UNIVERSITY OF NORTH TEXAS
DENTON, TEXAS

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ALMA MINGLE

Submitted By:

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SYSTEM STRUCTURE

System Structure, this part of the document contains the overall structure of the system. It contains diagrams and brief descriptions about the system structure including individual components (subsystems).

The technologies we are using for the website development are as follows
Database: MongoDB/FireBase
Backend: Nodejs
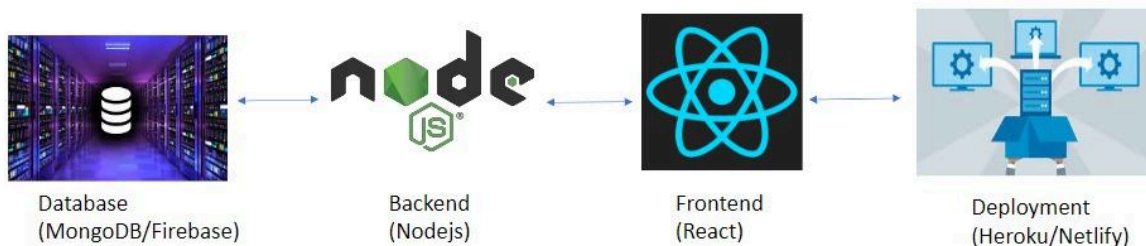*Frontend:* React
Deployment: Heroku/Netlify

Fig 1.1: Representing the System Architecture

For maintaining the transparency and track of the project tasks we are using Github, Trello, WhatsApp, Teams for communication purpose Microsoft 365 (Word, Excel, PPT), Google Docs for documentation related tasks and Canva for presentation.

Alma Mingle serves as an online portal dedicated to maintaining and facilitating connections among alumni of a particular university. It is tailored to accommodate two primary user roles: the **'Admin User'** and the **'Alumni User'.** Both user types are granted access to individual dashboards, each equipped with functionalities relevant to their specific roles and accessible through user-specific interfaces.

The 'Admin User' holds administrative privileges, allowing them to oversee and manage various aspects of the platform. This includes overseeing user data, managing events, and maintaining overall control.

On the other hand, the 'Alumni User' is equipped with features designed to enhance their networking experience. This includes options for updating personal profiles, connecting with fellow alumni, and staying informed about university-related events, job openings, guest lectures related information.

The platform ensures a seamless and user-friendly experience, catering to the distinct needs of both admin and alumni users. The interface is designed to be intuitive, fostering efficient navigation and interaction within the Alma Mingle community.
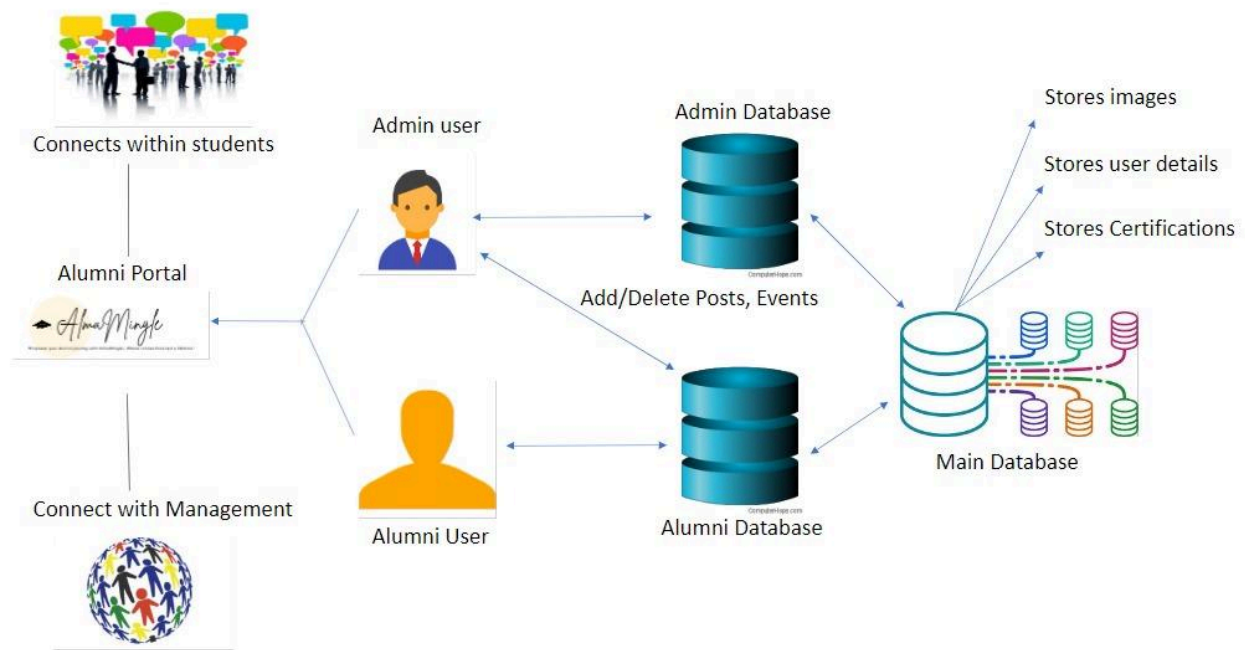

