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# **CHAPTER 1: INTRODUCTION**

## **1.1 General Introduction**

A common concern in institutions of higher education is to keep its former students (a.k.a. alumni) involved with current academic activities. It is an agreement that one of the greatest assets that any institute is their alumni. They are the people who represent the Institution in the real world. In recent years, universities have encouraged a movement towards the establishment of alumni associations as they provide networking opportunities and contact between the university and the Alumni.

## **1.2 Project Perspective**

In this sense, this project is aimed at analysing and building an alumni management system that will bridge the gap between alumni and students of the institute. Having such a system provides a variety of benefits to both the parties. It allows alumni to have access to the latest events that the institute has to offer and also be able to provide various opportunities to the continuing students of the institute. In addition, having a good alumni network plays a vital role in the development of the university because of their enormous outreach potential that benefits the university and helps others in their career path.

## **1.3 Project Profile**

- Topic : Alumni Information Management
- By : Prince Swargiary (CSB19053)
- Guide : Prof. D.K. Bhattacharyya
- Department : C.S.E
- Organization : Tezpur University

## **1.4 Document Structure**

The first part of this report contains an introduction to the problem and scope of the project. The next part will provide knowledge of the initial studies and structuring of the application. After that, the following parts will provide information about the usage, implementation, and testing of the application.

This project is done under the course ‘CO317: Software Engineering Using Project Perspective’ in the 6th-semester (Spring 2022) B.Tech CSE dept of Tezpur University.

## **CHAPTER 2: INITIAL SYSTEM STUDY**

### **2.1 Initial System Study**

As per the existing system, there is no proper alumni management system that keeps track of alumni. Alumni has to check the official website of the institute to get any updates of ongoing events. They have to directly contact the administration in case they want to host any event for the students. Also, a lot of opportunities are missed as a student due to lack of an easy and efficient system that connects them with the alumni of the institute at one common place. The traditional way thus needs to be updated to enhance the bond between both the partly and greatly increase opportunities for the continuing students.

Drawbacks of the Existing System:

- Storing information of alumni and students is problematic due to large and expanding volume of data.
- Maintaining and providing with the latest information is difficult without a proper management system.
- Lacks an efficient way of finding and connecting with alumni.

### **2.2 Problem Statement**

To make an Alumni Information management web-based application that shortens the gap between the institute and its alumni network in order to create and expand opportunities for both.

### **2.3 The Proposed System**

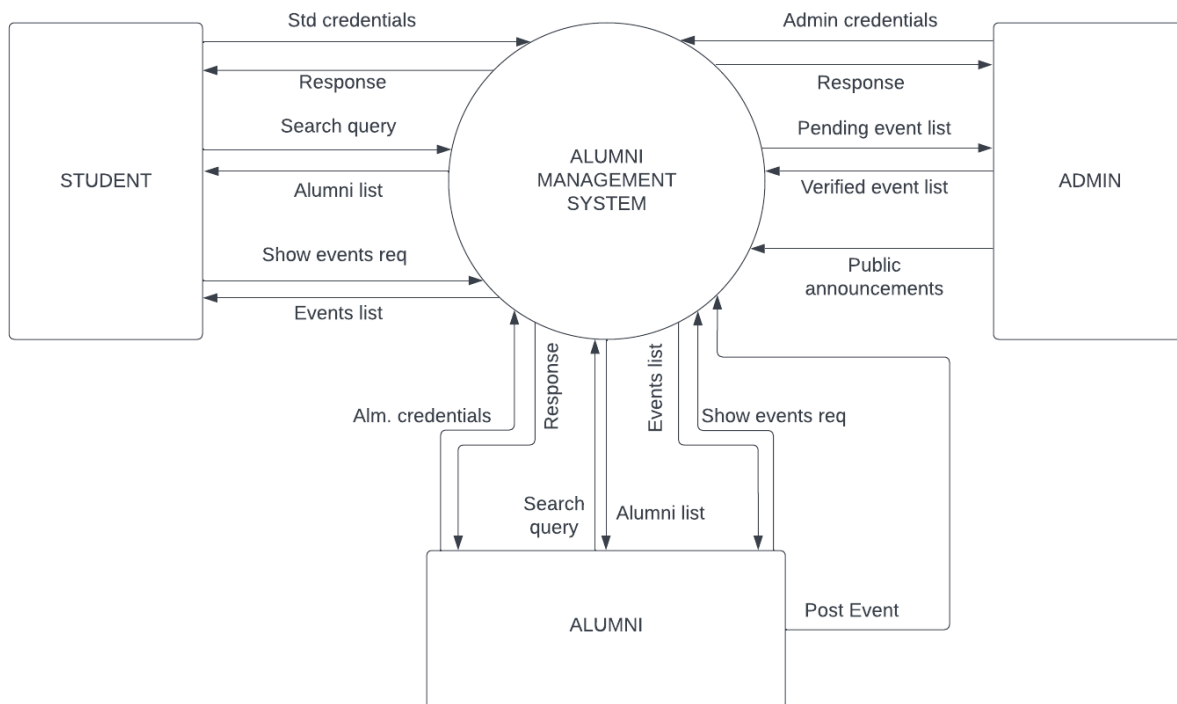
With the help of the proposed application, it will be much easier for alumni to stay in touch with the institute and vice versa. This will open doors for many opportunities and bring exposure of current real-world scenario to the students. Any registered member can easily search for other alumnus in the network and get their latest details. This way students can follow and take guidance from alumnus of his/her choice.

Any alumnus will also be able to search for other alumnus if they wish to come together or organize any event. They will also have the option to post announcements that can be shared with the admin and upon verification by admin, the post will be visible to all.

Apart from regulating the website, the admin will also have the option to make public announcements which will aim to give the latest news and updates of the institute to the visitors. Through this, alumni can keep themselves updated and plan for any future academic related events accordingly.

The website shall be built keeping simplicity, efficiency and security in mind. The aim is to provide easy to use yet attractive user interface that provides all the necessary functionalities of a modern Alumni Management System.

## 2.4 Context Diagram



## 2.5 Scope of the Project

This project has been done in the sixth semester of the Bachelor of Technology program at Tezpur University. The period of work is roughly three months. Within this project, we accomplish the following part of the system proposed above –

1. Carry out a detailed System Analysis of an Alumni Management System.
2. Designing/Creation of relational tables in SQL.
3. Creating interface that allows registration of alumni and the students in the system.
4. Designing data entry forms to enter and subsequently maintain information pertaining to the institute, its alumni and the students.
5. Generating and producing various tables at different stages based on specific queries by the user input.

