Software Requirements Specification

for

Echo

Version 1.1

Prepared by

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Course: CS253

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
V1.1	All Group Members	First version of the Software Requirement Specification Document.	24/01/25

• Introduction

1.1 Product Scope

The product Echo aims to provide the campus community of IITK a place to express their thoughts and views about any topic they have interest in. Many people in the campus including professors write blogs and most of the time the campus doesn't know that someone has written a blog about something interesting. We aim to solve this problem using our software, Echo. Echo will help the whole campus community by providing a single point to read and write blogs. It will also help the people to connect with each other that have similar interests. Writers will be able to publish their blog within the campus community. Writers will be able to style their blogs in any way they want.

With Echo people will be able to share their knowledge, thoughts and wisdom in many ways.
One of the cool features of this project would be that people will be able to post their blogs anonymously. This will try to promote free speech in the community.
Echo will provide a safe place for people to express themselves.

1.2 Intended Audience and Document Overview

The document is mainly intended for the entire developers, testers, stakeholders, users and approvers. The developers and testers would mainly be interested in specific requirements and non-functional requirements. The users and stakeholders should read the introduction, overview and specific requirements to get the information they want.

1.3 Definitions, Acronyms and Abbreviations

- IITK- Indian Institute of Technology, Kanpur
- OTP- One Time Password
- UI- User Interface
- DB – Database
- HTTP- Hyper Text Transfer Protocol
- HTML- Hyper Text Markup Language
- CSS- Cascading Style Sheet
- TA – Teaching Assistant

1.4 Document Conventions

- General Text: Font-Arial Size-11
- Heading: Font-Arial Size-18
- Sub-headings: Font-Arial Size-14
- Sub-sub-headings: Font-Arial Size-12
- Margin-1'

