College Management System

A PROJECT SUBMITTED BY

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(REGD.NO:421206421015)

IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

MASTER OF SCIENCE

In

COMPUTER SCIENCE

UNDER THE GUIDANCE OF

Dr. K RAJA KUMAR

DEPARTMENT OF INFORMATION TECHNOLOGY AND COMPUTER APPLICATIONS

ANDHRA UNIVERSITY

VISAKHAPATNAM - 530003

(2021-2023)

DEPARTMENT OF INFORMATION TECHNOLOGY AND COMPUTER APPLICATIONS

ANDHRA UNIVERSITY

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CERTIFICATE

THIS IS CERTIFY THAT THE PROJECT REPORT ENTITLED "COLLEGE MANAGEMENT SYSTEM", IS THE BONAFIDE WORK CARRIED OUT BY KAKI SYAMALA SAI JAYA MADHURI WITH REGD. No : 421206421015, A STUDENT OF MSC IN AU COLLEGE OF ENGINEERING (A), ANDHRA UNIVERSITY, VISAKHAPATNAM, DURING THE YEAR 2021-2023, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE

Dr. K RAJA KUMAR

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KAKI SYAMALA SAI JAYA MADHURI

(421206421015)

DECLARATION

I Declare That The Project Report Entitled, "**COLLEGE MANAGEMENT SYSTEM**" Has Been Done By Me In Partial Fulfillment Of Requirement For The Award Of Degree, Of " Master Of Science ", During The Academic Year 2021-23 Under The Guide Of "DR K RAJA KUMAR", Department Of Information Technology And Computer Applications, AU College Of Engineering(A), Andhra University, Visakhapatnam. I Here By Declare That This Project Work Has Not Been Submitted To Any Other Universities/Institutions For The Award Of Any Degree.

PLACE: VISAKHAPATNAM **KAKI SYAMALA SAI JAYA MADHURI**

DATE: **(421206421015)**

COLLEGE-MANAGEMENT-SYSTEM

ABSTRACT-

This project is based on COLLEGE MANAGEMENT SYSTEM, a web-based application meant for helping institutions. It is a piece of software that helps run the college daily administrative and academic operations smoothly from afar. It manages the records of college and students easily like placement information, various different types of events going on in our college. It also keeps track records of all the information regarding students those who are placed in the various organizations.

Achieving this objective is difficult using a manual system like Excel as the information is scattered, can be redundant and collecting relevant information may be very time-consuming. All these problems are solved using this project. Admin is the super user of this project. All the record stores in MYSQL database. The proposed software will also reduce the cumbersome paperwork, manual labor as well as communication cost.

Whenever we want, we can easily export the records stored in database to Excel. Editing, viewing, removing records is easy. Students can access the site to fill their details and surveys. Only admin can register and login to the application, he will manage the application further.

CHAPTER – 1:

INTRODUCTION

1.1 INTRODUCTION -

The college management system is the ultimate solution to digitize and streamline the day-to-day operations of colleges and universities. From student details management to college details management and placement details to higher education details. The approach of software has several benefits. It has an email id and password for all the processes connected to the college.

The design and implementation of the system is to provide service in institute and colleges. The system is to provide comprehensive student information system and user interface is to replace the current paper records. Students and admin having different user interfaces, admin can access student home page also. Admin should add records of the events and operations of the college, he can edit details any time and can remove the records.

The data stored in the database can be downloaded in the form of excel sheets using a download button. All these will be available for future references too. Searching will become more efficient and faster in comparison to manual searching. Overall, it will reduce the cost and time of the college head in taking care of the college.

1.2 PROBLEM STATEMENT-

There is a problem with traditional college management system because it didn't have a systematic way to store information about students. When the staff or administrator wants to record the details of a student, they must fill out a paper form or manually enter in excel sheets. The data might be lost if there are a lot of problems at the same time.

Another problem that can happen is that it can be hard to find and update information about students and college arrangements.

Below is a specific problem statement that happens in a standard college, when they use a manual system.

- There is a lot of paper used to keep track of student and college information.
- Manual systems are difficult to locate and update with information about students, their performance.
- The manual system doesn't protect the academic information that could be lost.

1.3 MOTIVATION-

The motivation behind developing a college management application, is to store details of students, events and operations of college in an efficient way. The software facilitates the administrators to know the present status of the student of the college.

It will generate the reports of all the students of a particular section. Hence, we conclude that the present system (CMS for colleges) would help the user by saving time and effort by reducing the processing time and volume of errors. The efficiency of the work done would be improved and work satisfaction on the part of the users after computerization would on high

So, the motivation for our project came from that it has been made for that purpose, and for trying hardly to achieve all the previous goals

1.4 OBJECTIVE-

- The main objective of the project is to build a responsive website to manage the different college activities.
- To track student's details and performance.
- To make a virtual community between the members of educational process.
- College management system provides one attractive environment where you can manipulate data and information about students and staff easily.

- The core purpose of designing the application is to manage the task related to the college students/staff and to reduce time to searching of appropriate candidates in college view.

1.5 SCOPE-

Without a **college management system**, managing and maintaining the details of the student is a tedious job for any organization. Student information will be stored including their background information, educational qualifications and personal details.

This system is designed to be easy for people to use and efficient for a wide range of different tasks. These tasks may include things like registering new students, managing activities, managing placements, and all the other things that make the department of the college work well.

- In computer system the person must fill the various forms & number of copies of the forms can be easily generated at a time.
- In computer system, it is not necessary to create the manifest but we can directly print it, which saves us time.
- To assist the staff in capturing the effort spent on their respective working areas.
- It satisfies the user requirement
- Be easy to understand by the user and operator.

1.6 EXISTING SYSTEM-

Some of the drawbacks which force us to plan this whole idea of developing an online college management system, initially college must maintain records of the events and students using excel sheets and they enter details manually, it is hard to use excel. If we want student details, then staff must enter the details of each student.

If we want to store the file uploads then, it will be hard to store using excel and retrieve whenever we want. Update and delete doesn't work efficiently in excel sheets.

Suppose if some student comes and asks for the profile changes after few days then the staff will open the file and search it manually for the student's name which will take time. In conclusion, this project can avoid these problems effectively and efficiently.

1.7 PROPOSED SYSTEM -

This is a web-related application that permits us to approach the entire knowledge regarding the college, students etc. This application is called as college management system. It offers an actual trip of the college campus. Here we would gain the recent knowledge regarding the college.

This general application planned for managing the student and college details. It also allows staff to upload relevant documents about the events and operations done in the college. The administrator would maintain the project by adding new records, updating existing, removing the records and exporting the data in the form of excel sheets.

To solve few problems with manual entry and in excel sheets, this new system has been created, that attempts to operate the whole procedure considering the database integration approach.

CHAPTER – 2:

LITERATURE SURVEY

2.1 LITERATURE SURVEY -

The system provides guidance to the admin to keep track of each student. The admin has the access to database of the system. In an educational institute, management is crucial thing. So, in order to reduce the efforts of staff we are introducing our system. This system comes on with much functionality like Authenticating user, adding records, updating records, deleting records and downloading records into excel sheets.