## **2.6 System Development Approach**

The iterative waterfall development method has been used to develop this project because the linear nature of the waterfall development method makes it easy to understand and manage. This project had clear objectives and stable requirements so it was best to use the waterfall method.

## **CHAPTER 3: FEASIBILITY ANALYSIS**

### **3.1 System Architecture**

The application developed in this project can be made using ‘Three-Tier Architecture’. This pattern of software development divides the application into three tiers: Presentation, Application and Data Tier.

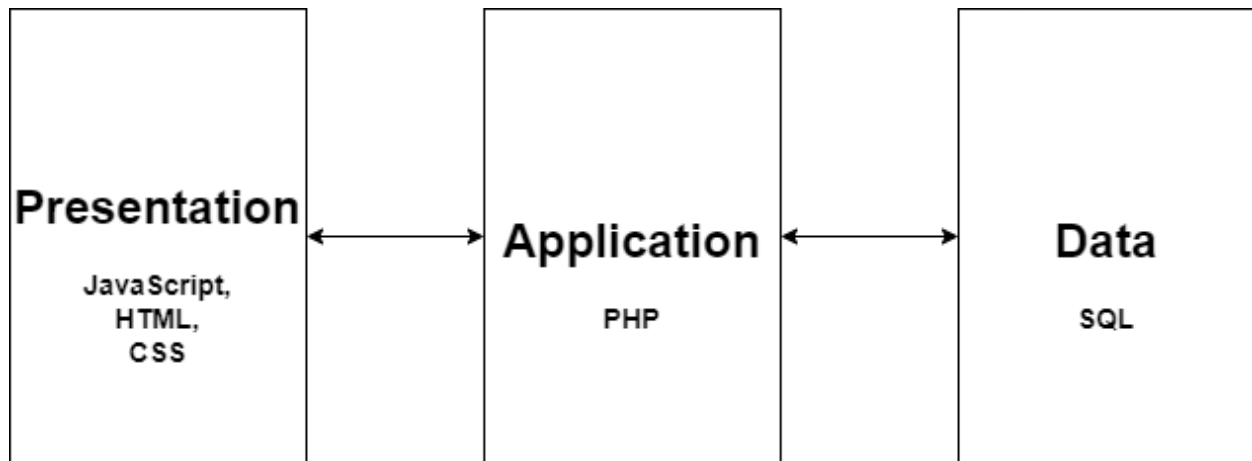


Fig 3.a: 3-Tier Architecture

**Presentation layer:** Is the user interface and communication layer of the application, where the end user interacts with the application. Its main purpose is to display information to and collect information from the user.

**Application layer:** In this tier, information collected in the presentation tier is processed - sometimes against other information in the data tier - using business logic, a specific set of business rules.

**Data layer:** Is where the information processed by the application is stored and managed.

### **3.2 Requirements for System Development**

This will be a website so we need to deploy a hosting server. A computer with an internet connection, a software platform to write codes, and some libraries, IDEs that will be used for the development. In our case we will use the following:

- Code Editor/IDE: VS code.
- Scripting language: PHP, JS, JQuery, AJAX.
- Style Sheet language: CSS
- Database programming language: SQL

- Database Management System: MySQL

### **3.3 Behavioural aspects of the proposed system**

The system has an admin who will be responsible for making some important decisions inside the system when needed. Admin has to be in touch with the system regularly. All other users can access the platform if they need to use certain functionalities.

The suggested system is feasible because we have the access to all the necessary requirements. All the software needed to generate the proposed system are free and open-source which makes it easy to get started with and to use independently.

### **3.4 Development Schedule**

The schedule to complete the project is around 4 months. This timeline is enough to implement and test the proposed system

Hence the project is feasible to develop as all the necessary basic requirements are available and the required technologies and tools are available on open-source platforms.



## **CHAPTER 4: SOFTWARE REQUIREMENTS SPECIFICATIONS**

### **4.1 General Description:**

- **Product Perspective**

This will be an independent website that can act as a standalone web application or it can be linked with the homepage of the official website of any institute. Through this product both the alumni and the institute can have one common destination for all their academic related needs.

- **Product Functions**

The product has various functions. Through this product, the alumni or any member of the institute would be able to sign up and register in the system.

After successfully registering and signing in, they would be able to search for other alumni based on any info or tag related to them. The users will be able to update their profile swiftly via an update form in the website. The product will be managed by an admin and he/she would have the privilege to verify the post request made by any alumnus. If the admin accepts the post request, then it will be made visible to all the users.

- **Assumptions and Dependencies**

We are assuming that users have sufficient knowledge to operate computer and they are giving correct credentials at the time of registration.

### **4.2 Functional Requirements**

- **Functional Requirements for Admin:**

WA1 – Logging into the system.

Input: Admin Credentials (Username and Password)

Output: Admin successfully gets logged in and admin dashboard is shown. In the case if the credentials are incorrect a prompt message is displayed showing that the entered credentials are wrong.

WA2 – Post Public Announcements.

Input: Post title, Date and time, Description.

Output: The post is saved and can be checked by any visitor from the home page in Events section.

WA3 – Verify pending posts.

Input: Accept or Reject pending posts.

Output: If the admin accepts the post, then it gets saved and the post can be checked by any user who is logged into the system.

WA4 – Check accepted events.

Input: Check events button is clicked.

Output: All the accepted events is shown in a tabular format with all its details.

WA5 – Logout

Input – Logout button is clicked.

Output: Admin is logged out.

- **Functional Requirements for Students:**

WS1 – Sign up.

Input: Name, Roll, Phone No., Password.

Output: If all the credentials are valid then the user is registered, else an error message is shown.

WS2 – Sign In.

Input: Roll no and Password.

Output: If the credentials matches then the user is logged in else an error message is displayed.

WS3 – Search for alumni.

Input: Any key related to alumni info like name, job or location.

Output: A live table is shown with details of alumni which matches with the input query of the user.

WS4 – Check Events.

Input: Check events button is clicked.

Output: All the accepted events is shown in a tabular format with all its details.

WS5 – Update details.

Input: Details to be updated such as phone no., roll no., name (in case of any mistake while registering).

Output: The details of the user are updated.

WS6 – Logout

Input – Logout button is clicked.

Output: Student is logged out.

- **Functional Requirements for Alumni:**

WL1 – Sign up.