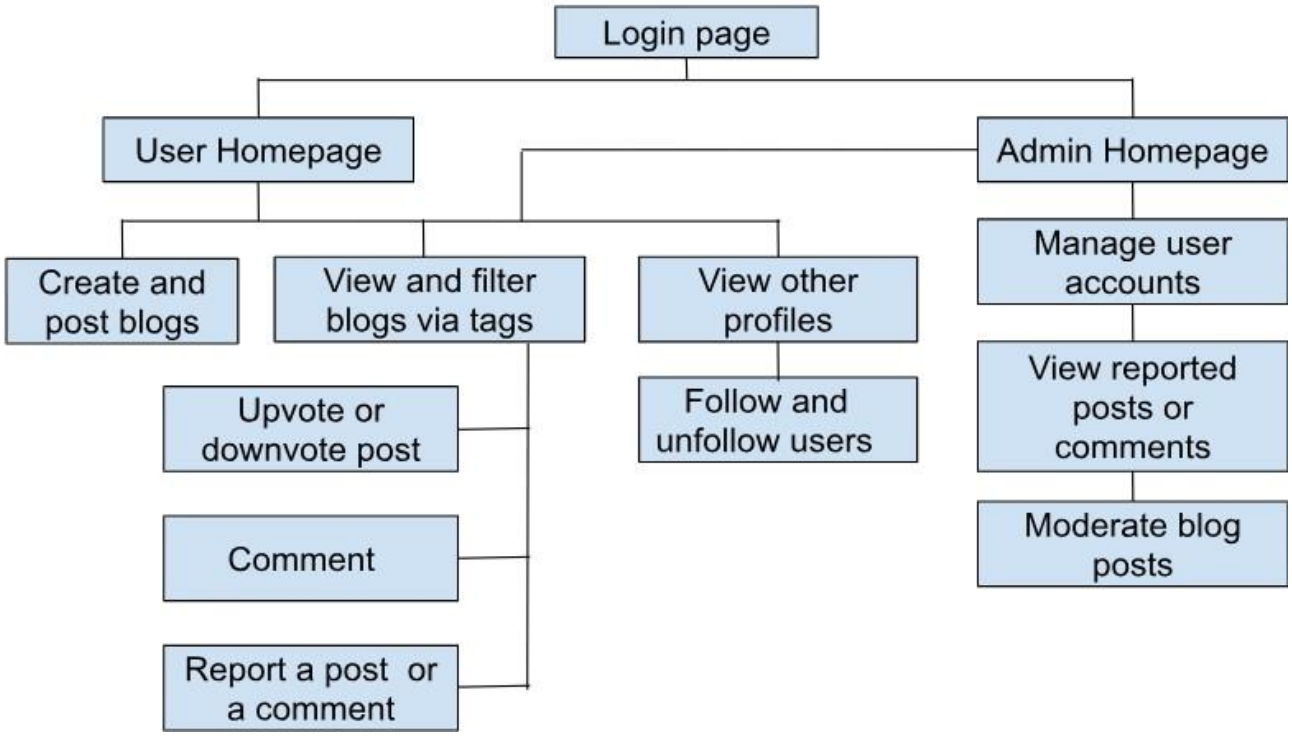
1.5 References and Acknowledgments

- We would like to acknowledge the help of our TA Mr. Paras Ghodeshwar and our instructor Mr. Indranil Saha for guiding us through the document, and for providing us this SRS template.

● Overall Description

2.1 Product Overview

The echo platform is designed specifically for IITK community to share & explore content. The platform allows users to create and publish blogs under their name or anonymously while enabling interaction through following, commenting and voting. With features that enhance user engagement, this project aims to foster a creative blogging culture within IITK community. The following is a diagram connecting all the important components.



2.2 Product Functionality

1.The user can create & publish blogs under their name or anonymously.
2.One can save drafts to be able to access them in future.
3.Authenticate user through IITK webmail ensuring security.
4.Blogs can be filtered by tags.
5.It allows users to interact via votes (upvote and downvote), comments to blogs & following users.

2.3 Design and Implementation Constraints

1.The system must handle simultaneous usage by a large number of users, requiring optimized memory and processing capabilities.
2. IITK webmail integration requires strong encryption protocols and secure session management.
3. The platform must be compatible with major web browsers and ensure responsiveness across

both desktop and mobile devices.
4. We will be using HTML, CSS, JavaScript with React library for front end.
5. HTTP protocol for communication between frontend and backend.
6. For backend we will be using Node js and Express js.

2.4 Assumptions and Dependencies

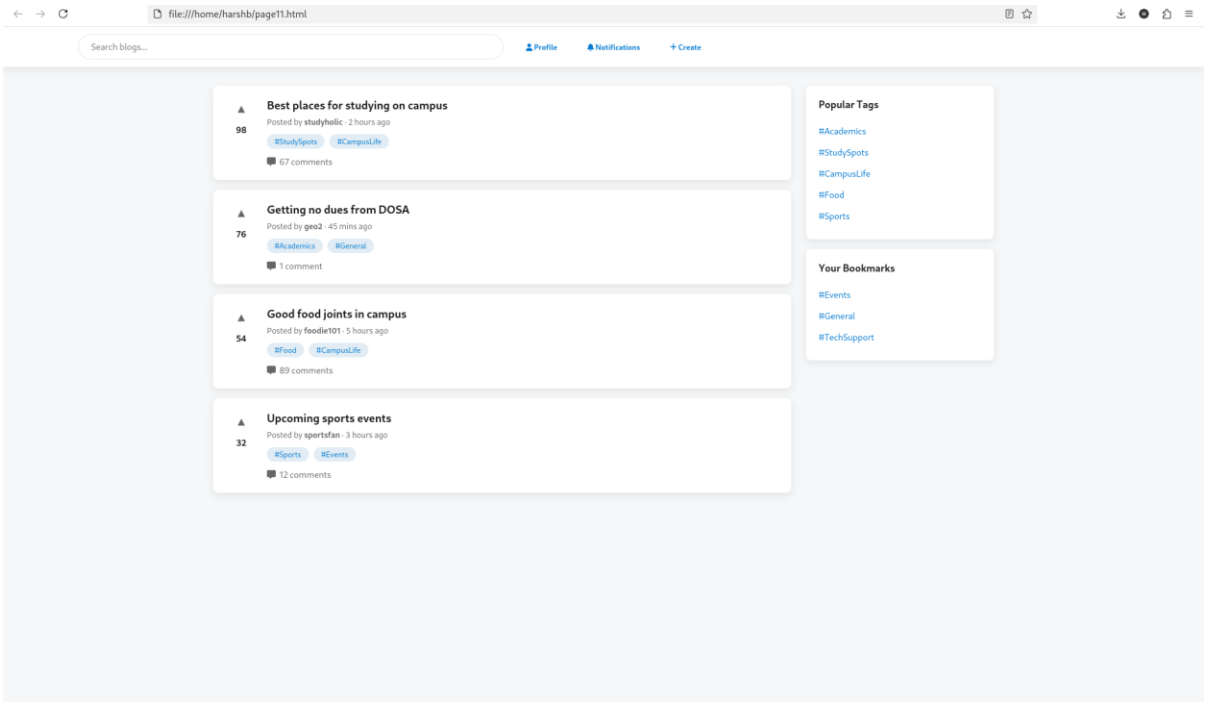
1.We assume seamless access to IITK webmail system for authentication purposes. Any changes to this could impact functionality.
2.The project assumes that the selected database will handle increasing amounts of data as the platform grows without major performance issues.
3.It is assumed that the project will not face restrictions or conflicts with existing IIT Kanpur policies.