Fig 1.2: Represents the flow of the system architecture.

The website distinguishes between visitors and users, providing them with varying levels of access and functionalities. Visitors and users can navigate through common features like landingPage, infoTab, register, login, and gallery.

Admin Users, identified by their specific role, enjoy elevated privileges, including the ability to create and delete events, broadcast messages, and manage comments and posts.

Alumni Users, registered individuals with the platform, gain access to a more extensive set of features. This includes the creation of accounts, a personalized

dashboard, profile management, messaging capabilities, notifications, and exploration of the members and events sections. These functionalities are further organized into three distinct classes: Post, Message, and Event, ensuring a comprehensive and tailored experience for the Alumni User community.
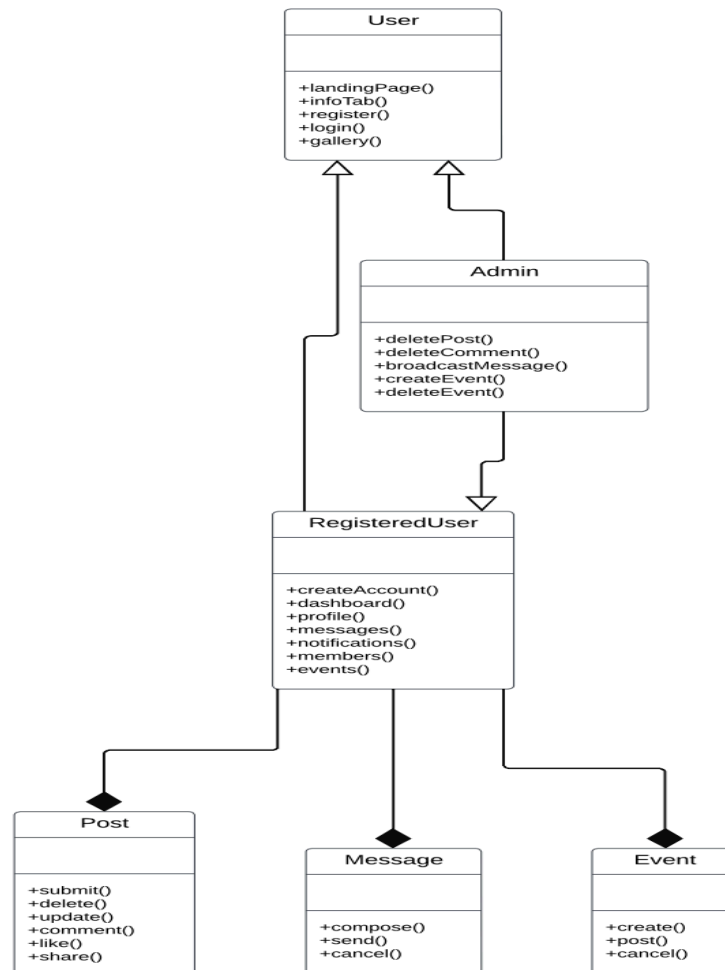
Fig 1.3: Class Diagram for AlmaMingle

In the sequence diagram for Alma, the interaction between the Alumni User, the Alumni Portal, and the Database unfolds in a seamless flow. Following the Alumni User's login, a thorough authentication and authorization process is executed to ensure secure access.

