
Design Document

for

ConnVerse

Version <1.0>

Prepared by Team MahaDevS

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Course: CS253

Mentor TA: *Abhilash*

Date: 6 February 2024

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Initial Draft 1.0	MahaDevS	Initiated the document.	06/02/24

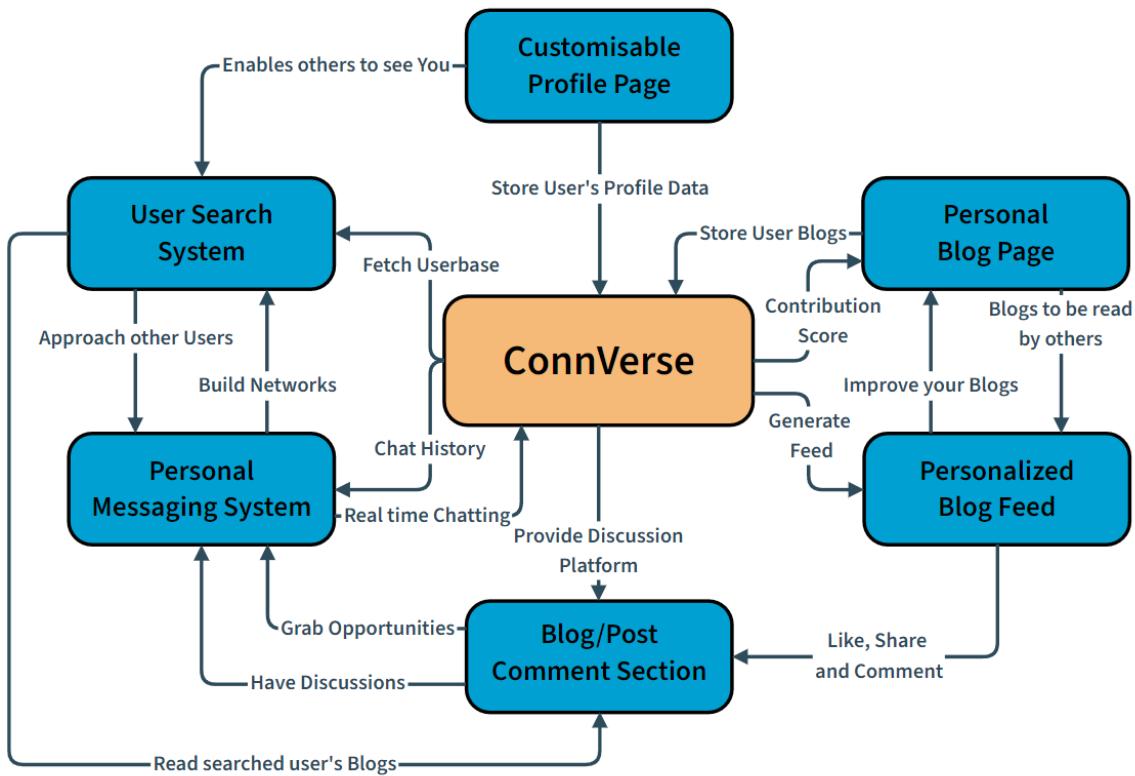
1 Context Design

1.1 Context Model

The system interacts with various of its subsystems which complement together and exhaustively provides the best user networking experience. These subsystems are connected to each other as well as with the server making necessary fetch and update queries with the server. Often use of one of the subsystems leads to the use of another as a form of follow-up.

The model and its subsystems are as follows:

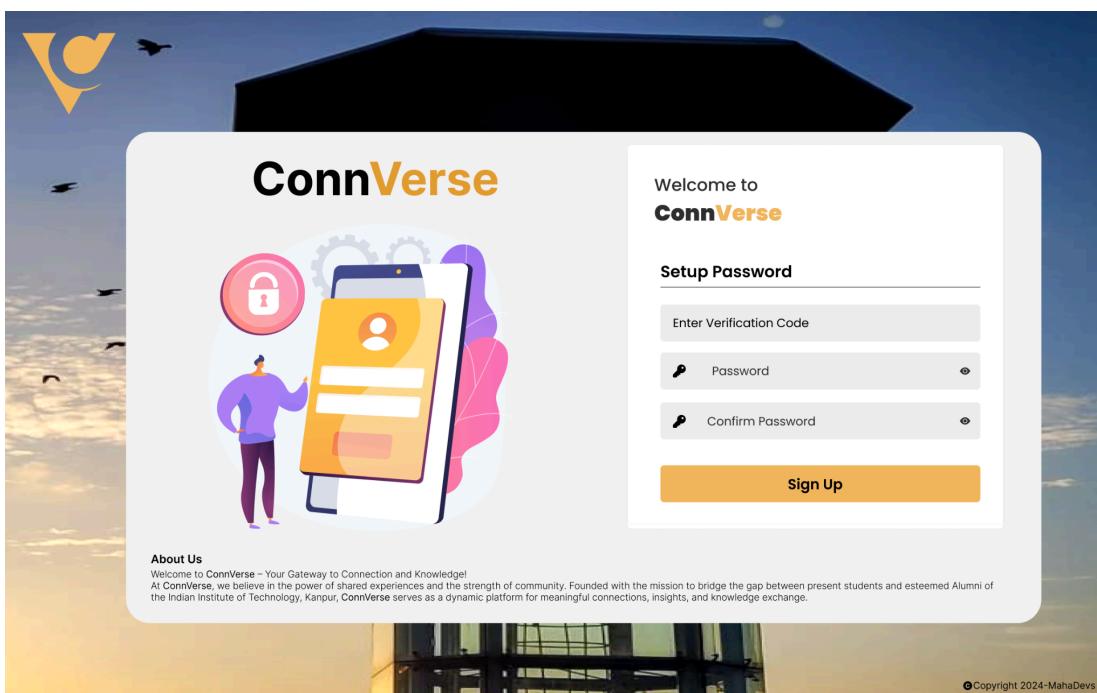
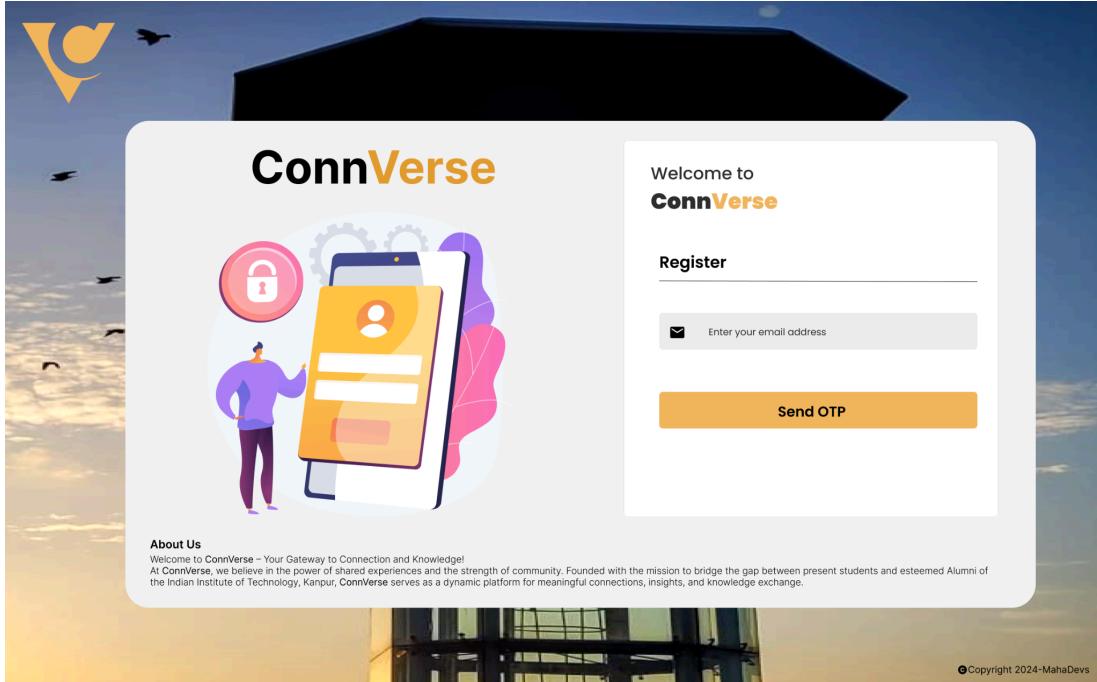
- ❖ **Customisable Profile Page:** Every user is free to use his creativity to showcase the best of his skills and inner self professionally on a huge canva open to opportunities and exposure. This Profile Page is what people will first see when they search you and gets appended to the pool of users.
- ❖ **User Search System:** Exploring the campus and what its people have to offer is essential to massive growth in life professionally as well as academically. We allow user full freedom to network, connect and approach campus community for Research, Academia, Projects and Exploration.
- ❖ **Personal Messaging System:** Our Platform provides a messaging system to enable people to connect professionally and have one-on-one conversations securely and safely. This system will act as ice-breakers for opportunity discussion for potentially the ideas which will lead the world to a brighter place.
- ❖ **Personal Blog Page:** Each user has a personal blog page attached to his profile page. Blogging is very common among professionals who wish to allow learners to follow the paths they once tread. This also appends to the pool of blogs that is shown to other users. There is also a contribution score which the user gets for writing inspiring and engaging writing art pieces.
- ❖ **Personalised Blog Feed:** This essentially keeps you on the lookout for essential changes that are going on in the campus environment, opportunities to grab or inspiring art pieces that guides you for the years to come.
- ❖ **Comment Section:** Every blog has a comment section where you can happily share your opinion as well as foster a healthy discussion down there. These discussions can often be taken to personal messaging.



1.2 Human Interface Design

This section comprises drafts outlining the interfaces for each functionality of the software. These drafts are intended to be used as a reference by developers and system designers, as they provide comprehensive details about the software features, including the visual layout of screens, available user options, and the intuitive nature of their usage.

1.2.1 Signup Page



1.2.2 Signup for Alum

ConnVerse

GREETINGS ALUM !