Input: Name, Job, Post, Location, Phone No., Password.

Output: If all the credentials are valid then the user is registered, else an error message is shown.

WL2 – Sign In.

Input: Roll no and Password.

Output: If the credentials matches then the user is logged in else an error message is displayed.

WL3 – Search for alumni.

Input: Any key related to alumni info like name, job or location.

Output: A live table is shown with details of alumni which matches with the input query of the user.

WL4 – Check Events.

Input: Check events button is clicked.

Output: All the accepted events is shown in a tabular format with all its details.

WL5 – Update details.

Input: Details to be updated such as Phone no., Job, Post, Location (in case of any mistake while registering).

Output: The details of the user are updated.

WL6 – Send a post request to admin:

Input: Post title, date/time, description.

Output: The post is sent to admin for verification.

WL7 – Logout.

Input – Logout button is clicked.

Output: Alumnus is logged out.

### **4.3 Non-Functional Requirements**

- **User Interface requirements**

The user interface of the application must be user friendly, intuitive and easy to use, implementing the economics standards.

- **Security requirements**

In order to use certain features of the system, users must first authenticate themselves by name and passwords. The system shall not allow access if the user fails to provide correct login information.

## **CHAPTER 5: SYSTEM DESIGN**

### **5.1 System Architecture**

Three-tier architecture is a well-established software application architecture that organizes applications into three logical and physical computing tiers: the presentation tier, or user interface; the application tier, where data is processed; and the data tier, where the data associated with the application is stored and managed.

The chief benefit of three-tier architecture is that because each tier runs on its own infrastructure, each tier can be developed simultaneously by a separate development team, and can be updated or scaled as needed without impacting the other tiers.

In brief, the three tiers are:

**Presentation tier:** This tier, which is built with HTML5, cascading style sheets (CSS) and JavaScript, is deployed to a computing device through a web browser or a web-based application. The presentation tier communicates with the other tiers through application program interface (API) calls.

**Application tier:** The application tier, which may also be referred to as the logic tier, is written in a programming language such as Java and contains the business logic that supports the application's core functions. The underlying application tier can either be hosted on distributed servers in the cloud or on a dedicated in-house server, depending on how much processing power the application requires.

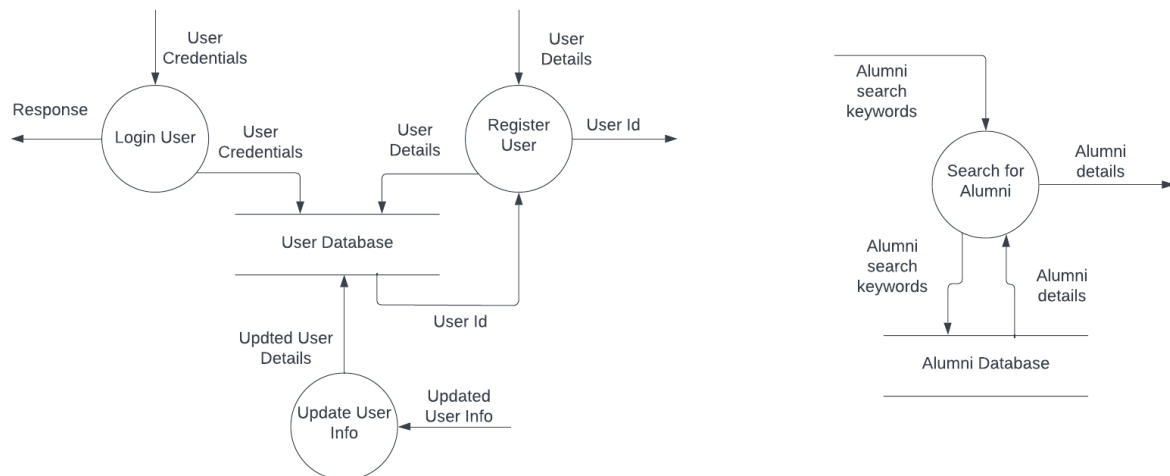
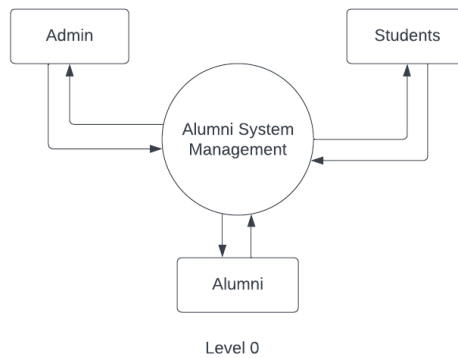
**Data tier:** The data tier consists of a database and a program for managing read and write access to a database. This tier may also be referred to as the storage tier and can be hosted on-premises or in the cloud. Popular database systems for managing read/write access include MySQL, PostgreSQL, Microsoft SQL Server and MongoDB.

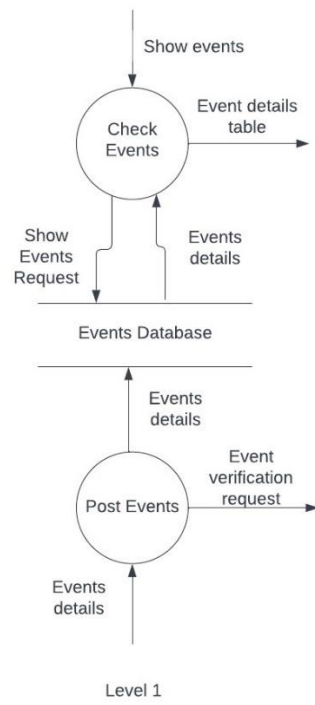
#### **Advantages of using 3-tier system:**