This system is a paperless system. Overall reduces the man power and time required. In this section we present reviews of related research papers.

Author 'Lalit Joshi', "A research paper on college management system" (2015), International journal of computer applications, referred that the system utilizes user authentication, displaying only information necessary for an individual's duties. Additionally, each sub-system has authentication allowing authorized users to create or update information in that subsystem.

College department management system (2018) proposed by Ms.A.V.Sinhasane, Ms.A.N.Kashid from international research journal of engineering and technology which is introduced to reduce the stress and efforts of a staff as well as students.

Another similar system, School management system proposed by Abhinav Sekhri (2020). This system includes functionality like holidays, classes, accounts, reports etc. On the other hand, it does not contain library management module from where students as well staff can issue books related to their interest.

CHAPTER – 3

SYSTEM ANALYSIS

3.1 REQUIREMENT ANALYSIS -

Requirements analysis is a crucial phase in the software development process where the software requirements are identified, analyzed, documented, and prioritized. This process helps to ensure that the software being developed meets the needs and expectations of its intended users and stakeholders. Requirements analysis typically involves gathering information about the needs and requirements of the users and stakeholders, defining the scope of the software, identifying the functional and non-functional requirements of the software, and documenting the requirements in a detailed and structured manner. The requirements analysis process can include various techniques, such as interviews, surveys, observations, and focus groups, to gather information about the requirements.

- Requirements analysis is the process of identifying and documenting the needs and expectations of the users and stakeholders for a software project.
- It also helps to ensure that the software development team has a clear understanding of what needs to be developed, tested, and delivered.
- This process helps to identify potential issues and risks that may impact the software development process, such as conflicting requirements or missing requirements.

3.2 FUNCTIONAL REQUIREMENTS -

Functional Requirement defines a function of a software system and how the system must behave when presented with specific inputs or conditions. These may include calculations, data manipulation and processing and other specific functionality.

In this system following are the functional requirements:

- The system allows authentication and authorization for the users.
- It will help in storing details of college and students.
- We can upload relevant files in the database.
- We can download the data inside the database in the form of excel sheets.
- Admin can able to manage the system like updating functionalities.
- Students will be having different UI they can access only few things.
- Admin can access students as well as admin UI.

3.3 NON-FUNCTIONAL REQUIREMENTS -

It is a requirement specification that specifies criteria that can be used to judge the operations of a system rather than specific behavior. These requirements are also called quality attributes of a system as these include the majority those metrics that define the standard and quality for the system, some of the parameters coming under this includes Performance, Security etc.

- Performance: The system should be able to add, update, delete records quickly and accurately, with minimal delay or lag.
- Accessibility: The system should be accessible to users with different levels of physical ability, and be designed with usability best practices in mind.
- Security: The system should be secure, with appropriate measures in place to prevent unauthorized access or malicious attacks.
- Usability: The system should be intuitive and easy to use, with clear instructions and feedback for users.
- Availability: The system should be always available to users, with minimal downtime for maintenance or updates.

CHAPTER – 4

SYSTEM CONFIGURATION

4.1 SOFTWARE REQUIREMENTS -

These are the requirements which are not directly concerned with the specific function delivery by the system. They specify the criteria that can be used to judge the operation of a system rather than specific behaviors

The software requirements are:

Operating system	:	Windows 7/8/10
Coding Language	:	JavaScript
Tools	:	VS Code
Backend	:	NodeJS
Frontend	:	React

4.2 HARDWARE REQUIREMENTS -

In this system following are the hardware requirements:

System	:	Intel I3 or higher.
Hard Disk	:	120 GB.
Monitor	:	15'' LED
Ram	:	8 GB or higher

CHAPTER – 5

SYSTEM DESIGN

5.1 SYSTEM ARCHITECTURE -

System architecture refers to the design and structure of a computer system, including its hardware, software, and other components, as well as their interactions and relationships. A good system architecture is essential for building complex systems that are reliable, scalable, maintainable, and adaptable.

The system architecture for COLLEGE MANAGEMENT SYSTEM could include several components, such as:

Fig : System Architecture

User Interface: Finally, the user interface module would provide a graphical user interface (GUI) for the user to interact with the system.

Authentication: User first authenticated. Whether user is admin or not by credentials like email id and password.

Manipulate Records: Admin can manipulate records like adding records, updating, deleting and downloading.

Data Stored to Database: After admin changes the data then newly entered data is submitted to database.

Logout: After that admin can logout from the application.

5.2 DESIGN -

The design of the college management system, to create an accurate, reliable and easy-to-use system, several key design considerations must be taken into account. Firstly, the system architecture should be designed in a scalable and modular way to accommodate the various components of the project.

The user interface is also a critical component of the design, and should be intuitive and easy to use.