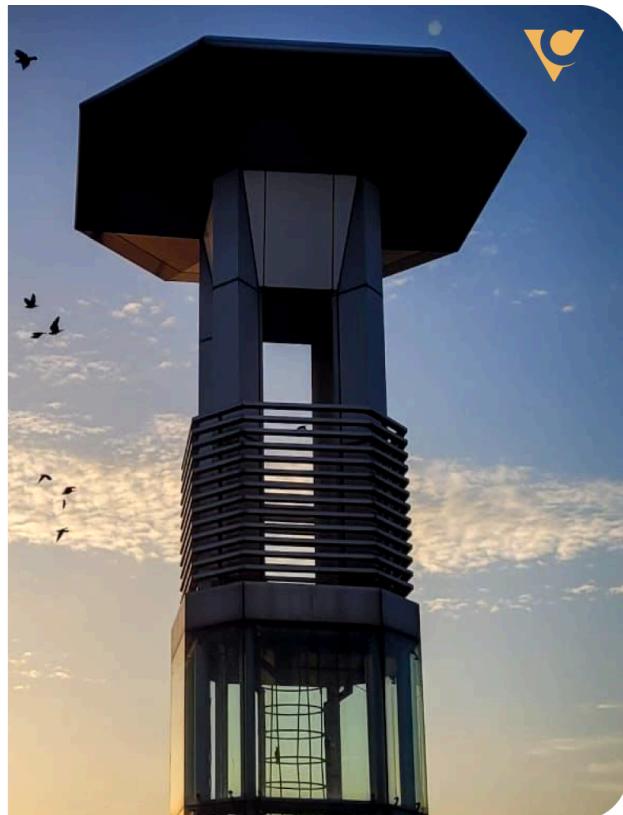
Welcome to ConnVerse Community

Submit

Already have an account? [Log in](#)



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1.2.3 Login Page

ConnVerse



Welcome to
ConnVerse

Email

Password

Remember me

[Forgot Password?](#)

Login

[Don't have an account?](#) [Register](#)

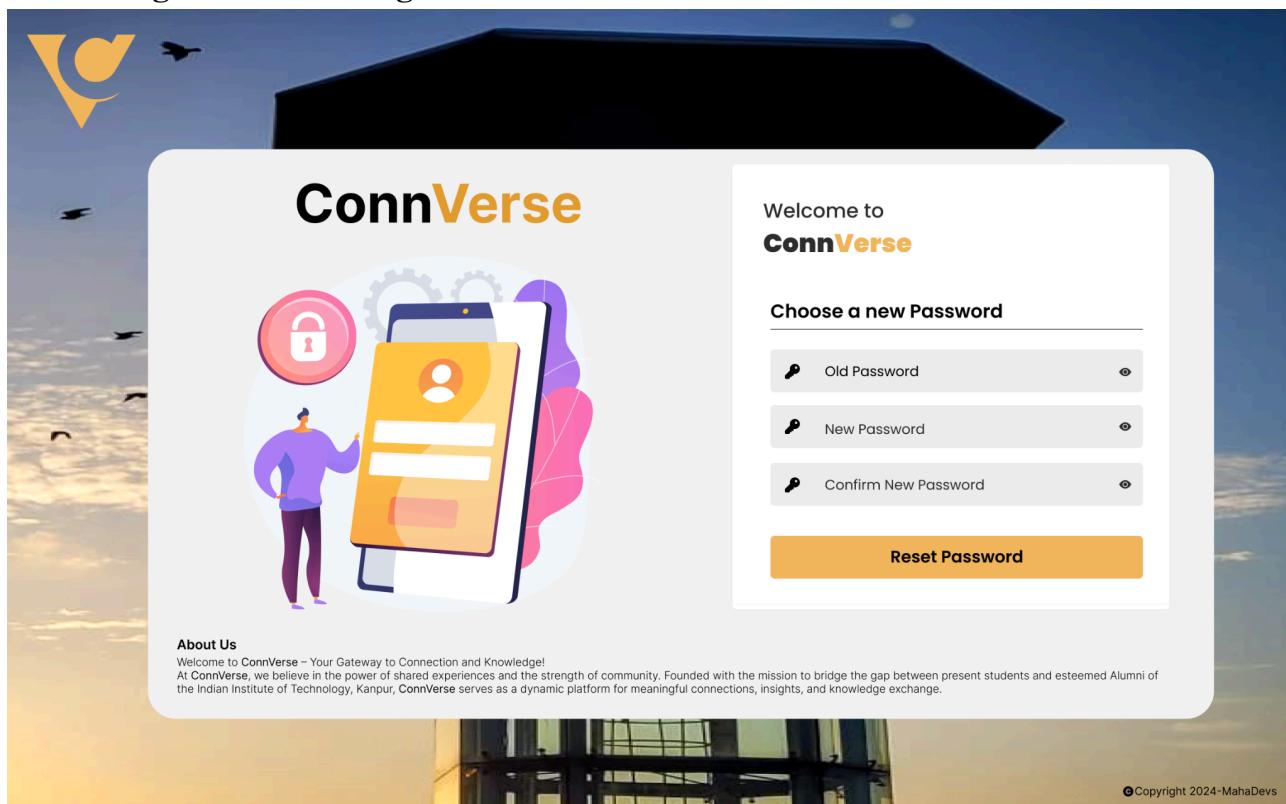
About Us

Welcome to ConnVerse – Your Gateway to Connection and Knowledge!

At ConnVerse, we believe in the power of shared experiences and the strength of community. Founded with the mission to bridge the gap between present students and esteemed Alumni of the Indian Institute of Technology, Kanpur, ConnVerse serves as a dynamic platform for meaningful connections, insights, and knowledge exchange.

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1.2.4 Forgot Password Page



1.2.5 Home Page

The screenshot displays the ConnVerse Home Page with a header featuring navigation links (HOME, MEMBERS, CREATE, CHAT) and a user profile icon. A search bar and a filter icon are also present. Below the header, there are three blog entries arranged vertically.

Title of the Blog
User 11
10 days ago
[Insights](#) [Insights](#)

As the apex scholar of our esteemed institution, I effortlessly reign over academia, leaving mere mortals awestruck.

Mastering the Art of Leadership
User 23
12 hrs ago
[Insights](#) [Insights](#)

A leader not by imposition, but by example, fostering an environment where collective success was celebrated as much as individual achievement.

Revelations and Reflections at the Zenith
User 51
13 hrs ago
[Insights](#) [Insights](#)

The delicate balance between academic pursuits and personal growth is an art I mastered, and in this entry, I want to focus on this in..

1.2.6 User Profile Page(Editable)

The screenshot displays the ConnVerse User Profile Page. At the top, there is a navigation bar with links for HOME, MEMBERS, CREATE, CHAT, and a user icon labeled "User". Below the navigation bar is a large profile picture of a young man with dark hair, set against a background of birds flying in a cloudy sky.

User Name: BT CSE'26

SKILLS

- Software Development: MERN Stack, GoLang, ReactJS
- Data Structures & Algorithms: Competitive Rating - 2300
- XYZ: ABC - XYZ

TOP POSTS

- Night Life at IITK: Night life is a very important part of a ... Non-Academic
- Quantum Mechanical Experience: PHY114 will always be regarded as one ... Insights Physics

[View More](#)

ACHIEVEMENTS

- JEE Advanced AIR 107
- KVPY Scholar 2022
- Inter IIT Tech 7.0 Gold Medal
- Takneek Winner Hall 3

[View More](#)

CREDENTIALS

- Secretary - Gamedev Club: SnT Council, IITK
- Web Organiser - Antaragni: Competitive Rating - 2300
- XYZ: ABC - XYZ

PROJECTS

- ConnVerse - Connect and Converse - under Prof Indranil Saha 🔗: ConnVerse is the Connect and Converse App set up for IITK Community where we are bringing students and alumni on the same table where people can have formal conversations about Research, Academia, Projects and Opportunities. View More
 - Software Development CS253
- Project XYZ - under ABC Club 🔗: Project XYZ is the official starship project offered in the summers by ABC Club IITK. This project offers exposure to market standards and experience for building world class software which are ready to be implemented to production. View More
 - Software Development

COURSES

- CS253 - Introduction to Software Development: under prof Indranil Saha

The software development course exceeded expectations. Engaging lectures, hands-on projects, and expert guidance empowered me to master coding languages and build practical applications. A well-structured curriculum that seamlessly blends theory with real-world application. Highly recommended! View More
- CS253 - Introduction to Software Development: under prof Indranil Saha

Project XYZ is the official starship project offered in the summers by ABC Club IITK. This project offers exposure to market standards and experience for building world class software which are ready to be implemented to production. View More

1.2.7 User search

The screenshot shows a search results page with a header bar containing 'HOME', 'MEMBERS', 'CREATE', 'CHAT', and a user profile icon. A search bar at the top has the text 'Dev'. Below the search bar are three search results, each in its own card:

- Naman Jaiswal** (BT CSE'26): Software Development, DSA. Description: A leader not by imposition, but by example, fostering an environment where collective success was celebrated as much as individual achievement.
- Pulkit Raichand** (BT MSE'26): Game Development, AI/ML. Description: Driven by a passion for both AI and game development, I explore the realms where technology and creativity converge. Aspiring to contribute innovative solutions to
- Devendra R** (BT CSE'25): Product Management, Consulting. Description: Leveraging a blend of analytical skills and strategic thinking, I'm dedicated to driving innovation and delivering impactful solutions in dynamic environments.

A small 'Insights' button is visible at the bottom left of the search results area.

1.2.8 Chat Page

The screenshot shows the ConnVerse chat interface with a header bar containing 'HOME', 'MEMBERS', 'CREATE', 'CHAT', and a user profile icon. The 'CHAT' tab is selected. On the left, there is a list of contacts with icons and names: User 21, User 67, User 43 (highlighted in orange), User 23, User 12, User 11, User 13, and User 14. On the right, a detailed chat window is open for 'User 43', showing a video thumbnail of a person's face and a message input field with a camera icon and a send arrow icon.

1.2.9 Compose Blog

Your Activity

Q 🔍

Interview at DevRev Insights AI/ML

7 days ago
DevRev is a developer centric CRM platform. It was founded by Dheeraj Pandey (former Nutanix CEO) and Manoj Agarwal (former executive at Nutanix). DevRev raised \$50M in the seed round, which is probably one of the largest ever seed fundings in the history of Silicon Valley...

Tips for CP Insights Intern Tips Competitive

12 days ago
What is CP?
It's a mind-sport where you are given a problem and have to develop optimised solutions for the given constraints with your coding skills. This helps us in building our logical and analytical...

Protesting at L18 Non-Academic

15 days ago
Hi friends,
As you might know three people committed suicide at IIT Kanpur since last month which was very unfortunate, but something equally unfortunate is people not knowing the right channel to help...