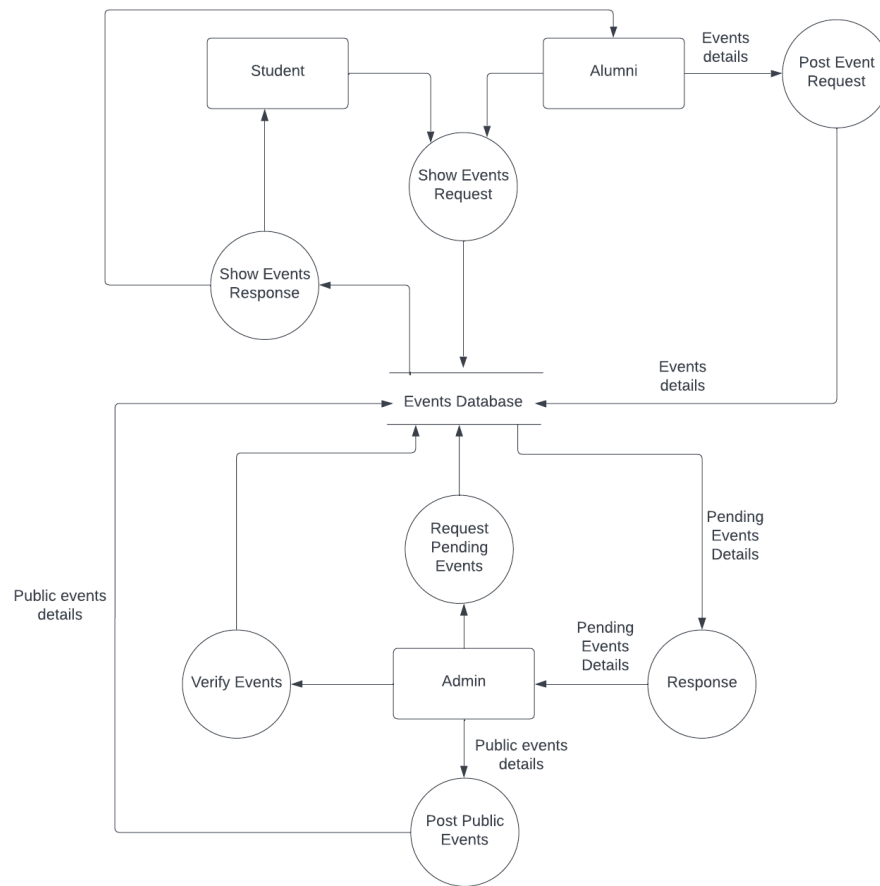
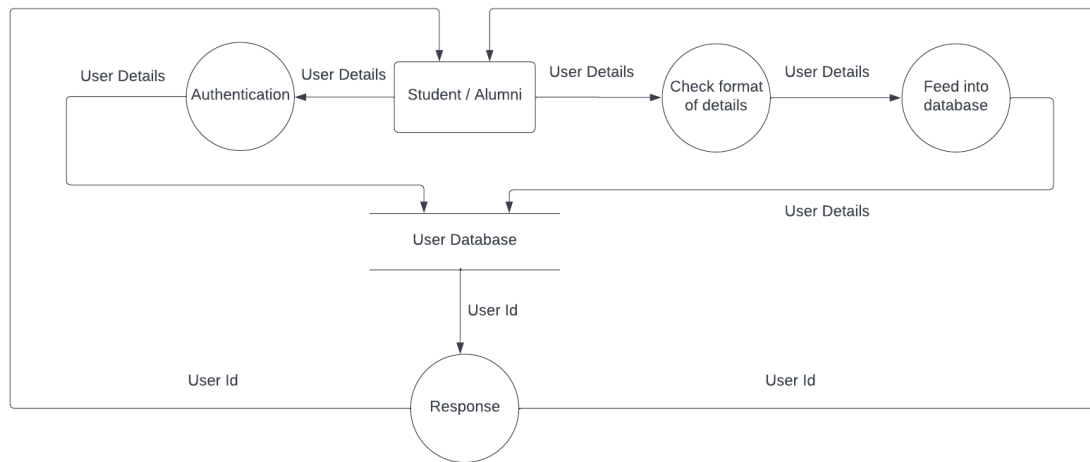
- **Faster development:** Because each tier can be developed simultaneously by different teams, an organization can bring the application to market faster, and programmers can use the latest and best languages and tools for each tier.
- **Improved scalability:** Any tier can be scaled independently of the others as needed.
- **Improved reliability:** An outage in one tier is less likely to impact the availability or performance of the other tiers.
- **Improved security:** Because the presentation tier and data tier can't communicate directly, a well-designed application tier can function as a sort of internal firewall, preventing SQL injections and other malicious exploits.

## 5.2 Module Design

DFD: The flow of data of a system or a process is represented by DFD. We can represent the system of different levels of abstraction using DFD. Higher-level DFDs are partitioned into low levels-hacking more information and functional elements. Levels in DFD are numbered 0, 1, 2 or beyond. Here, we will see mainly 3 levels in the data flow diagram, which are: 0-level DFD, 1-level DFD, and 2-level DFD.







