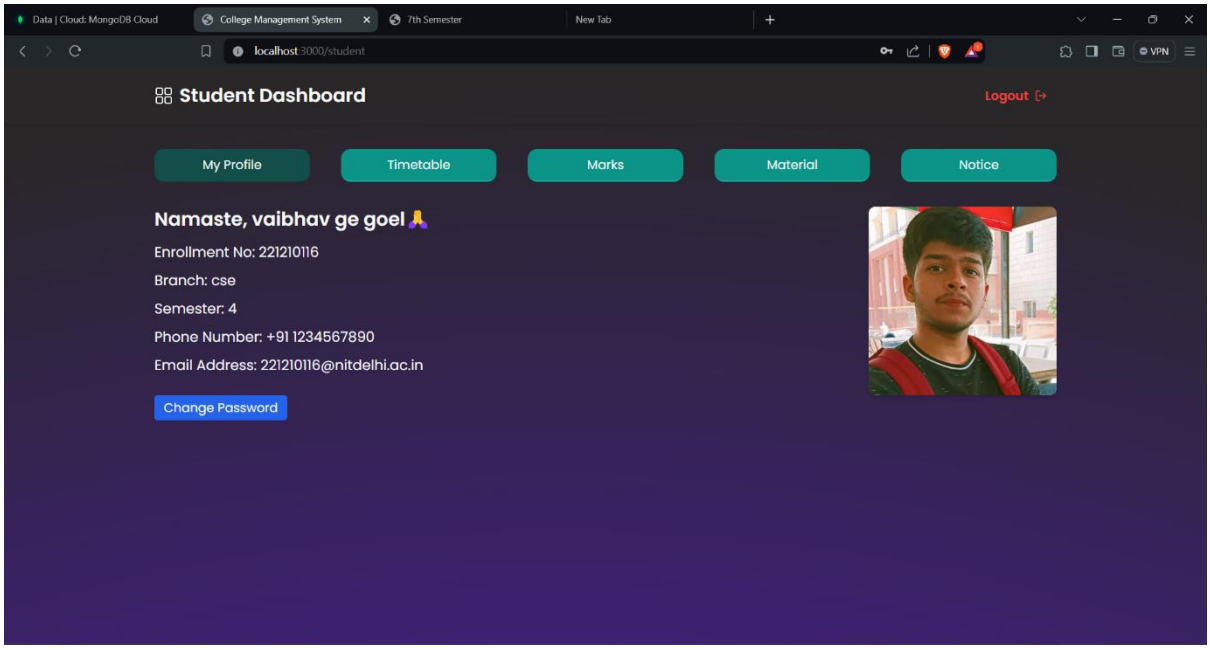
IMPLEMENTATION

1. Home Page

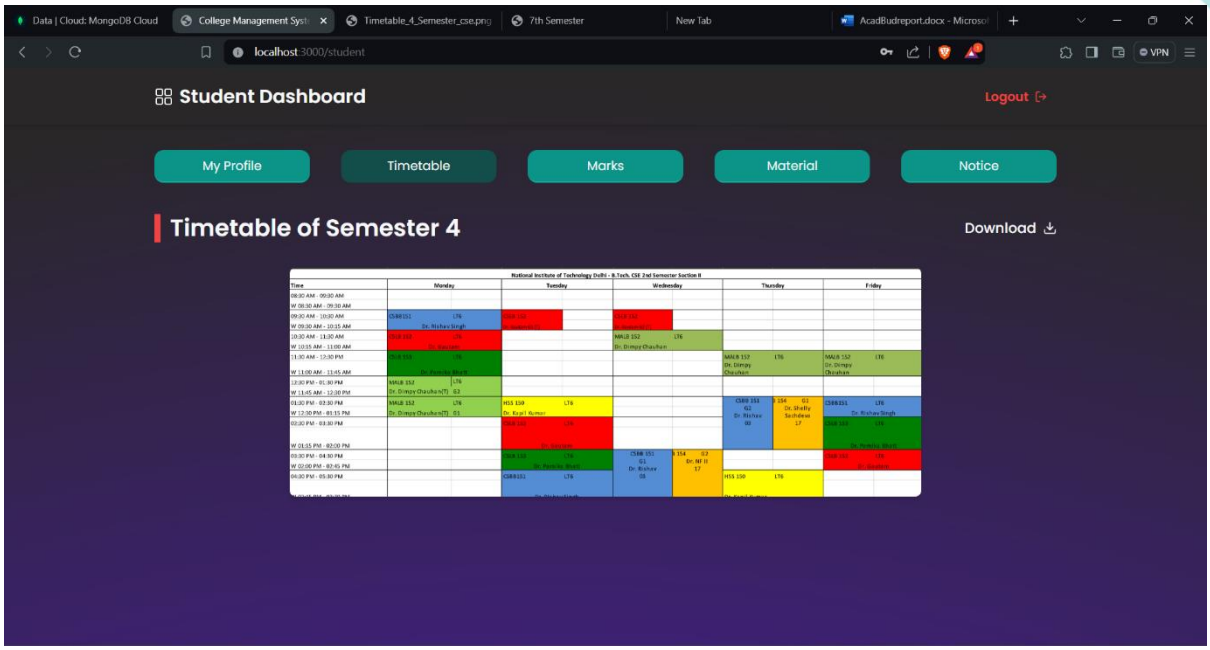


2. Student Facilities

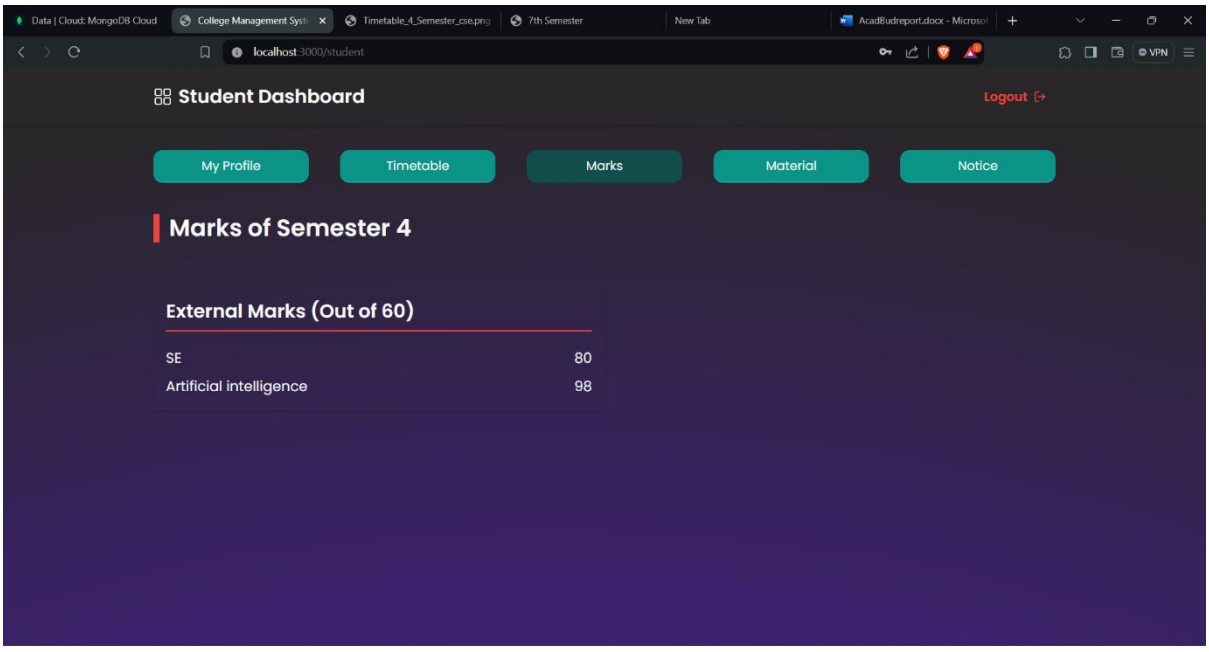
2.1 Profile



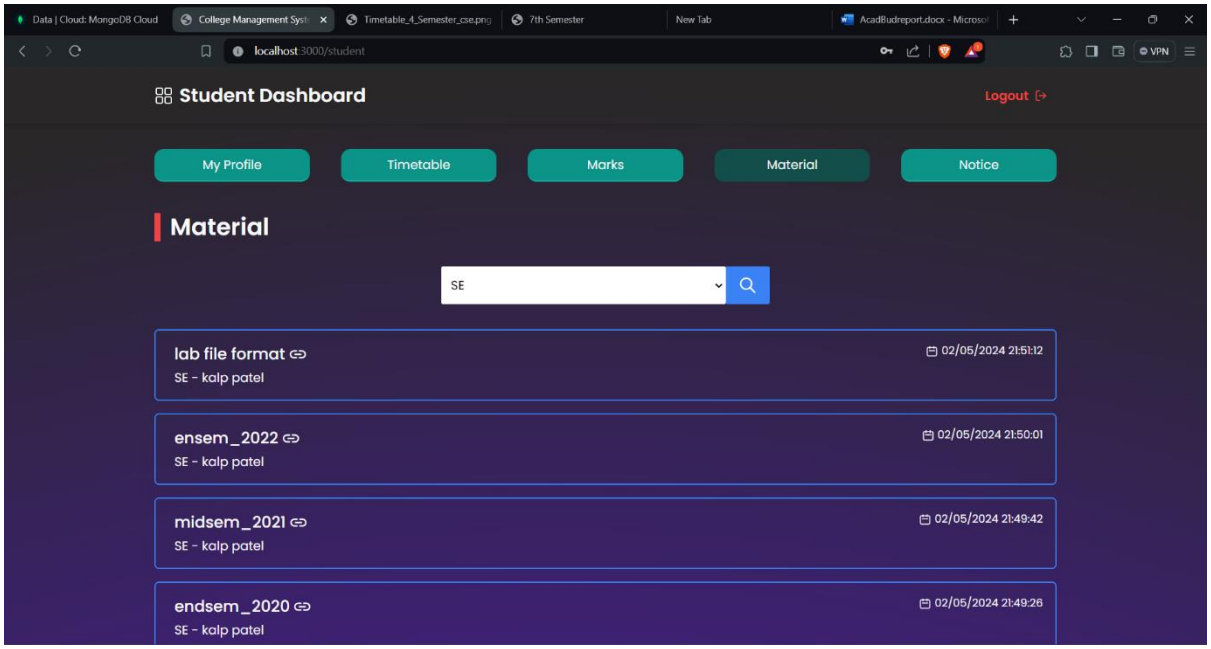
2.2 View Time Table



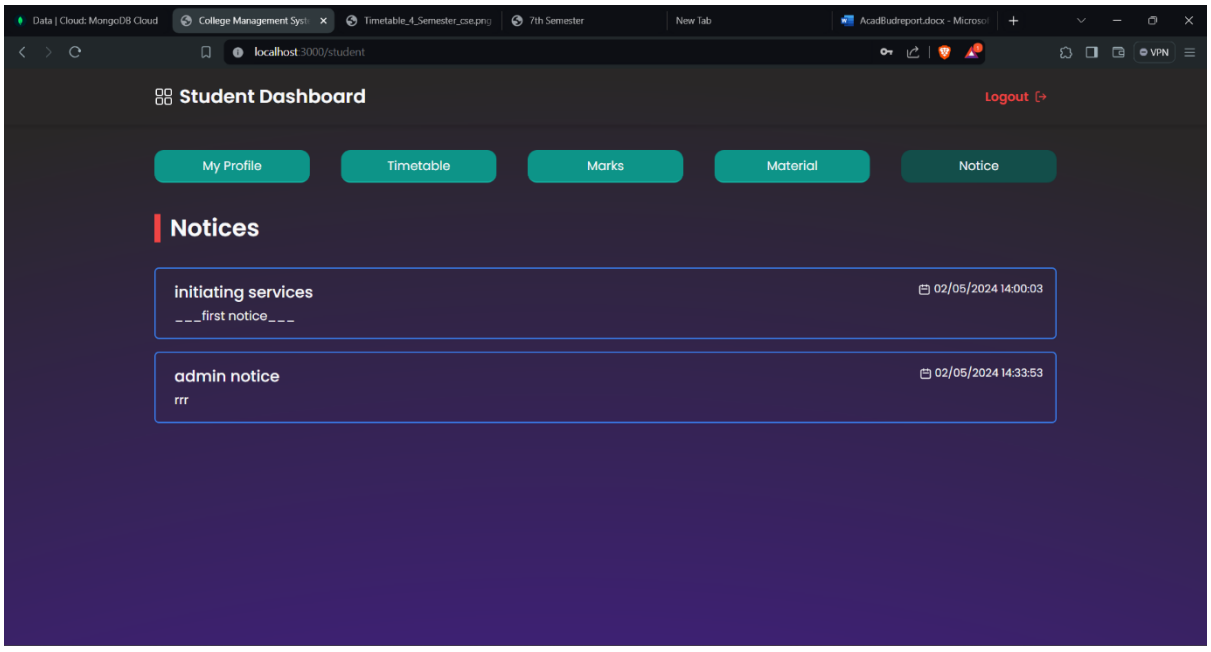
2.3 View marks



2.5 View Materials

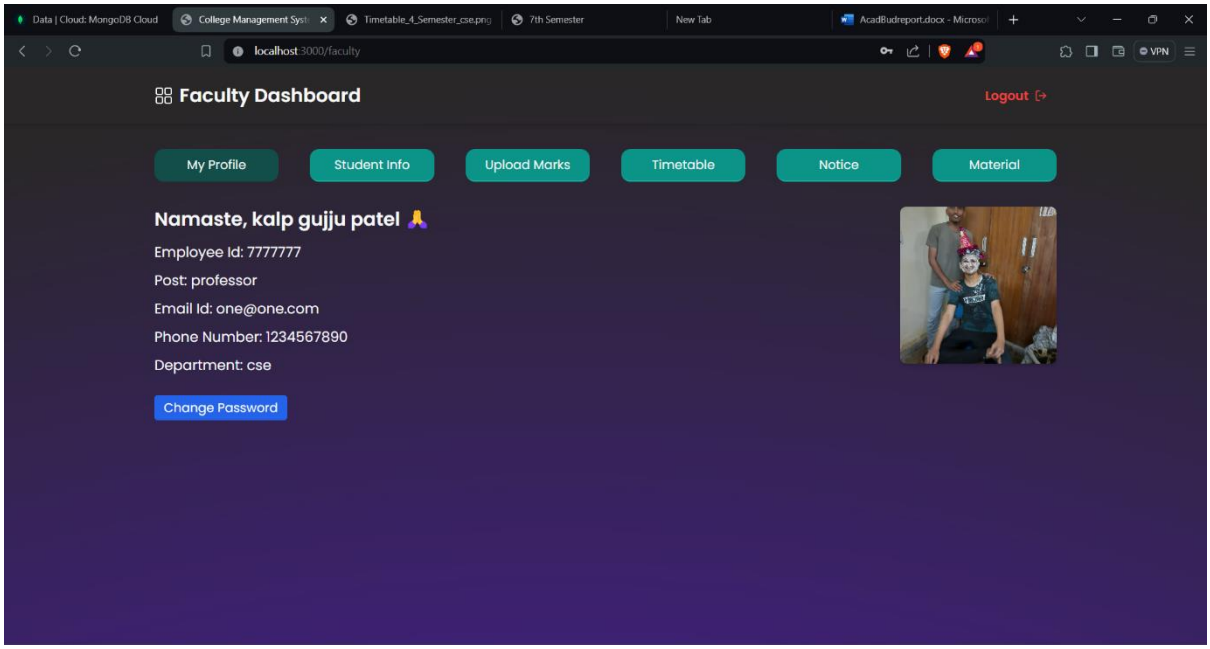


2.6 View Notices

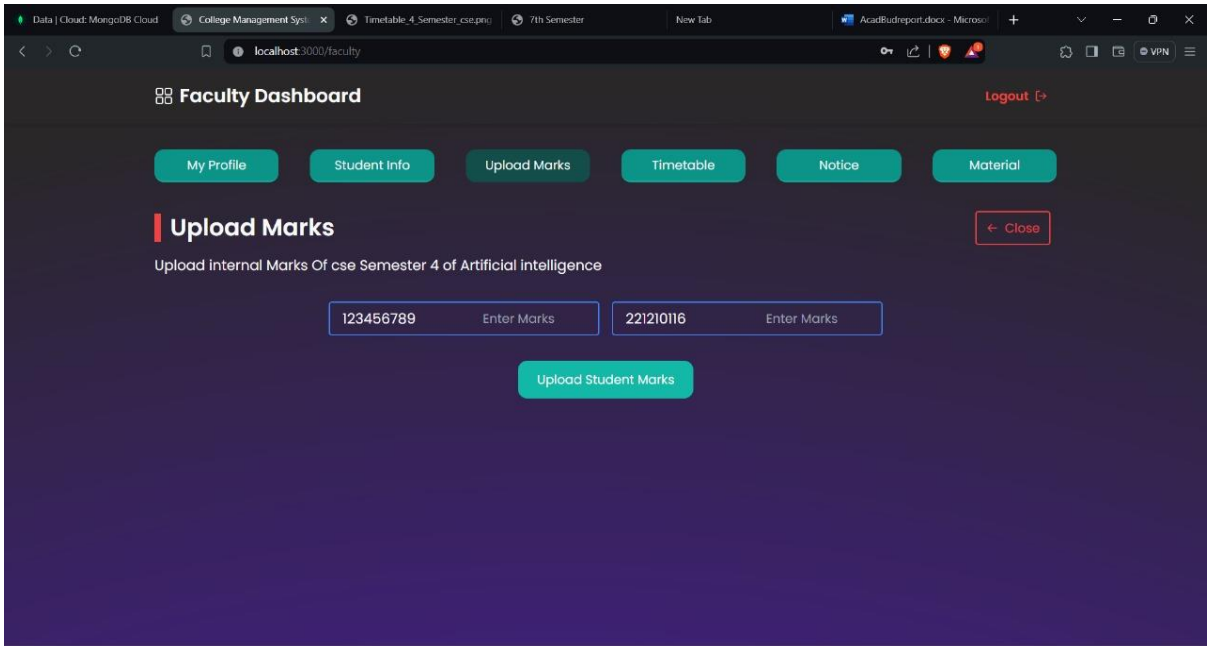


3. Faculty Facilities

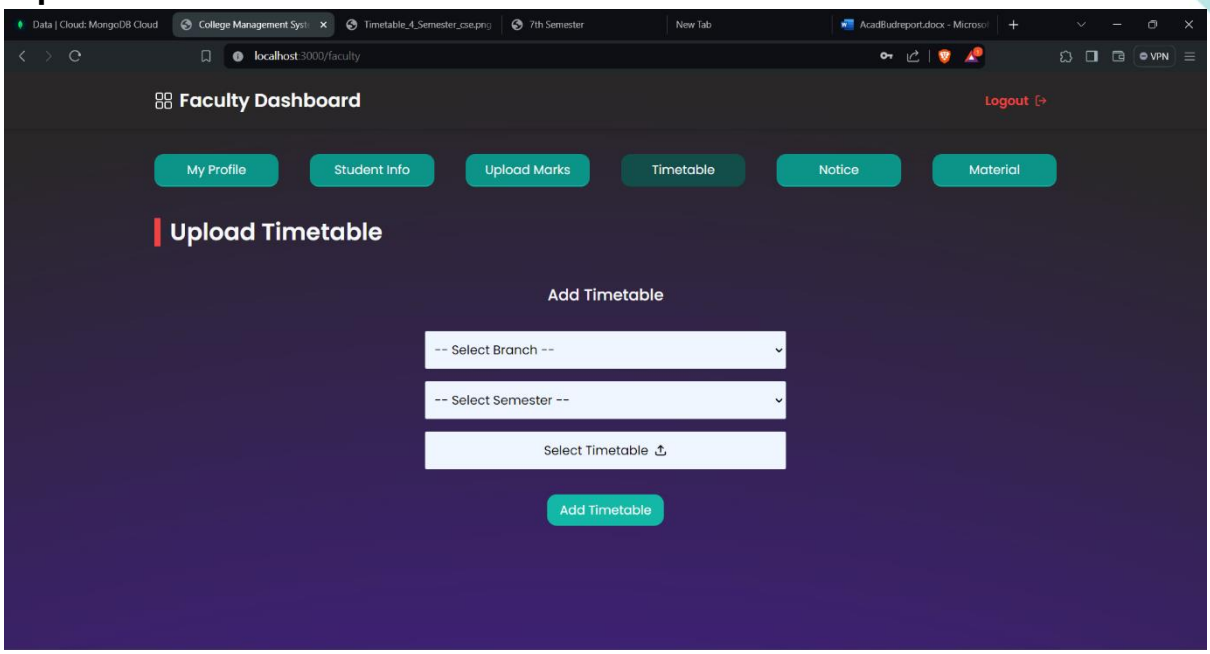
3.1 Profile



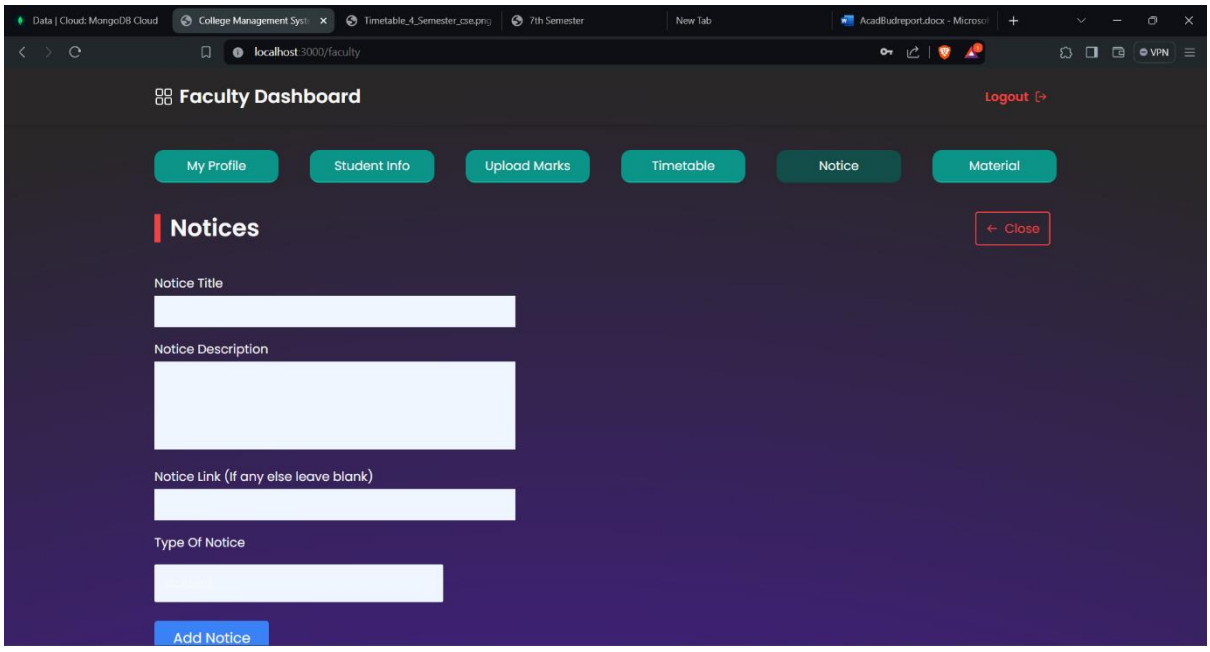
3.2 Marks Upload Module



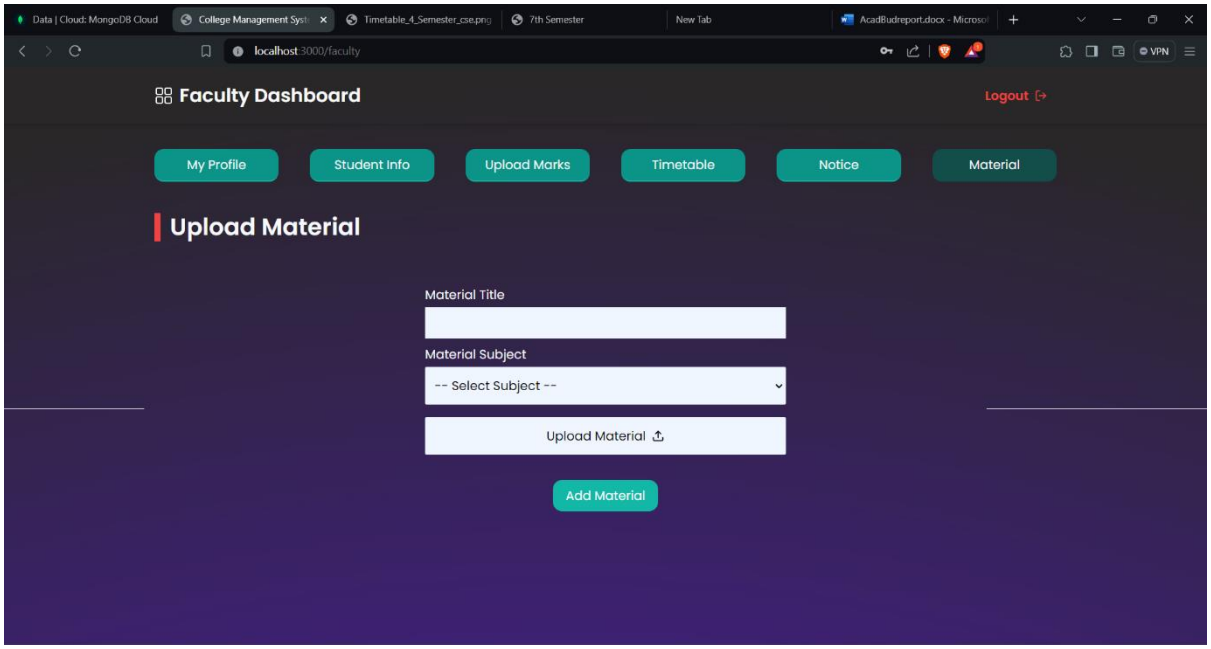
3.3 Upload Time table



3.4 Notice posting module

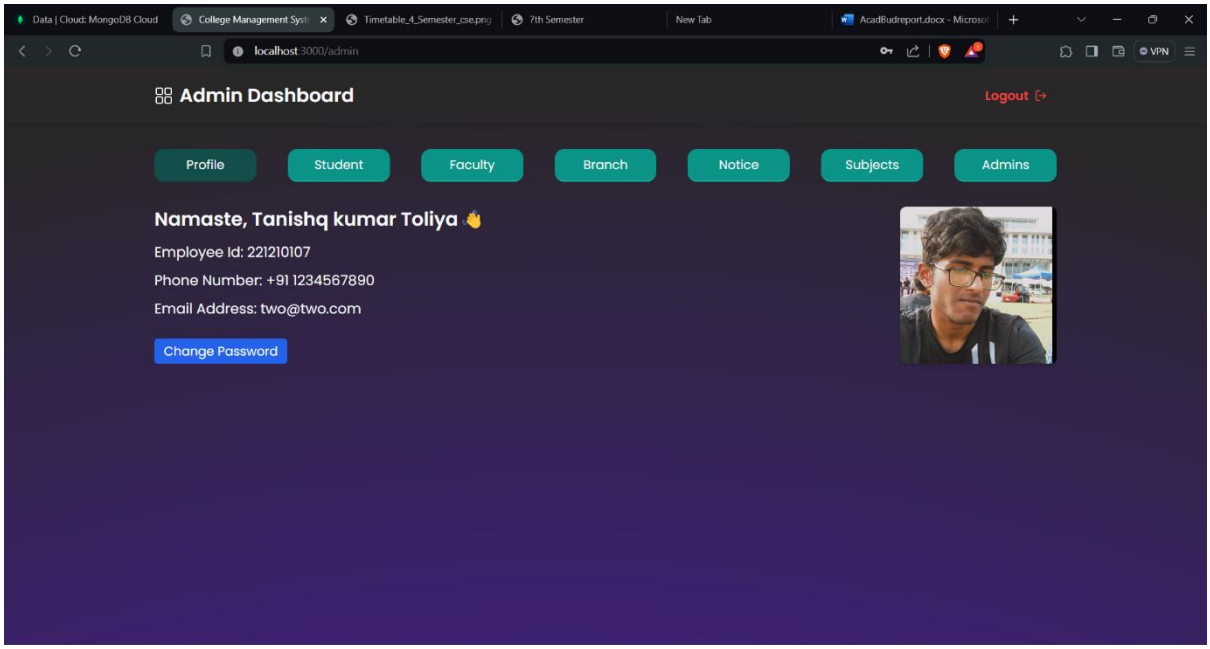


3.6 Upload Material

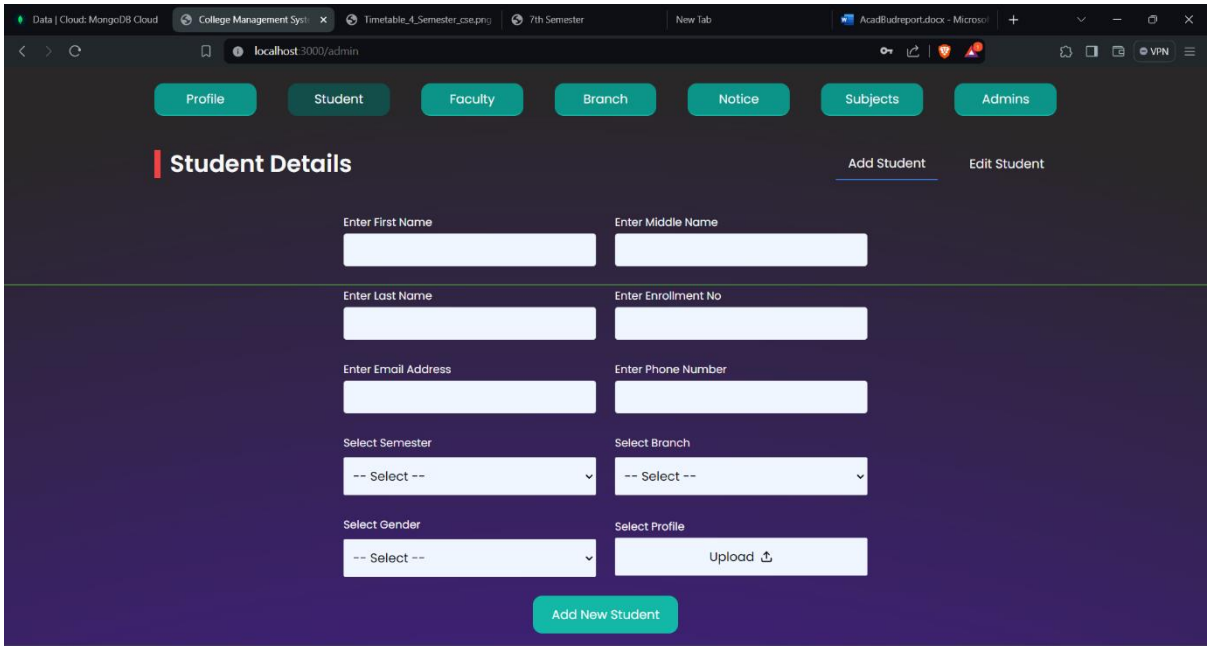


4. Admin Facilities

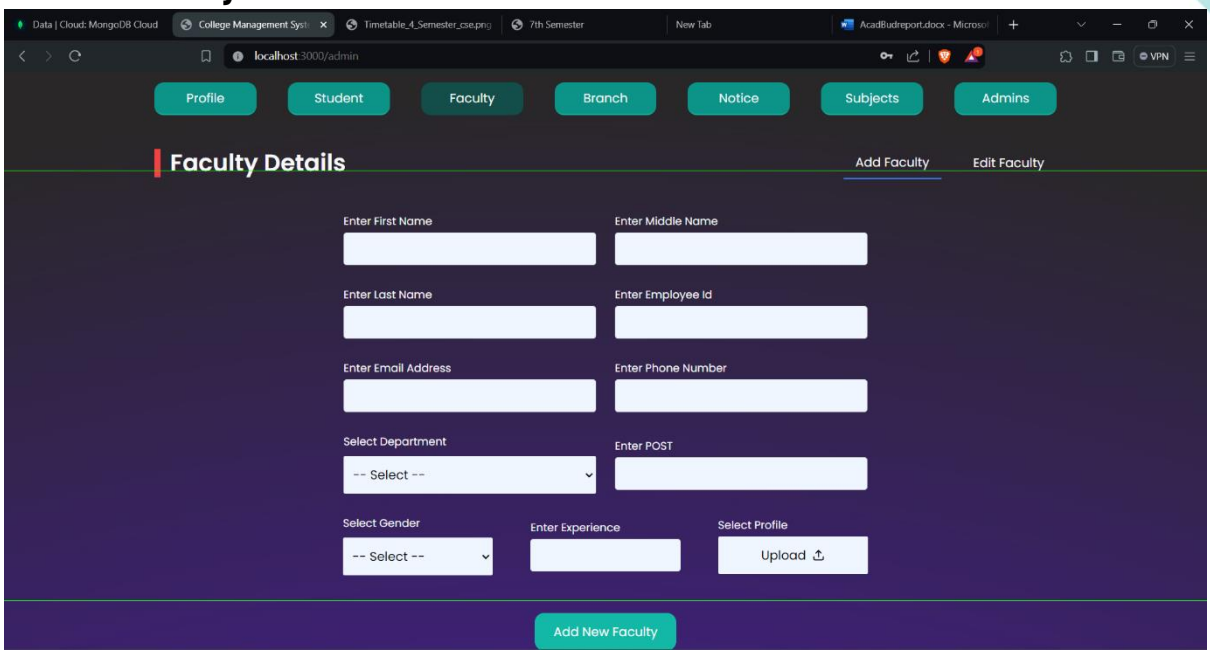
4.1 Admin Profile



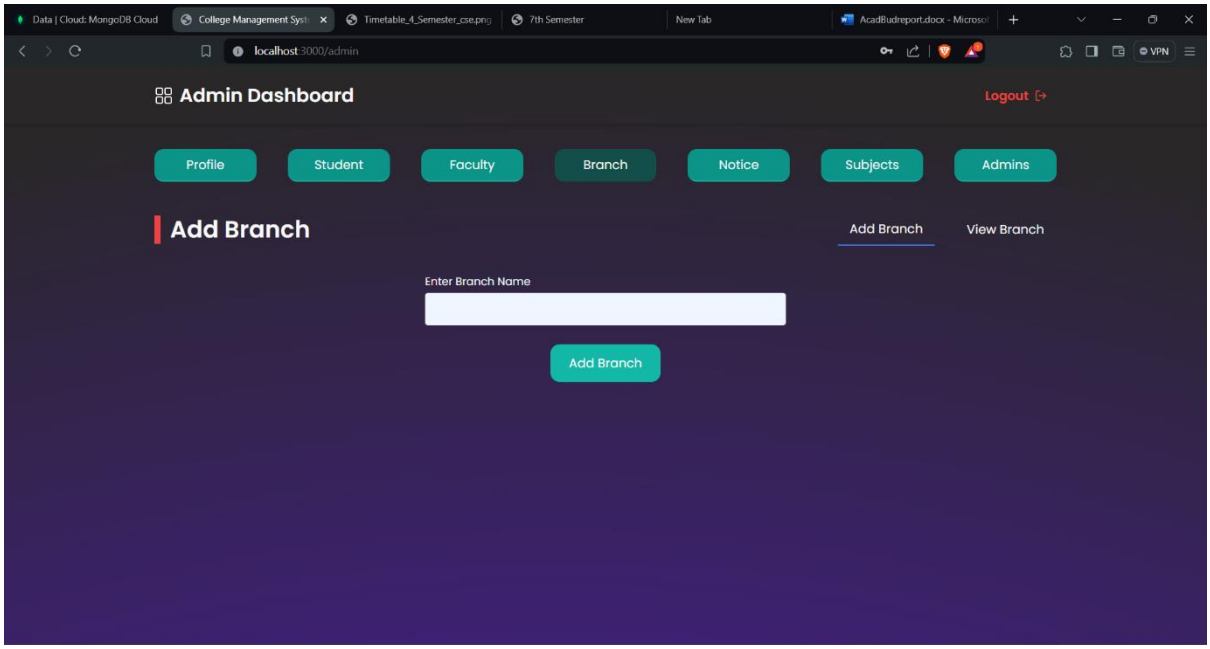
4.2 Add student details



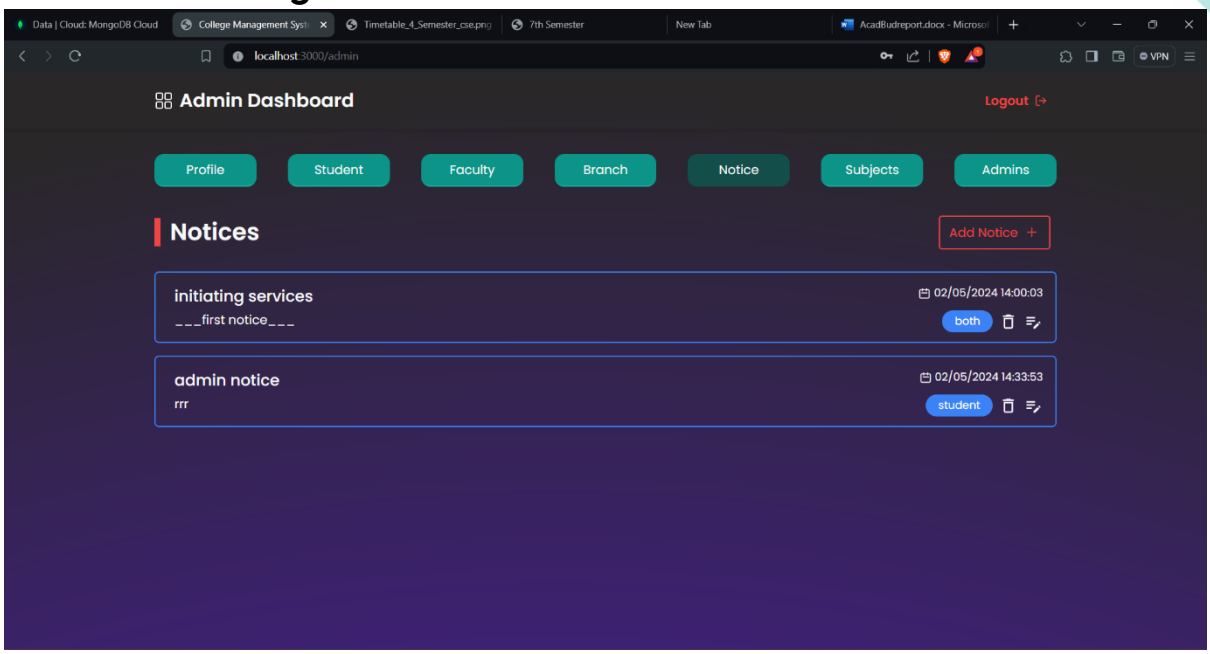
4.3 Add faculty



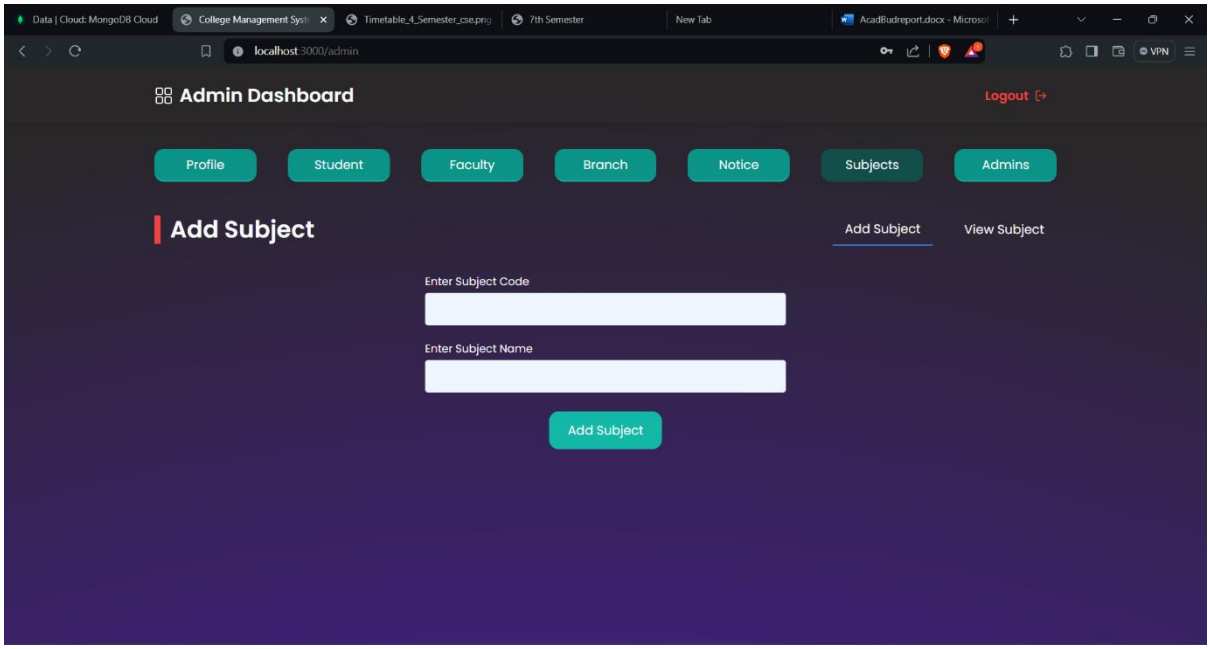
4.4 Add Branch



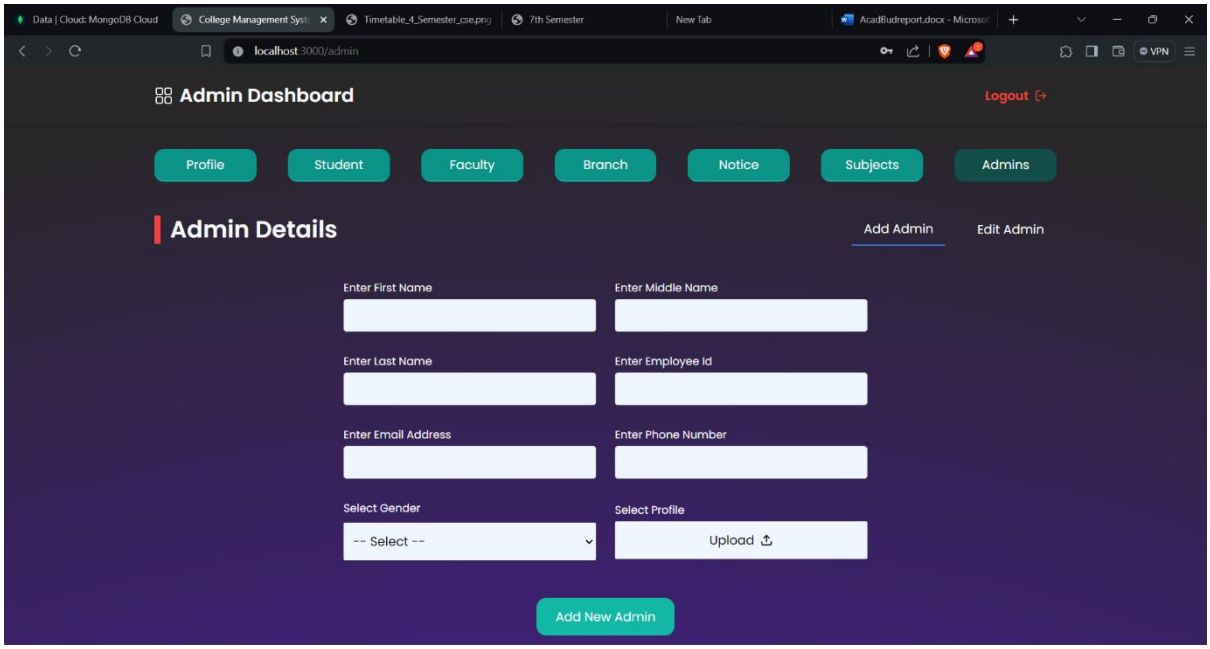
4.5 Notice Posting



4.6 Add Subject



4.7 Add admin


Admin Dashboard
Logout
Profile
Student
Faculty
Branch
Notice
Subjects
Admins
Admin Details
Add Admin
Edit Admin
Enter First Name
Enter Middle Name
Enter Last Name
Enter Employee Id
Enter Email Address
Enter Phone Number
Select Gender
-- Select --
Select Profile
Upload
Add New Admin

CONCLUSION

- In conclusion, the development and implementation of AcadBud is significant in enhancing student-teacher interaction within educational environments. Through this innovative platform, we have successfully addressed the growing need for effective communication channels between students and teachers, fostering a collaborative and engaging learning environment.

- AcadBud's comprehensive features, including Notice dissemination, marks upload, and resource sharing, have streamlined communication and facilitated seamless exchange of information between students and teachers. By providing a centralized platform for academic interaction, the platform has helped both students and teachers to efficiently manage coursework, track progress, and address concerns in a timely manner.

- Furthermore, the feedback received from users throughout the development and testing phases has been overwhelmingly positive, highlighting the platform's user-friendly interface, reliability, and effectiveness in facilitating meaningful student-teacher engagement.

- Looking ahead, as we continue to refine and expand the capabilities of AcadBud We believe that AcadBud has the potential to revolutionize the way students and teachers interact, ultimately contributing to improved learning outcomes and academic success.