TITLE

TAGS

IMAGE


User 12

User Name
BT CSE'26
Last Post: 7 Days Ago

Total Posts: **24**
Posts this Year: **12**
Contributions: **+123**

What do you want to share?

1.2.10 Individual Blog

HOME MEMBERS BLOG CHAT  User 12

 **Mastering the Art of Leadership**

user 67
13 days ago

If opportunity doesn't knock, build a door.



As my journey progressed, a transformative phase unfolded—a metamorphosis from a solitary scholar to a leader in the academic arena. Recognizing the significance of collaboration, I ventured into the realm of leadership, orchestrating a harmonious synergy among my peers. Leadership, to me, is not about authority but about inspiration. In this chapter of my narrative, the emphasis is on the communal spirit that permeated our academic endeavors. Through the art of leadership, I discovered the profound impact of mentorship and collaboration, realizing that the journey to the top is more meaningful when shared. The echoes of shared victories resounded through the academic corridors, creating a legacy that transcends individual triumphs.



Comments

Comment as User 12

 **User 12**
CFBR

 **User 13**
Very Insightful - loved it!

 **User 31**
Must read for future batches!!

 **User 67**
Means a lot.

 **User 12**
Leadership, a profound journey of depth and insights. Cheers to those navigating with grace. Your ability to inspire and adapt shapes the path forward. 🌟 #Leadership #insights

2 Architecture Design

We plan to use a hybrid of Model View Controller Architecture with Pipe and Filter Architecture.

2.1 Model View Controller Architecture

1. Browser Requests Login/Signup:

- ❖ The user interacts with the web application by requesting login or signup.
- ❖ This request is sent to the controller for authentication.

2. Controller Authentication:

- ❖ The controller receives the login/signup request and authentication process starts here.
- ❖ It involves searching for the user in the model (database).

3. Model Processing and Session Data:

- ❖ The model searches for the user in the database.
- ❖ If authentication is successful, the model generates session data which is then displayed on the screen and the user gets the access.
- ❖ The view is responsible for presenting the data to the user, creating the user interface.

4. Real-Time Interaction:

- ❖ Users can make some requests by giving input from the view in response to real-time interactions.
- ❖ The controller segregates these requests into appropriate queries and processes the input through the model.

5. Model Processing for Real-Time Interaction:

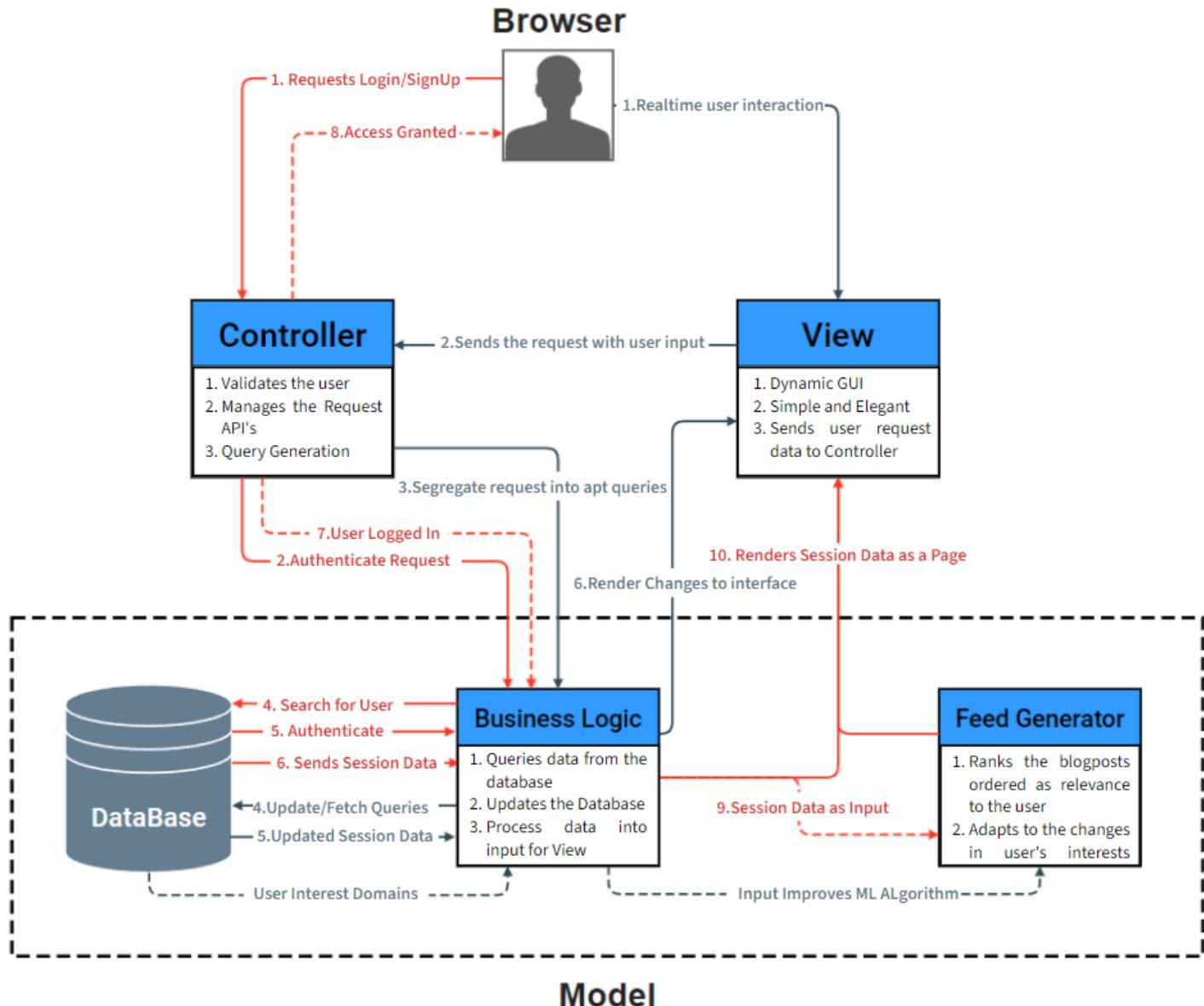
- ❖ The controller interacts with the model to process the made requests.
- ❖ Data from the database is fetched or updated based on the requests made by the user.

6. View Updating:

- ❖ The controller, after processing the requests in the model, updates the view using the model(database).
- ❖ The updated data is displayed on the user's page.

7. Feed Generator and ML Algorithm:

- ❖ The relevant data from the model is transferred to a feed generator which will help it to dynamically create feeds for a particular user.



2.2 Pipe and Filter Architecture

Our system will employ pipe and filter architecture pattern to perform the following processing to provide enhanced user experience:-

1. Blog Feed:

- ❖ All the blogs/posts written by the user base are collected together to form a Pool of Blogs.
- ❖ This Pool is filtered based on the varying user interests querying on the tags associated with blogs. This creates a sub-pool which is fed as an input to the ML Algorithm.
- ❖ This ML Algorithm is continuously fed the user data to train upon so that it can find the relevance factor for each post/blog which is used for ranking of the blogs. This Blog subpool rated with the relevance ranking, creates the user's Blog Feed.
- ❖ The user can like a blog, comment on it and have conversations in the comments section, share it or get inspired to write a blog of his own.

2. Explore the user base:

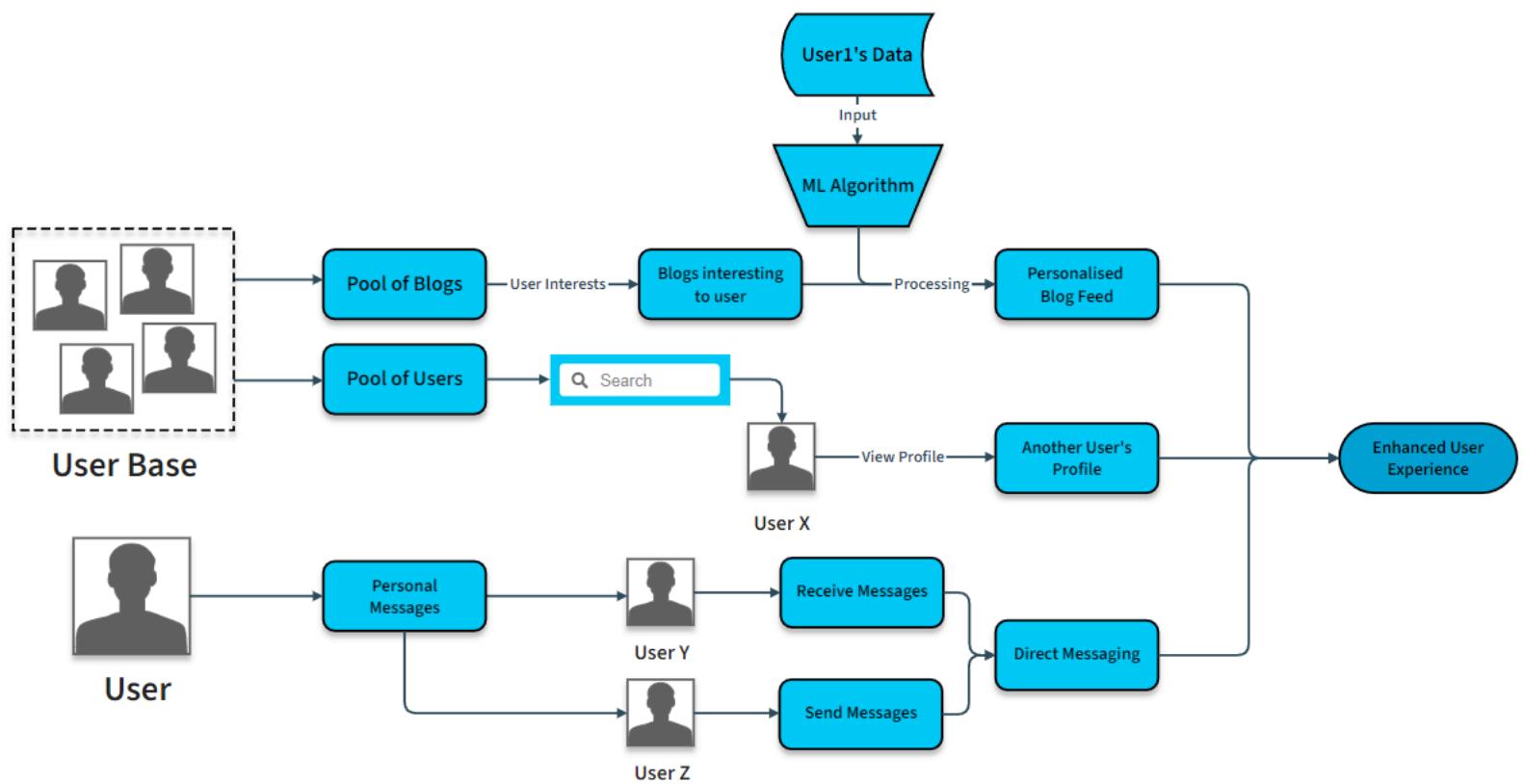
- ❖ ConnVerse gives the user full freedom to explore other users - batchmates, seniors/juniors or alumni along with their professional life.
- ❖ Exploration can also be done to gather intel about what projects/courses have been done by the same batch who had gone through the same footsteps a few years ago.
- ❖ This also helps in clearing the clouds about what is upcoming to them and what opportunities are available for them in the domain of their interests.
- ❖ The user can also choose to approach / direct message any other user on the platform.