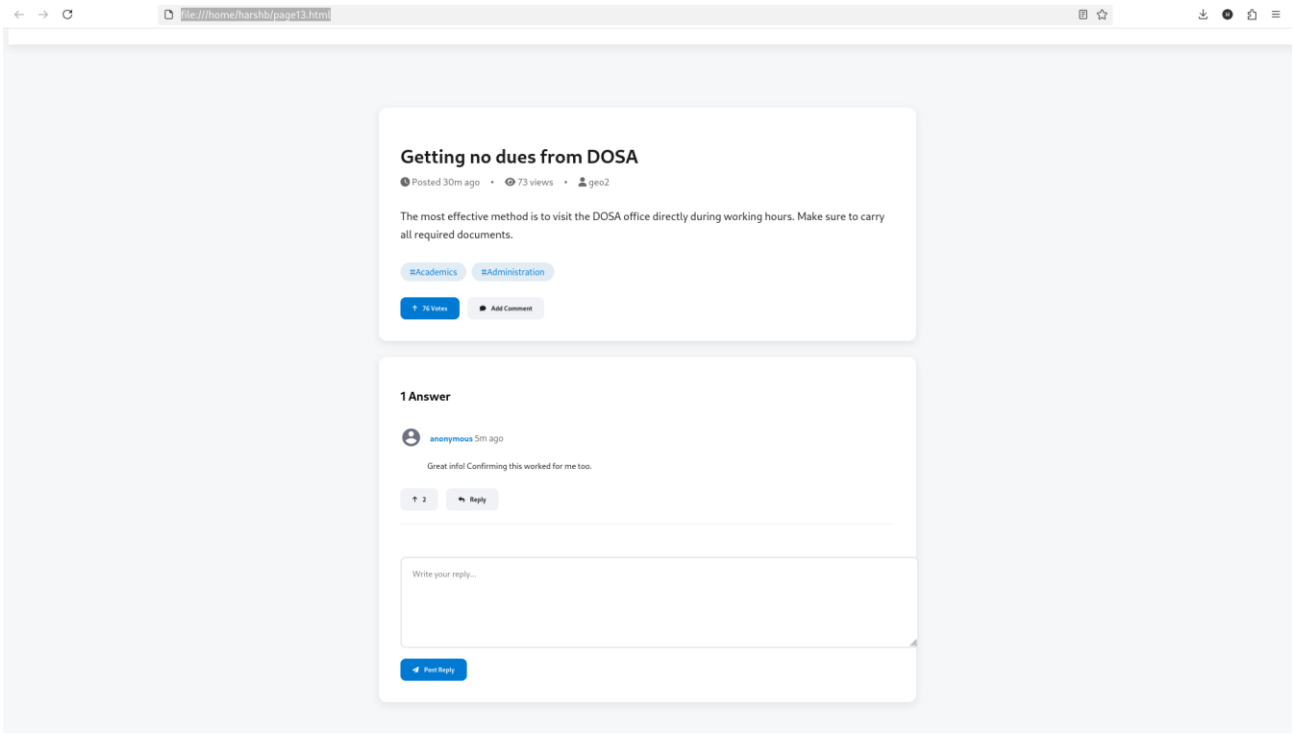
• Specific Requirements

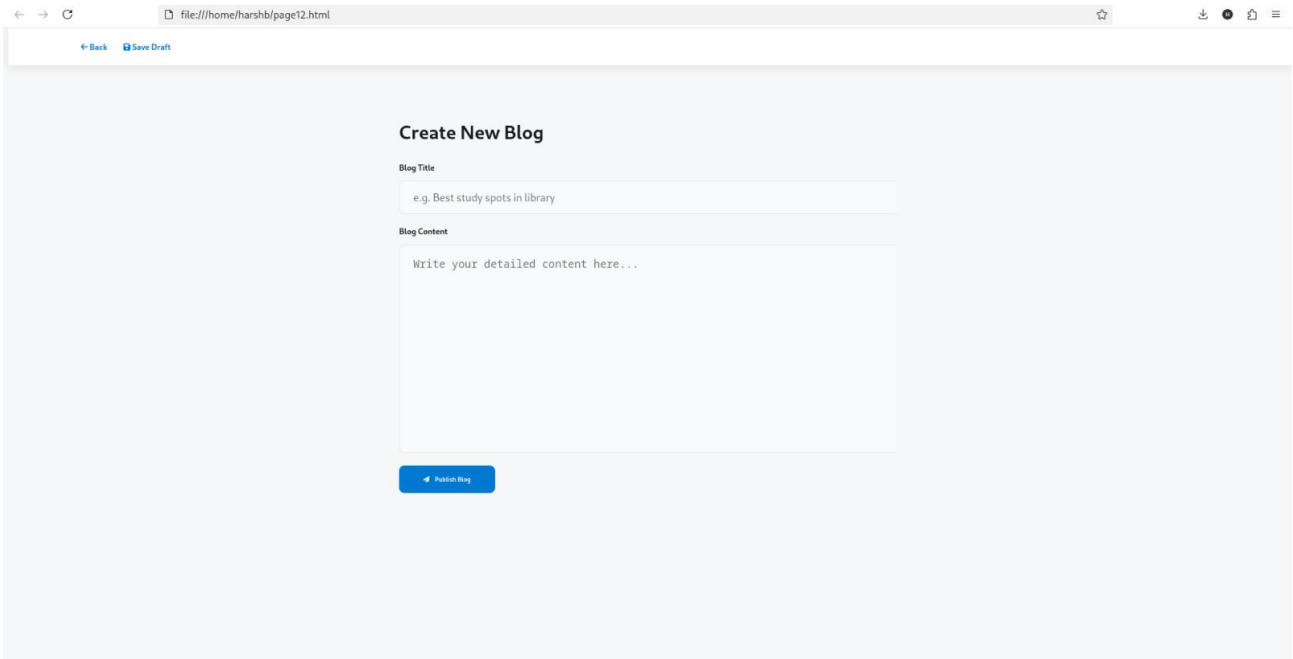
3.1 External Interface Requirements

3.1.1 User Interfaces

A user needs to have basic familiarity with navigation in browsers to be able to understand the functions provided by the system. The home page serves as the primary source of user feeds, with each thread being listed in the center page of the home, and a menu on right side of the page having tag lists, and hyperlinks for user bookmarked threads. User profiles, Notifications, Thread creation and misc. menu are located on the top right corner. The search bar for navigating the threads is located at the top of the page. Threads/Blogs are arranged as per the desired tags and popularity. UI for the page having a specific thread has been depicted in the following image. The interface has the options for vote, share, report, comment, and follow. The third image shows a similar interface for thread creation.




file:///home/harshb/page13.html
Getting no dues from DOSA
Posted 30m ago • 73 views • geo2
The most effective method is to visit the DOSA office directly during working hours. Make sure to carry all required documents.
#Academics
#Administration
76 Votes
Add Comment
1 Answer
anonymous 5m ago
Great info! Confirming this worked for me too.
2
Reply
Write your reply...
Post Reply


file:///home/harshb/page12.html
Back
Save Draft
Create New Blog
Blog Title
e.g. Best study spots in library
Blog Content
Write your detailed content here...
Publish Blog

3.1.2 Hardware Interfaces

Client side: Devices for browsing and an active internet connection.
Server side: A web server for hosting the website.

3.1.2 Software Interfaces

Client side: Operating system, web browser
Server side- web server, database

3.2 Functional Requirement

3.2.1 Maintain User Profile

1. The system allows users to create their profiles and set their credentials.
2. The system allows users to update their personal information (e.g., name, profile picture, bio).
3. The system allows users to change passwords securely.
4. The system allows users to view the profiles of other users based on privacy settings.
5. The system allows users to upload profile pictures with appropriate validation.

