Software Requirements Specification

for

SafeSpace

Version 1.0

Prepared by

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CONTENT	TS	2
REVISION	NS	3
1 In	TRODUCTION	4
1.1	Product Scope	4
1.2	Intended Audience and Document Overview	4
1.3	Definitions, Acronyms and Abbreviations	5
1.4	DOCUMENT CONVENTIONS	5
1.5	REFERENCES AND ACKNOWLEDGMENTS	6
2 O	VERALL DESCRIPTION	7
2.1	Product Overview	7
2.2	Product Functionality	
2.3	Design and Implementation Constraints	8
2.4	Assumptions and Dependencies	9
3 SF	PECIFIC REQUIREMENTS	9
3.1	External Interface Requirements	9
3.2	FUNCTIONAL REQUIREMENTS	17
3.3	Use Case Model	19
4 O	THER NON-FUNCTIONAL REQUIREMENTS	25
4.1	Performance Requirements	25
4.2	SAFETY AND SECURITY REQUIREMENTS	25
4.3	SOFTWARE QUALITY ATTRIBUTES	26
5 O	THER REQUIREMENTS	27
A PPENDI	x A – Data Dictionary	28
A PPENDI	x B - Group Log	31

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Initial Draft (v1.0)	404 Team Not Found	Initiated the document. Added all the necessary details.	24/01/25

1 Introduction

1.1 Product Scope

SafeSpace is a confidential and supportive online platform designed exclusively for students at IITK. The platform aims to address students' mental health challenges and provide a safe environment to connect with peers and counselors from the Institute Counseling Service. Its primary objective is to foster mental wellness, open communication, and mutual understanding within the student community.

Major Benefits Include:

Anonymity for Open Communication:

Students can express their thoughts and struggles anonymously, ensuring a judgment-free environment and reducing the stigma surrounding mental health discussions. These discussions may include everything from serious problems to slightly bad moods.

• Al-Powered Support for Counselors:

The platform uses AI to analyze students' posts, categorizing cases as mild, moderate, or severe. The counsellors get notified in case any severe condition is detected so that appropriate and timely action can be initiated and they can chat with the person directly.

- Community Building through Shared Experiences:
 - Students can connect with peers facing similar challenges through public comments fostering a supportive network that promotes empathy and mutual understanding.
- Safe Online Environment:

Includes Al-driven spam filtering to remove any abusive or irrelevant content from the feed and maintain the purpose of the initiative.

- One-to-One Counseling Sessions:
 - Counselors can initiate private chats with students in need and vice versa, while students can also book counseling sessions with counselors whenever required.
- Self-help Resources and Mental Health Articles:
 - Counselors and trained professionals can post articles, stories, and materials related to mental health and wellness to help students.

1.2 Intended Audience and Document Overview

Intended Audience -

This document can prove to be useful to different categories of people and cater to a wide range of audiences at the same time including the entire team of developers, document writers, stakeholders, project managers, testers, users, and approvers.

The intent and purpose of the app for each stakeholder may vary significantly.

Section 2: Overall Description

This section offers a concise overview of the project's purpose, functionalities, and implementation approach. It primarily supports project managers and developers by providing essential insights

into the overall design and scope, ensuring efficient resource allocation and effective project management.

Section 3: Specific Requirements

This section outlines detailed specifications such as functional requirements, interface designs, and system interactions. It is vital for developers, testers, and documentation writers, enabling precise development, testing, and preparation of user manuals.

Section 4: Other Non-Functional Requirements

This section focuses on non-functional aspects, including performance benchmarks, safety standards, security protocols, and software quality attributes. It provides valuable insights for users and testers, ensuring the system behaves as expected and meets the desired quality standards.

1.3 Definitions, Acronyms and Abbreviations

Term	Definition
API	Application Programming Interface
CSA	Counselling Service Admin
CSS	Cascading Style Sheets
GUI	Graphical User Interface
HTML	HyperText Markup Language
НТТР	HyperText Transfer Protocol
ICS	Institute Counselling Service
IITK	Indian Institute of Technology Kanpur
ОТР	One-time Password
SRS	Software Requirement Specifications
UI	User Interface

1.4 Document Conventions

Formatting Conventions -

- Arial font size 11 is used throughout the document for text.
- The document maintains a 1" margin and is single-spaced throughout...