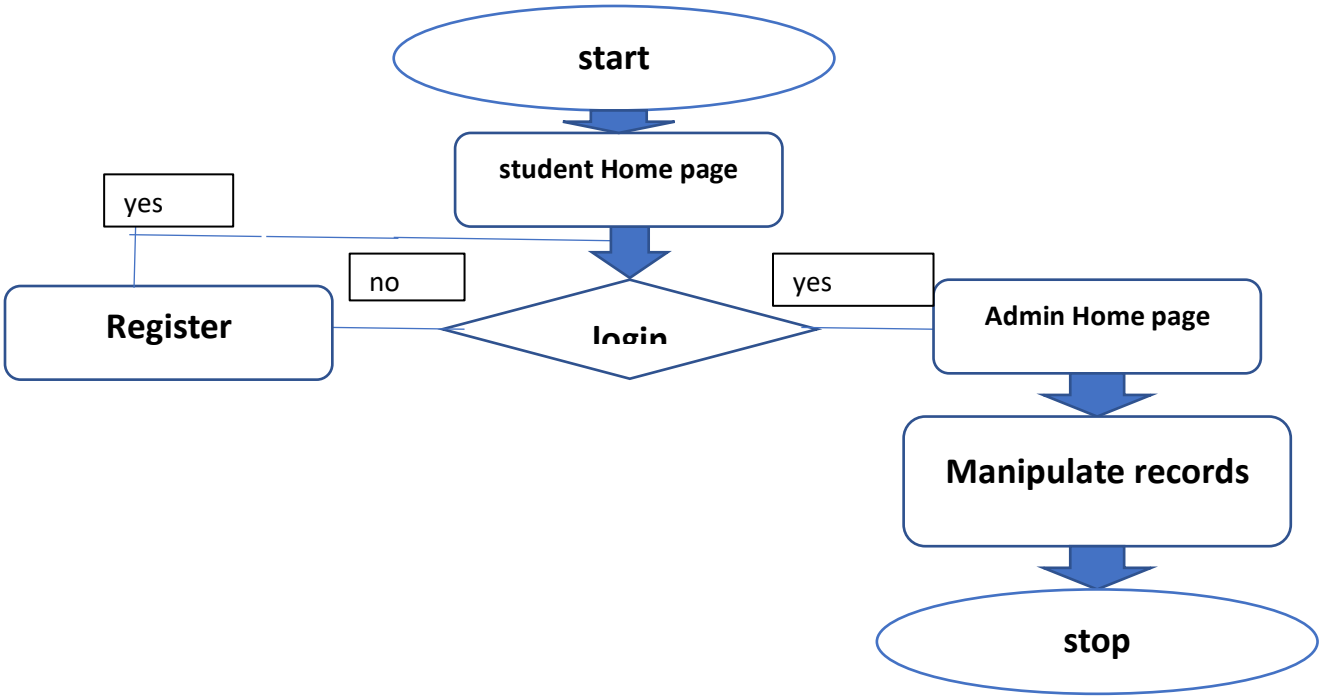


Fig: Flow chart for college management system

5.3 UML DIAGRAMS -

5.3.1 USE CASE DIAGRAM -

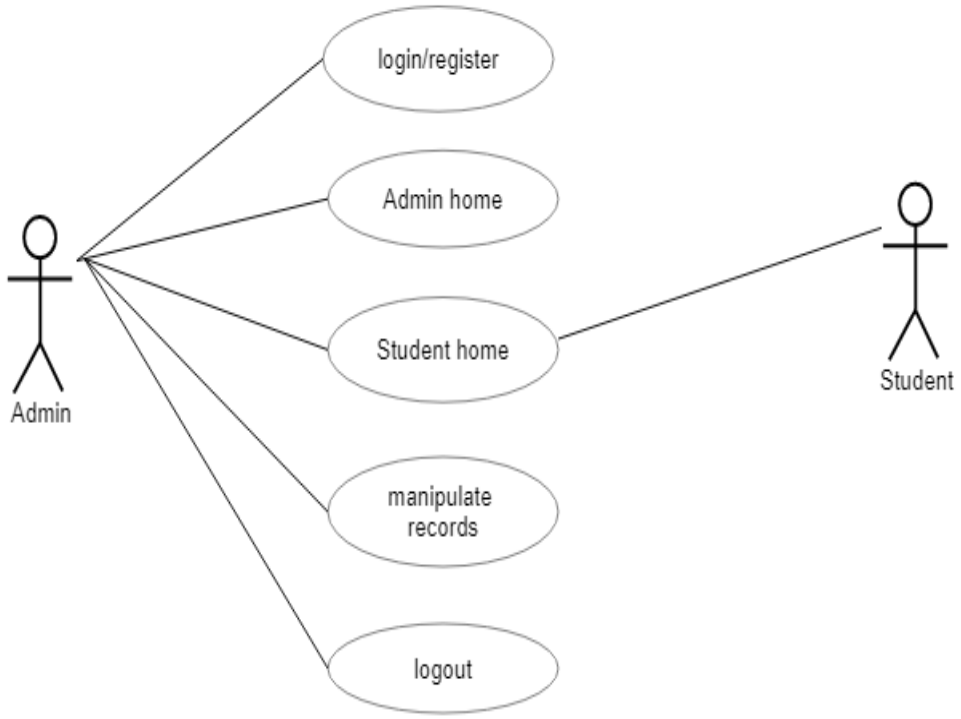
A use case diagram is a type of UML diagram that represents the interactions between actors and the system. Actors are external entities that interact with the system, while use cases are the actions or services that the system provides to the actors. The use case diagram is a dynamic representation of the system, meaning that it shows how the system behaves over time.

The purpose of a use case diagram is to provide a high-level view of the system's functionality and the interactions between actors and the system. Here are some of the key benefits of using a use case diagram:

1. It helps identify the user requirements by identifying the actors and the use cases they need to perform.

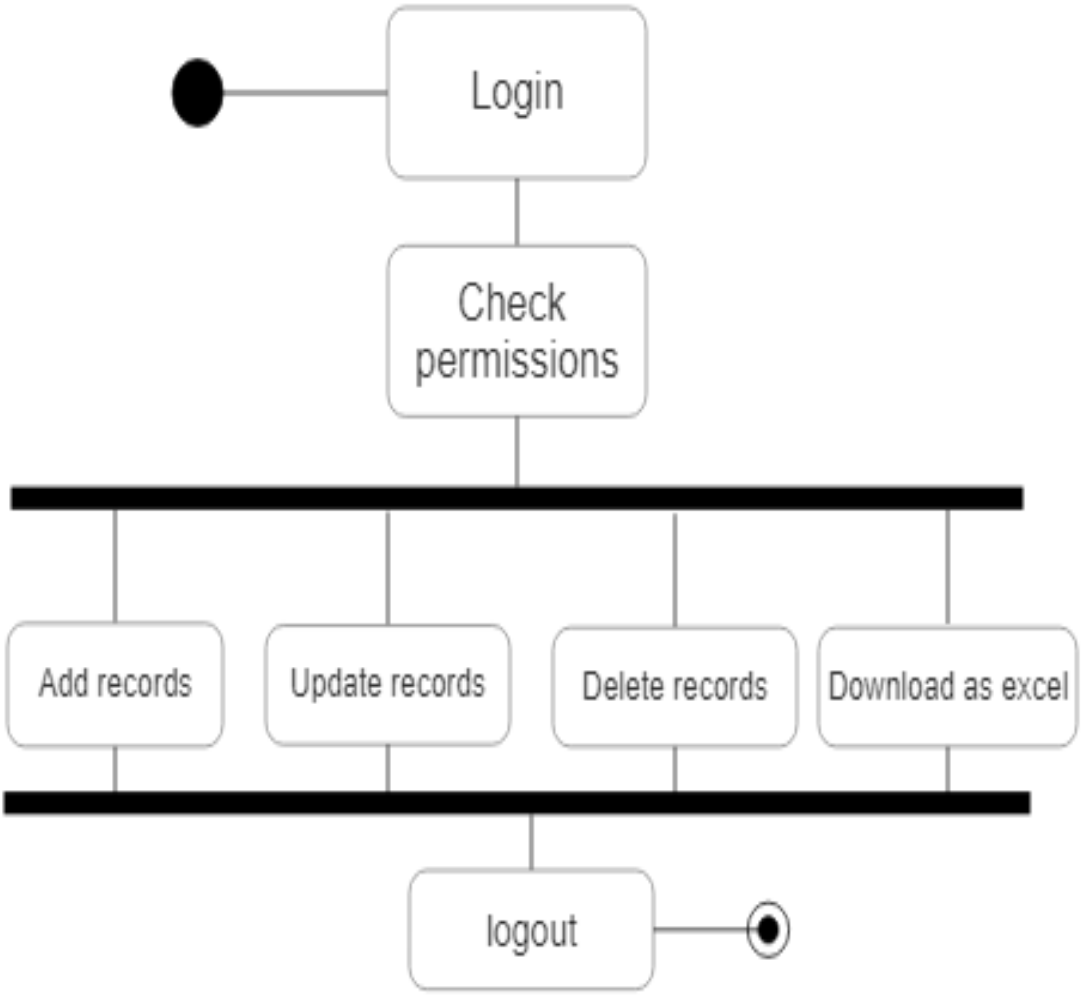
2. It helps identify the boundaries of the system by showing which actors are external to the system.