3.2.2 Email Confirmation and OTP Authentication

1. The system stores the email addresses of all users.
2. Users can only use their IITK email addresses to create a profile.
3. The system requires email verification for profile creation via an OTP-based confirmation.

3.2.3 Provide Fields of Interest

1. The system allows users to choose tags related to their interests, such as Academics, Clubs, Sports, Inter-IITs, Hall, etc.
2. Users can view blog posts or questions tagged with their chosen fields of interest.
3. Users can tag blog posts or queries with relevant fields to help others find them easily.

3.2.4 Create and Manage Blog Posts

1. The system allows users to create blog posts with a rich text editor.
2. Users can edit or delete their blog posts.
3. Users can format blog posts with text, images, and hyperlinks.
4. The system allows users to save drafts of their blog posts before publishing.

3.2.5 Comment and Interaction System

1. The system allows users to comment on blog posts.
2. Users can edit or delete their comments.
3. Users can like or upvote blog posts and comments.
4. Users can reply to comments in a threaded format.

3.2.6 Provide Search Facility

1. The system provides a facility to search previously published blog posts.

2. Users can search for blog posts or questions by keywords, tags, or author name.
3. Users can also search for other users by their username.

3.2.7 Content Moderation and Reporting

1. The system allows admins to review blog posts before they are published.
2. Users can report inappropriate blog posts or comments.
3. Admins can remove or edit reported content if necessary.

3.2.8 Notifications

1. The system notifies users about new comments, likes, or replies on their posts.
2. Users receive notifications for posts or questions tagged with their interests.
3. Email notifications are sent for major updates or replies.

3.2.9 Follower System

1. Users can follow other users to receive updates on their activity (e.g., new blog posts).
2. Users can view their follower and following lists.

3.2.10 Analytics and Insights

1. The system tracks the number of views, likes, and comments for each blog post.
2. Users can see metrics related to their own posts and interactions.
3. Admins can access platform-wide analytics, such as total users and popular tags.

