A PRELIMINARY REPORT ON

PROJECT ALLOCATION SYSTEM

SUBMITTED TO THE VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY, PUNE
IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE

OF

BACHELOR OF TECHNOLOGY (COMPUTER ENGINEERING)

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2021 -2022

CERTIFICATE

This is to certify that the project report entitled

“ PROJECT ALLOCATION SYSTEM”

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is a bonafide student of this institute and the work has been carried out by him/her under the supervision of **Prof. Nivedita Bhirud** and it is approved for the partial fulfillment of the requirement of VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY, for the award of the degree of **Bachelor of Technology** (Computer Engineering).

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ACKNOWLEDGEMENT

It gives us great pleasure in presenting the project report on “PROJECT ALLOCATION SYSTEM”

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ABSTRACT

Nowadays, all universities and colleges are mainly focusing on making the process online with a web based application for the convenience of students and teachers.

Project Allocation System has been initiated by Eduplus Foundation in collaboration with B.R.A.C.T's Vishwakarma Institute Of Information Technology, Pune. Project Allocation System is a web application which is used for allocating projects and monitoring their progress along the project duration. The process of BE project allocation was difficult, especially for Industrial projects. Before, the project coordinator would have to inform the students about the new project through email and students have to generally reply to that email to show their interest in working in that industry project. And then the project coordinator then used to allocate to make a group of students and then allocate them the project. So, our team came up with the idea of developing a web application for Project Allocation System which will solve the problems faced by the Project Coordinator and students by making the process easy and on a single platform. The web application consists of different dashboards for students, faculties and coordinators. Students will be able to create a group/ join a group. Coordinators will be able to add new projects to the web application and then students can check the details of the project and if interested can apply to the project in a group. After which the coordinator can see the applications and finally assign the project to one of the student groups and faculty mentor to them. The programming languages used in this project are Handlebars.js for frontend and Node.js for the backend. Various modules of node.js like npm, Axios, Express, and modules of Handlebars.js like bootstrap have been used. For databases, MySQL is used. Also, Xampp is used to set up servers and phpmyadmin to handle the data. The project allocation system can be deployed on the servers of various colleges.

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CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

All universities and colleges are mainly focusing on making the process online with a web based application for the convenience of students and teachers.Our system will be able to create/ join a group for students and coordinators can allocate projects to students and teachers. Thus, a well-developed application for allocation of projects which will help coordinators, teachers and students to keep track of this process throughout the semester.

1.2 MOTIVATION

- Projects play an important role in academic growth and development of students. Getting projects of individual's choice and interest is also important.
- Forming groups, floating forms, going through applications and then allocating projects to groups of students becomes tragic and complicated.
- Departments like Mechanical, Civil are not that familiar with existing project allocation platforms available.

1.3 PROBLEM DEFINITION AND OBJECTIVES

Problem Definition:

The purpose is to use a Project allocation system where mainly we can allocate projects to students. Students can create or join a group, view all available projects as well as their details, leave or delete a group. Another part of our project is access to a coordinator and provide a dashboard. Coordinator can add new projects, delete existing projects, view all applications to a particular project, assign a group and faculty to a particular project. Faculty can also see details of allocated projects and groups on their own dashboard.

Objectives:

1. To allocate industrial as well as research and in-house projects to students and faculty members.

2. To allow students to create groups and join groups as per their choice.
3. To allow students to apply for projects as per their choices and get a chance to work on the particular project.
4. To create a dashboard for coordinators where all details and functionality of allocation will be available.

1.4 PROJECT SCOPE & LIMITATIONS

Statement of scope:

The scope of the project involves the integration of a Project allocation system on college ERP websites.

Limitations:

1. Stable internet connection is must to access the system
2. Only 4 Team members are allowed in each team
3. Domains selected by the group leader can not be changed
4. Project allocated to a group by coordinator can’t be changed

CHAPTER 2

LITERATURE REVIEW

2. LITERATURE REVIEW

The education management refers to improvement of the learning and teaching processes. It also provides the idea of management education flow of an automated system rather than transforming it.. The apparatuses and materials that we utilize in our day by day lives alter nearly day by day. Instructing and learning are two measurements of the scholarly world.

Asset assignment is the dispersion of the accessible assets financially. The allotment of an extent is like a subset of the asset allotment issue. The allotment of ventures ought to be done reasonably for both the teachers and understudies. The assets are the ventures, understudies, and scholastics. The same scholastics act as both bosses and inspectors but for diverse ventures.

Each undergrad understudy needs to do a last year venture. Any project undertaken carries five credits and reports must be submitted for marking. Every year, the Project coordinator within the college encounters issues in distributing ventures to last year understudies. These issues are primarily because year after year, the number of students keeps expanding which leads to an increment within the complexity of the assignment of the projects. There are limitations such as the coordinator's workload which plays a critical part within the allotment of projects.

2.1. RESPONSIBILITIES OF THE PROJECT COORDINATOR

The Project coordinator should monitor, support, and direct the student’s work and progress soon after the allocation of project/dissertation titles. The responsibilities of the coordinator include:

1. Proposing/supervising projects/dissertations in their subject area.

2. Setting a framework for regularly scheduled progress meetings between supervisor(s) and student.
3. Providing advice on issues of plagiarism, in line with the university's regulations.
4. Briefing the students and apprising them of the regulations about the final year projects/ dissertations.
5. Giving frequent feedback/comments on progress achieved by the student.
6. Giving guidance on the approach for the appropriate analysis of data obtained interpretation and presentation of results (if applicable).
7. Assisting in the identification of a research methodology, planning, and execution of the research project (if applicable).
8. Giving guidance about the formulation of an appropriate hypothesis-driven research project and focusing on the objectives of the research (if applicable).

2.2. RESPONSIBILITIES OF STUDENTS

Throughout project/dissertation work, the students are to seek advice, comments, and guidance from his/her supervisor(s) on the nature of the project/dissertation work and the standard expected. Students are also advised to keep a notebook for the meeting with the supervisor(s) while the supervisor(s) may wish to keep a brief record of each meeting held.

The responsibilities of the student include:

1. Responding to the supervisor's suggestions and/or criticisms on his/her work and progress; Following all laboratory safety guidelines (if applicable).
2. Bring to the attention of the supervisor(s) any problems (academic and personal) associated with progress.
3. Discuss the layout of the final dissertation with the supervisor(s) before the writing-up stage.
4. Arranging with his/her supervisor(s) mutually agreed convenient times to discuss progress achieved (if meetings are not possible, e-mails or other forms of communication may be used).

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1. ASSUMPTIONS AND DEPENDENCIES

- All the users are familiar with the VIERP system using either mobile or desktop websites.
- Developers should be familiar with the ERP system.
- All the users are already registered in the ERP system.

3.2. EXTERNAL INTERFACE REQUIREMENTS

3.2.1. USER INTERFACES

- Handlebar is used as the basic framework for Project Allocation UI.
- Bootstrap has been used to add various UI elements.

3.2.2. HARDWARE INTERFACES

- Compatible with laptops, mobiles, and tablets

3.2.3. SOFTWARE INTERFACES

The libraries that must be included in the project are npm (package manager for Javascript), node.js(back-end JavaScript runtime environment), Xampp (for creating a database).

3.3. SYSTEM FEATURES

3.3.1. Project Allocation

Description and Priority:

The system will allow the admin to add/delete/allocate projects, it will display the details of the project to faculty, students, and management(co-ordinator).

Functional Requirements:

The system will update the status of the allocated projects and groups. As per the status of projects and groups allocated that will reflect changes in project allocation.

3.4. NON-FUNCTIONAL REQUIREMENTS

3.4.1. PERFORMANCE REQUIREMENTS

Performs well only with the services. The response time is dependent on the internet speed of the user. If any services go down or are under development the ERP will also go down.

3.4.2. SAFETY REQUIREMENTS

Changing or modifying user-related data from the backend may cause malfunctioning of the desktop application in certain cases. Any such changes must be done only under the developer's guidance or advice.

3.4.3. SECURITY REQUIREMENTS

Admin and development team will be the only one having access to user data

3.4.4. SOFTWARE QUALITY ATTRIBUTES

The website must have a simple and user-friendly interface. The navigation to various tabs should make it more convenient to the users to save time and confusion. Application is compatible with all types of browsers and with android and iOS phones. In case there is any need for addition or deletion of any information it could only be done by consent of the Project Owner. The consent will be put into immediate effect by the developer team.