- Section titles use font size 18 and subsection titles use font size 14
- Comments are italicized and important words are made bold.

1.5 References and Acknowledgments

- 1. Following websites were referred for the help in creation of document:
 - Figma
 - Pinterest
 - Use Case Model
- 2. We would like to acknowledge our instructor Dr. Indranil Saha for guiding us through the process of making this document.
- 3. We extend our gratitude to TA Souvik for having a discussion with us and leading us through the document creation process.

2 Overall Description

2.1 Product Overview

SafeSpace is a new, self-contained web application designed to support the mental well-being of students on campus. It provides a secure and anonymous platform where students can share their issues, connect with counselors and access resources to enhance mental health awareness and support. The application emphasizes personalized interactions through features such as a private chat system for one-on-one counseling, an intuitive appointment scheduler with counselors, and dynamic blog feeds that prioritize posts based on severity tags. Users can write and interact with posts, search for relevant content using tags, and engage with counselors through insightful blogs and comments.

SafeSpace promotes a safe and inclusive environment by filtering inappropriate content and enabling features to report and block harmful interactions. By fostering meaningful conversations and providing easy access to professional guidance, SafeSpace leverages technology to empower students, enhance campus well-being, and create a supportive community. The figure below provides a high-level description of the main components of the system, showing the interaction with the students, counselors and the context in which the applications are used.

2.2 Product Functionality

- I. Authentication:
 - A. Login
 - B. Register
 - 1. OTP Generation and Verification
 - 2. Set Password
 - 3. Login Page Access
 - C. Forgot Password
 - D. Changing Password for Login
- II. Homepage:
 - A. Navigation Bar:
 - Chat Feature:
 - Can chat personally with a counselor
 - Send text messages, images, or attachments
 - Controls: Block and Report
 - 2. Appointments:
 - For Users:
 - (1) List of all counselors and their available slots
 - (2) Option to book an appointment
 - For Counselors:
 - (1) List of appointment Requests
 - (2) Option to accept, reject, or reply to any request
 - (3) Edit their availability slots
 - Personal Profile:

- For Users: Shows past posts and comments
- For Counselors: Shows upcoming appointments
- Search bar:
 - Search blogs or posts by tags
 - Search counselors

B. Main feed:

- 1. Dynamic Blog Feed:
 - Counselor feed prioritized by the severity tag
 - Users can search Posts based upon tags and keywords.
- 2. Write a post or blog:
 - Composing Blogs:
 - (1) Title, body text, and relevant tags
 - (2) Publish immediately or save as a draft
 - (3) Comment or like on blogs
 - Users can post their issues
 - Counselor posts can include Images and attachments.
 - Each post is assigned a tag which can be used to search for similar content
- 3. Spam Filtering:
 - Inappropriate posts or comments removed.
 - Users blacklisted and warned.

2.3 Design and Implementation Constraints

The development of the mental health web application is subject to various constraints that shape its design and implementation. These constraints include:

A. Memory Requirements:

A dedicated database is required to store user profile data and blogs efficiently.

B. Security Considerations:

- Utilization of IITK email-based authentication during user registration ensures that only legitimate users can access the system.
- For enhanced security, passwords will be stored in hashes.

C. Tools, Languages, and Databases:

- **MongoDB** will serve as the database to handle the substantial amount of data associated with user profiles and blogs.
- **FastAPI** will be employed to enhance performance, meet timing constraints, and execute various logical decision-making operations in the backend.
- The frontend will be developed using **ReactJS**, **HTML**, **CSS** and **JavaScript** to ensure a user-friendly, responsive, and portable GUI.

D. Communication Protocols:

• **HTTP** protocol will be used to communicate between the servers, ensuring smooth interactions within the system.