3.2.11 Bookmarking System

1. Users can bookmark blog posts for later reference.
2. Bookmarked posts can be accessed from the user’s profile.

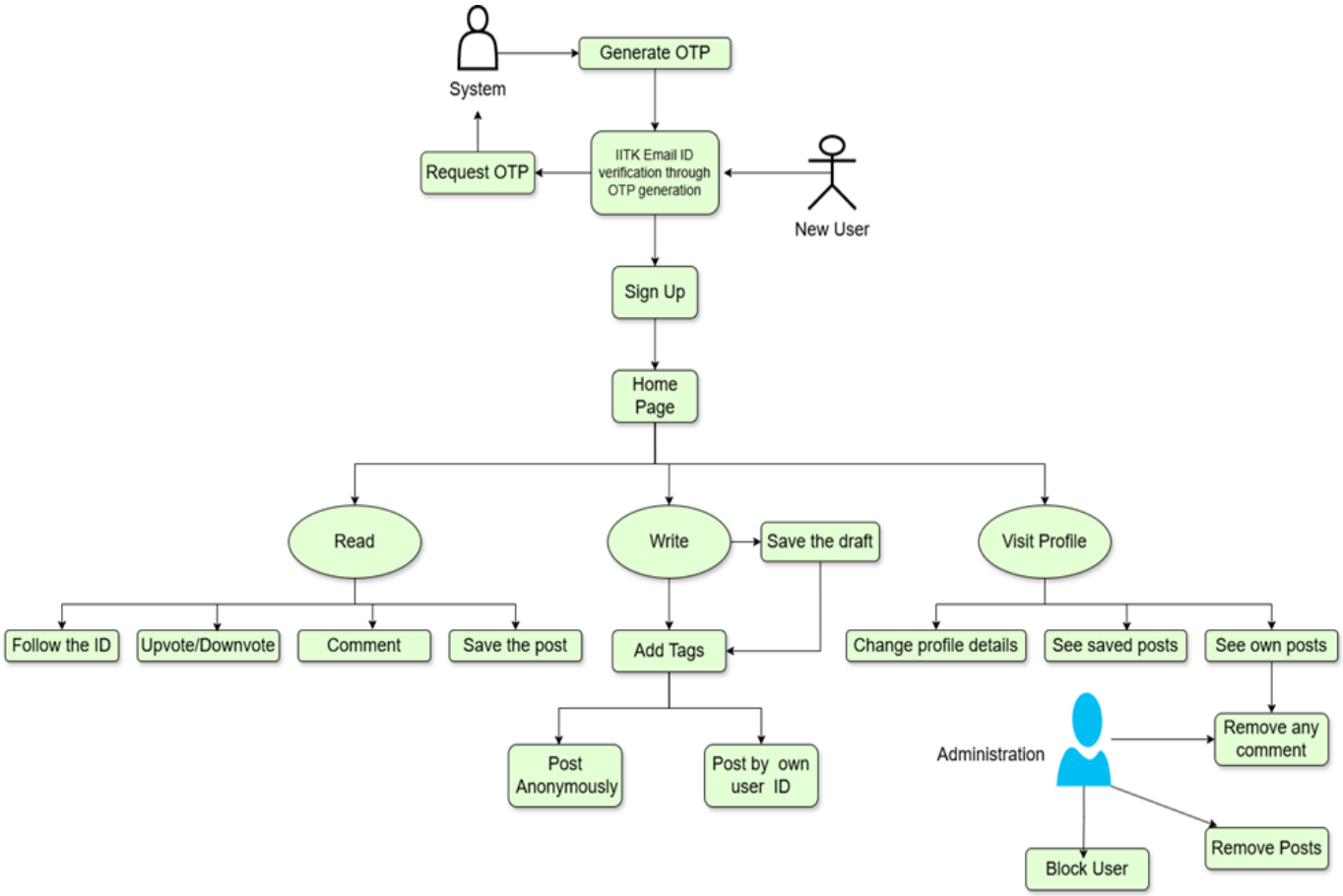
3.2.12 Integration with Campus Tools

1. The system can integrate with campus tools such as calendars for event announcements.
2. The system allows posting of announcements related to campus activities or competitions.

3.2.13 Multi-user Roles and Permissions

1. The system supports role-based access for admins, contributors, and readers.
2. Admins can manage user roles, such as granting or revoking permissions.

3.3 Use Case Model



3.3.1 Use Case #1 Sign UP

Author	**Durbasmriti Saha**
Purpose	It only allows the valid user to sign up.
Requirements Traceability	The user should be a member of IITK community with valid IITK email ID.
Priority	HIGH
Preconditions	Should have IITK email ID and login credentials.
Postconditions	The user will have an account on the site and can explore the site.
Actors	The user(human).

Exceptions	The system may not send the OTP due to some unexpected behavior.
Includes	None

3.3.2 Use Case #2 Writing

Author	Durbasmriti Saha
Purpose	Writing a post by user
Requirements Traceability	User profile, post writing interface
Priority	HIGH
Preconditions	User must be authenticated
Postconditions	A post under his profile.
Actors	The user(human), Database, System
Exceptions	None
Includes	Sign UP
Notes/Issues	None

3.3.3 Use Case #3 Profile

Author	Durbasmriti Saha
Purpose	The user can update or change profile credentials
Requirements Traceability	User profile, DB, system
Priority	HIGH
Preconditions	The user should be authenticated.
Postconditions	Ideally, the Database will be updated with new data

Actors	The user (human)
Exceptions	The system may fail to update its database
Includes	Sign UP
Notes/Issues	None

3.3.4 Use Case #4 Reading

Author	Durbasmriti Saha
Purpose	Reading, commenting, upvoting or downvoting a post by another user
Requirements Traceability	User profile, DB, post
Priority	High
Preconditions	User must be authenticated
Postconditions	Upvote/downvote or comment on the post
Actors	User (human), Database
Exceptions	None
Includes	Sign UP, Writing
Notes/Issues	None

3.3.5 Use Case #4 Admin

Author	Durbasmriti Saha
Purpose	To make sure that no posts or comments are against basic human values
Requirements Traceability	Access to database i.e. have an editing access
Priority	High
Preconditions	Admin must be authenticated

Postconditions	The comments/post against the community guidelines will be removed.
Actors	Admin (human), Database, system
Exceptions	None
Includes	Sign UP, Writing
Notes/Issues	The admin may misuse their power.