3. It can be used to develop test cases that validate the system's behavior.

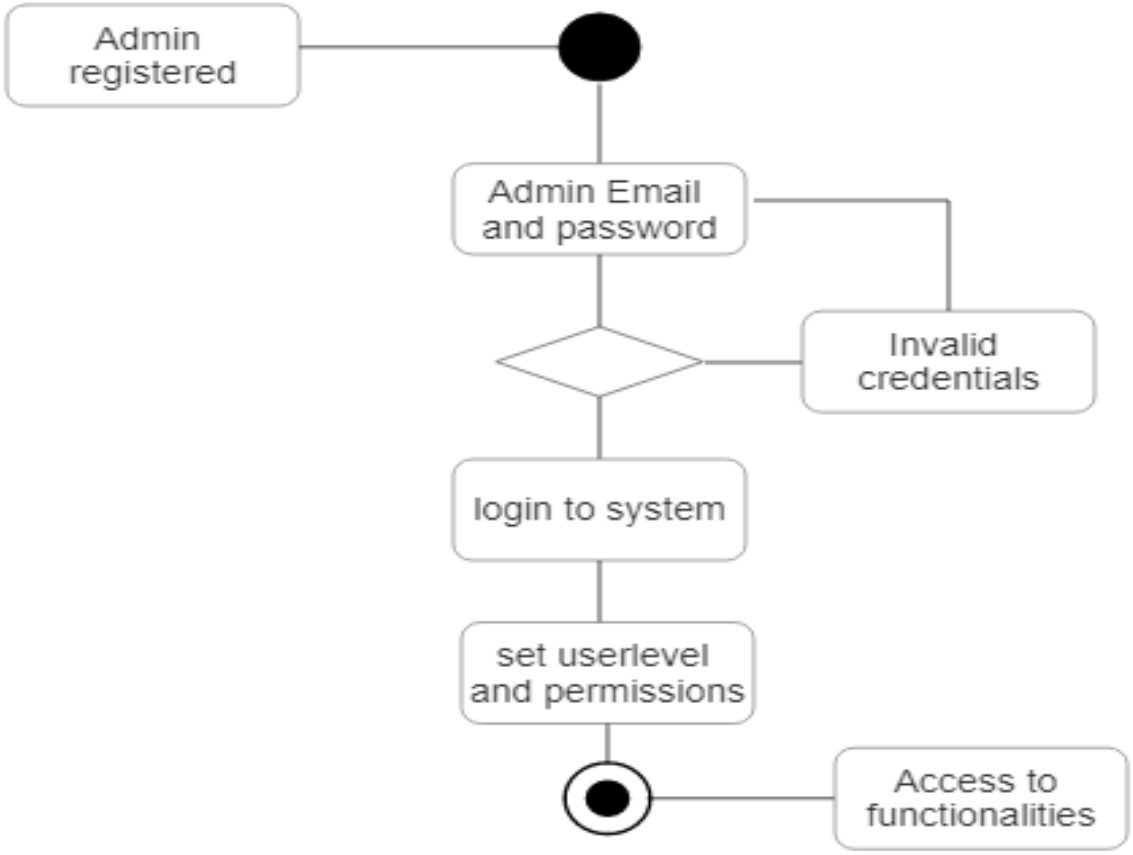


5.3.2 ACTIVITY DIAGRAM -

This is the Activity diagram of college management system which shows the flow between the activity of college, students, events, login. The main activity involved in this UML Activity diagram of college management system are as follows:



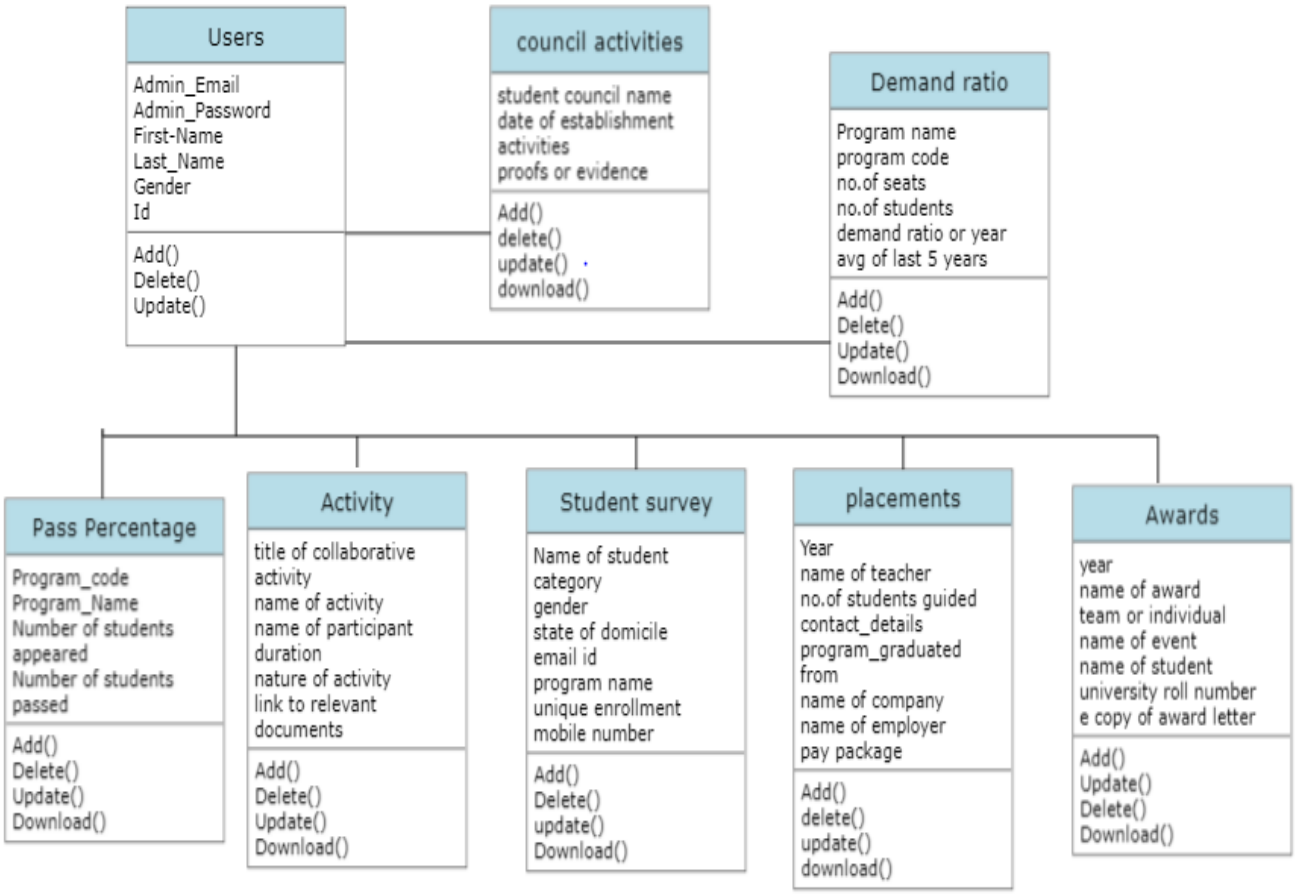
This is the login activity diagram of college management system, which shows the flows of login activity, where admin will be able to login using their E-mail and password. After login user can manage all the operations.