Level 2

Fig 5.a: DFD

## 6.3 Database Design

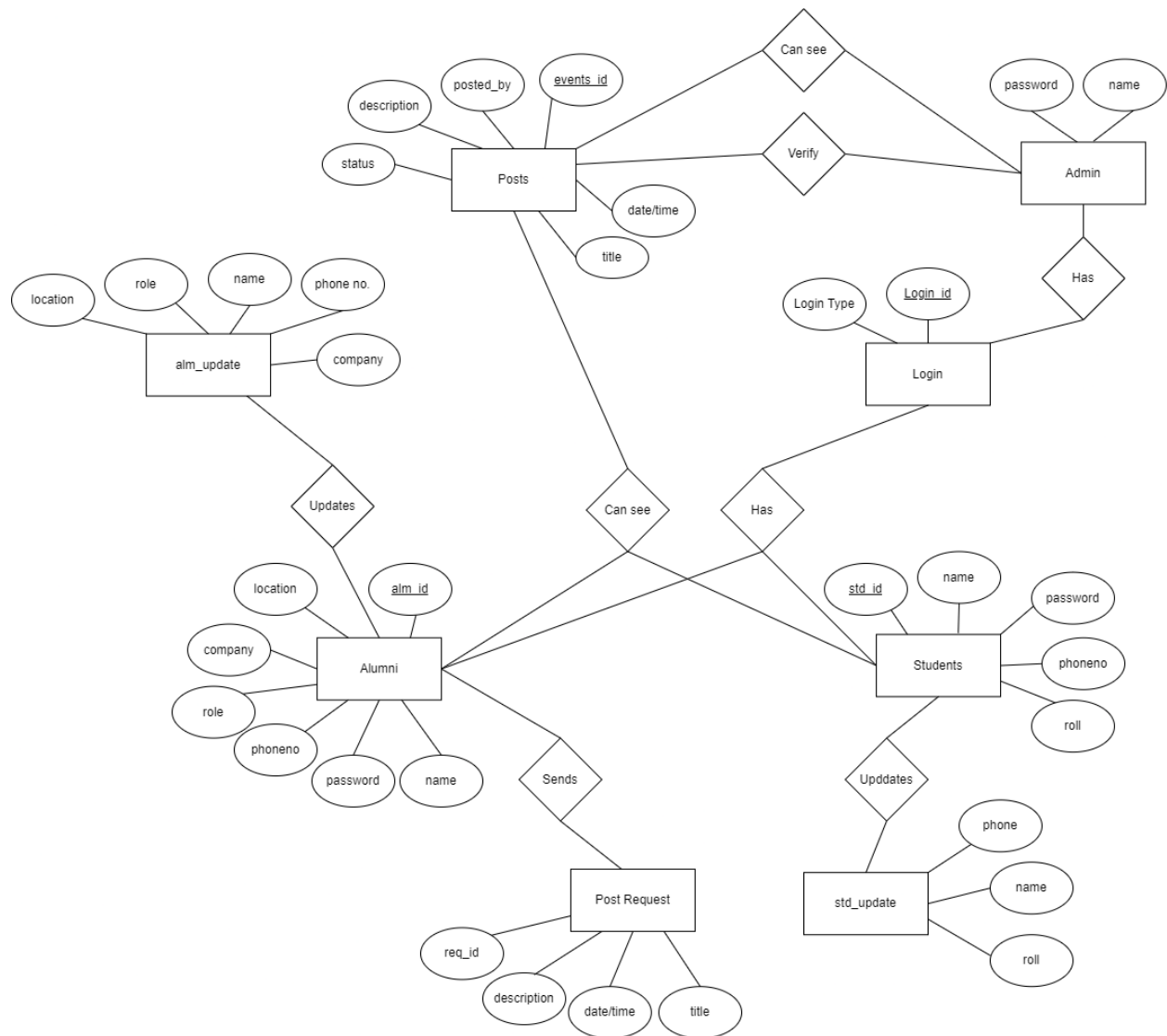


Fig 5.b: ER diagram

Data models for the application



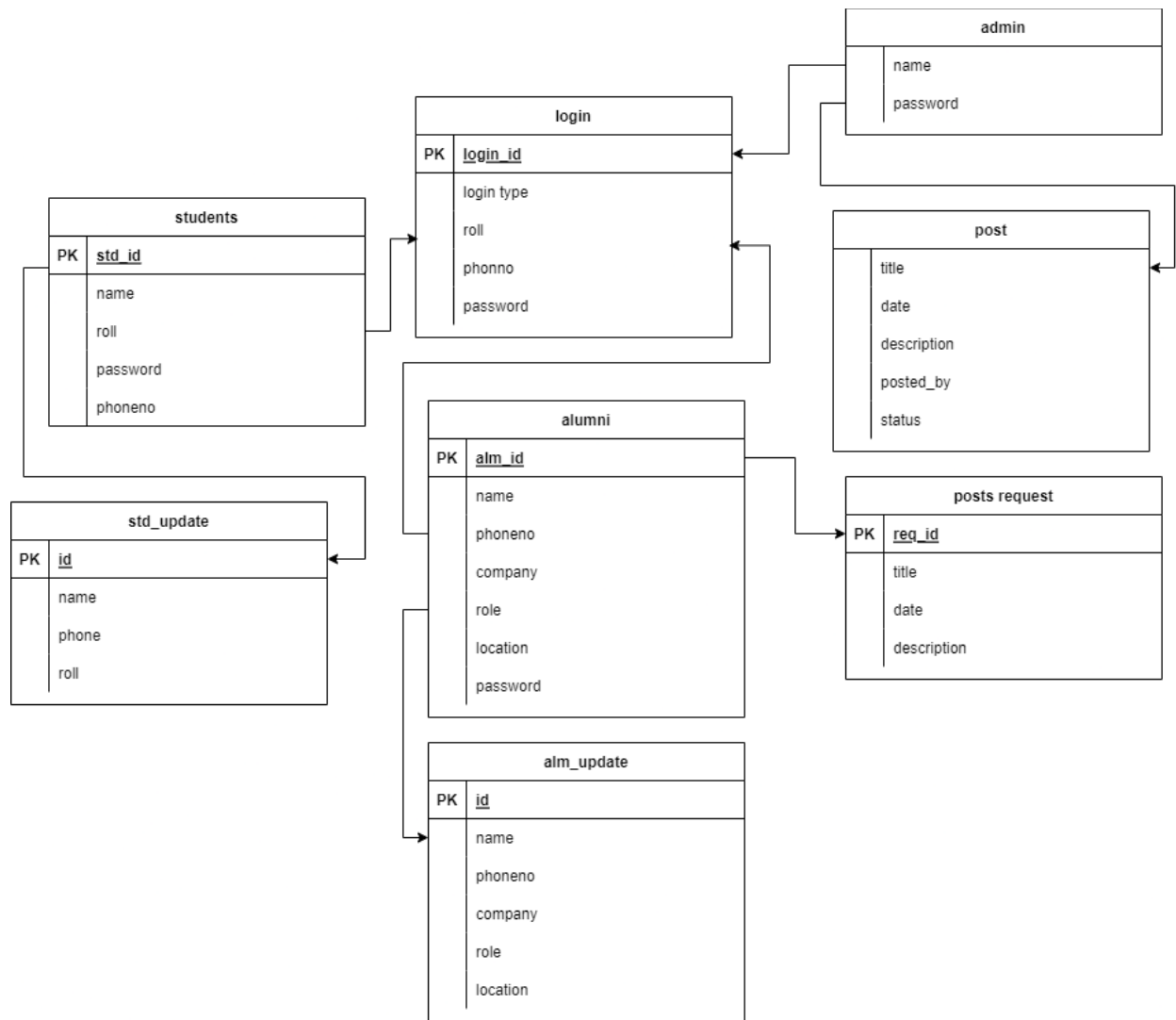


Fig 5.c: Data models

## **CHAPTER 6: SYSTEM IMPLEMENTATION**

### **6.1 System Development Platform**

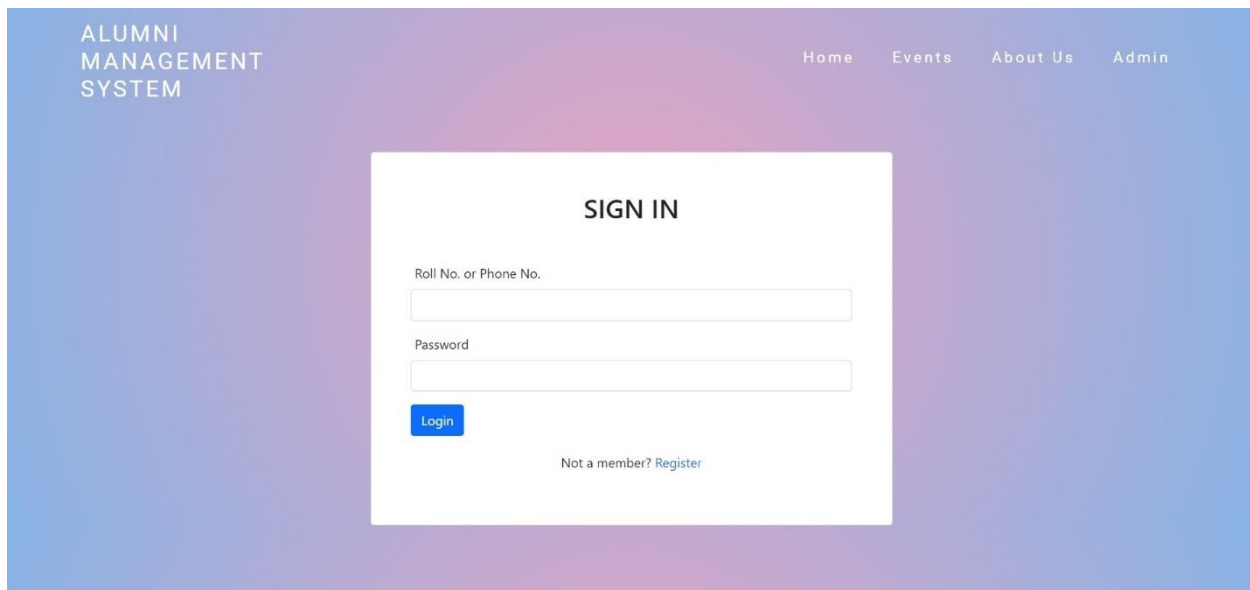
Hardware used to develop this system is just a simple windows 10 machine which 4 GB of RAM, 1 TB of HDD and i5 8th Gen Intel processor.

We need to install some software on our system that will be crucial in developing this project. We would need to install XAMPP to host the server locally. We would be needing a text editor like Sublime text for editing code. One can use IDEs like Visual Studio as well as code editor.

### **6.2 User Interfaces and Modules**

This website has been divided mainly into three modules i.e., **Alumni module**, **Student module** and **Admin module**.

Login



The screenshot displays the login interface of the Alumni Management System. The page has a blue and purple gradient background. In the top left corner, the text 'ALUMNI MANAGEMENT SYSTEM' is visible. In the top right corner, there are navigation links: 'Home', 'Events', 'About Us', and 'Admin'. The central part of the page features a white box with the title 'SIGN IN'. Inside this box, there are two input fields: the first is labeled 'Roll No. or Phone No.' and the second is labeled 'Password'. Below these fields is a blue 'Login' button. At the bottom of the white box, there is a link that says 'Not a member? Register'.