2.4 Assumptions and Dependencies

The design and implementation of our project are based on several assumptions and dependencies that may impact its development. These include:

Assumptions:

- 1. All software users are assumed to possess a unique institute mail ID.
- 2. The use of institute IDs for authenticating user profiles implies a commitment to maintaining the platform's standards by preventing the posting of inappropriate or unethical content.
- 3. ICS is willing to cooperate and interact with users on the website

Software Dependencies:

- 1. We depend on Material/Chakra UI for styling, ensuring a cohesive and visually appealing user interface.
- 2. The project relies on various JavaScript libraries to enhance functionality and streamline development.
- 3. The utilization of Redis Repository, WebSocket Server, and HTTP Server is necessary for the implementation of direct messages.
- 4. ReactJS serves as a critical component for the front end, providing the necessary tools for creating an interactive and dynamic user interface.

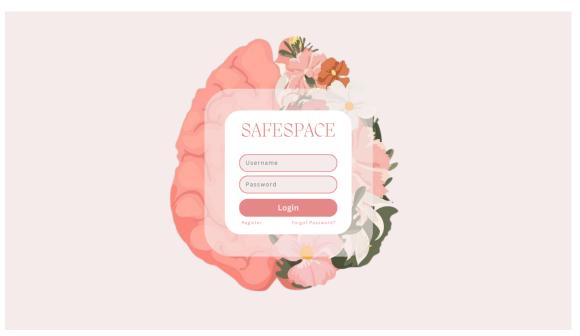
3 Specific Requirements

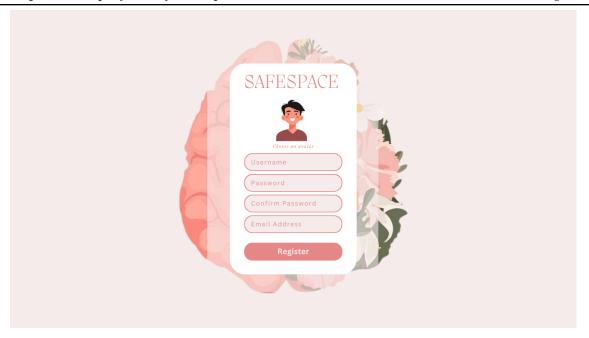
3.1 External Interface Requirements

3.1.1 User Interfaces

1. Start/Login/Sign Up Page







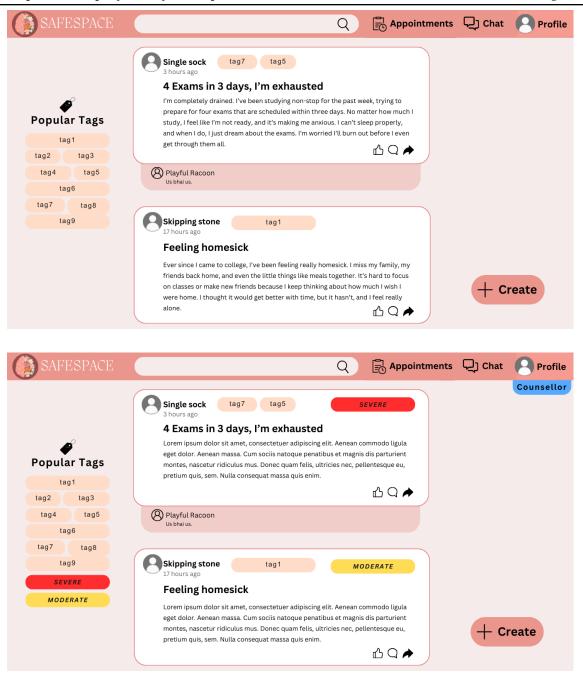
1.1 Login:

- The login page will prompt the user to enter their username and password.
- Upon successful login, users will be directed to the home page.

1.2 SignUp:

- New users can sign up by providing their email address and creating a password and username.
- After entering the email, an OTP will be sent to the provided email.
- Users will be prompted to enter the OTP to verify their email.
- Once verified, account creation will be successful.
- After account creation, the User will be directed to the home page and an alert prompt for adding profile details will be shown.
- There is an option for requesting the ICS Admin role for the counselors in the profile tab.