CHAPTER 4

SYSTEM DESIGN

4.1.SYSTEM DESIGN FLOW PLAN

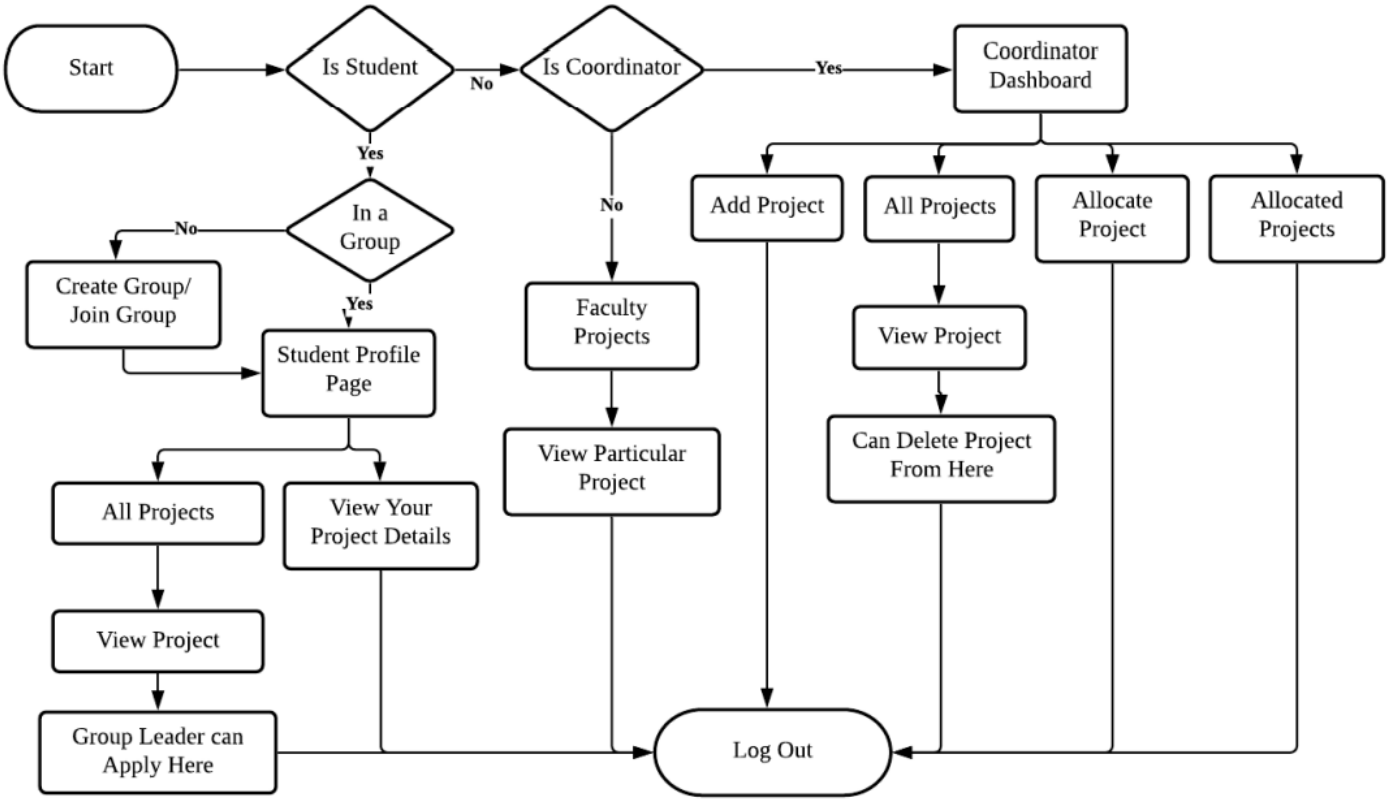

Fig. 4.1. System Design Flow chart

4.2. USE CASE MODEL

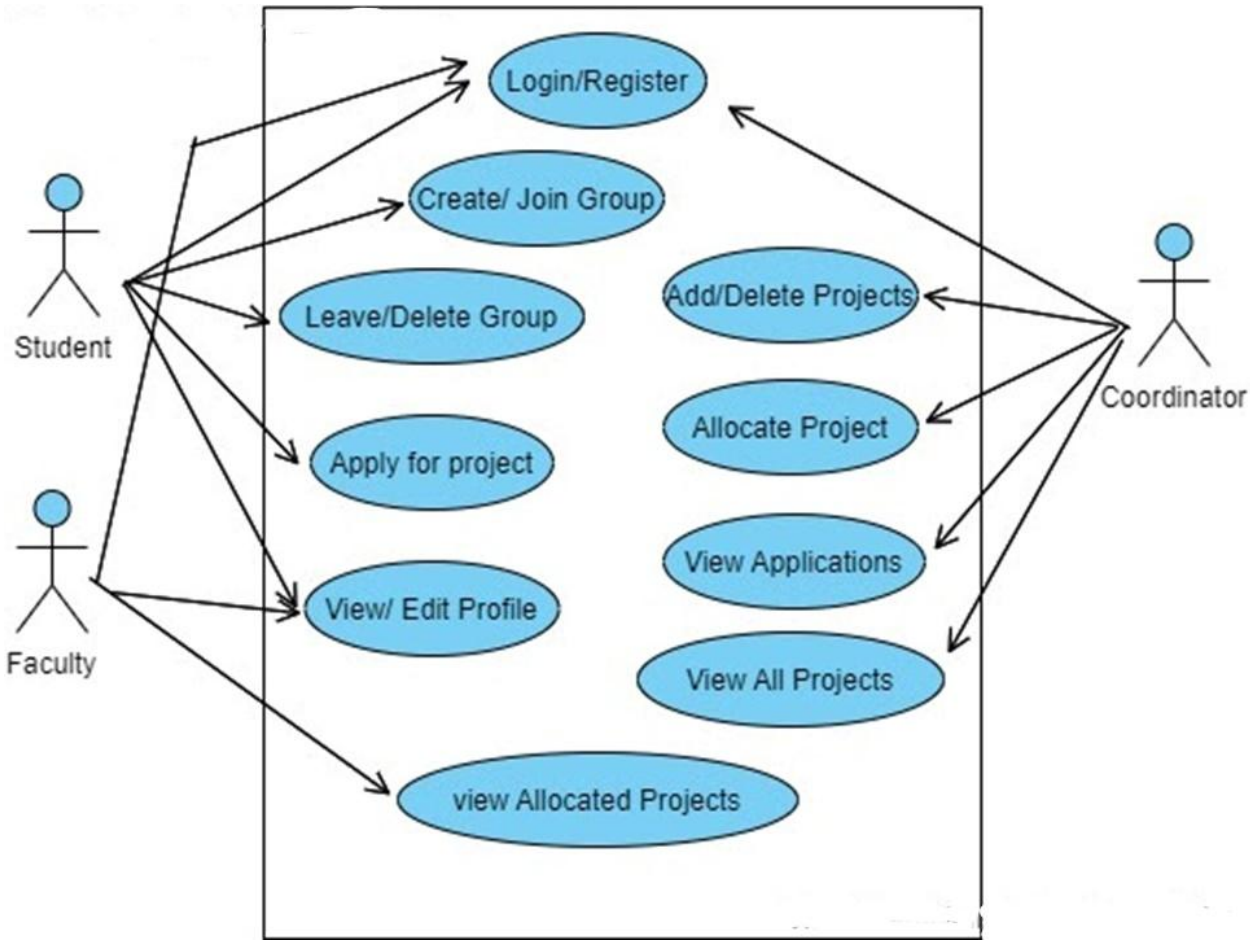

Fig. 4.2. Use Case Model

4.3. Class Diagram

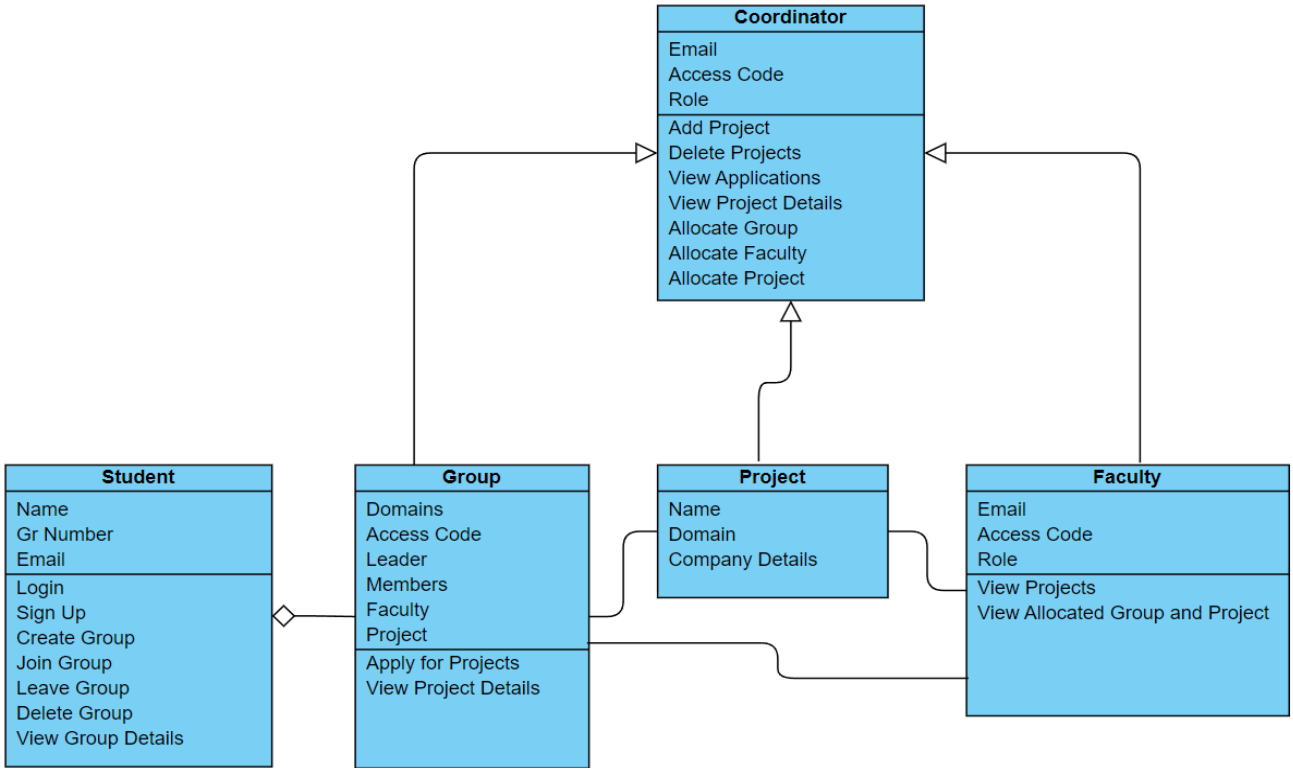

Fig. 4.3. Class Diagram

4.4. Entity Relationship Diagram

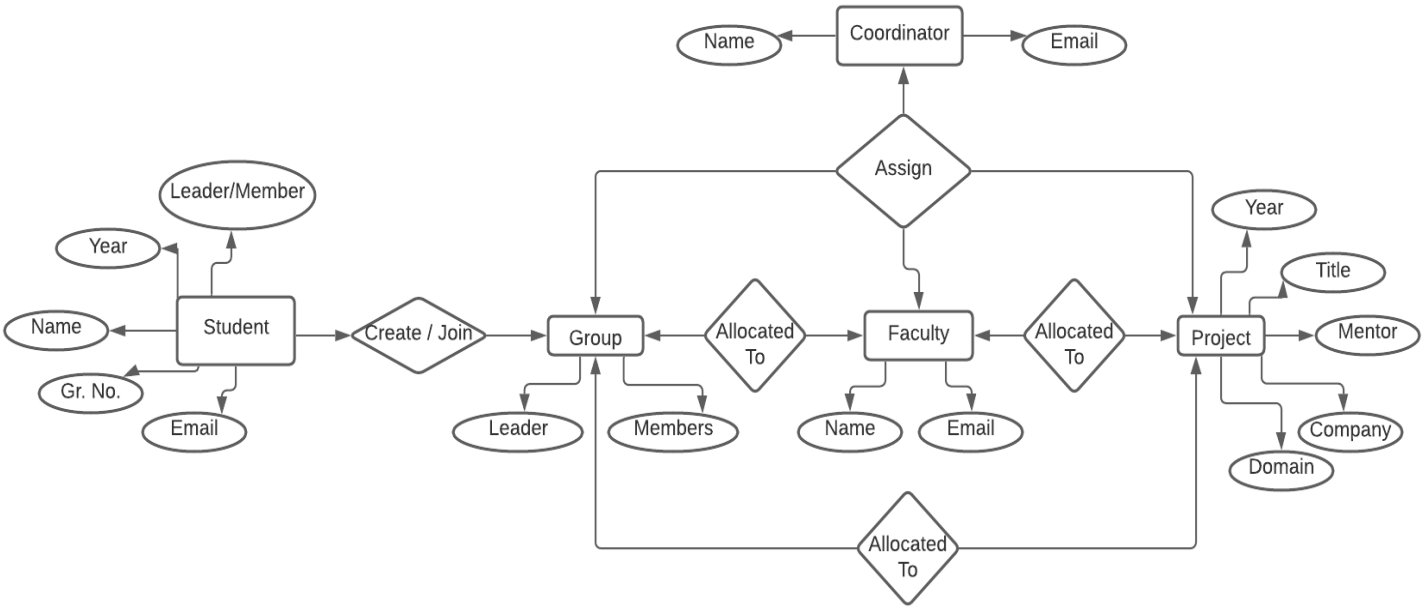

Fig. 4.4. ER Diagram

4.5. Deployment Diagram

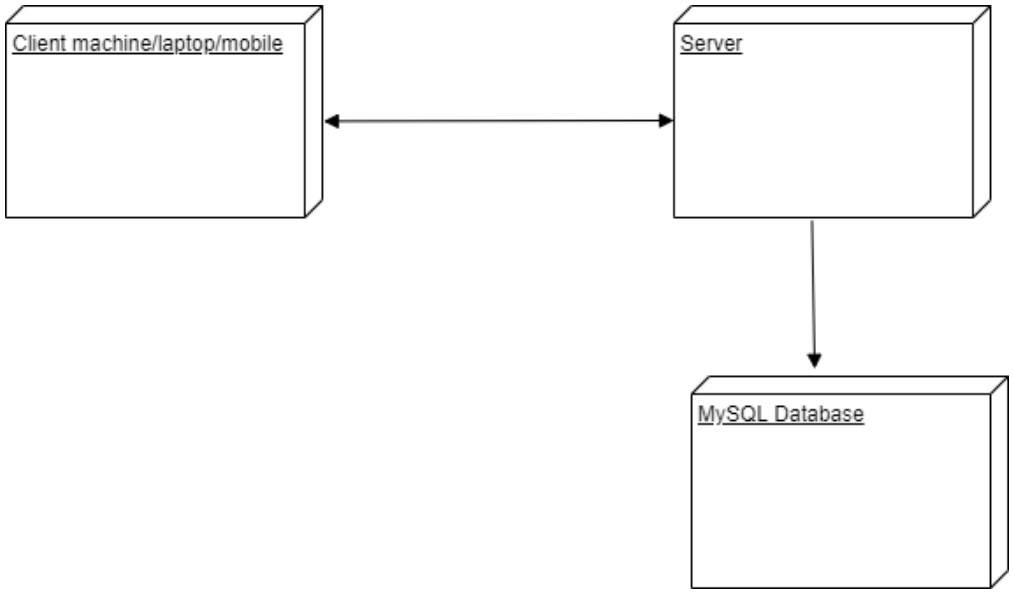

Fig. 4.5. Deployment Diagram

4.6. DATABASE STRUCTURE

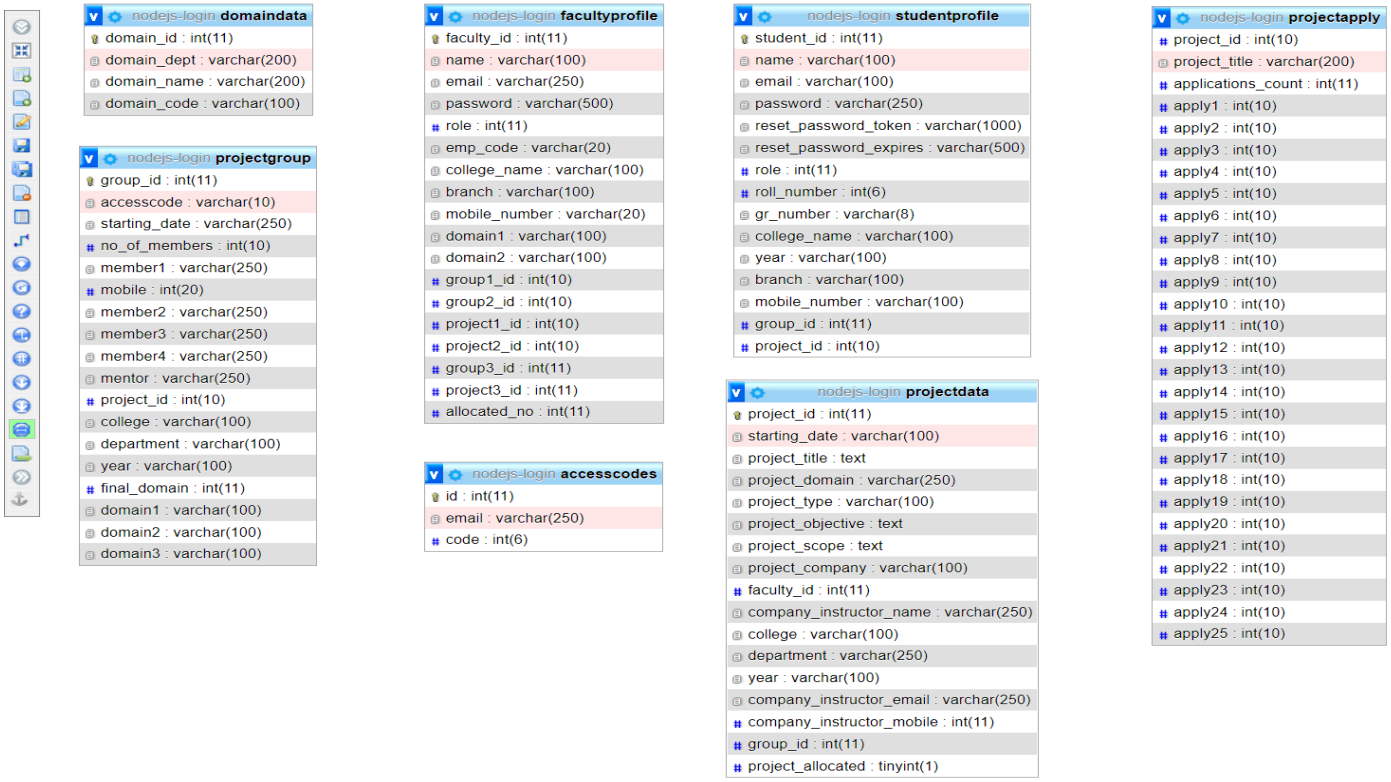

Fig. 4.6. Database Structure

CHAPTER 5

PROJECT PLAN

5.1. PROJECT ESTIMATES

5.1.1. TIME ESTIMATES

Duration Estimate = 16 weeks (30 hours per week)

5.1.2. PROJECT RESOURCES

5.1.2.1. Team

Name	Role
Prof. Nivedita Bhirud	Faculty Mentor
Mr. Deepak Pawar	Industry Mentor
Arya Talathi	Developer
Rohan Sadawarte	Developer
Samyak Jain	Developer
Mirelle Martis	Developer
Ruchika Bhaisare	Developer
Sakshi Chajed	Developer

5.1.2.2. SERVICES/SOFTWARES

- Handlebars.as view engine.
- node.js as a language
- Visual Studio for development
- MySQL as Database

5.2 RISK MANAGEMENT

5.2.1 RISK IDENTIFICATION

The risks which have been identified are:

1. The large number of project groups opting for the same domain.
2. Integrating with the existing ERP system and Project Allocation.
3. Any system can be hacked virtually with a lot of expertise, intent and motivation and so can be said for our system developed by students with no industry experience.
4. In case the hosting platform or Database Provider is down the system will not work.

5.2.2 RISK ANALYSIS

The risks for the Project can be analyzed within the constraints of time and quality

Sr No	Risk Description	Probability	Impact		
			Schedule	Quality	Overall
1.	Compromised System Security	Low	Low	High	High
2.	Integrating with the existing ERP system	Low	Low	High	Low
3.	Unexpected Requests from Client Side	Medium	Low	High	High
4.	Hosting or Database Provider not available	Low	Low	High	High

Table 5.1: Risk Table

Probability	Value	Description
High	The probability of occurrence is	> 75%
Medium	The probability of occurrence is	26-75%
Low	The probability of occurrence is	< 25%

Table 5.2: Risk Probability definitions

Impact	Value	Description
High	>10%	Schedule impact or unacceptable quality
Medium	5-10%	Schedule impact or some parts of the project have low quality
Low	<5%	Schedule impact or barely noticeable degradation in quality impact on schedule or quality can be incorporate

Table 5.3: Risk Impact definitions

5.2.3 Overview of Risk Mitigation, Monitoring, Management

Following are the details for each risk.

Risk ID	1
Risk Description	A large number of project groups opting for the same domain may lead to inconsistent monitoring
Category	Development
Source	NA
Probability	Low
Impact	Medium
Response	Mitigate
Strategy	Re-assign Tasks to students
Risk Status	Identified

Table 5.5: Risk details [1]

Risk ID	**2**
Risk Description	Integrating with the existing ERP system
Category	Development
Source	NA
Probability	Low
Impact	Low