Once authenticated, the Alumni User is directed to their individual dashboard, where a spectrum of alumni-related functionalities is available for exploration. One such feature involves the retrieval and update of personal details. When an Alumni User opts to

modify their information, the request triggers an update in the database, ensuring that the stored data accurately reflects the user's latest details.

Additionally, the dashboard encompasses diverse functionalities, ranging from event participation and message exchange to exploring member profiles and staying informed about upcoming alumni activities. Each of these interactions is orchestrated in harmony, enhancing the overall user experience within the Alma Alumni Portal. The sequence diagram encapsulates this dynamic process, illustrating the coherent flow between the Alumni User, the portal, and the database.
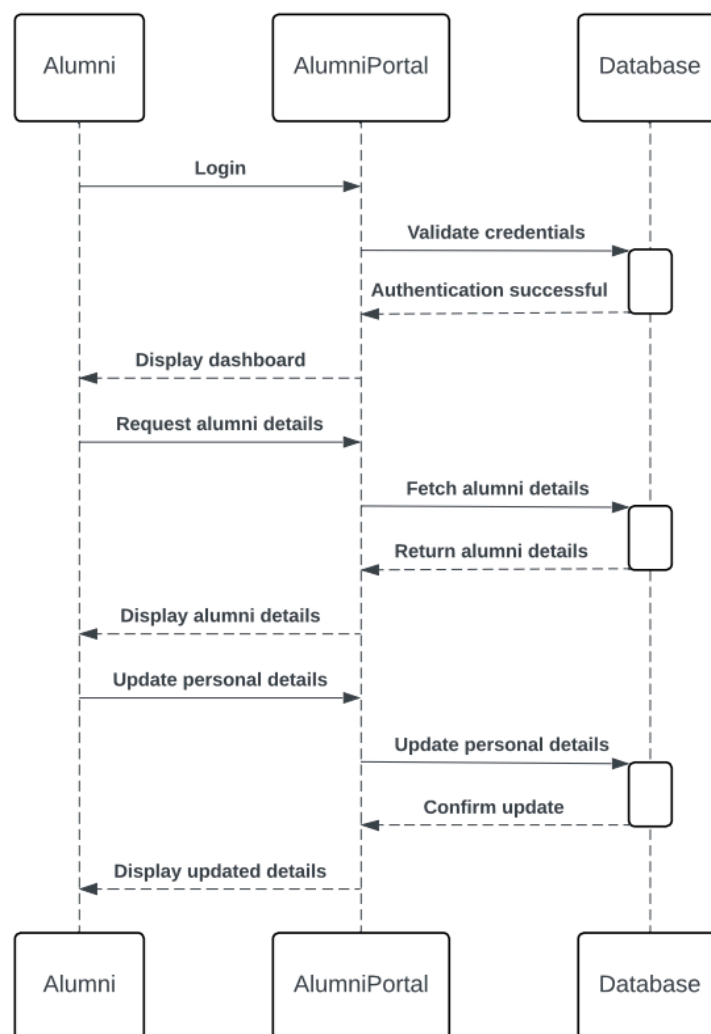

Fig 1.4: Sequence diagram explaining few operations for AlmaMingle

REQUIREMENT SPECIFICATIONS

Requirement specifications comprehensively address both functional and non-functional requirements, ensuring inclusive coverage of all interfaces for a holistic understanding and implementation of the system.