2. Home Page



2.1 Navigation Bar:

- The homepage will feature a navigation bar containing links to key sections such as Chat, User Profile, Appointments, Homepage and also a search bar.
- Users can easily navigate between different sections by clicking on the respective links.
- A search bar will allow users to search for specific blogs or keywords within the platform.

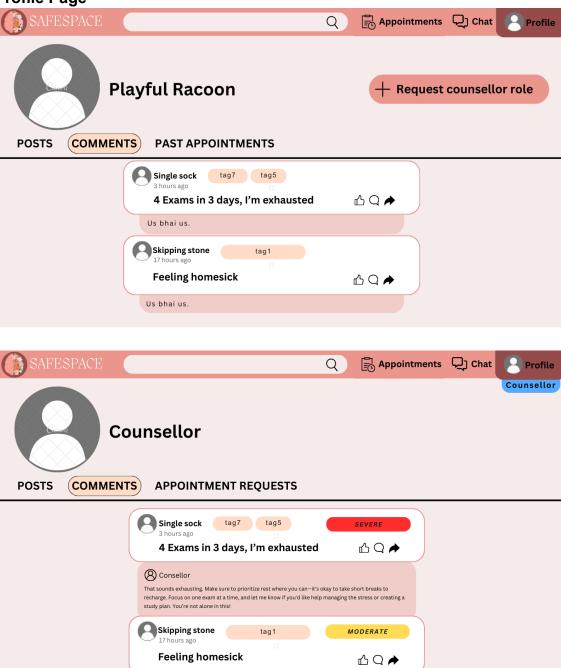
2.2 Main Feed:

- The main content area will include a dynamic feed that displays relevant content based on the user's selected tags.
- The feed will consist of the latest posts created by other users or ICS.

2.3 Create Button:

- There will be a "+Create" button beside the feed.
- It will allow the user to access the create post page.

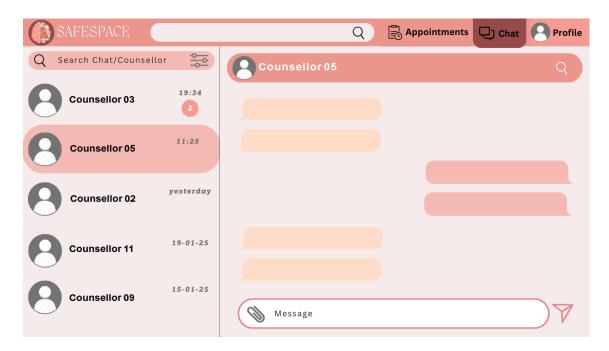
3. Profile Page



3.1 Profile Information

- The user profile page will show the posts and comments that they have made on SafeSpace.
- By Clicking the avatar icon the user will be able to change/select any avatar from our collection of avatars.
- The counselor profile will show their upcoming appointments.

4. Chat



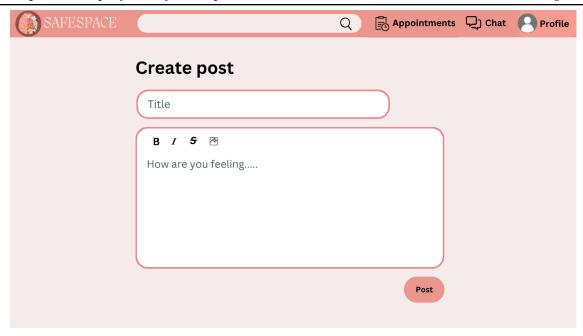
4.1 The chat page:

- Prominent chat icon for easy access on the homepage.
- Systematic arrangement from newest to oldest for user convenience.
- Efficient search bar for locating specific counselors or finding specific text.
- Time of latest message beside every chat, along with an indication for unread messages.