3. Personal Messaging:

- ❖ Whenever the user logs in, the session data which is rendered on the user browser includes his personal messages (read, unread or sent).
- ❖ The user is free to explore, approach and network on the ConnVerse platform. This is highly facilitated with the messaging option.
- ❖ Real-time messaging is handled using a Redis server which acts as an intermediary between the Model Business Logic and Model Database.

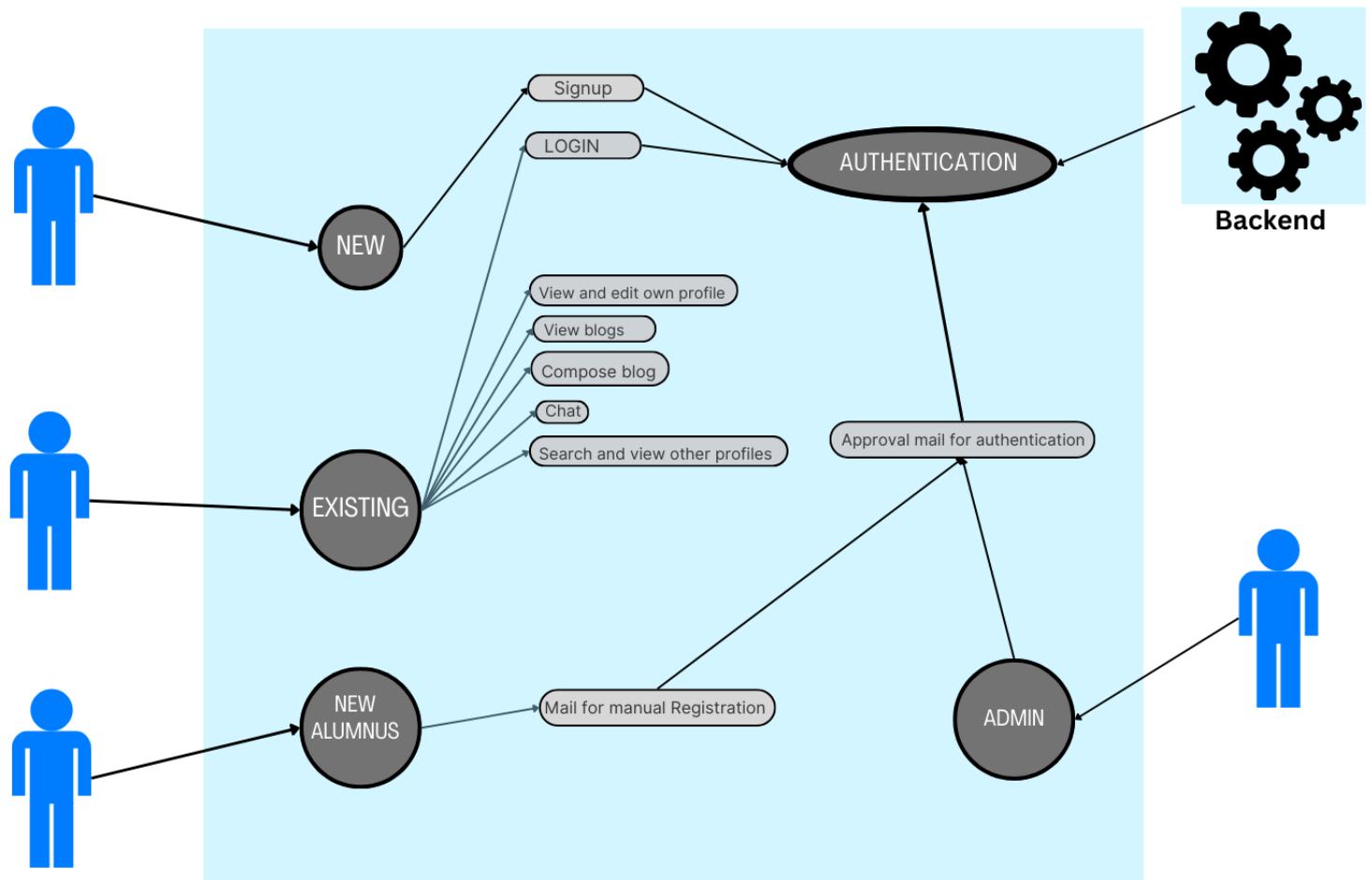
Data Source and Data Sink in the Architecture:

- A. **Source:** Our platform is essentially a networking asset-light model which means the current database of the user base along with their professional life is the input to the architecture.
- B. **Sink:** This data is repeatedly processed via three paths into features that actively streamline the networking which is key to our platform's selling point "Networking Tools" converging into an excellent user experience.

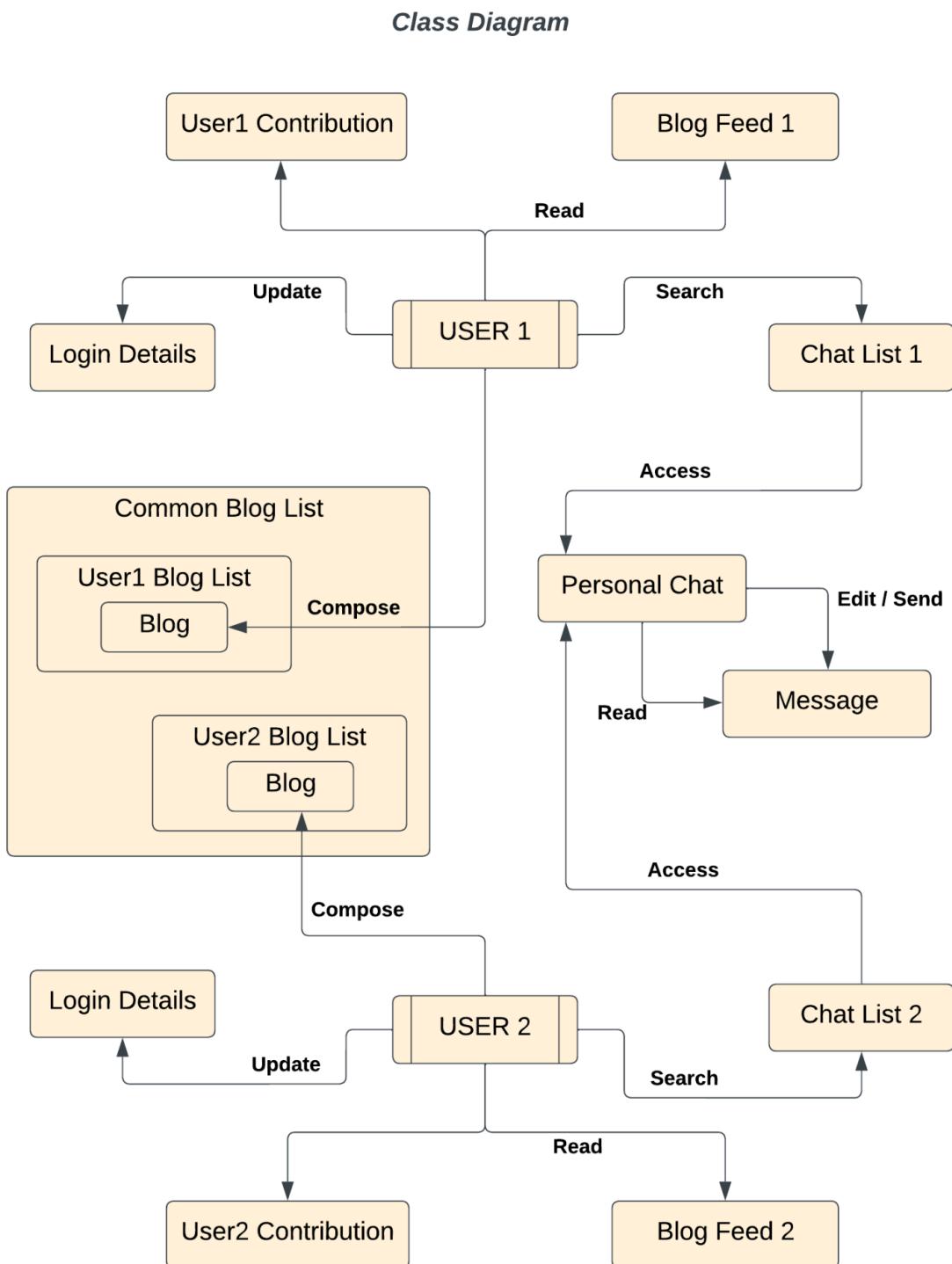


3 Object Oriented Design

3.1 Use Case Diagrams



3.2 Class Diagrams



USER PROFILE		PROJECT																			
(*) FIXED/DEFAULT		(*) FIXED/DEFAULT (**) STANDARD FORMAT																			
NAME:	STRING*	USER_ID:	NUMBER*																		
ROLL NUMBER:	NUMBER*	TITLE:	STRING																		
NICK-NAME:	STRING	MENTOR:	STRING																		
SKILLS:	ARRAY OF STRINGS	DESCRIPTION:	STRING																		
POST_ID:	ARRAY OF NUMBERS	ORGANISATION:	STRING																		
COURSES:	ARRAY OF COURSE	TIME_PERIOD:	STRING**																		
PROJECTS:	ARRAY OF PROJECT	GITHUB_LINK:	STRING																		
CREDENTIALS:	ARRAY OF STRINGS	• EDIT_PROJECT()																			
IMG:	IMAGE	COURSE																			
BANNER_IMG:	IMAGE	(*) FIXED/DEFAULT		USER_ID:	NUMBER*	(*) FIXED/DEFAULT		TITLE:	STRING	(*) FIXED/DEFAULT		COURSE_CODE:	STRING	(*) FIXED/DEFAULT		REVIEW:	STRING	• EDIT_PROFILE()		• EDIT_COURSE()	
(*) FIXED/DEFAULT		USER_ID:	NUMBER*																		
(*) FIXED/DEFAULT		TITLE:	STRING																		
(*) FIXED/DEFAULT		COURSE_CODE:	STRING																		
(*) FIXED/DEFAULT		REVIEW:	STRING																		
• EDIT_PROFILE()		• EDIT_COURSE()																			