1. Functional Requirements

All visitors to the AlmaMingle page will be able to view the following:

1. **Landing page:** The landing page of AlmaMingle will have a clean UI for users to login to the portal , it will also have the university logo and other supplementary information sections which will redirect the user to the official University website.
    a. Info Tab - static information (may have tabs such as about us, history etc all static information)
    b. Register- redirects to **registration page**
    c. Login Button -redirects to **Login page**
    d. Gallery -
        i. A scrolling slideshow of images (A carousel)
2. **Register(sign up):** This page lets you sign up for an AlmaMingle account as an alumnus. With this account, you can access all the services and features on the website. New users can easily register using their university email and will be directed to the next page to create their account.
    a. Authenticates the users using the backend database
    b. Only valid UNT(@my.unt.edu/ @unt.edu) users in the database can signup and will be redirected to the **create account page**

Signup with your Email Address

Email Address

Submit

Already Member? Click here to Login

    c.
    d. Other users will be shown a pop up to "contact UNT"

3. **Create Account page:** Any user can access this page however only alumni who have given their email id to the student affairs team that oversees the university alumni activities will be able to successfully register as the email Id entered here will be authenticated with the backed database to avoid registration by unauthorised users. This page will collect all the user details while also guiding the user with prompts to clarify the information that is required.
   a. Allows users to enter details in a web form
   b. An info button that gives additional information about the section (Optional)
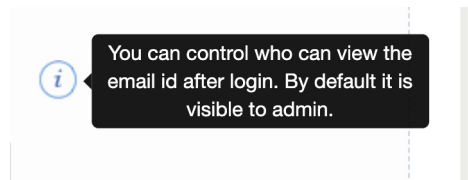
   c.
   d. A create account button
   e. The details will be Put into the database —----> **Login Page**
4. **Login:** The login page acts as an authentication method that allows the user to access his account on AlmaMingle via his account's credentials (Email ID, password). They are also given options to reset/recover their password and can go to the Signup page in case they do not have an account to begin with. Successful login takes the user to the dashboard page.
   a. Email Id
   b. Password
   c. Forgot password
   d. Signup
   e. Login button —---> User **Dashboard page**

Alumni User: Any visitor to the Almamingle web portal is considered a user, however only users registered with the University will be able to successfully login to the portal. Once logged in,users will be able to access all the services the alumni portal has to offer.

1. **Dashboard :** This is the page that an authorized user who has successfully logged in to the AlmaMingle portal will view. The dashboard will have quick linked buttons to all the services that the web portal offers.
   a. Burger Menu Bar (On the right) : Info Tab - static information (may have tabs such as about us, history etc all static information)

b. Navigation Menu (On the top) **:** Has buttons that will redirect you to various pages within AlmaMingle (*Notification, Messages , Profile,Members*,)
c. Post Box : Allows users to post something
   i. Text box- allows you to attach images, text and Submit
   ii. Post Category :
   iii. **Visibility : (Optional, Try to implement)** - Limits the visibility of the posts to certain groups
   iv. Submit
d. Posts : Can view posts **(Include timestamp) - Shows the latest posts**
   i. Delete : Only users that have created the post can delete (and Admin)
   ii. Update : Only users that have created the post can update
   iii. Comment/Reply : All users can comment or reply to the post
   iv. Like : Should also allow everyone to view the users that have liked the post
   v. Share: All users are allowed to share the post
e. Filter : Allows you to filter the posts
f. Footer Menu : links to social media handles and website of UNT

2. **Profile:** This page allows the user to be able to edit his/her profile through several options. These options encourage the user to express and represent themselves better. This page enables the alumni to control what details of the alumni is to be seen by the other users present on the website
   a. The user will be redirected to the profile section when he presses the profile icon or his name which is present on the dashboard page
   b. On the profile page Edit Profile allows users to view or edit the following
      i. Profile picture
      ii. Work
      iii. Education
      iv. Contact details
   c. A save profile button at the bottom of the page contains the updated data in the database

3. **Messages page:** Messages page allows the users to connect with other users who are registered with the Alumni portal, here the user will be able to see the messages that they have received and also compose new messages.

a. The user will be redirected to the Messages section when he presses the message icon on the dashboard page
b. All messages section : here user can view the messages he received
c. Compose message button opens a dialog box
   i. The dialog box has the following sections
      1. TO: Will be able to search for other recipients that the message will be sent to.
      2. Subject : Text box to type subject
      3. Message : Text box to type message
      4. Send message button : sends the message to the user mentioned in the TO section.
      5. Cancel message button : closes the message dialog box