4.2 Inside a chat:

- Bottom text bar for composing messages.
- Small arrow next to the text bar for seamless message sending.
- Attachment icon embedded in text bar for sending photos/docs.
- Comprehensive history for effortless interaction review.
- Circular profile picture and name at the top
- Search icon on profile bar for searching messages inside the particular chat.

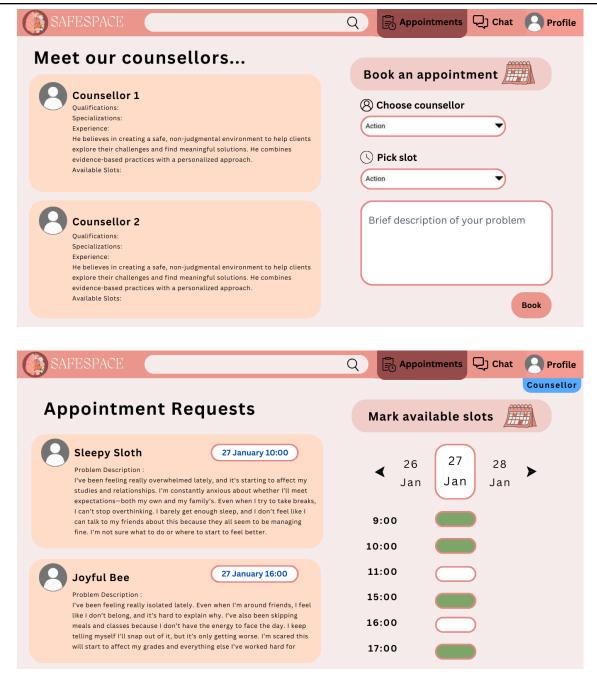
5. Create Post



5.1 Creating a Post:

- Users will have a create post page which can be accessed by clicking on "+ Create" on the homepage.
- The page will have an input box for adding title, followed by an input box for content of the post.
- The content box will have options for formatting the text (like bold, italics, strikethrough) and for adding images.
- Only the Counsellors have the option to add images.

6. Appointments



6.1 Counsellors info:

• The registered users can view the information of the counsellors.

6.2 Appointment Booking:

- Users can further book an appointment with selected counsellor.
- For the selected counsellor, the available time slots will be shown.
- The user would be required to provide a brief description of their predicament.

6.3 Appointment Requests:

- Counsellors have the option to accept or reject the requests based upon the description provided.
- In case of clashes in the timings of appointment requests, the counsellor has the option to initiate a chat with the users.

6.2 Slot Marking:

• The counselors can select the time slots they are available for on a particular day.

3.1.2 Hardware Interfaces

There are no hardware interfaces involved in the project. No additional hardware is required.

3.1.3 Software Interfaces

There are no software interfaces involved in the project. No additional software is required.

3.2 Functional Requirements

3.2.1 User Registration

All users must register on the system using their institute-provided email ID. An OTP will be sent to the user's email ID for verification. Users must create username and password for subsequent logins.

3.2.2 Changing Password for Log In

If a user forgets their login password, they can reset it via an OTP sent to their registered email ID. The OTP is then verified to generate a reset password link.

3.2.3 Admin Registration for Counselors

Counselors can request Admin privileges through the profile page in the application from the application maintainer. After manual verification, counselors can use the application with features such as severity detection.

3.2.4 Editing User's Personal Details

All users can edit their personal details, such as: Avatar and Banner image. The username is anonymous and linked to the email ID and cannot be changed.

3.2.5 Chat with Counselors

Users can chat directly with Counselors. On the first message sent, the counselor has the option to accept or decline the chat request. Conversation can only proceed after the chat is accepted. Messages can contain text and images.

All users will have the option to block, delete or report the chat.

3.2.7 Composing Posts

Users can create posts containing: Title, Body text, and Relevant tags. Users can: publish blogs immediately, save blogs as drafts. Counselors can also include images in their posts.

3.2.8 Edit Published Posts

Users can edit their own published Posts. Users cannot edit other users' posts.

3.2.9 Comment or Like in Blogs

Users can: comment on blogs or like them.