5.3.3 CLASS DIAGRAM -

College management system class diagram describes the structure of a college management system classes, their attributes, operations (or methods), and the relationships among objects. The main classes of the college management system are users, activities, collaborative activities, placements etc.

- Users class: Manages all the operations of users.
- Higher Education class: Manages all the operations of Higher education.
- Placement class: Manages all the operations of placements.
- Collaborative Activities class**:** Manages all operations of Collaborative activities etc.



5.3.4 ER DIAGRAM -

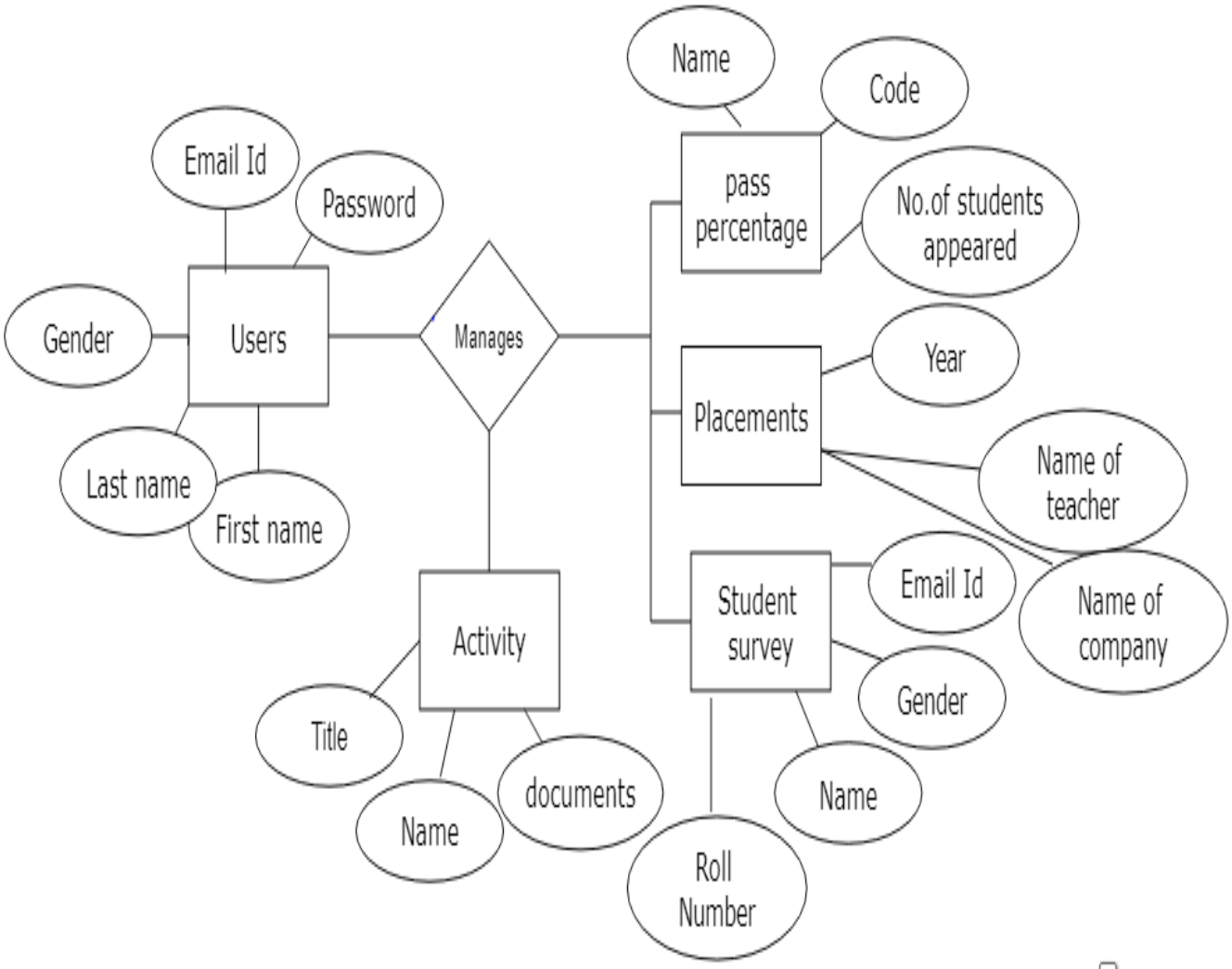
The ER (Entity Relationship) Diagram represents the model of college management system entity. The entity-relationship diagram of college management system shows all the visual instrument of database tables and the relations between Users, Activity, Placements, Demand ratio etc. It used structure data and to define the relationships between structured data groups of college management system functionalities. The main entities of the college management system are users, activity, demand ratio, placements etc.

College Management System entities and their attributes:

Users Entity: Attributes of users are Admin_Id, Admin_password, First_Name, Last_Name etc.