## Sign Up

SIGN UP AS

Student▼  
Student  
Alumni

Your Name

Your Roll

Phone No.

Password

☐ I agree all statements in [Terms of service](#)

Register

## See public events

ALUMNI  
MANAGEMENT  
SYSTEM

HomeEventsAbout UsAdmin

Available Events

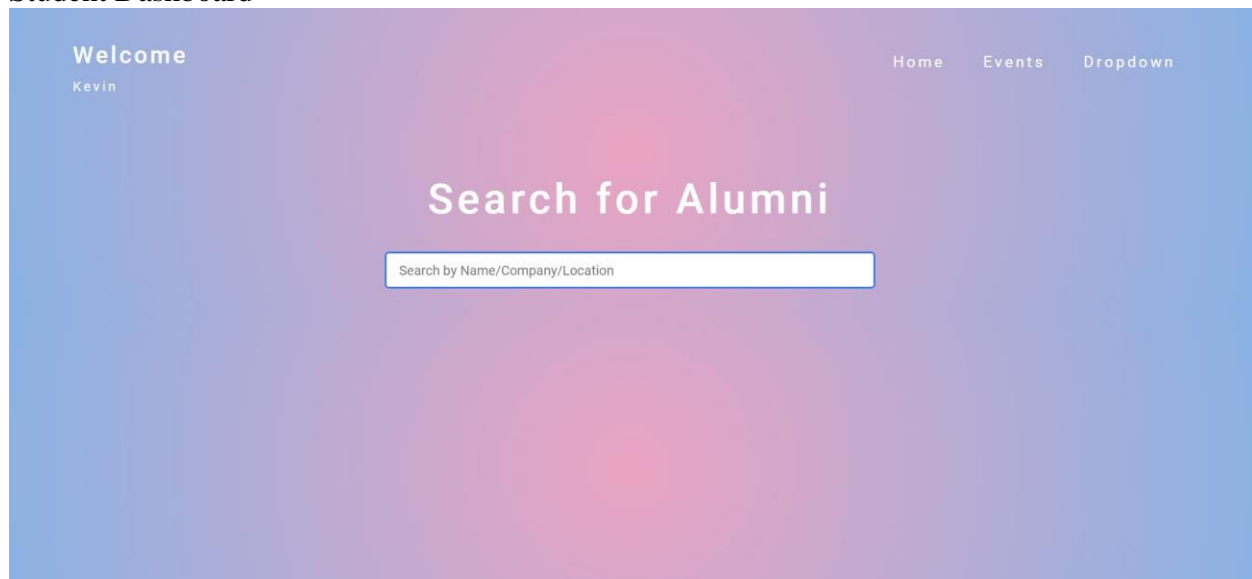
Title	Date	Description
Title 1	10/9/23	Lorem Ipsum is simply dummy data
Title 2	12/8/22	Lorem Ipsum is simply dummy data
Title 3	3/12/22	Lorem Ipsum is simply dummy data

## Gallery

### TU GALLERY



## Student Dashboard



## Alumni Search 1

Welcome  
Kevin

HomeEventsDropdown

Search for Alumni

Alumnus Name	Company	Location	Post	Phone
Prashant	Qualcomm	Banglore	Branch Manager	1234567890

## Alumni Search 2

Welcome  
Kevin

HomeEventsDropdown

Search for Alumni

Alumnus Name	Company	Location	Post	Phone
Aarti	Google	Chennai	Technical Asst.	12345609876
Meghna	Google	Hyderabad	Software Engineer	0987612345

See private events

Welcome  
Kevin

HomeEventsDropdown

Available Events

TITLE	DATE	DESCRIPTION
Title 1	12/12/12	Lorem Ipsum is a dummy data.
Title 2	12/12/23	Lorem Ipsum is a dummy data.
Title 4	22/2/22	Lorem Ipsum Lorem Ipsum is a dummy data.
Title 3	23/12/23	Lorem Ipsum is a dummy data.