4. **Notifications Page:** The user will be redirected to the notifications page when he presses the notifications icon on the dashboard page. This page helps users to track their past and present notifications. It enables them to respond to them better.
   a. Here the user will be notified about all the interactions that other users had with his posts

5. **Members:** This page will allow the users to view all the alumni members of AlmaMingle , the user will be able to search other users by scrolling through a list or by typing the name of the user in the search box.
   a. The user will be redirected to the members page when he presses the members icon on the dashboard page
   b. Search box : allows the user to search for a specific member
   c. List of all members : shows a list of all the members

6. **Events:** Similar to the notifications page, the events page allows the users to track all the past and upcoming events. It acts as a medium for alumni to host events and advertise them to other users using the website.
   a. The user will be redirected to the Events page when he presses the Events icon on the dashboard page
   b. User can view all the event sorted based on the latest events
   c. Create event button :
      i. opens a create event dialog box which will have following sections Event Name
         1. Event Date
         2. Event Time
         3. Event Location
         4. Event Image

ii. Post event button which will persist the event data into the database

iii. Cancel button closes the create event dialog box 3

Admin User : AlmaMingle will have at least one admin and the admins can be increased based on the need.The admin will login same as the normal user and have the same UI as a general user but will be able to perform some special functions such as delete any post , send broadcast messages and delete any comment and event:

1. **Dashboard** This is the page that an admin user who has successfully logged in to the AlmaMingle portal will view. The dashboard will have quick linked buttons to all the services that the web portal offers.
   a. Burger Menu Bar (On the right) : Info Tab - static information (may have tabs such as about us, history etc all static information)
   b. Navigation Menu (On the top) **:** Has buttons that will redirect you to various pages within AlmaMingle (*Notification, Messages , Profile,Members*,)
   c. Post Box : Allows admins to post something
      i. Text box- allows you to attach images, text and Submit
      ii. Post Category :
      iii. Visibility **:** By default the admin posts are visible to everyone
      iv. Submit
   d. Posts : Can view posts (Include timestamp) - Shows the latest posts
      i. Delete any post : This will allow the admin to delete any post on the AlmaMingle
      ii. Update : Only users that have created the post can update
      iii. Comment/Reply : All users can comment or reply to the post
      iv. Delete any comment : This will allow the admin to delete any comment on the AlmaMingle
      v. Like : Should also allow everyone to view the users that have liked the post
      vi. Share: All users are allowed to share the post
   e. Filter : Allows you to filter the posts
   f. Footer Menu : links to social media handles and website of UNT
2. **Profile:** This page allows the admin to be able to edit his/her profile through several options. These options encourage the user to express and represent themselves better. This page enables the alumni to control what

details of the alumni is to be seen by the other users present on the website

    a. The admin will be redirected to the profile section when he presses the profile icon or his name which is present on the dashboard page

    b. On the profile page Edit Profile allows users to view or edit the following

        i. Profile picture

        ii. Work

        iii. Education

        iv. Contact details

    c. A save profile button at the bottom of the page contains the updated data in the database

3. **Messages page:** Messages page allows the users to connect with other users who are registered with the Alumni portal, here the user will be able to see the messages that they have received and also compose new messages.

    a. The admin will be redirected to the Messages section when he presses the message icon on the dashboard page

    b. All messages section : here admin can view the messages he received

    c. Compose message button opens a dialog box

        i. The dialog box has the following sections

            1. TO: Will be able to search for other recipients that the message will be sent to.

            2. Subject : Text box to type subject

            3. Message : Text box to type message

            4. Send message button : sends the message to the user mentioned in the TO section.

            5. Send broadcast message to all users This will allow the admin to send messages to all the users of AlmaMingle

            6. Cancel message button : closes the message dialog box

4. **Notifications Page:** The admin will be redirected to the notifications page when he presses the notifications icon on the dashboard page. This page helps users to track their past and present notifications. It enables them to respond to them better.

    a. Here the user will be notified about all the interactions that other users had with his posts