3.2.10 Searching Blogs and Counselors

Users can search posts by: post name, applying provided filters to search by niche. A popular tag dialogue box is provided to quickly select the most relevant tags for ease of access.

Users can search for counselors by their name or tags.

3.2.11 Booking Appointments

Users can request to book an appointment slot from the available time slots set by the counselor.

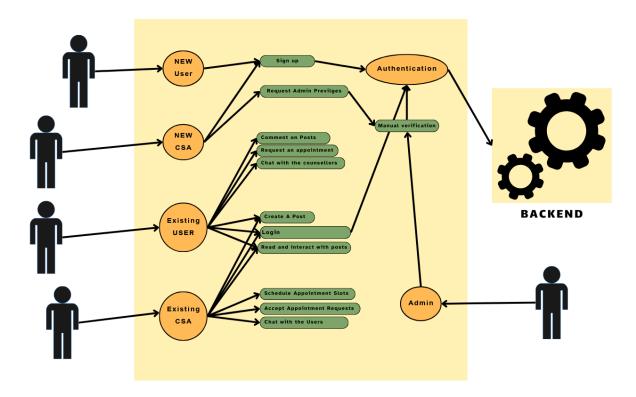
3.2.12 Scheduling Appointments

Counselors can declare time slots available for booking according to their schedule.

3.2.13 Accepting Appointment Requests

Counselors can further select which user they want to confirm an appointment for. In case of clashes or rejection of appointments due to unforeseeable reasons, the counselor has the option to initiate a chat with the rejected user.

3.3 Use Case Model



3.3.1 User Registration #1

Purpose	New User Registration for students
Requirements Traceability	Institute Email Id, Password Setup, Anonymous Username
Priority	High
Pre conditions	None
Post conditions	The user profile will be available to registered users. They can view the profile and message the counselors through our internal messaging system as well.
Actors	New User
Exceptions	None
Includes	None

Counselors have to request for admin role
but must login as normal users initially

3.3.2 User Login #2

Purpose	Registered User Login
Requirements Traceability	Registered email id, password
Priority	High
Pre conditions	User account should be pre-registered
Post conditions	The user profile will be available to pre-registered users. They can use the platform effectively.
Actors	User, Maintainer
Exceptions	None
Includes	None
Notes/Issues	If the user forgets the password, OTP verification will be done by sending an OTP to the registered email ID and the user will set a new password and log in again

3.3.3 Interacting with posts #3

Purpose	Interacting with posts for Registered Users
Requirements Traceability	User ID, password
Priority	Medium
Pre conditions	Registered user must be logged in
Post conditions	Users may view posts published by other users at the feed page. Users may sort the posts based on tags and may upvote and comment the post of any other user

Actors	Registered Users
Exceptions	None
Includes	Viewing Others' Profiles
Notes/Issues	None

3.3.4 Creating Posts #4

Purpose	Creating Posts
Requirements Traceability	User ID, password
Priority	Medium
Pre conditions	Registered user must be logged in
Post conditions	Users may write a post and publish it or save it to draft. The post will include text only
Actors	Registered Users
Exceptions	Users with a counsellor role can also include images in their posts.
Includes	None
Notes/Issues	None

3.3.5 Viewing user profile #5

Purpose	View user's own Profile to track the activity on the platform
Requirements Traceability	User ID, password
Priority	Medium
Pre conditions	Registered user must be logged in
Post conditions	Users may inspect their profile and track all the comments and posts that have been

	made by them.
Actors	Registered Users
Exceptions	None
Includes	None
Notes/Issues	None

3.3.6 Reset User Id/Password #6

Purpose	Reset password for user's own account	
Requirements Traceability	Registered email ID	
Priority	Medium	
Pre conditions	User have already registered	
Post conditions	User can change password for the linked account	
Actors	Registered users	
Exceptions	None	
Includes	None	
Notes/Issues	None	

3.3.7 Counselor Registration #7

Purpose	To give Counsellor role to counselors
Requirements Traceability	None

Priority	High
Pre conditions	Request for counsellor role privileges.
Post conditions	Verification of the counselor must be conducted
Actors	Counselor,ICS.
Exceptions	Request made by any student
Includes	None
Notes/Issues	None

3.3.8 Appointment With Counselor #8

Purpose	To book an appointment with the counselor
Requirements Traceability	Name of Student, Student Roll No.
Priority	High
Pre conditions	User have already registered
Post conditions	s will choose the appointment date, time and venue and inform the user about it
Actors	Registered Users, counselors
Exceptions	None
Includes	Requesting for a particular date and time for the appointment
Notes/Issues	None

3.3.9 Severe Situations #9

Purpose	To report a severe situation
Requirements Traceability	Someone has posted something very serious such as self-harm

Priority	Very High	
Pre conditions	None	
Post conditions	Counselors will receive the email ID of the user who has posted	
Actors	Counselors, System organisers	
Exceptions	None	
Includes	None	
Notes/Issues	After getting the email ID all other necessary data about someone can be extracted from the institute database	

3.3.10 Chatting with Counselors #10

Purpose	To chat with the counsellor
Requirements Traceability	User must be logged in
Priority	Medium
Pre conditions	User has requested to initiate a chat with the Counsellor
Post conditions	Counselors will receive a chat request in their chat menu.
Actors	Students, Counselors, System organisers
Exceptions	None
Includes	None
Notes/Issues	None

4 Other Non-functional Requirements

4.1 Performance Requirements

- 4.1.1 **Robustness:** The system should be capable of seamlessly supporting up to 4,000 concurrent users, even during peak traffic times, without compromising performance. The system should handle a high volume of requests, including post interactions and chat messages, ensuring real-time responsiveness and reliability. This robustness is critical to maintaining a seamless experience for users, enabling them to engage with posts and connect with counselors effectively, thereby fostering trust and satisfaction.
- 4.1.2 **Performance and Responsiveness:** The system must ensure a response time of under one second for user actions and deliver feed, profiles, and content within two seconds of session initiation. These performance benchmarks are critical to providing a smooth, efficient experience, minimizing delays during searches, message exchanges, and initial loading, thereby enhancing user satisfaction and retention.
- 4.1.3 **Scalability:** The software should be designed to accommodate a growing user base and handle sudden spikes in API queries efficiently. It must support both horizontal and vertical scaling, enabling adaptability to demand through automated or manual adjustments.

4.2 Safety and Security Requirements

- 4.2.1 **User Data Protection and Anonymity:** User data and personal records must be thoroughly protected against any software vulnerabilities. The application must ensure complete user anonymity by refraining from using or displaying real names, and no one should be able to access or trace a user's identity. Private chats must remain secure and inaccessible to third parties under any circumstances. Only the system organizer will have access to the email addresses linked to user accounts, strictly for reaching out in severe, life-threatening situations.
- 4.2.2 User Authentication: Currently, only IITK email addresses are permitted for account creation to prevent access by strangers or scammers and maintain the app's relevance to the IITK community. Users will need to verify their identity through a One-Time Password (OTP) during the registration process to prevent impersonation. Additionally, the platform will include a "Forgot Password" feature to ensure secure account recovery when needed. These measures help ensure a safe, trustworthy environment aligned with the founding principles of the software.
- 4.2.3 User Experience: Every user is encouraged to freely express their opinion, but must also respect others' opinions. Any public activity, such as blog posts or comments, must be accountable to the user. The platform's core value lies in its formal, respectful connections and discussions. Negative comments, mockery of someone's problem, or any harmful behavior will not be tolerated. All comments will be strictly filtered, with no allowance for negativity. Users who violate these rules will receive warnings, and after three warnings, their accounts will be blocked. To unblock an account, users must contact the system organizer. Both automated and manual moderation will be in place to maintain a positive environment.

4.3 Software Quality Attributes

- 4.3.1 **Portability**: The application will function consistently across various devices, ensuring a uniform user experience. By leveraging cross-platform frameworks and responsive design, the software adapts seamlessly to different screen sizes and resolutions.
- 4.3.2 Maintainability: The application is structured to be easy to understand, modify, and enhance. Clean and readable code, with consistent naming conventions and a modular design, eliminates complexity. Long functions and deeply nested loops are avoided, while each module is well-documented to facilitate future updates. Additionally, version control practices, such as meaningful commit messages and clear branching strategies, enable effective collaboration and traceability of changes. Tools for database migration and backup systems ensure smooth updates, minimizing downtime and protecting data integrity during maintenance.
- 4.3.3 **Usability**: The application's interface is designed to provide a seamless and intuitive experience, even for new users. Tasks such as updating profiles, publishing blogs, and connecting with counselors via the chat feature are straightforward and easy to perform.

Other Requirements

Appendix A – Data Dictionary

A.1 User Database

Element name	Description	Operation	Data Type	Field size for display
Email ID	IITK email id of the user which links them to a unique username	Required for authentication	string	40
Username	A unique username which helps to maintain the privacy and the anonymity of the user.	Identifies Unique User	string	25
User ID	A unique ID for maintaining the database.	Identifies unique user	ID	32
Password	It takes the password as arguments then checks the condition of login.	Secure User login	hex	30
Avatar	A set of predefined images that the user can choose from	Provides personalisation	Image	2MB
Role	Role of the user can be counsellor or a student which is assigned by the maintainer	Provides access to certain features	string	10

A.2 Chat Interface

Element name	Description	Operation	Data Type	Field size for display
Message ID	Unique identifier for each message.	Identifies unique message	ID	32
Sender ID	ID of the user who sent the message.	Identifies sender	ID	32
Recipient ID	ID of the user the message was sent to.	Identifies recipient	ID	32

Message Text	The content of the message.	Stores message content	String	Variable
Timestamp	Date and time the message was sent.	Records message time	Timestam p	Variable
Message Type	Type of message (text, image, video, file, system message, etc.).	Categorizes message type	Enum	Variable
Media URL	URL of any attached media (if applicable).	Links attached media	URL	Variable
Reply To	ID of the message this message is replying to (if applicable).	Tracks reply message chain	ID	32

A.3 Appointments

Element name	Description	Operation	Data Type	Field size for display
Sender ID	IITK email id of the user who sends appointment request	Identifies sender	ID	32
Recipient ID	ID of the user the appointment was requested to	Identifies Recipient	ID	32
Timestamp	Date and time the appointment requested.	Records time	Timestamp	Variable
Text Message	Conveys counsellor about the problem and requested date, time counsellor confirms the date and time and sends it to student	Stores message content	String	Variable
Password	It takes the password as arguments then checks the condition of login.	Secure User login	hex	30

A.4 Feed

Element name	Description	Operation	Data Type	Field size for display
Post Type	Type of post (text, image, video, file, system message, etc.).	Categorizes post type	Enum	Variable
Post Content	Text-by studentstext, image, vid etc by counsellors	Store post content	String	Variable
Content Tag	Sorts posts according to the user's choice	Stores content tag	String	Variable
Severity Tag	Posts are ordered according to severity	Marks severity according to stored keywords	String	Variable
Comments	Replies to the posts by other users	Stores these replies	String	Variable

Appendix B - Group Log

SL. no.	Date	Description
1	08/01/25	Brain-stormed various possible prospective ideas for the project.
2	10/01/25	Met the professor to present the discussed ideas and take feedback.
3	11/01/25	Discussed the feasibility of the ideas and finalized "SafeSpace" as the project.
4	18/01/25	Studied the SRS template given and distributed the work amongst the team members.
5	19/01/25	First meet with the Teaching Assistant Mr. Souvik Mukherjee. Discussed some doubts regarding the SRS documentation.
6	20/01/25	Redistributed the pending work after having clarified the doubts with the TA.
6	20/01/25	Explored some more functionalities for the product and progressed with the SRS document.

7	21/01/25	Explored various implementation tools and software for the project.
8	22/01/25	Progressed with SRS documentation work.
9	23/01/25	Progressed with SRS documentation work.
10	24/01/25	Submission of the SRS document.