MESSAGE

(*) FIXED/DEFAULT (**) STANDARD FORMAT

MESSAGE_ID:	NUMBER*
SENDER_ID:	NUMBER*
RECIPIENT_ID:	NUMBER*
TEXT:	STRING
TYPE:	TEXT/IMAGE/DOC
IMG:	IMAGE
DOC:	DOCUMENT
TIME_STAMP:	STRING**
READ_RECEIPT:	BOOLEAN
<ul style="list-style-type: none"> • EDIT_MESSAGE() 	

CHAT LIST

(*) FIXED/DEFAULT

USER_ID:	NUMBER*
CHAT:	ARRAY OF CHAT

CONTRIBUTIONS

(*) FIXED/DEFAULT (**) STANDARD FORMAT

USER_ID:	NUMBER*
TOTAL_POSTS:	NUMBER
CONTRIBUTION:	NUMBER
<ul style="list-style-type: none"> • UPDATE_CONTRIBUTION() 	

CHAT

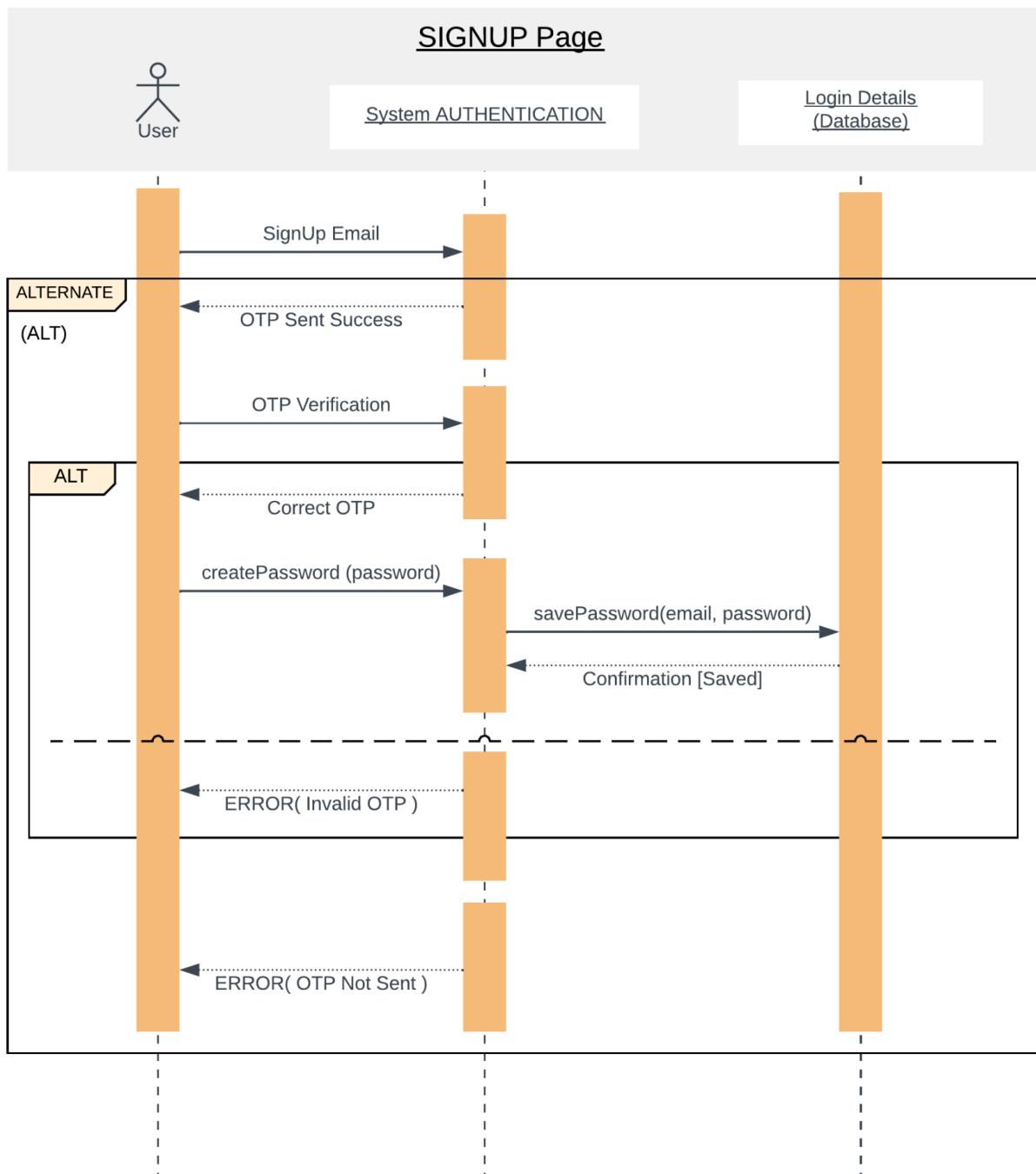
(*) FIXED/DEFAULT

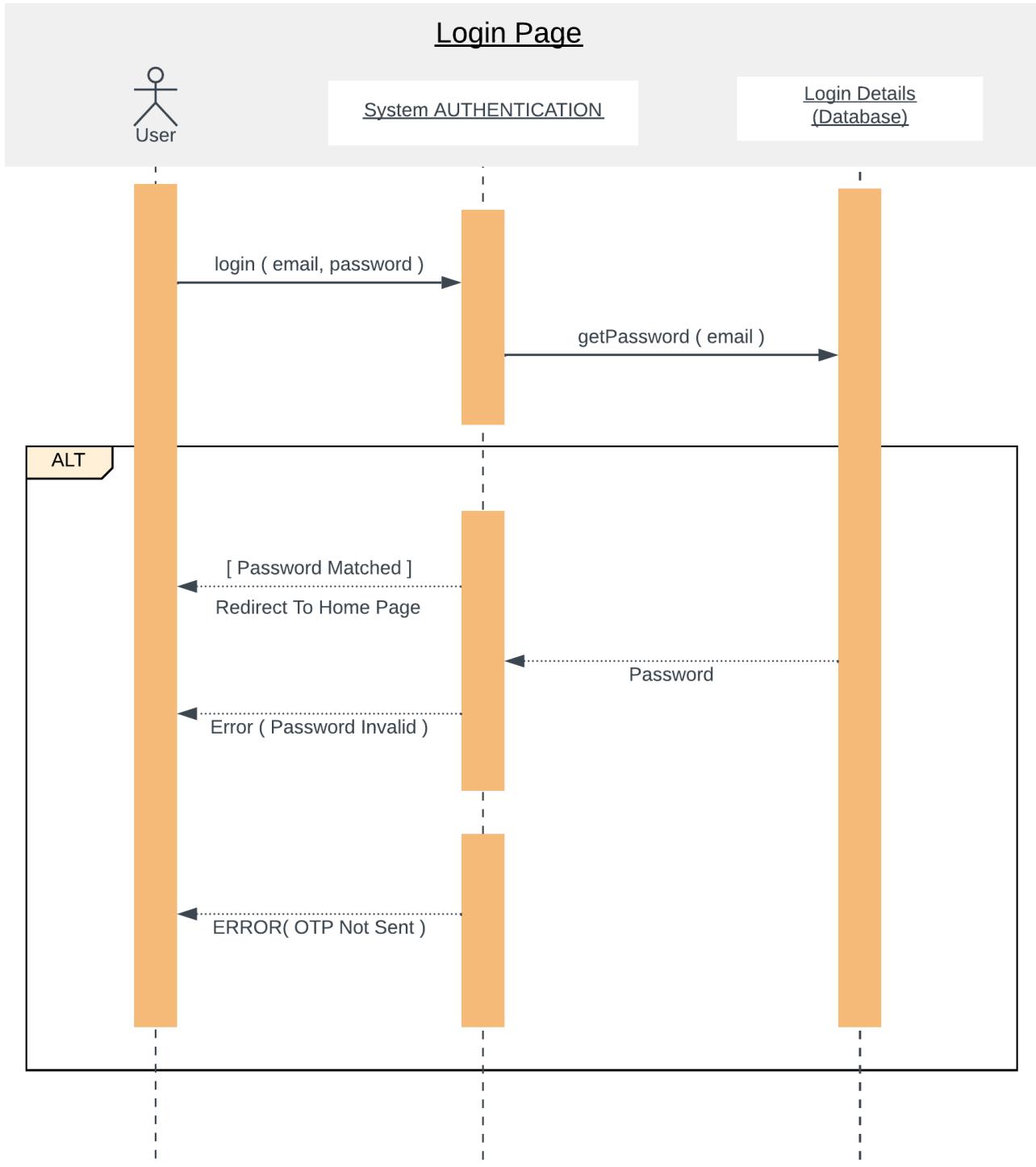
USER_ID:	NUMBER*
RECIPIENT_ID:	NUMBER*
ACCEPTED:	BOOLEAN
BLOCKED:	BOOLEAN
MESSAGES:	ARRAY OF MESSAGE
<ul style="list-style-type: none"> • PERMIT() 	

