Implementation Document

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		28/03/25

Implementation Details

	FRONT-END	BENEFITS	BACK-END	BENEFITS
Programming Language	JavaScript	- Allows to create dynamic and interactive user interfaces. - Powers interactive features such as real-time updates and smooth animations.	JavaScript	- Dynamically loads content without page refreshes for a superior user experience. - Seamlessly integrates various website components.
	CSS	- Crafts a visually appealing and responsive layout across devices. - Ensures design consistency and reinforces brand identity.		
	HTML	-Establishes a fundamental structure for blog posts. - Organizes content and boosts SEO through clear semantic markup.		
Framework			Express.js	- Offers a minimal, flexible framework that simplifies building robust RESTful APIs. - Integrates routing and middleware seamlessly for efficient and secure request handling.

Library	React.js	- Virtual DOM significantly improves rendering speed. - allows to break down the UI into different components. - allow for smooth and responsive user interfaces, enhancing overall user interaction.		
Database System			MongoDB	- NoSQL structure allows flexibility in storing blog posts, comments, and user interactions. - Handles large-scale data efficiently, supporting real-time updates. - Scalable schema adapts to evolving project needs without complex migrations.

Codebase

GitHub Repository: - aryank2240/CS253-BitByBit-Project

Bit-by-bit has been mostly written in JavaScript, CSS and HTML. We have used Node JS and Express for the backend and React for the frontend. MongoDB is used as the database.
It follows the model-view-controller architectural pattern. The web app can be run using npm commands.

Codebase Navigation: -
The repository contains two folders, Backend and Frontend which contains all the code for the respective part.

Backend codebase structure:

- **Routes** → Defines API endpoints for different resources (e.g., authentication, blogs, comments, users). It ensures structured URL routing to handle HTTP requests efficiently.
- **Config** → Manages application settings, including database connections and environment configurations.
- **Controllers** → Implements business logic for handling incoming requests, processing data, and sending appropriate responses. It acts as an intermediary between routes and models.
- **Middleware** → Contains reusable middleware functions that intercept and process requests before they reach controllers, such as authentication and request validation.
- **Models** → Defines database schemas and handles data interactions. Each model represents an entity like users, blogs, or comments.
- **Utils** → Stores utility functions that assist various operations, such as OTP generation, data validation, and formatting.

Frontend Codebase structure:

The frontend is built using React.

public/

Contains static assets such as the main HTML template, icons, and files like manifest.json, robots.txt.

src/

The core source directory for React components and logic.

- **components/** – All the frequent used UI components along with their backend functionality.
- **pages/** – contains different page views, such as home, profile, blog writing/editing, admin, sign-up/login.
- **services/** – handles API interactions and business logic for the frontend.

  Readme.md: details about all the group members and how to start the server locally is mentioned there.

How to run the code

Prerequisites

Make sure you have the following installed:

- **Node.js** (Latest LTS version) – Download
- **MongoDB** (If using locally) – Download

Clone the repository:

```
git clone https://github.com/aryank2240/CS253-BitByBit-Project.git
cd [path]
```

Install all the dependencies

```
cd backend
npm install
```

```
cd ../frontend
npm install
```

Run the server:

```
cd ../backend
npm start
```

Create the .env files for configurations.

```
touch .env
```

Put these values in the .env file for the configuration.

```
MONGO_URL , SMTP_HOST ,SMTP_PORT , SMTP_SECURE, EMAIL_USERNAME, EMAIL_PASSWORD, JWT_SECRET
```

Run the web-application:

```
cd ../frontend
npm start
```

Completeness

SRS features	STATUS	Description
Login/registration	Completed	Allows the user to the create an account and login into the website.
Maintain User Profile	Completed	Allows the user to maintain his/her profile and let them decide what to show/hide to other users.
Search and Tags	In progress	Allows the user to search for blogs with some specific tags or some keywords.
Blog Creation/Management	Completed	Allows the user to create a blog and either publish it or save as a draft.
Follower System	Completed	Allows the user to follow other user on the website and see the posts they published publicly.
Draft System	In progress	Allows the user to save the blog as a draft.
Bookmarking System	Completed	Allows the user to bookmark a blog for accessing it in the future.
Content Moderation and Reporting	In progress	Allows the user to report any offensive comment or blog which is further verified by the admin before taking any action on the account.
Forgot User Password	In progress	Allows the user to change his/her password if they forgot the password.

Future Development Plans	Description
Collaborative Blogging	Allows multiple users collaborate with each other to write a blog and publish it under the ownership of both of their accounts.
Direct Messages	Allows one user interact with other use through direct messages privately.
Mobile Experience	Would be extending the website to an android friendly version.
Themes and Templates	The user can add customized theme to their blog making it more relevant to the topic.
Embeddable Content	Writers will be able to attach images with the content
Polls and Surveys	Allowing the user to conduct polls and surveys on the website for a public opinion on any matter.

Appendix A - Group Log

DATE	TIME	MEMBERS PRESENT	DESCRIPTION
3 February 2025	10 PM (Meet with TA)	Ansh, Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Someshwar	Everyone set up their IDE for backend and frontend in their system.
8 February 2025	6:30 PM	Ansh, Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Someshwar	Meet regarding Frontend development.
16 February 2025	3 P.M.	Ansh, Aryan, Nishanth, Govind, Lavish, Durba, Lokesh, Someshwar	Discussed about the progress
3 March 2025	10 P.M.	Aryan, Nishanth, Harsh, Govind, Lavish, Lokesh, Durba, Someshwar	Started working on the backend
9 March 2025	10 PM	Ansh, Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Lokesh, Someshwar	Discussed the problems faced by team members and tried to find solutions for it.
15 March 2025	9 PM	Ansh, Aryan, Nishanth, Harsh, Govind, Durba, Lokesh, Someshwar	Worked together on some of the files
25 March 2025	10:30 P.M.	Ansh, Aryan, Nishanth, Harsh, Govind, Lavish, Durba, Lokesh, Someshwar	Final meet to discuss about the completeness of work and what got left.