Response	Mitigate
Strategy	Create schema according to the existing ERP system
Risk Status	Identified

Table 5.6: Risk details [2]

Risk ID	**3**
Risk Description	Runtime error due to a large number of users.
Category	Testing
Source	NA
Probability	High
Impact	High
Response	Mitigate
Strategy	Erp is working on this
Risk Status	Identified

Table 5.7: Risk details [3]

5.3 PROJECT SCHEDULE

5.3.1 PROJECT TASK SET

Major Tasks in the Project stages are:

1. Planning
2. GUI development
3. Development of Database Schema
4. Development of Algorithm for Project status
5. Development of REST APIs
6. Deployment on the website

5.3.2 TIMELINE CHART

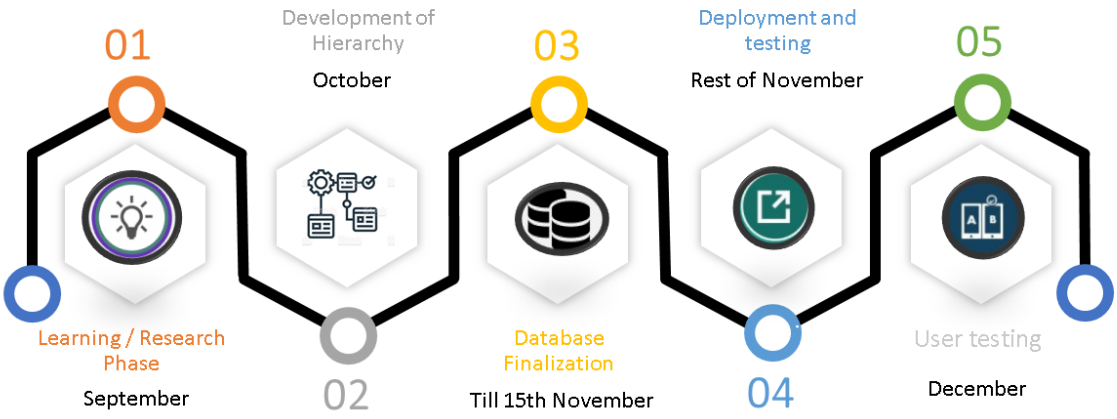

Fig 5.3.2: Timeline chart.

5.4 TEAM ORGANIZATION

5.4.1 TEAM STRUCTURE

Name	Role
Prof. Nivedita Bhirud	Faculty Mentor
Mr. Deepak Pawar	Industry Mentor
Arya Talathi	Developer
Rohan Sadawarte	Developer
Samyak Jain	Developer
Mirelle Martis	Developer
Ruchika Bhaisare	Developer
Sakshi Chajed	Developer

5.4.2 MANAGEMENT REPORTING AND COMMUNICATION

- The workload is distributed among the team members based on their skills and expertise.
- After completion of the implementation of any module of the project, the work done is communicated among the team members and to the project guide.

CHAPTER 6

PROJECT IMPLEMENTATION

6.1. OVERVIEW OF PROJECT MODULES

6.1.1. PROJECT ALLOCATION MODULE

The purpose is to use a Project allocation system where the coordinator can add projects, allocate projects to student groups and assign faculty mentors to student groups. Students can create or join a group,leave or delete a group.They can also view all available projects as well as its details and apply until they have been allotted a project.

6.2. TOOLS AND TECHNOLOGY USED

The following are the tools used:

- **VS Code**: Visual Studio Code is a source-code editor Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git.
- **Github:** GitHub is a code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere. It hosts your source code projects in a variety of different programming languages and keeps track of the various changes made to every iteration.
- **XAMPP**: XAMPP is an abbreviation for cross-platform, Apache, MySQL, PHP, and Perl, and it allows you to build WordPress site offline, on a local web server on your computer.
- **Handlebar JS:** Handlebars compiles templates into JavaScript functions. This makes the template execution faster than most other template engines.
- **MySQL:** MySQL is the most popular database system. A free, open-source, and cross-platform web server solution stack developed by *Apache Friends,* that has interpreters for scripts written in the aforementioned languages hence making it extremely easy for the researcher to create a local web server for testing and implementation purposes.
- **Node JS** – For Backend: It is an asynchronous platform based on non-blocking input-output operations. As a result, the advantages include exceptional scalability and a good ratio between product performance and developer effort with the help of Express Framework .