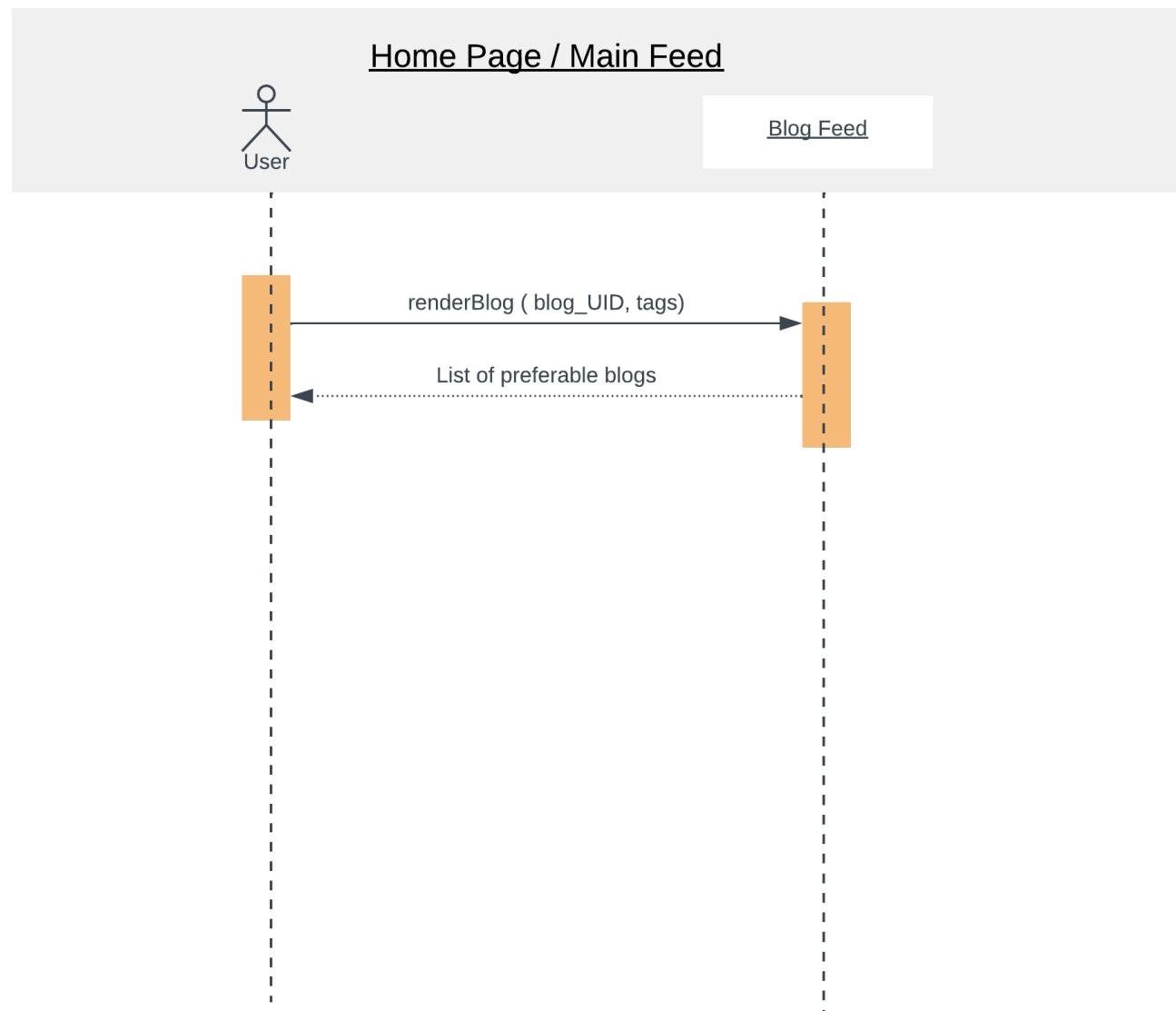
BLOG	
(*) FIXED/DEFAULT (**) STANDARD FORMAT	
USER_ID:	NUMBER*
BLOG_ID:	NUMBER*
TITLE:	STRING
TAGS:	ARRAY OF STRINGS
TIME_STAMP:	STRING**
UP_VOTE:	SET OF NUMBERS
DOWN_VOTE:	SET OF NUMBERS
IMG:	IMAGE
CONTENT	STRING
COMMENTS:	ARRAY OF PAIR <USER_ID, STRING>
<ul style="list-style-type: none"> • ADD_COMMENT() • EDIT_BLOG() 	

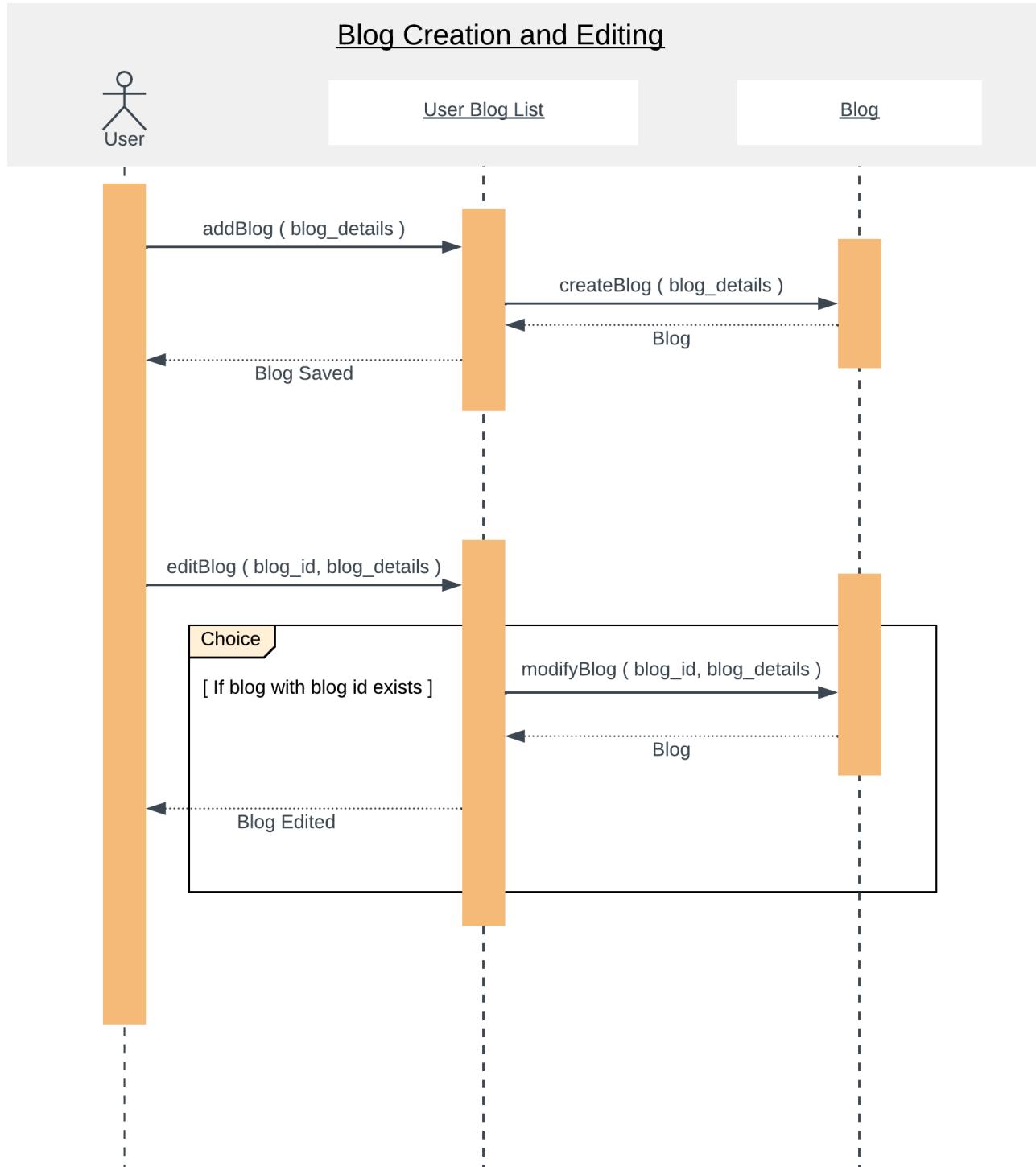
MAIN BLOG FEED	
(*) FIXED/DEFAULT	
USER_ID:	NUMBER*
BLOGS:	ARRAY OF BLOG
<ul style="list-style-type: none"> • RENDER_BLOGS() 	
LOGIN DETAILS	
(*) FIXED/DEFAULT (**) STANDARD FORMAT	
USER_ID:	NUMBER*
EMAIL:	STRING
PASSWORD:	STRING** (ENC)
<ul style="list-style-type: none"> • CHANGE_PASSWORD() 	
USER BLOG LIST	
(*) FIXED/DEFAULT	
USER_ID:	NUMBER*
BLOGS:	ARRAY OF BLOG
<ul style="list-style-type: none"> • ADD_BLOG() 	