5. **Members:** This page will allow the admins to view all the alumni members of AlmaMingle , the admin will be able to search other users by scrolling through a list or by typing the name of the user in the search box.
    a. The admin will be redirected to the members page when he presses the members icon on the dashboard page
    b. Search box : allows the admin to search for a specific member
    c. List of all members : shows a list of all the members
6. **Events:** Similar to the notifications page, the events page allows the users to track all the past and upcoming events. It acts as a medium for alumni to host events and advertise them to other users using the website.
    a. The admin will be redirected to the Events page when he presses the Events icon on the dashboard page
    b. Admin can view all the event sorted based on the latest events
    c. Create event button :
        i. opens a create event dialog box which will have following sections Event Name
            1. Event Date
            2. Event Time
            3. Event Location
            4. Event Image
        ii. Post event button which will persist the event data into the database
        iii. Delete events: This will allow the admin to delete any Event on the AlmaMingle
        iv. Cancel button closes the create event dialog box 3

2. Non-Functional Requirements

Security:

- The endpoints should be secured and only the authorized person should be able to access the resources.
- The application should be robust and secure ensuring no one can access confidential data and manipulate it.
- Sensitive data should be encrypted to prevent unauthorized access.

Usability:
- The User Interface of the application should be simple and easy to understand.

- The user interface should follow established design guidelines and maintain consistency across all pages/modules.

Performance:

- The system should be able to handle multiple users at the same time keeping the response time as low as possible.

Scalability:

- The system must possess scalability to adapt to additional features or higher usage levels that may arise in the future.

Reliability:

- The system should guarantee constant accessibility will 99.9% uptime.
- The system should have and maintain regular backups to avoid data loss under any circumstances.

3. Interfaces

- **Alumni Web Interface**

  i. **Design** : The AlmaMingle web page will have a clean and simple UI with insignias, logos of the University , it will have a simple menu bar using which the users can access all the services of the portal.
  ii. **Post Module**: A text dialog box just below the navigation menu bar of the page , it will have a text box to type and a post button to allow the user to post it.
  iii. **Profile page module**: It will display the user profile image at the top and have the user personal information categories below , it will have an edit option to make changes to the information.
  iv. **Messages module:**This module will have a list of all the messages received , below this the button for composing a new message will allow the user to open the message dialog box.
  v. **Message Dialog box module:** This will have three sections which will allow the user to enter the username of the user to whom a

message is to be sent , it will have a text box for the message and a send message button at the button

vi. **Notifications module** : This will have a list of all the notifications

vii. **Members module** : This page will display the users and their details in alphabetical order, A simple search bar at the top will allow the user to search for a specific user

viii. **Events Module**: This page will have two columns of all the upcoming events created by other users, below each event name the event specific details will be visible. At the top right of the page " create event " will be present.

ix. **Create Event Dialog box :** This box will have text boxes to enter event details and time , a post event button at the bottom allows users to post the event.

○ **Admin Web interface:**

i. **Design** : The AlmaMingle web page will have a clean and simple UI with insignias, logos of the University , it will have a simple menu bar using which the admin can access all the services of the portal. On the dashboard the admin will also have an option to delete using the delete icon which is present against each post that is on the dashboard page

ii. **Post Module** : A text dialog box just below the navigation menu bar of the page , it will have a text box to type and a post button to allow the admin to post it. Each post has a button that is present with it to delete that specific post.

iii. **Messages module:**This module will have a list of all the messages received , below this the button for composing a new message will allow the admin to open the message dialog box.

iv. Message Dialog box module :This will have three sections which will allow the admin to enter the username of the user/users to whom a message is to be broadcasted to, the admin will be able to send messages to all the users of AlmaMingle if required. it will have a text box for the message and a send message button at the button.

v. **Notifications module** : This will have a list of all the notifications

vi. **Members module** : This page will display the users and their details in alphabetical order, A simple search bar at the top will allow the user to search for a specific user

vii. **Events Module:** This page will have two columns of all the upcoming events created by other users, below each event name the event specific details will be visible. At the top right of the page " create event " will be present.

viii. **Create Event Dialog box :** This box will have text boxes to enter event details and time , a post event button at the bottom allows users to post the event .

ix. **Delete event:** Each event has a button present in it that allows the admin to erase that particular event.