- **Bootstrap 5 -** Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains CSS- and (optionally) JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

CHAPTER 7

SOFTWARE TESTING

7.1 TYPES OF TESTING

Testing is the process of executing a program to find errors. It assesses the quality of the product. In other words, software testing is a verification and Validation process. The various types of testing that are used in the dissertation are as follows:

- **Unit Testing:** Unit testing is the testing of an individual unit or group of related units. It falls under the class of white box testing. It focuses on the smallest unit of software design. In this, we test an individual unit or group of interrelated units. It is often done by the programmer by using sample input and observing its corresponding outputs. We have tested various functions in our application individually before moving on to the next function.

- **Integration Testing:** The objective is to take unit-tested components and build a program structure that has been dictated by design. Integration testing is testing in which a group of components is combined to produce output. After unit testing of individual functions and modules, we have integrated them and then performed integration testing.

- **Regression Testing:** Every time a new module is added leads to changes in the program. This type of testing makes sure that the whole component works properly even after adding components to the complete program.

- **Functional Testing:** Functional testing is the testing to ensure that the specified functionality required in the system requirements works. It falls under the class of black-box testing. We have tested all the use cases possible on the application and the application performs all the functions defined in the scope of the project.

- **System Testing:** This tests the whole system. It is functional testing, performed to approve that the application meets user requirements.

- **Usability Testing:** Usability testing is performed from the perspective of the client, to evaluate how the GUI is user-friendly? How easily can the client learn? After learning how to use it, how proficiently can the client perform? How pleasing is it to use its design? This falls under the class of black-box testing. We have tried to make the GUI as simple as possible for using all the functionalities effortlessly. We have made different students use our application to test it for usability.

7.2 TEST CASES & TEST RESULTS

	Test Case Description	**Test Result**		Test Status (PASS/FAIL)
		Expected	Actual	
1.	Student Task crud operations	The student should be able to create or join a group using access code.	The student can do all the operations successfully.	PASS
2.	Coordinator Task Crud Operations	The coordinator should be able to add or delete projects and allocate projects to students and teachers.	The coordinator is successfully able to do all the tasks.	PASS
3.	Algorithm testing	The project group's status must be reflected based on the completion of tasks by students within respective groups.	The project group's status is successfully reflected based on task completion.	PASS