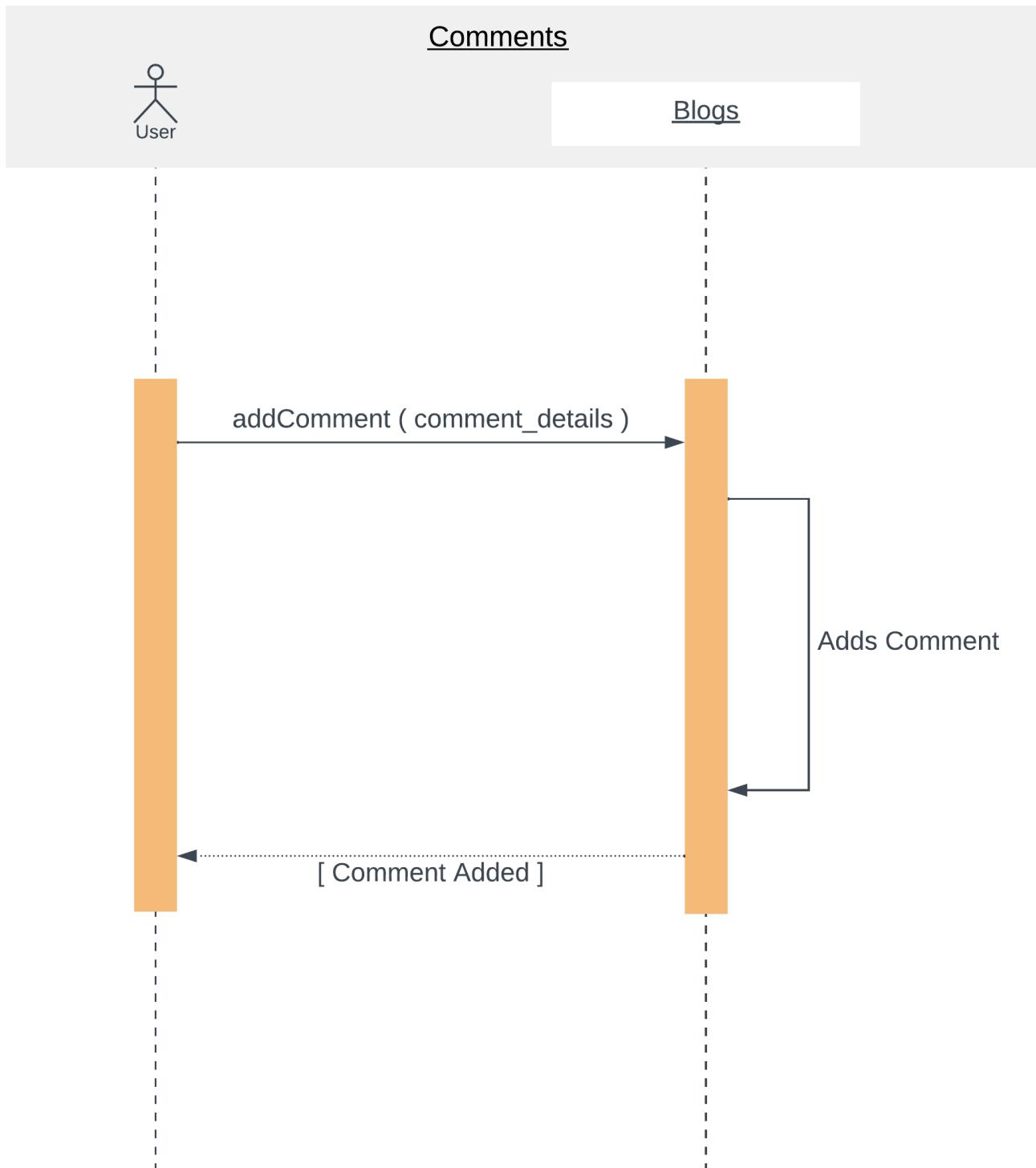
3.3 Sequence Diagrams

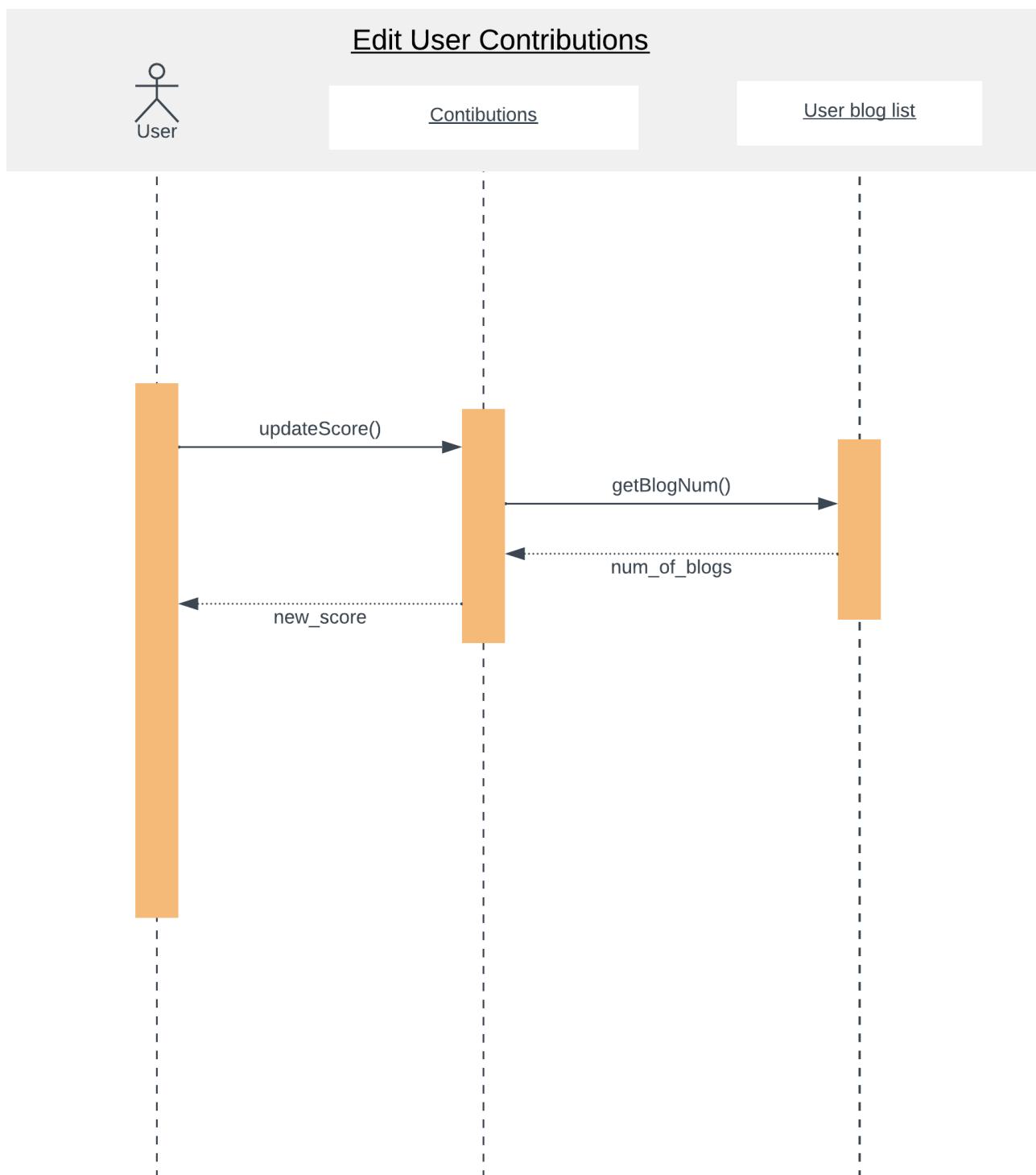


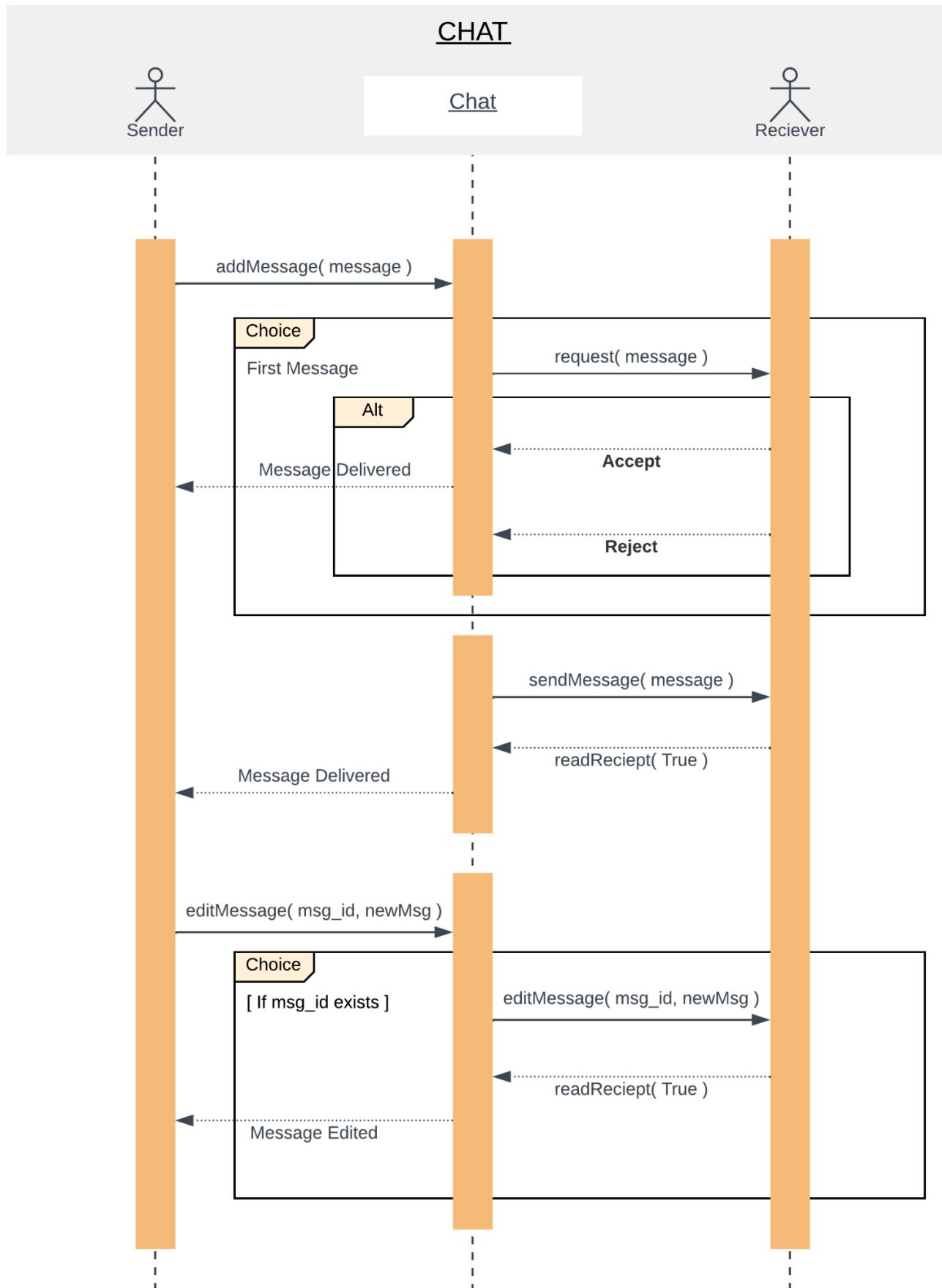






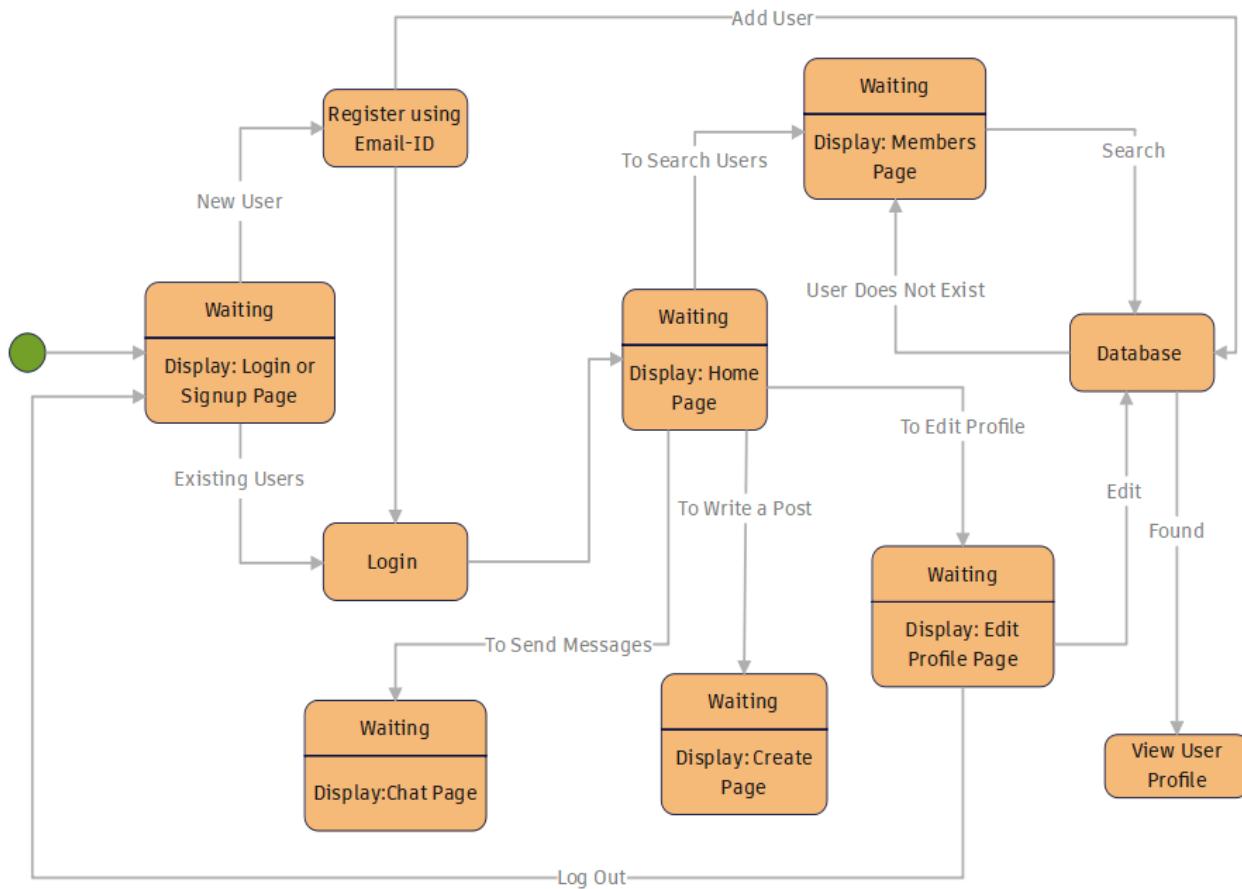






3.4 State Diagrams

The software's response to each request can be illustrated through a state diagram. The system can transition between different states based on user inputs and system actions as described in the state diagram below:



4 Project Plan

4.1 Landing Page:

This page serves as the entry point for the website, offering two primary options:

A. Register

- ❖ New users (students) input their institute email.
- ❖ Email verification is initiated through an OTP sent to the provided mail ID.
- ❖ After successful verification, users set a password for their account.
- ❖ Direct redirection to the login page upon completion.

B. Login

- ❖ Existing users enter their email and password.
- ❖ Pressing the login button verifies credentials; successful login redirects to the homepage.
- ❖ An error message pops up for unsuccessful login attempts, providing users with the option to retry.
- ❖ A "Forgot Password" option enables users to set a new password via the email verification page used during registration.

4.2 Homepage:

A. Navbar:

i. Chat Page:

- ❖ Displays previous and unseen chats.
- ❖ Allows users to view, send messages, documents, images, etc.

ii. Personal Profiles:

- ❖ Directs users to the personal profile page.
- ❖ Enables viewing and editing of personal information and profile photo.
- ❖ Users can edit courses taken and update projects.

iii. Compose/Edit Blog:

- ❖ Provides a platform to write new blogs or modify existing ones.
- ❖ Users can add images to their blogs before posting.

iv. Search People:

- ❖ Allows users to search for others by name, clubs, courses taken, similar projects, or department.

B. Feed:

- ❖ Contains personalized blogs posted by different users, tailored to individual interests.
- ❖ Users can like and comment on blogs.

4.3 Backend:**A. Database:**

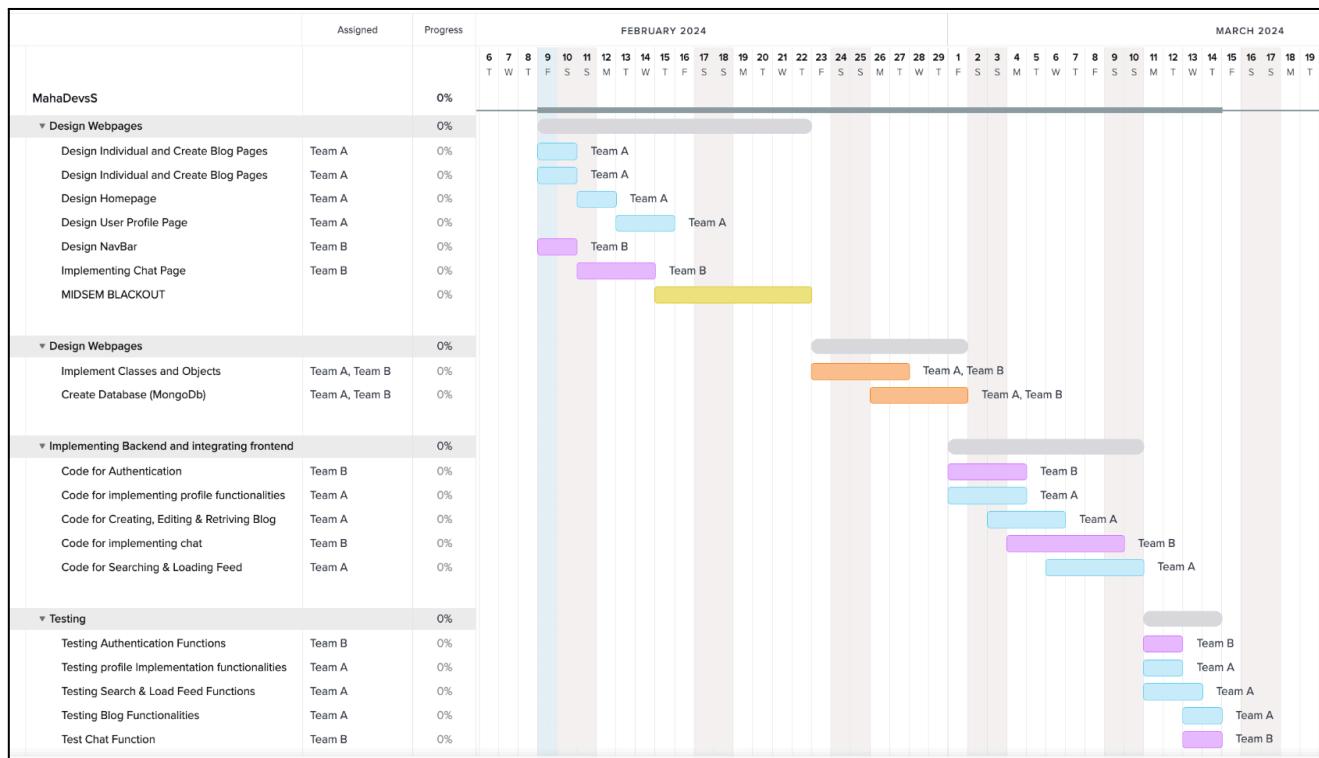
- ❖ Utilizes a single database to store collections of objects for all classes used.
- ❖ For each user, instances of the UserProfile and LoginDetails classes are created, storing user details, email, and password.
- ❖ Objects are instantiated for each project or course mentioned by the user from the Project or Course class.