○ **Software & Hardware requirements**

Software & hardware requirements for a registered user with an active internet browser include a compatible operating system (such as Windows, macOS), an internet browser (such as Chrome, Firefox, Edge), and a stable internet connection.

DEVELOPMENT PHASE PLAN

Phase No	Phase Name	Development Plan	Due Date
1.	Initial Code Development	In Phase 1, In the initial phase, our focus will be on coding the UI components such as the dashboard, landing page, and registration page. Simultaneously, we will define functional requirements for user profiles, member management, and event handling. Additionally, backend development will involve creating the necessary database and establishing connections.Here we will also be working on the admin dashboard which will be having additional privileges discussed in the functional requirements. Concurrently, our efforts will extend to researching and determining the most suitable approaches for implementing messaging, notifications, and authentication functionalities. Moreover, we will address the visibility of posts within specific groups, with the intention of handling these aspects in the subsequent phase. Throughout the project, we remain open to incorporating new ideas for further development. If any innovative concepts arise, we will assess their feasibility and integrate them into the code during the subsequent phases. Criticality:	Mar 17 2024 Deliverable 3

		User Authentication & Authorization, Backend Connectivity and Identifying the ways of implementing the messages and notifications.	
2.	Code Enhancement and improvement	In Phase 2, Continue code development for remaining functionalities researched in Phase 1. Develop test case scenarios to evaluate the website and fix identified bugs, we will simultaneously test the functionalities of both the user dashboard and the admin dashboard. Simultaneously, implement additional ideas/features recognized during Phase 1. Critical focus on implementing Messages and notifications. Criticality: It includes successful implementation of Messages and notifications, along with identifying and implementing appropriate test case scenarios for comprehensive website testing.	April 7 2024 Deliverable 4
3.	Finalize the code and Website Launch	In Phase 3, Review and make final adjustments to the website code before freezing it. Initiate User Acceptance Testing (UAT) and address any issues identified during this phase. Proceed with the deployment process, addressing various deployment-related tasks. Once all tasks are completed, the website will go live and be ready for use. Criticality: Handling different kind Deployment issues and responsiveness of the website.	April 28 2024 Deliverable 5

ID	Name	Jan, 24			Feb, 24			Mar, 24					Apr, 24				May, 24
		15	21	28	04	11	18	25	03	10	17	24	31	07	14	21	28	05
1	Alumi Portal		██														
4	Project idea finalized		██████████████														
2	▼ landing page							██████									
10	info tab							████									
11	Register							███									
12	Login Button							███									
13	Gallery (carousel)							████									
3	new user sign up							███████									
5	Account creation & login page							███████									
6	▼ Alumni user page								██████								
14	Burger menu bar								██████								
15	navigation menu								██████								
16	post box								██████								
7	message page / inbox								██████								
9	noifications page								██████								
8	site deployed															█	
17	Members Page												██████			
18	Events Page												██████			
20	Admin pages								████████								

Fig 3.1 Gantt Chart depicting our timeline for the different phases involved in the projec

MEMBER CONTRIBUTION TABLE

S.No	Member Name	Contribution	Overall Contribution (%)
1	Kamalini Ponnuru	Divided the tasks among the team, Handled Development phase plan and provided description in the System Structure part. Helped in documenting the report and reviewing the various sections of the document.	13%
2	Andre Sharp	Development planning and task timelines, Gnatt chart visualization	12%
3	Madi McCauley	helped with dividing tasks among the team, how we will proceed with development phase, technical background, helped coordinate meetings and kept track of participants and our contributions	12%
4	Shashank Verma	Helped in writing functional requirements and non functional requirements of User and Admin portal.	13%
5	Usama Bin Faheem	Delegation of tasks among team members , Functional Requirements ,Non functional requirements and Interfaces documentation.Review of system structure and development plan phases.	13%
6	Suhaibuddin Ahmed	Functional and Non Functional requirements documentation and review, Interfaces documentation and review. Diagrams review.	13%
7	Varun Mahankali	System Architecture Diagrams, Helped in Functional requirements, Helped in Development Phase Plan	12%
8	Rahman Mehmood	Created System Architecture Diagrams, Helped in assessing Functional Requirements and reviewing them.	12%