Table 7.2: Test Cases and Results

CHAPTER 8
RESULTS

8.1 Screenshots

1. Registration Page -Student

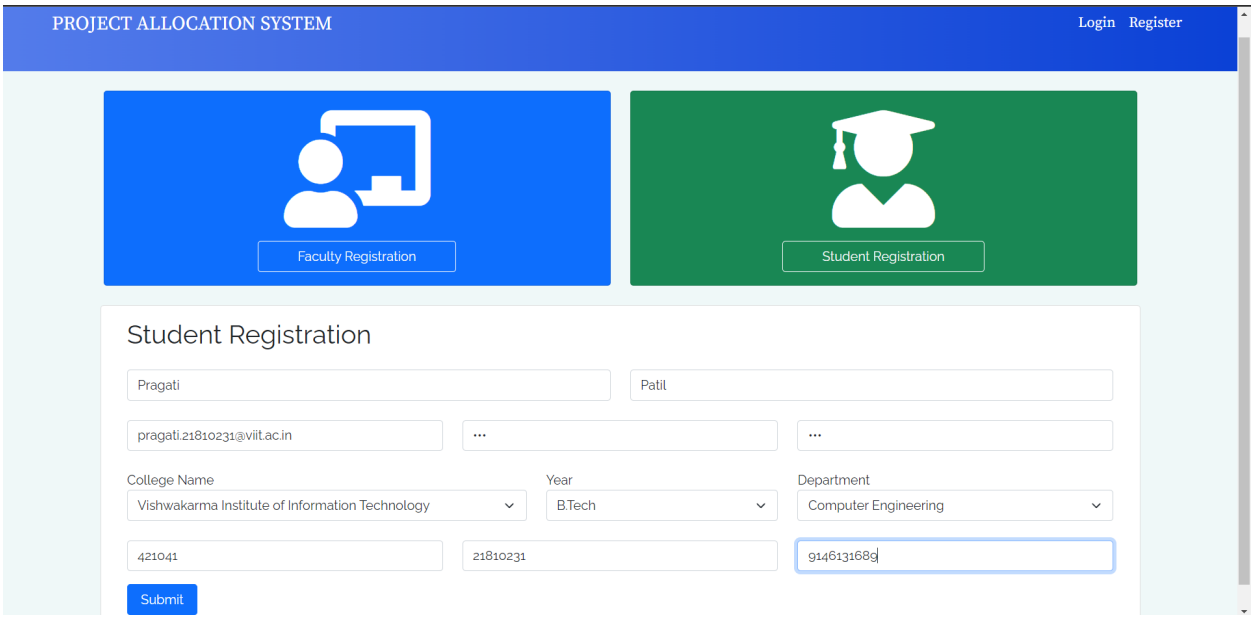

Fig. 8.1.1. Registration Page - Student

2. Login Page - Student

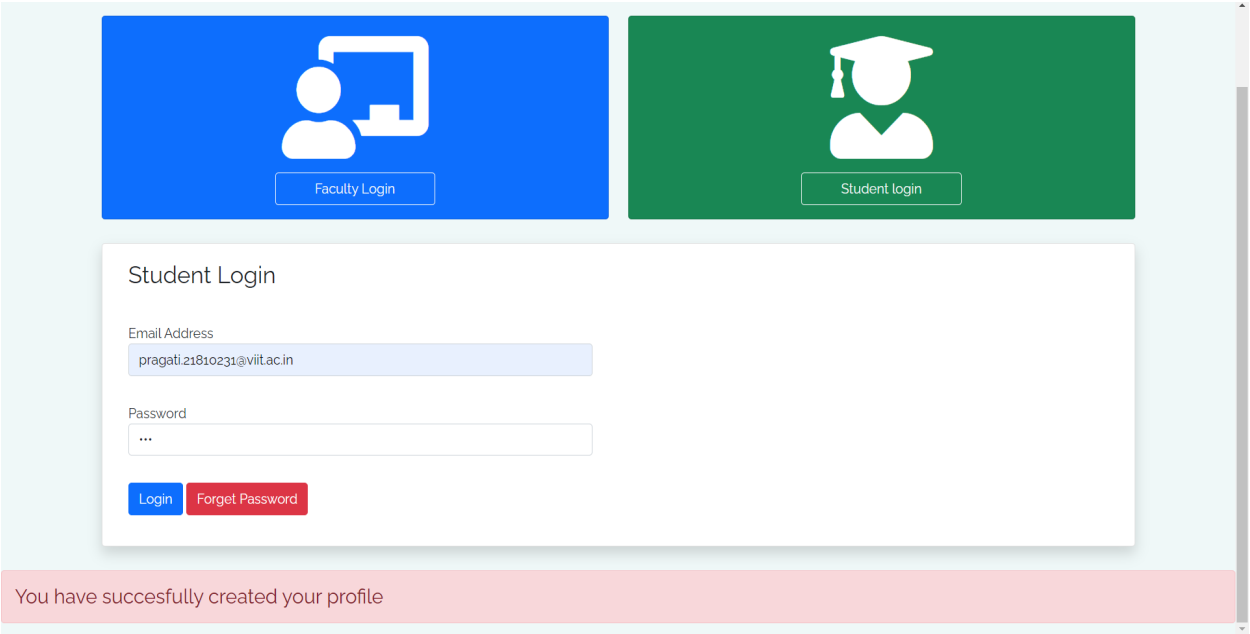

Fig. 8.1.2 Login Page - Student

3. Student Profile

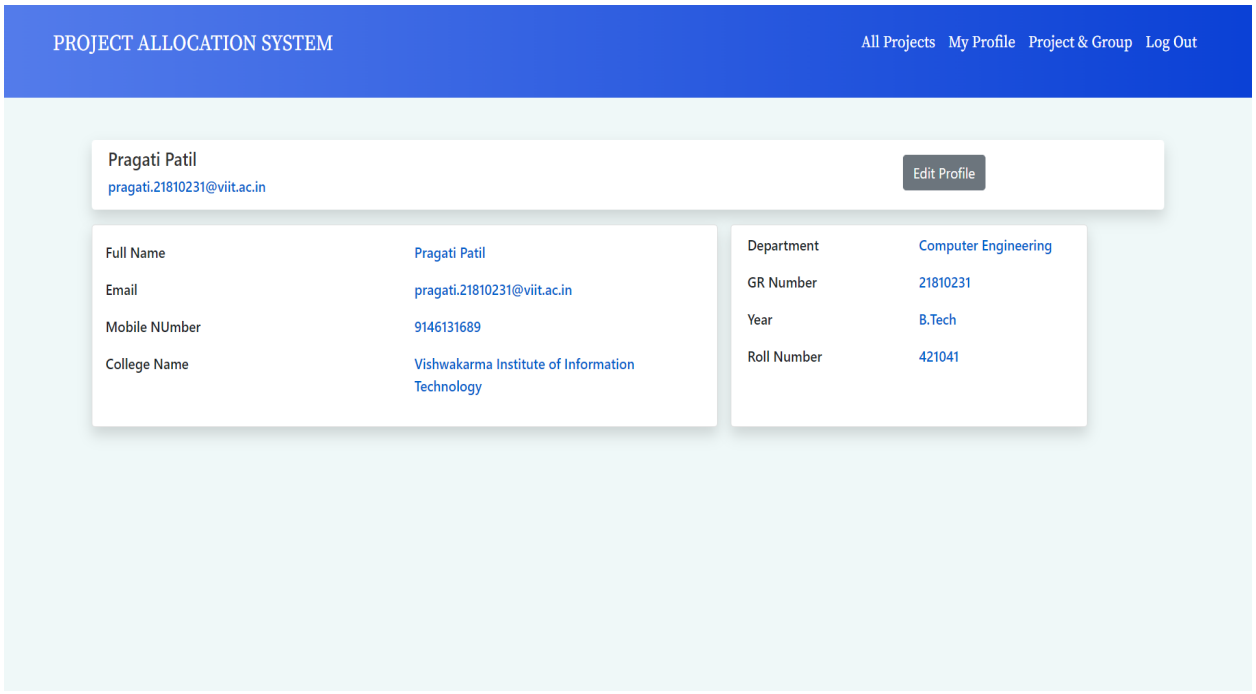

Fig. 8.1.3 Student Profile

4. Create Group

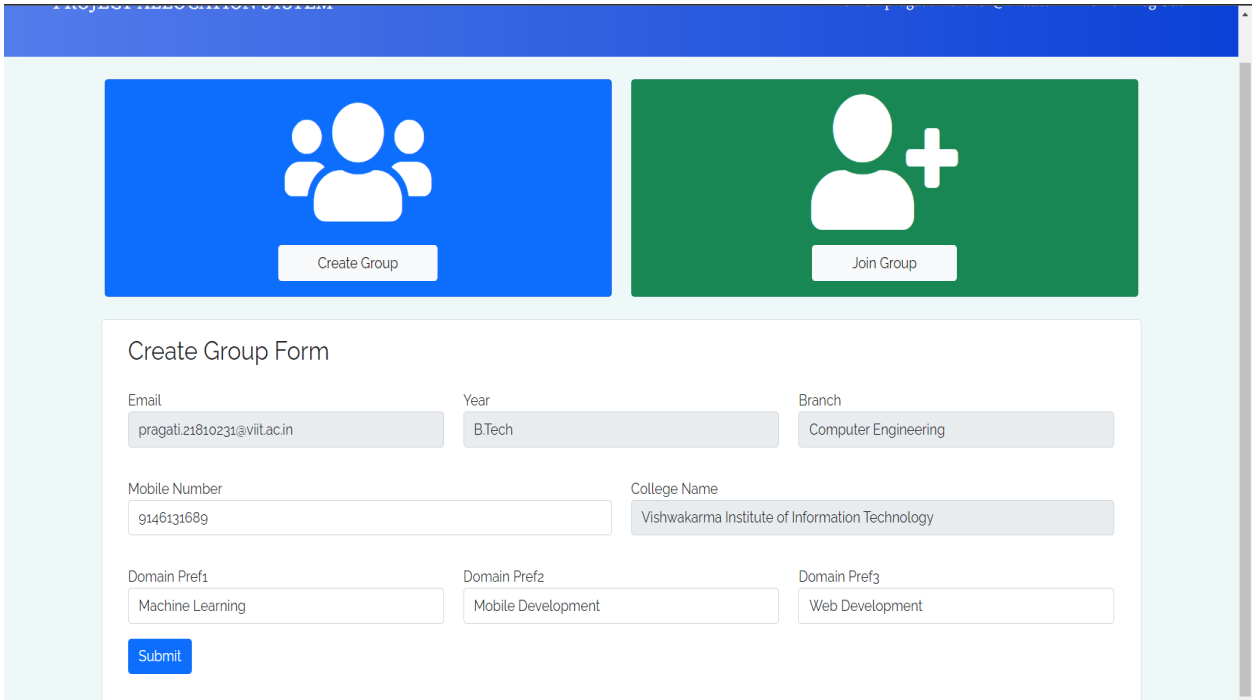

Fig. 8.1.4 Create Group

5. Join Group

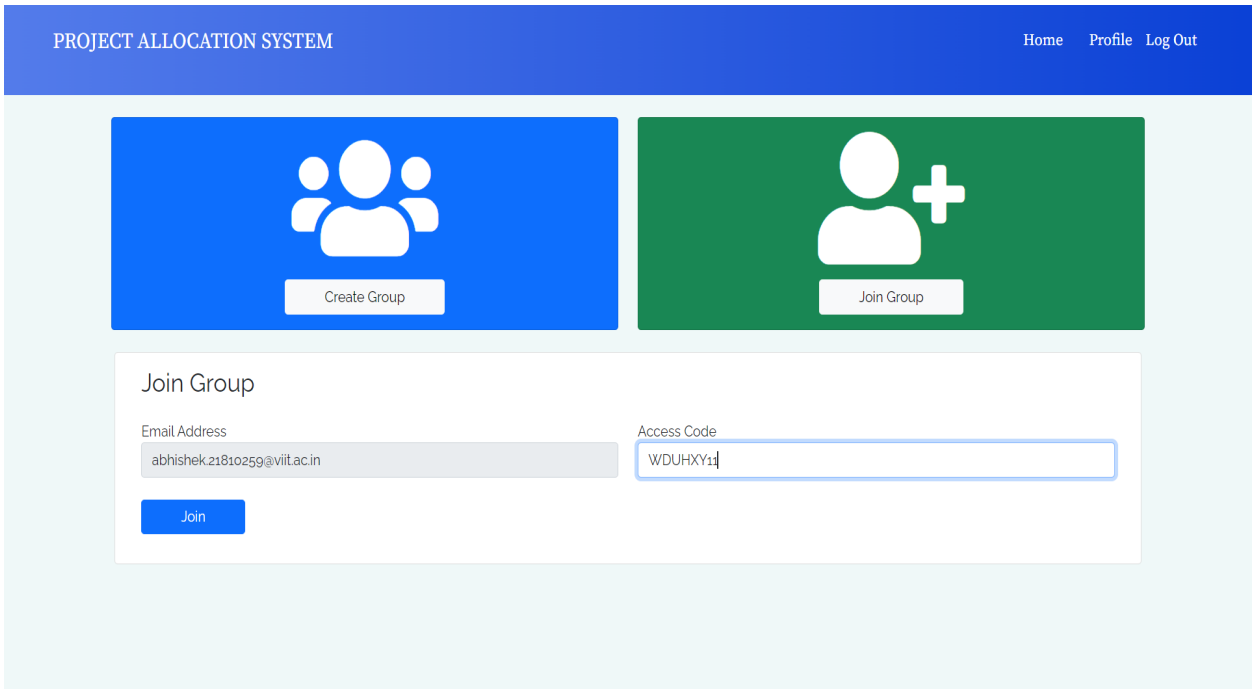

Fig. 8.1.5 Join Group

6. Project & Group Info (Before allocation)

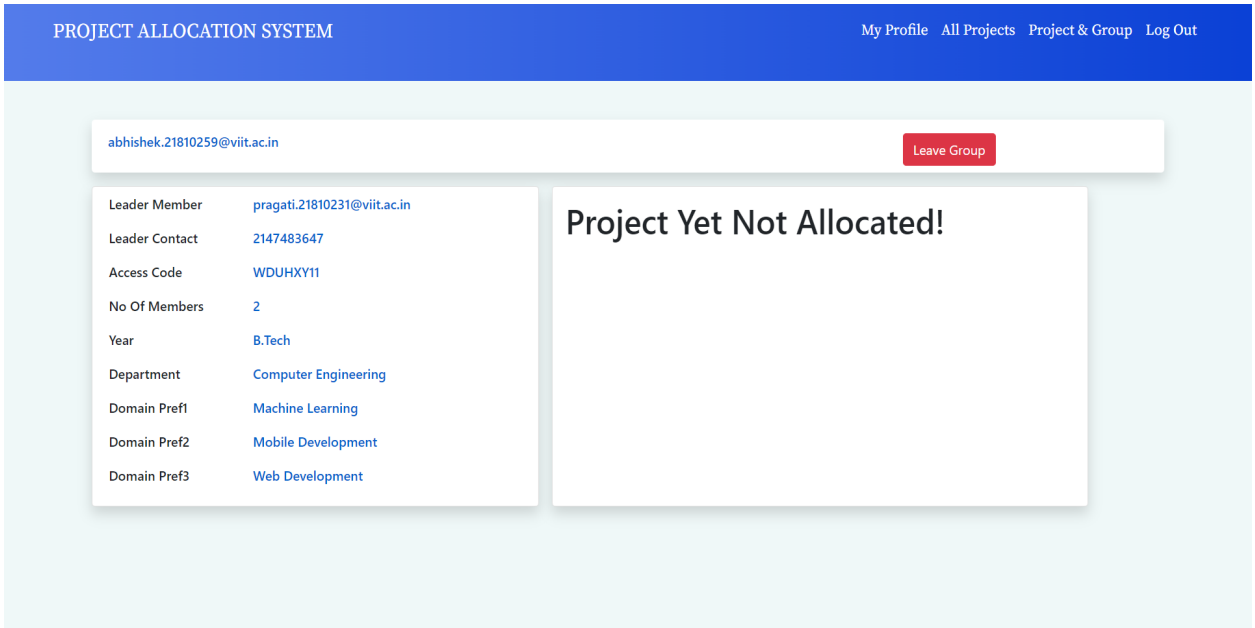

Fig. 8.1.6Project & Group Info (Before allocation)