Update student info

UPDATE INFO

Your Name

Your Roll

Phone No.

Update

Update alumni info

### UPDATE INFO 1

Working at

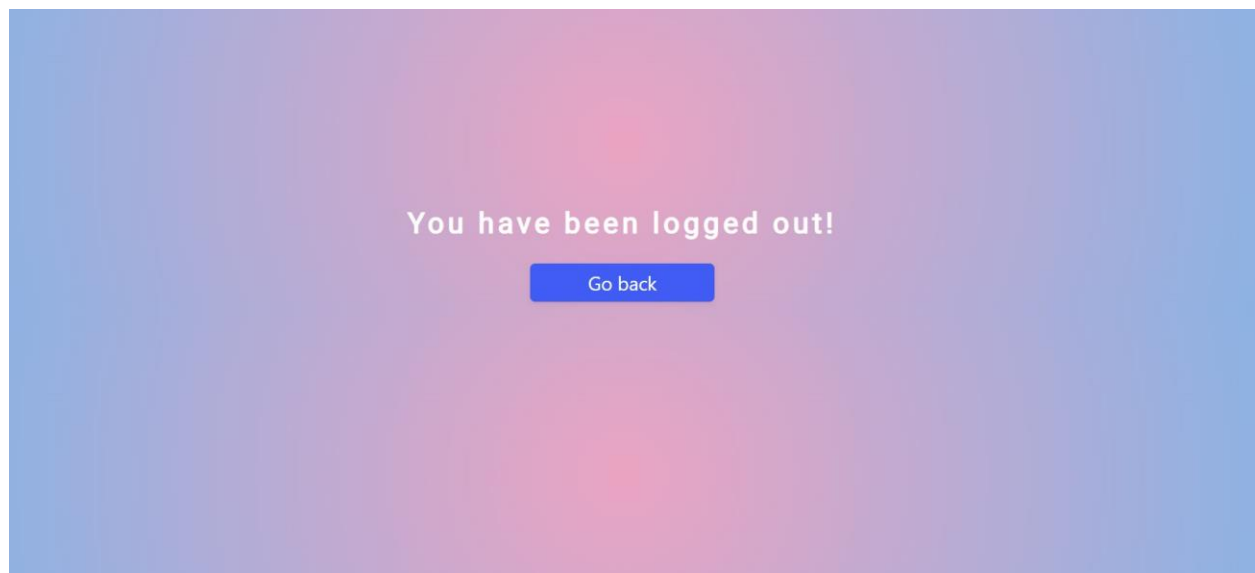
Working as

Current Location

Phone number

Update

Sign Out



## Post request

### ADD A POST

Post Title

Date/Time

Description

## Admin Login

ALUMNI  
MANAGEMENT  
SYSTEM

HomeAdmin

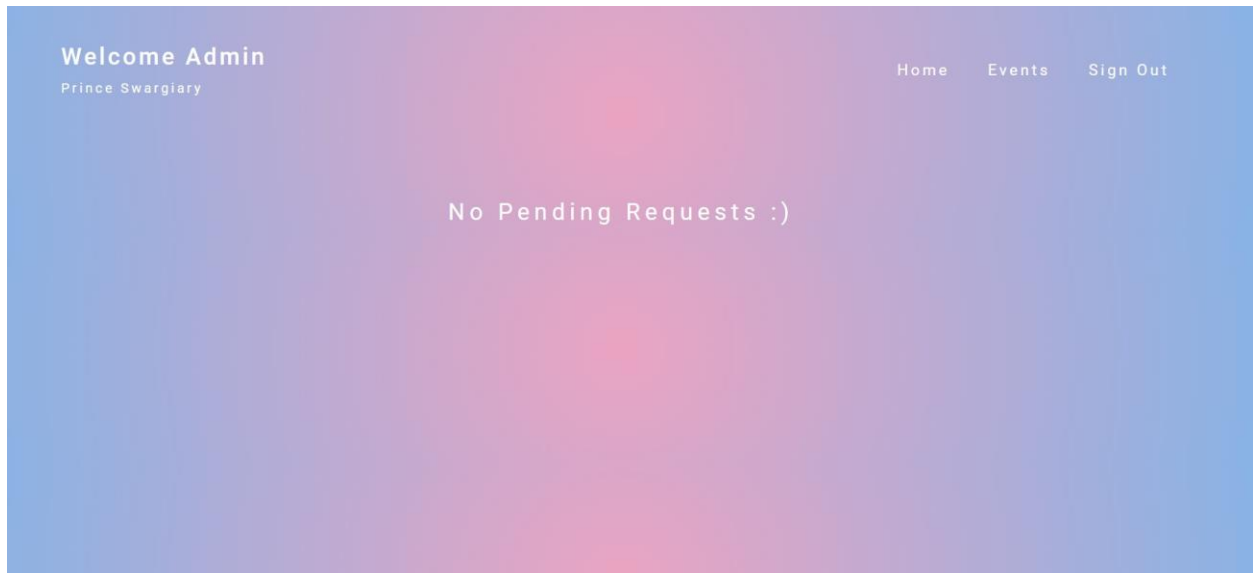
### ADMIN SIGN-IN

Admin Username

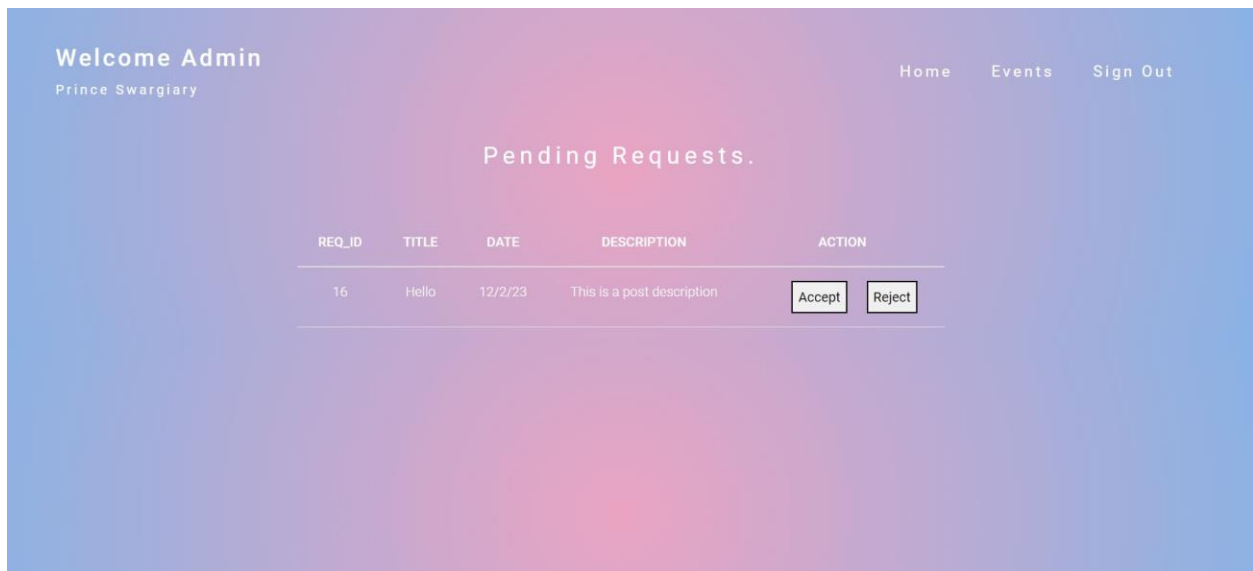
Password



## Admin Dashboard



## Post Verification



## **CHAPTER 7: SYSTEM TESTING**

### **7.1 Testing Strategy**

The application's working and functionalities are tested by picking up all the different user flows and analysing the input, output, and response of the system concerning the user's actions. Initially, just for the testing, false data were inserted into the database to see if everything was working as expected. Various test cases were taken to lookout for possible errors in the implementation.

### **7.2 Test Cases:**

#### Login

Step	Action	Expected Response	Pass/Fail
1	Enter roll or phone no.	Expects correct roll or phone no.	Pass
2	Enter password	Expects correct user password.	Pass
3	Click on Login button	Redirect to the dashboard.	Pass

#### Student Sign up

Step	Action	Expected Response	Pass/Fail
1	Enter Name	Expects name.	Pass
2	Enter Phone no.	Expects 10-digit phone no.	Pass
3	Enter Password	Expects correct password.	Pass
4	Enter Roll no.	Expects correct roll no.	Pass
5	Click on Sign Up button	Account successfully created.	Pass

#### Alumni Sign up

Step	Action	Expected Response	Pass/Fail
1	Enter Name	Expects name.	Pass
2	Enter Phone no.	Expects 10-digit phone no.	Pass
3	Enter Password	Expects correct password	Pass

4	Enter company name	Current company name.	Pass
5	Enter Post	Post in company	Pass
6	Enter Location	Current location	Pass
5	Click on Sign Up button	Account successfully created	Pass

#### Alumni Search

Step	Action	Expected Response	Pass/Fail
1	Enter Alumni related keywords (name, company, post).	Details of corresponding alumni in a tabular form.	Pass

#### Show Events

Step	Action	Expected Response	Pass/Fail
1	Click on show events	Shows all private events details in a tabular form	Pass

#### Post Events

Step	Action	Expected Response	Pass/Fail
1	Click on Post Events	Shows post form.	Pass
2	Enter title	Expects correct title	Pass
3	Enter date	Expects correct date	Pass
4	Enter description	Description of the event	Pass
5	Click on Submit button	Post is sent to admin for verification	Pass

#### Update Student Info

Step	Action	Expected Response	Pass/Fail