B. Logic Design

- ❖ **register()**: Registers the user and stores login data in the database.
- ❖ **verifyLogin()**: Verifies email and password for login access.
- ❖ **changePassword()**: Accepts a new password and updates it in the database.
- ❖ **editProfile()**: Allows users to make changes to their profiles and updates them in the database.
- ❖ **editProject()**: Allows users to edit/create a project and updates changes in the database.
- ❖ **editCourse()**: Allows users to edit/add new projects and updates changes in the database.
- ❖ **updateContributions()**: Adds new contributions and updates them in the database.
- ❖ **permit()**: Allows a person requesting to send messages.
- ❖ **editMessage()**: Allows users to edit previously sent messages.
- ❖ **addBlog()**: Allows users to save and post blogs.
- ❖ **addComment()**: Allows users to comment on a blog.
- ❖ **editBlog()**: Allows users to make changes to previous blogs and repost.
- ❖ **renderBlogs()**: Loads blogs from the main blog feed for presentation on the user's homepage.

❖ **Team A** consists of Aaditi Anil Agrawal, Dobariya Jenil Bharatbhai, Harsh Agrawal, Priyanshu Singh, and Harshit Srivastava. **Team B** comprises Arshit, Prem Kansagra, Chayan Kumawat, Naman Jaiswal, and Harshit.

The timeline for implementing ConnVerse is as follows:



5 Other Details

Appendix A - Group Log

The group was divided into four teams A-D and sections of SDD were distributed among the groups.

Team A	Prem Kansagra, Aaditi Agarwal, Jenil	Sequence diagrams, Class Diagrams
Team B	Harshit Shrivastava	Human Interface design, Use Case Diagram
Team C	Arshit, Harshit, Chayan, Naman	Architectural Design, Context Model
Team D	Harsh Agrawal, Priyanshu Singh	State Diagrams, Project Plan

Date	Team	Summary of the Meeting	Duration	Location
27th Jan' 24	All	Commenced the initial stages of crafting the software design document.	60 min	RM building
01th Feb' 24	All	Allocated subsections to each member of the group.	45 min	RM building
04th Feb' 24	All	Engaged in an online chat with our TA to address some uncertainties.	15 min	Online
05th Feb' 24	C	Discussion over architecture model and context diagram design	75 min	CCD
05th Feb' 24	A,D	Discussion about state diagrams ,class diagrams and sequence diagrams	60 min	RM building
08th Feb' 24	All	Implemented the last adjustments to the documentation.	120 min	RM building