7. All Projects

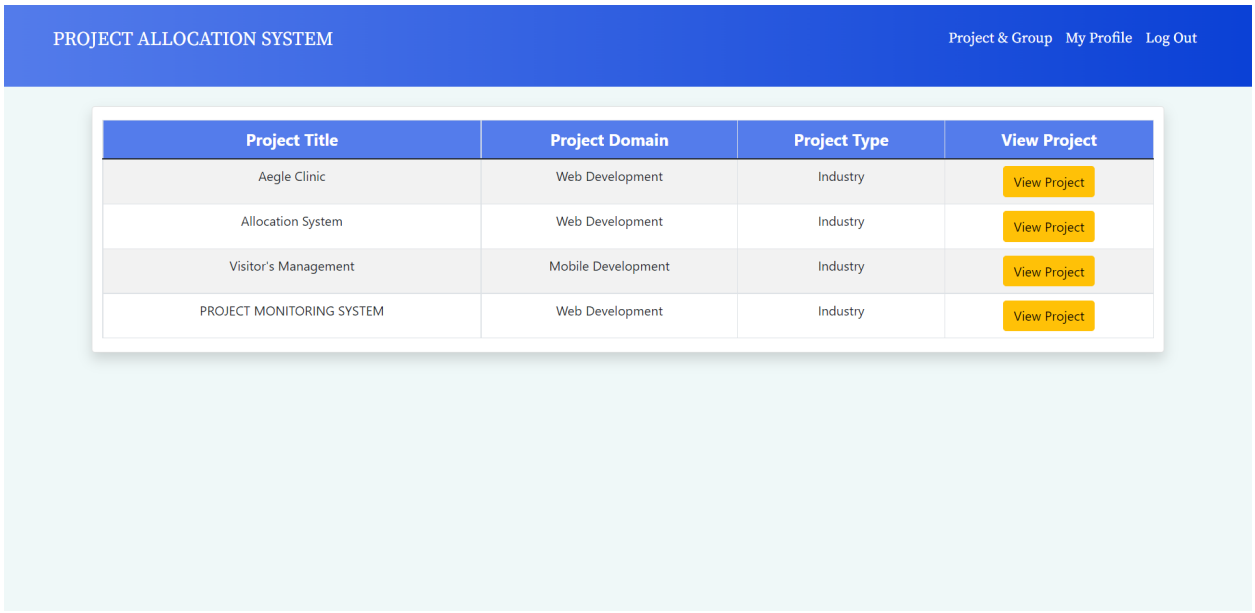

Fig. 8.1.7 All Projects

8. Apply for a Project

Member can't apply Only Leader can Apply

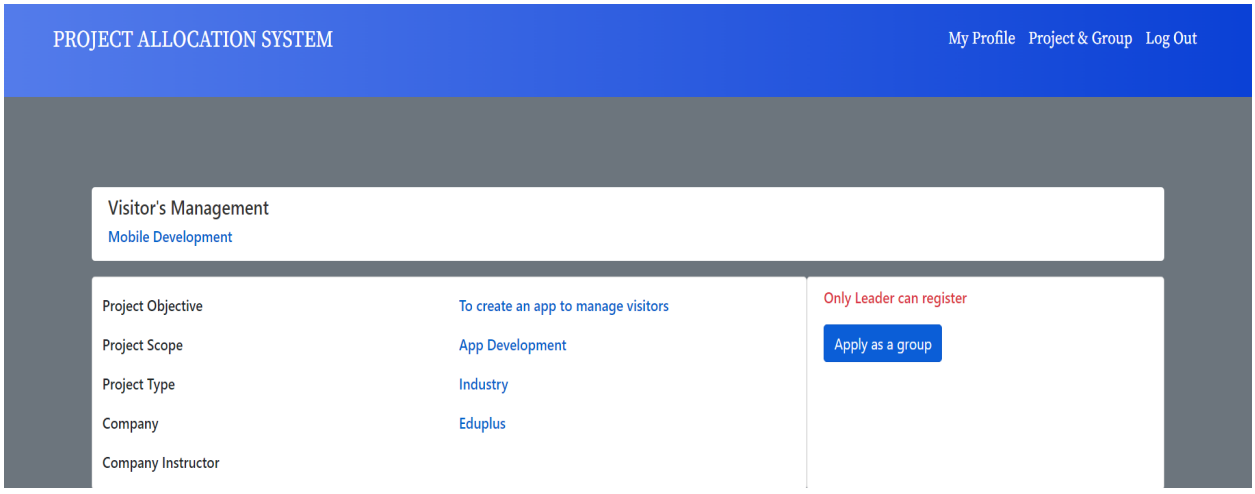

Fig. 8.1.8 Apply For a Project

9. Successfully applied

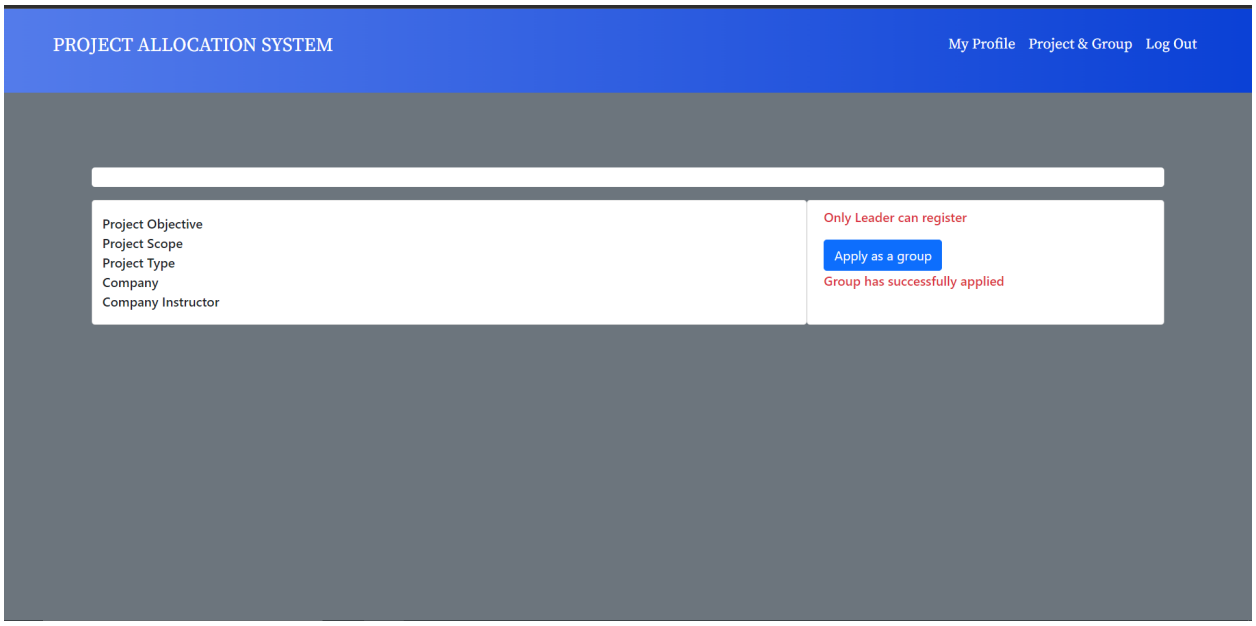

Fig. 8.1.9 Successfully applied

10. Registration Page - Access Code Verification

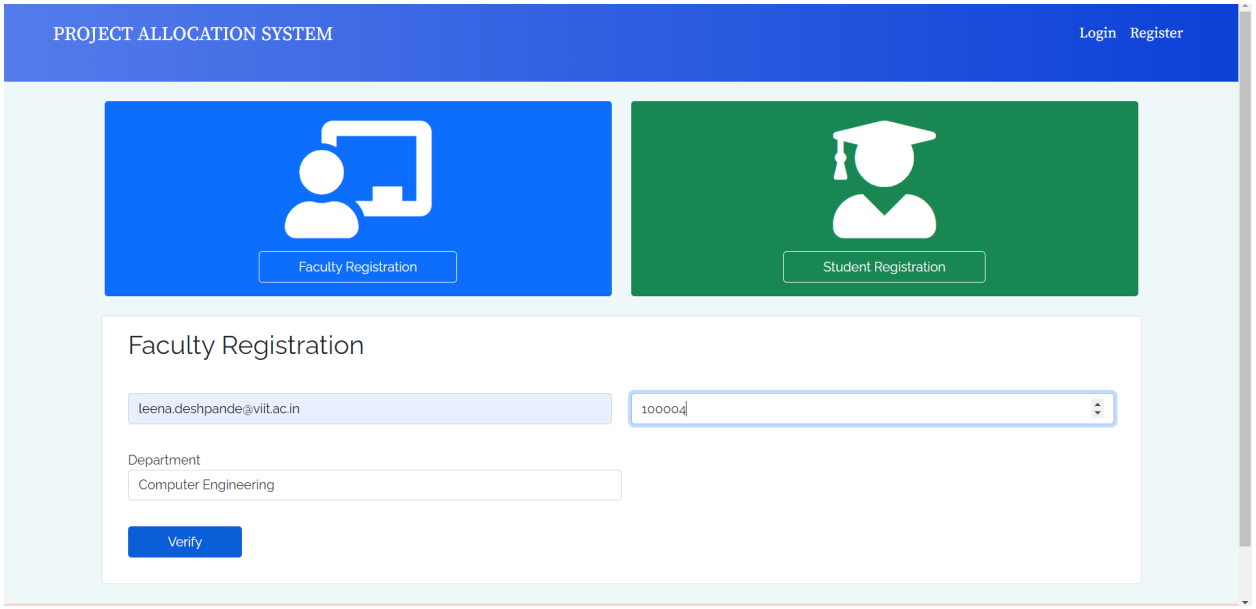

Fig. 8.1.10 Registration Page - Access Code Verification

11. Registration Page - Faculty

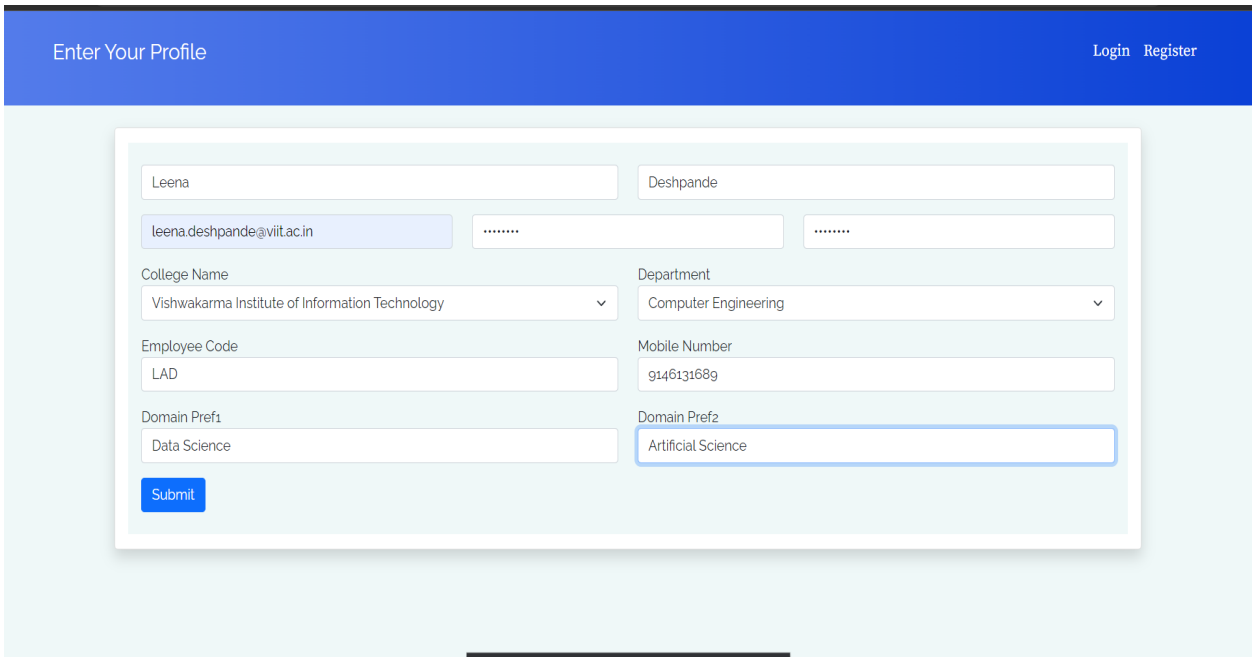

Fig. 8.1.11 Registration Page - Faculty

12. Faculty Profile

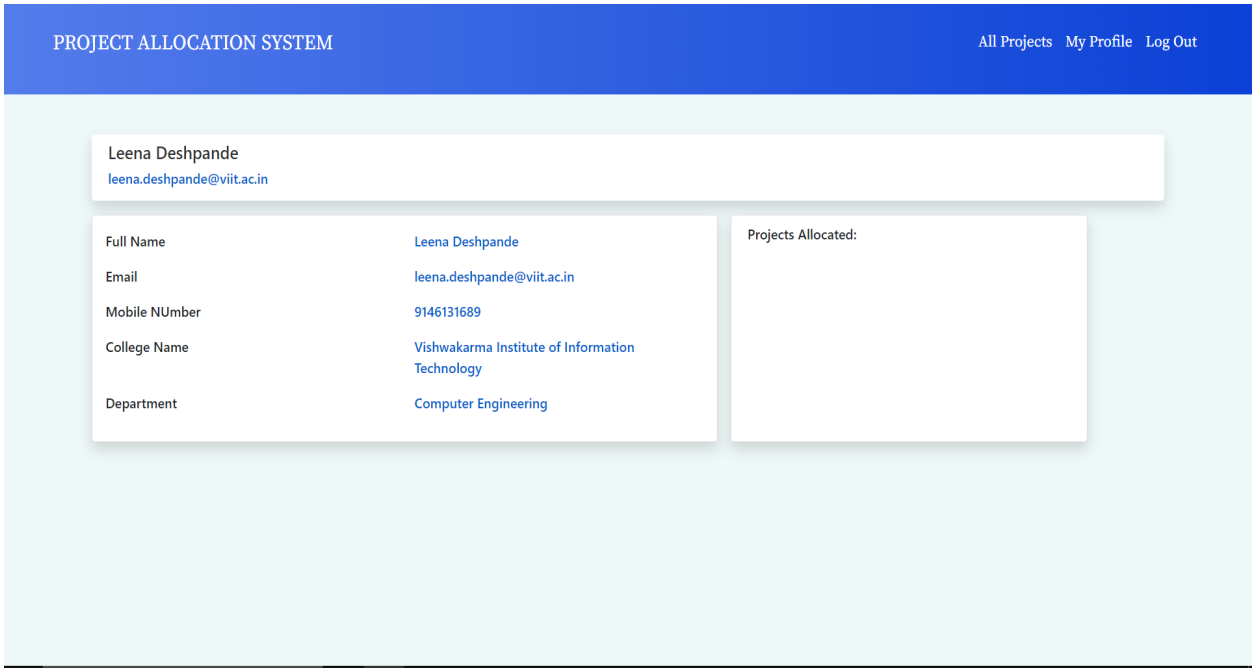

Fig. 8.1.12 Faculty Profile

13. Add Project

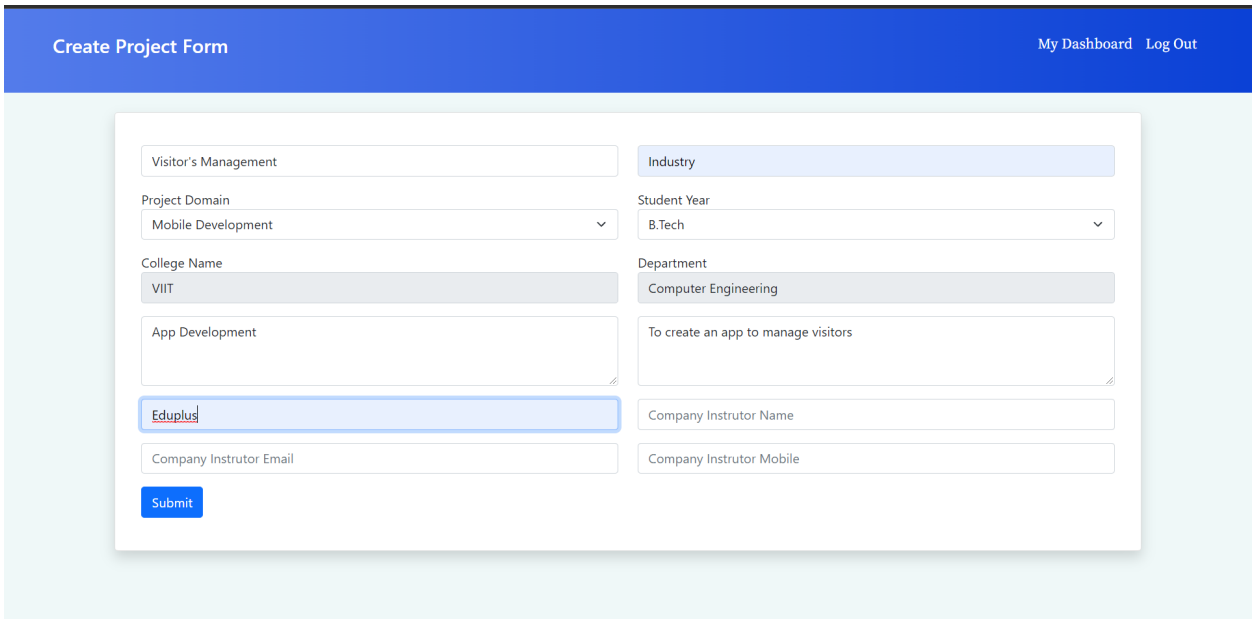

Fig. 8.1.13 Add Project

14. Co-ordinator Dashboard

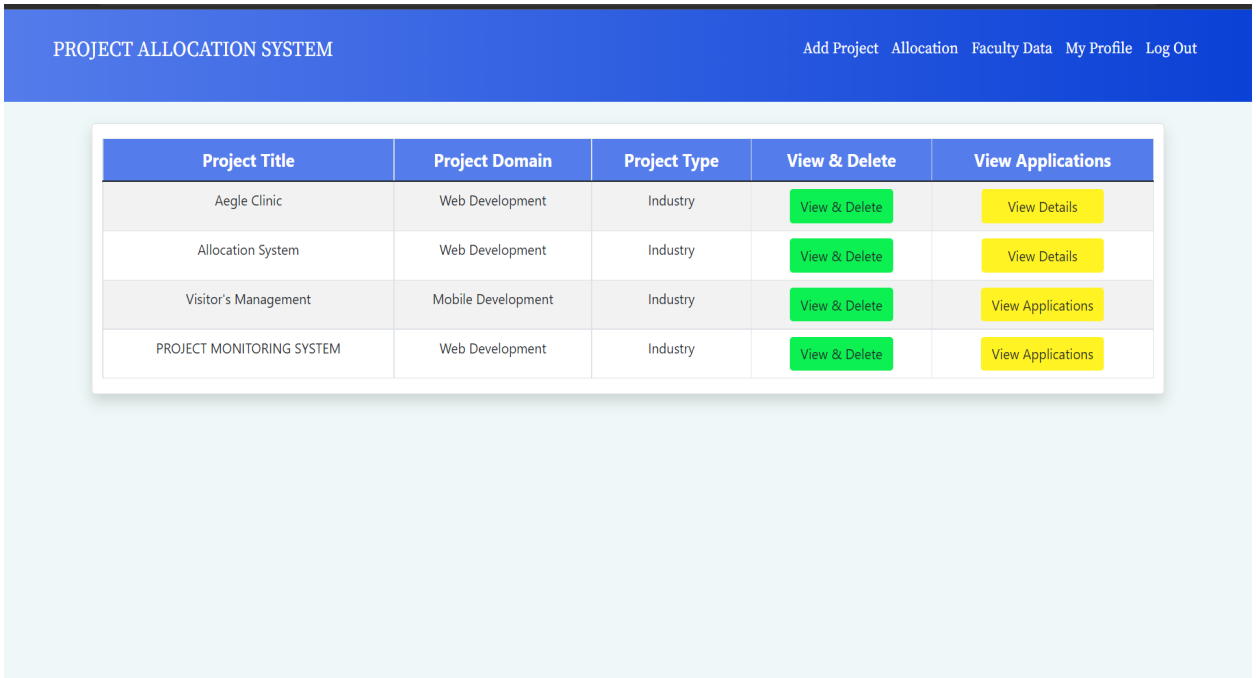

Fig. 8.1.14 Co-ordinator Dashboard

15. Delete Project

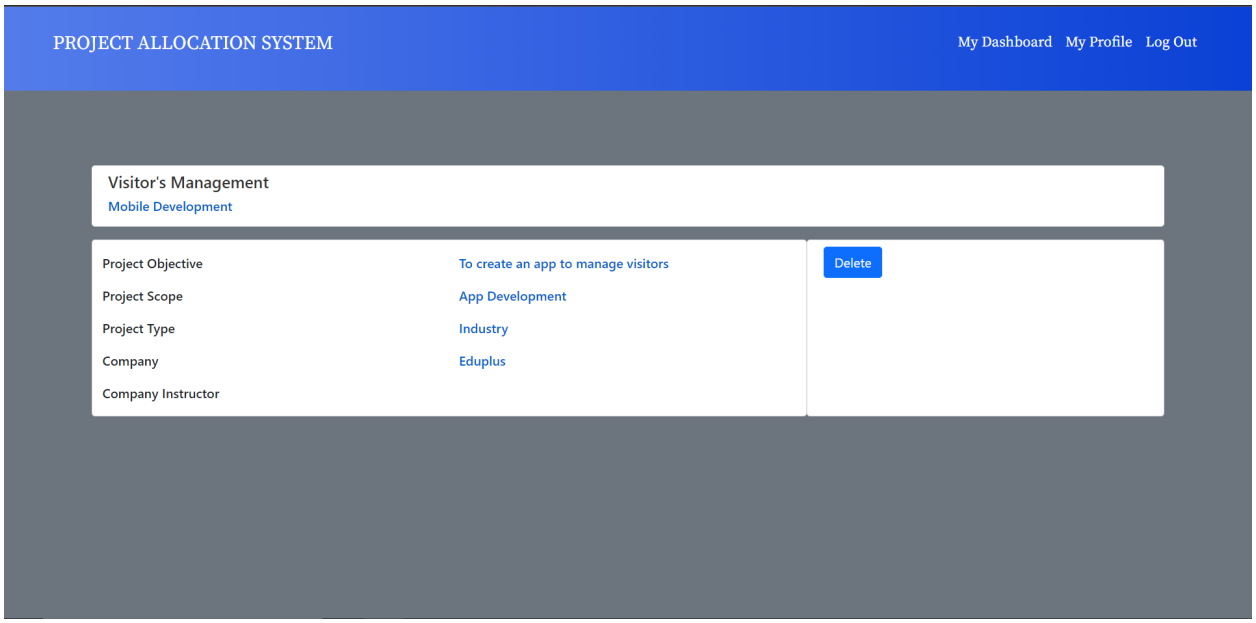

Fig. 8.1.15 Delete Project

16. View Applications

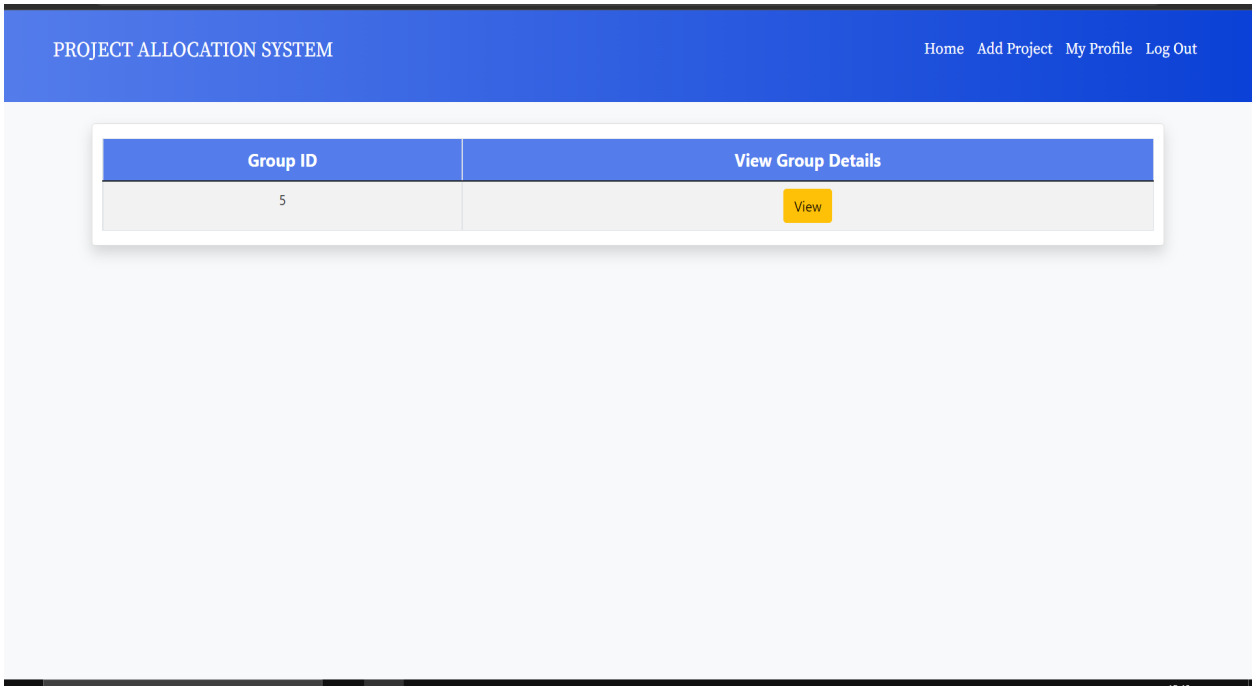

Fig. 8.1.16 View Applications

17. Allocate Projects