● Other Non-functional Requirements

4.1 Performance Requirements

- The software's response time for searching specific account/blog shall be less than 1 second.
- Additionally, the platform shall be able to handle a traffic of up to 6000 concurrent users, without performance degradation. This specificity is required as IIT-K has a large community of students, faculty and other service providers.

4.2 Safety and Security Requirements

- The system shall be able to detect offensive, inappropriate posts and comments that violate the community guidelines.
- The software shall ensure secure user authentication via suggesting strong passwords and personal data encryption.

4.3 Software Quality Attributes

4.3.1 Maintainability

- The code for implementation should be systematic, well-structured and shall be commented accordingly. Moreover, it shall be tested by other members of the team via a thorough range of test cases.

4.3.2 Availability

- The authenticated users shall be able to access the platform at locations other than the campus as well.
- In case some updating has to be made to the system, all the stakeholders shall be informed at least 24 hours prior to the unavailability.

4.3.3 Portability

- The system should give the best user experience across different devices (mobile phone, laptop etc) and different operating systems (android, windows, iOS etc).
- The system performance should not depend on the browser (chrome, edge, Firefox) through which it is accessed.

Appendix A – Data Dictionary

A.1 Table for user data

FIELD NAME	REQUIREMENTS	DESCRIPTION	OPERATIONS
Email-address	Email	It takes an IITK email address as an argument and associates it with a unique userId.	Provided by user while registering and creating account.
OTP	Number	It is used for email verification.	Sent to user email during signup or authentication processes.
Password	Hashed String	A secret combination of characters used to authenticate a user's identity.	A password is required each time a user logs in with their credentials.
username	String	Username is used for user identification and display (if not anonymous), ensuring careful attention to its uniqueness.	It is unique for the users. Others can find the user by the username, visit their profile, read their blogs and can also follow them.
User profile data	String/integer	Maintain the data of each user.	Store user info, total blogs posted, followers etc.

A.2 Table for user interface

FIELD NAME	REQUIREMENTS	DESCRIPTION	OPERATIONS
Registration	String/integer	It takes the username, password, OTP and email as arguments then checks the condition of registration and returns the status of registration.	Registration is required for first time only, then user can login through username and password.

Blog text	String	Allowing users to share ideas, knowledge, or updates through their blogs with its title and content.	Users can create, edit, draft, view or delete blog posts, ensuring the title and content are mandatory fields.
Tags	String	Tags user want to associate with the blog.	Selected or entered by the user during post creation.
Search keywords/ tags	String	The text entered by users in the search bar.	Searches for matching usernames, blog titles or tags.
Comments text	String	Content of a user's comment on a blog.	Entered when commenting on a blog.
Upvote/ Downvote	Integer	Count of total votes on a blog post or comment.	Upvotes will increase the total votes however downvotes will decrease it.
Report reason	String	Reason for reporting a blog post or comment.	Selected by users while reporting an inappropriate blogs or comments

Appendix B - Group Log

DATE	TIME	MEMBERS PRESENT	DESCRIPTION
11 January, 2025 (35 minutes)	11 A.M. (L 18 ground)	Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Lokesh	Discussed a list of potential project ideas and their pros and cons, everyone suggested their views and ideas regarding all projects.
12 January, 2025 (60 minutes)	5 P.M. (RM canteen)	Aryan, Nishanth, Govind, Lavish, Durba, Lokesh, Someshwar, Ansh	Finalized the project and explored different perspectives on the project idea.
17 January, 2025 (120 minutes)	6 P.M. (Hall 10 canteen)	Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Lokesh, Ansh, Someshwar	First meet with the TA Mr. Paras Ghodeshwar. He helped us ideating the whole project more systematically and talked about things we need to learn in the process.
18 January, 2025 (50 minutes)	11 A.M. (L 18 Ground)	Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Lokesh, Ansh	Discussed about the outline of every section and distributed the work to team members by forming small groups, each assigned to handle specific tasks.
19-23 January,	Google meet	Respective group members	Several meet among small groups to track the work among themselves.
23 January, 2025 (45 minutes)	4 P.M. (Google Meet)	Aryan, Nishanth, Harsh, Lavish, Durba, Lokesh, Someshwar, Ansh	Collected all the work and clustered it into a document and reviewed it. Studied the document and corrected in case of any errors or discrepancies.