1	Enter new name	Expects name.	Pass
2	Enter new phone no.	Expects 10-digit phone no.	Pass

<b>3</b>	<b>Enter updated roll no.</b>	<b>Expects updated roll no.</b>	<b>Pass</b>
<b>4</b>	<b>Click on Update button</b>	<b>The given fields are successfully updated</b>	<b>Pass</b>

#### Update Student Info

<b>Step</b>	<b>Action</b>	<b>Expected Response</b>	<b>Pass/Fail</b>
<b>1</b>	<b>Enter new name</b>	<b>Expects name.</b>	<b>Pass</b>
<b>2</b>	<b>Enter new phone no.</b>	<b>Expects 10-digit phone no.</b>	<b>Pass</b>
<b>3</b>	<b>Enter updated roll no.</b>	<b>Expects updated roll no.</b>	<b>Pass</b>
<b>4</b>	<b>Click on Update button</b>	<b>The given fields are successfully updated</b>	<b>Pass</b>

#### Update Alumni Info

<b>Step</b>	<b>Action</b>	<b>Expected Response</b>	<b>Pass/Fail</b>
<b>1</b>	<b>Enter new name</b>	<b>Expects name.</b>	<b>Pass</b>
<b>2</b>	<b>Enter new phone no.</b>	<b>Expects 10-digit phone no.</b>	<b>Pass</b>
<b>3</b>	<b>Enter new company</b>	<b>New company</b>	<b>Pass</b>
<b>4</b>	<b>Enter new post</b>	<b>New job post</b>	<b>Pass</b>
<b>5</b>	<b>Enter new location</b>	<b>New location</b>	<b>Pass</b>
<b>6</b>	<b>Click on Update button</b>	<b>The given fields are successfully updated</b>	<b>Pass</b>

## **CONCLUSION**

Alumni Information Management system developed in this project is a starting version of how an alumni management program can be handled and managed properly. The project development process follows the Iterative waterfall model for ensuring proper development methodology and unambiguous achievements. The development consisted for mainly five stages: Requirement analysis, Feasibility analysis, System Design, System Implementation, and System Testing. Appropriate development tools are used to demonstrate the system's architecture and specifications and the system is implemented accordingly. The application can be hosted on any actively running web server and can be accessed by users who have a basic computer system and an appropriate version of a web browser installed.

The system can be improved significantly in future versions which could include support for many features of managing like real-time chatting system, support for video conferencing etc. The system can be improved from time to time and can be made into a one thing solution for every aspect of mentorship management.

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- “PHP tutorial”:  
<https://www.w3schools.com/php/>
- “AJAX tutorial”  
[https://www.w3schools.com/xml/ajax\\_intro.asp](https://www.w3schools.com/xml/ajax_intro.asp)