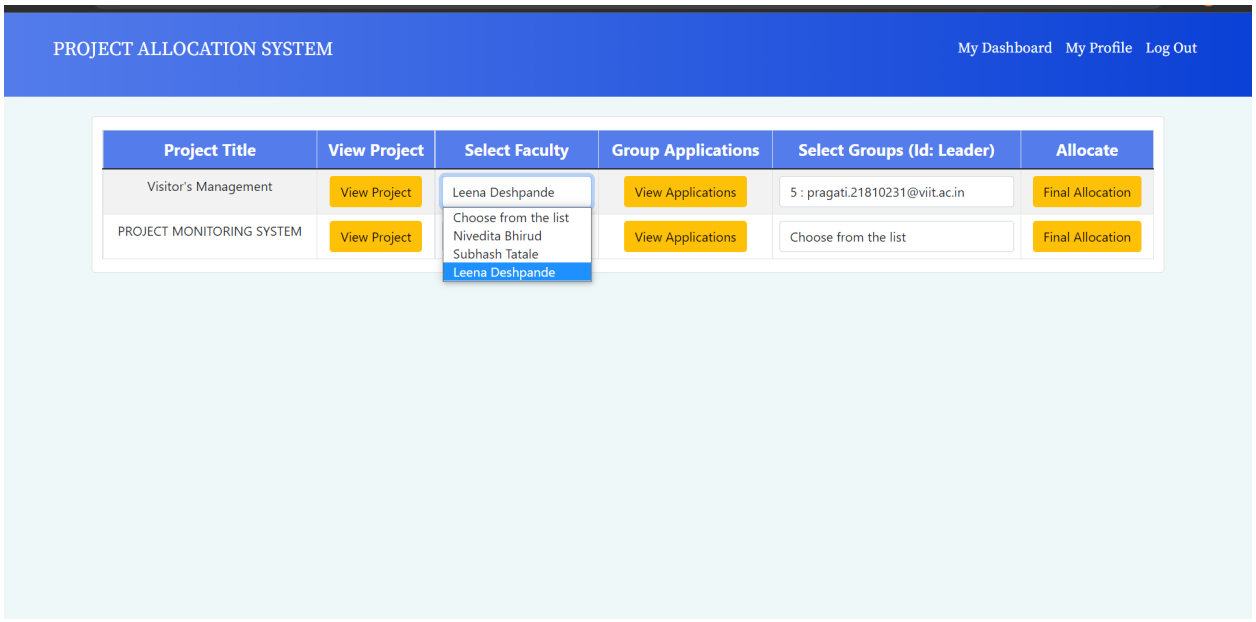

Fig. 8.1.17 Allocate Projects

18. Faculty Project Details View

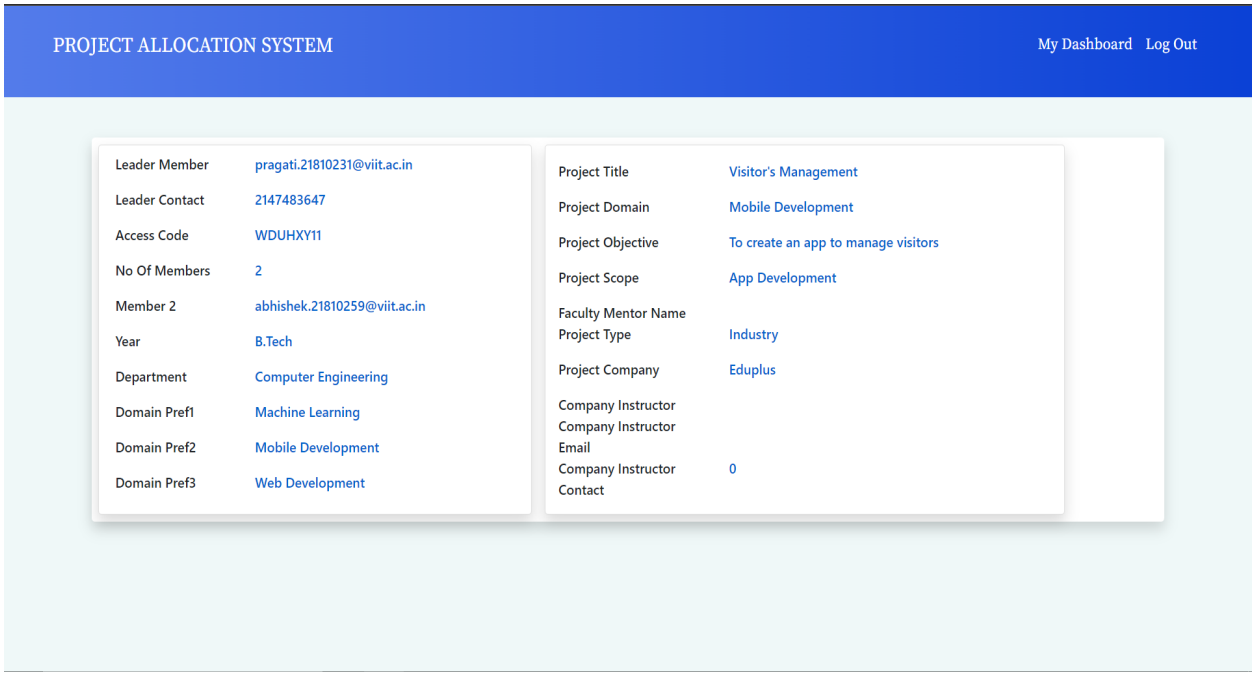

Fig. 8.1.18 Faculty Project Details View

19. Student Project Details View

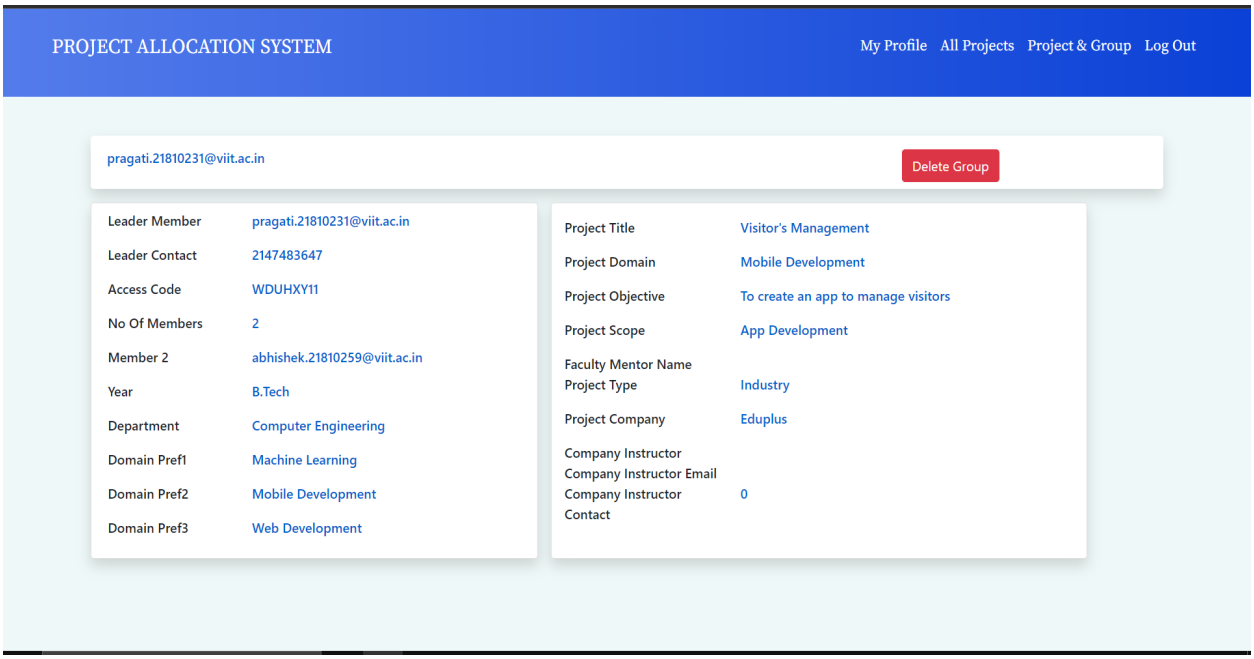

Fig. 8.1.19 Student Project Details View

20. All Allocated Projects to Faculty

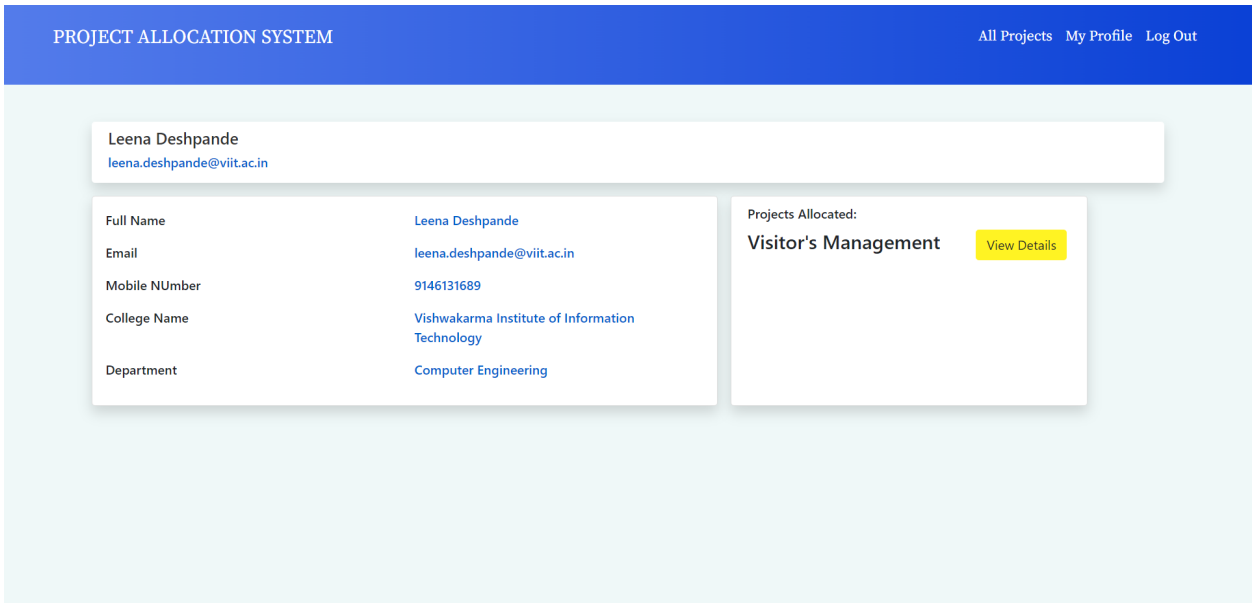

Fig. 8.1.20 All Allocated Projects to Faculty

CHAPTER 9

CONCLUSION

9.1. CONCLUSIONS

1. The choice of which approach to use throughout the project is critical to the project's success.Certain conclusions were taken after completing a comprehensive and critical review of several well-established approaches and discussing the findings with the supervising professor (Prof. Nivedita Bhirud).

2. Our project is a web application to automate the project allocation process for students, teachers and coordinators. It is a centralized system to manage student groups, projects and faculties.
3. Coordinator can view all the projects of the department from its dashboard, faculty can view all the projects under him/her

4. The ultimate goal is to create a framework that allows coordinators to easily allocate projects and faculties to student groups within a limited time.

5. The Software planning's goal is to create a framework that allows developers to establish credible estimates within a restricted time period at the start of a software project, and it should be updated on a frequent basis as the project develops.

9.2 Future work:

A variety of future scopes are there like we can integrate this system with the existing ERP of the college. We can make it more compatible with mobile devices or build mobile applications connected with the same database.

9.2. APPLICATIONS

- Students can form groups and apply to the projects on the application system instead of floating numerous google forms by coordinator.
- The projects can be allotted to student groups according to department and college by the respective coordinator.

- Faculty Guides can view all the projects under them and see their progress and coordinate with them.

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