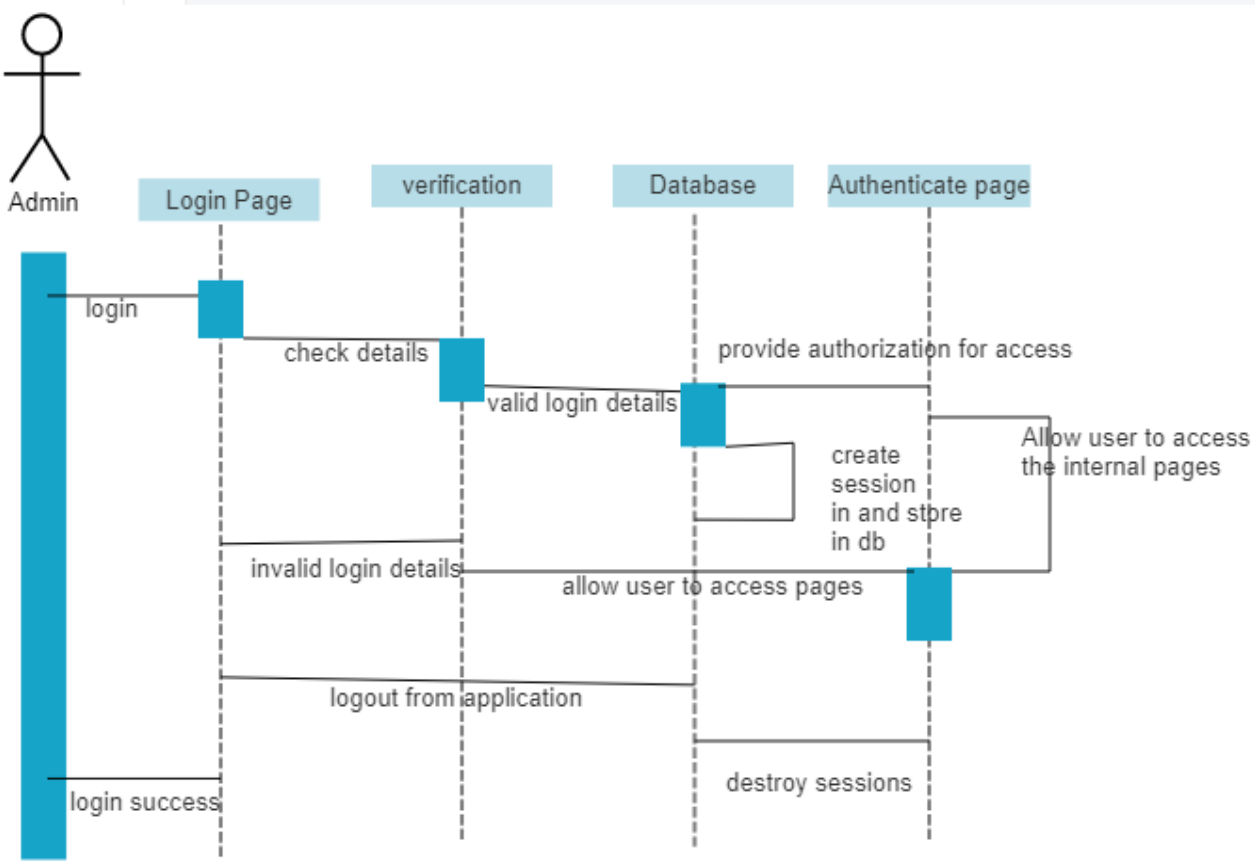
Activity Entity: Attributes of activity are Title, Name of activity, Name of participant, Duration, Year of collaboration.

Demand Ratio: Attributes of Demand ratio are Program code, program name, number of seats available etc.



5.3.5 SEQUENCE DIAGRAM -

This is a Login sequence diagram of college management system, where admin will be able to login in their account using their credentials. After login user can manage all the operations on college tables and student tables. The diagram below helps demonstrate how the login page works in a college management system. The various objects in the users, activity, demand ratio etc. Page interacts over the course of the sequence, and user will not be able to access this page.


Admin
Login Page
verification
Database
Authenticate page
login
check details
valid login details
provide authorization for access
Allow user to access
the internal pages
create
session
in and store
in db
invalid login details
allow user to access pages
logout from application
destroy sessions
login success

CHAPTER – 6

CODING

Backend API's

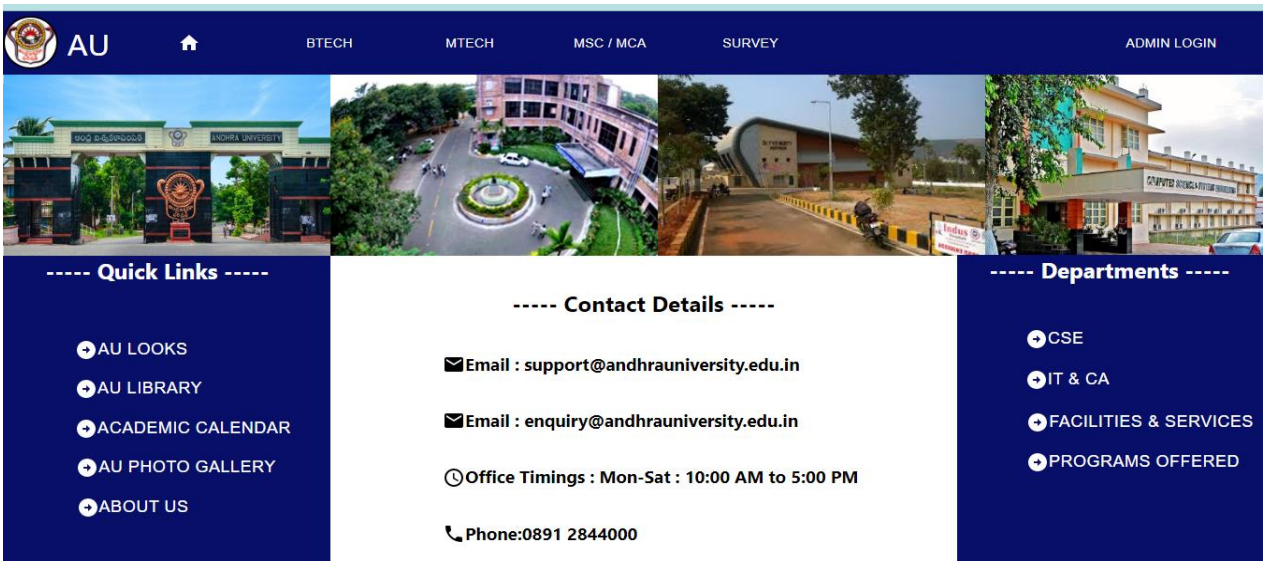
```
const conn = require('./database');

http = require('http');

const cors = require('cors');

const express = require('express');

const morgan = require('morgan');

const bodyParser = require('body-parser');

const dotenv = require('dotenv');

const path = require('path');

const app1 = require('./routes/BtechRouter');

const app2 = require('./routes/MtechRouter');

const app3 = require('./routes/MscORMca_Router');

const app4 = require('./routes/PlacementOutgoing_Router');

const app5 = require('./routes/CollaborativeActivities_Router');

const app6 = require('./routes/ValueAddedCourse_Router');

const app7 = require('./routes/DemadRatio_Router');

const app8 = require('./routes/AvgNumberOfDays_Router');

const app9 = require('./routes/Avgpasspercentage_Router');

const app10 = require('./routes/Awards_Router');

const app11 = require('./routes/Per_Students_Undertaking_Router');

const app12 = require('./routes/HigherEducation_Router');

const app13 = require('./routes/StudentComputerRatio_Router');

const app14 = require('./routes/CouncilActivity_Router');

const app15 = require('./routes/StudentSatisfactory_Router');

const app16 = require('./routes/login');

const excel = require('./routes/Excel');

app.use(morgan('dev'));

app.use(express.json());
```

```
app.use(cors());

app.use('/mtech',app2);

app.use('/mscormca',app3);

app.use('/placement',app4);

app.use('/activities',app5);

app.use('/',app6);

app.use('/demandratio',app7);

app.use('/avgnumberofdays',app8);

app.use('/avgpasspercentage',app9);

app.use('/awards',app10);

app.use('/internships',app11);

app.use('/highereducation',app12);

app.use('/computerratio',app13);

app.use('/councilactivities',app14);

app.use('/studentsatisfactory',app15);

app.use('/',app16);

app.use('/download',excel);

    res.end('<html><body><h1>This is home
page</h1><h2>btech,mtech,mscormca,placement,activities,ValueAdded</h2></body></ht
ml>');

});

const server = http.createServer (app);

server. Listen(process.env.DATABASE_PORT,()

console.log ('listening on port '+process.env.DATABASE_PORT);

});
```

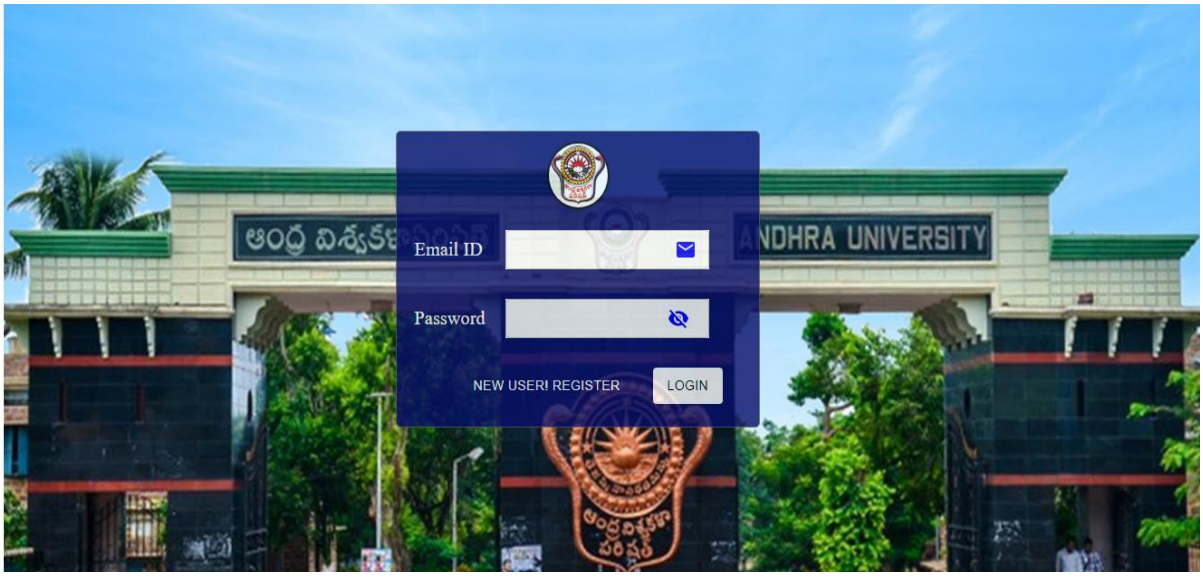
CHAPTER – 7

SCREEN SHORTS

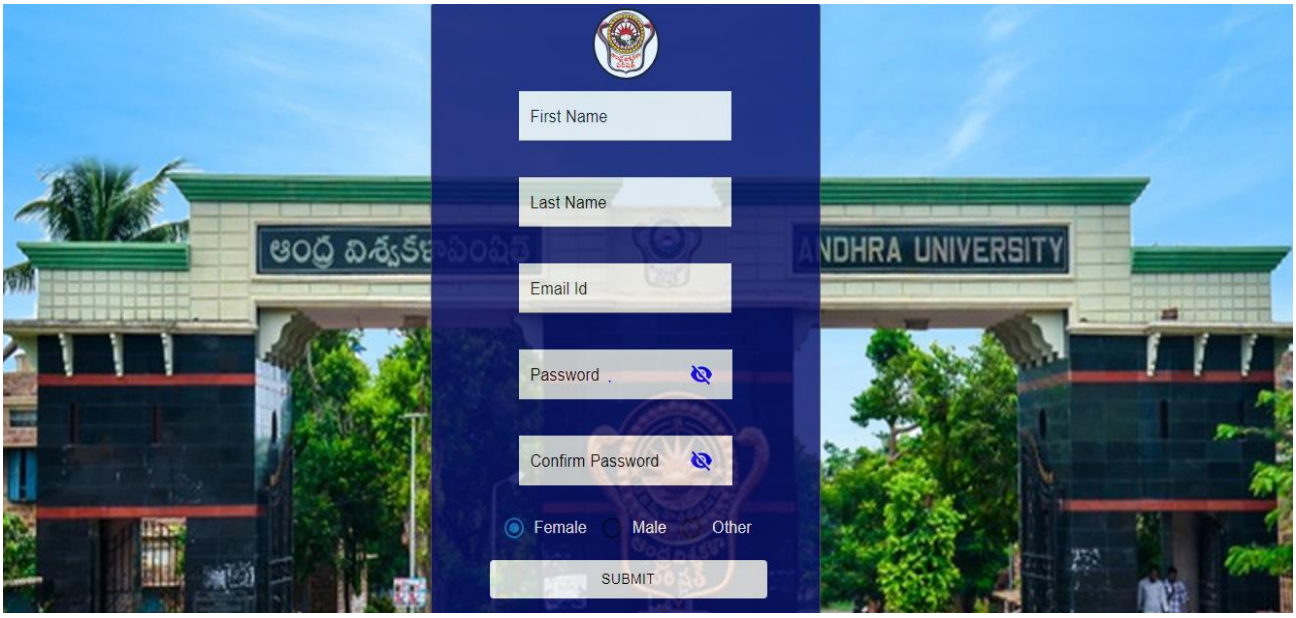
Home page: For students



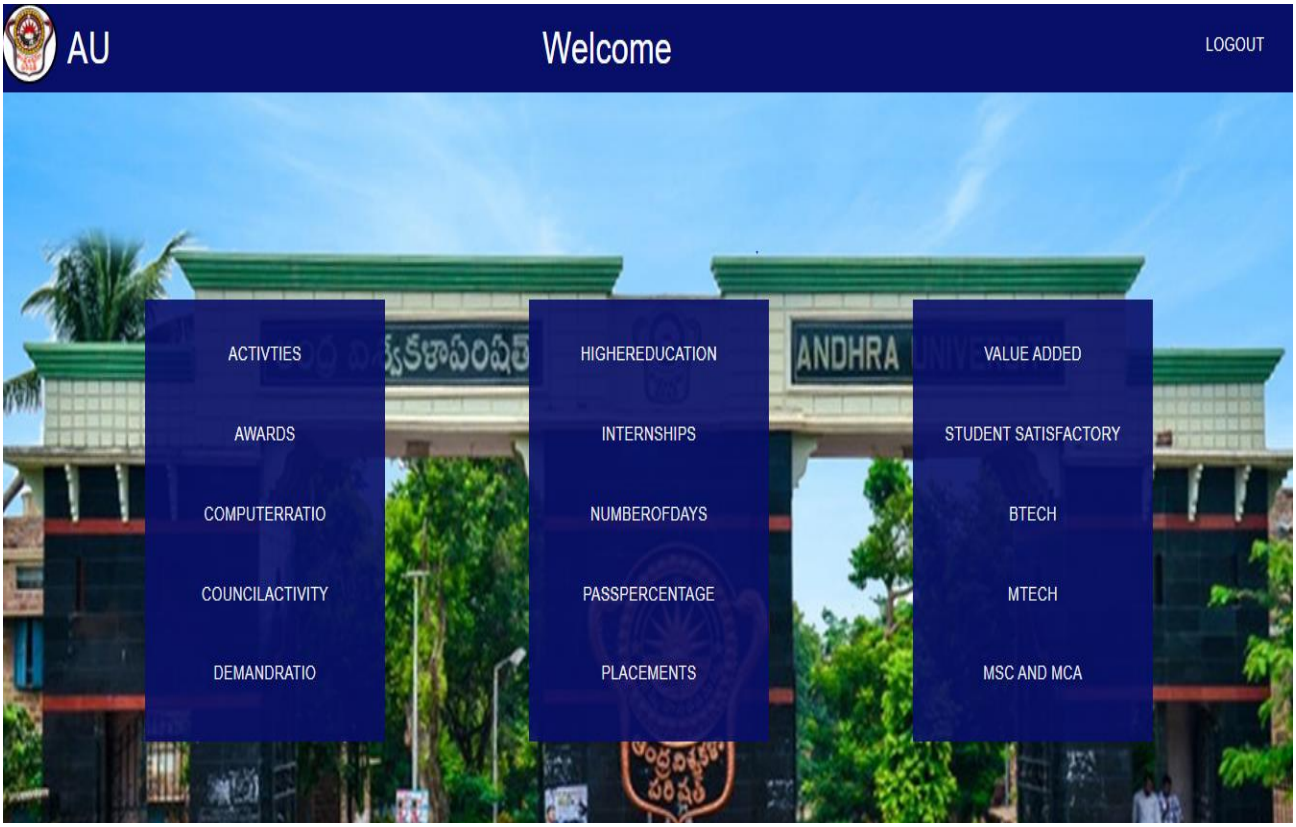
Login page for admin:



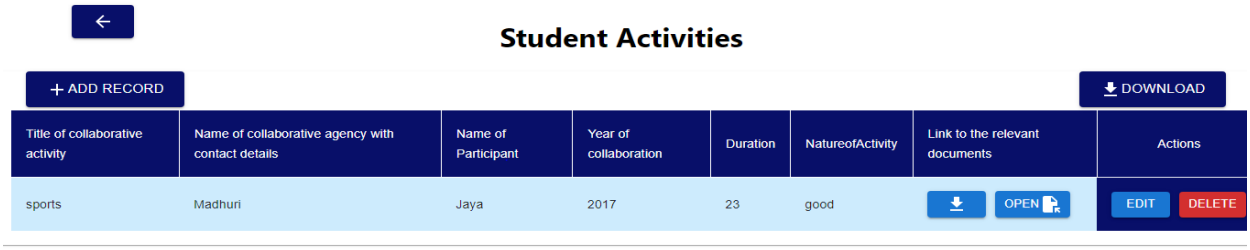
Register page for admin:



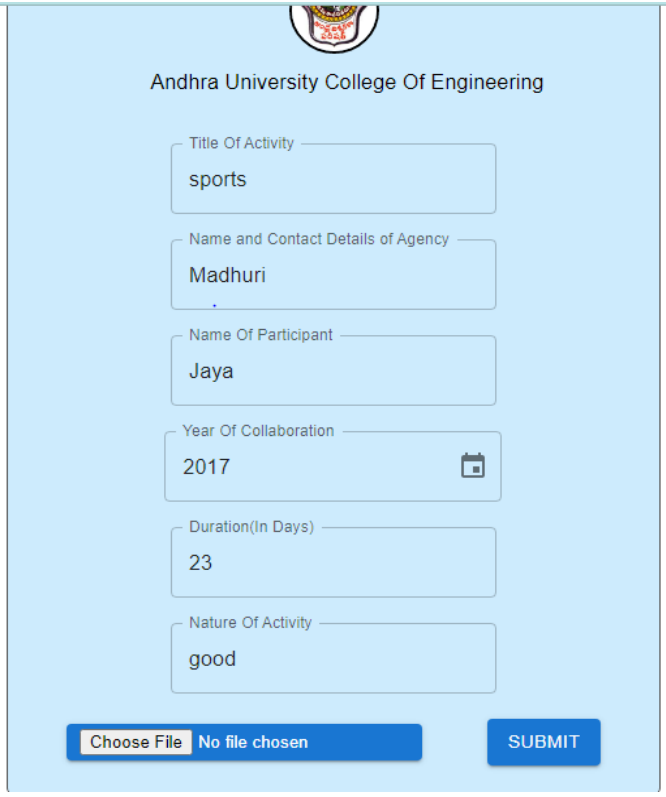
Admin home page:



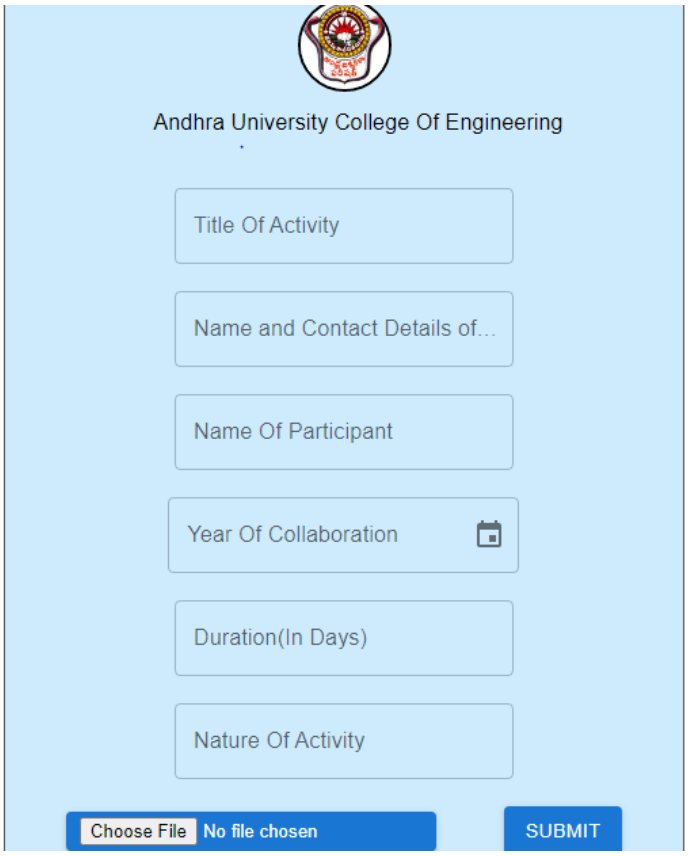
View records of a table:



Update record:



Adding a record:


Andhra University College Of Engineering
Title Of Activity
Name and Contact Details of...
Name Of Participant
Year Of Collaboration
Duration(In Days)
Nature Of Activity
Choose File
No file chosen
SUBMIT

CHAPTER – 8

TESTING

8.1 TYPES OF TESTING: