BLOGGING PLATFORM

A PROJECT REPORT

Submitted by

SUDHARSHAN M

in partial fulfilment for the award of the course

CGB1221 – DATABASE MANAGEMENT SYSTEMS

IN

DEPARTMENT OF

COMPUTER SCIENCE AND ENGINEERING

(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**)**

K. RAMAKRISHNAN COLLEGE OF ENGINEERING
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ANNA UNIVERSITY
CHENNAI 600 025

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PROJECT FINAL DOCUMENT

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Under the Guidance of

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Certified that this project report titled **"BLOGGING PLOTFORM "** is the bonafide work of **SUDHARSHAN M (8115U23AM052)** who carried out the work under my supervision.

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DECLARATION BY THE CANDIDATE

I declare that to the best of my knowledge the work reported here in has been composed solely by myself and that it has not been in whole or in part in any previous application for a degree.

Submitted for the project Viva-Voice held at K. Ramakrishnan College of Engineering on _____

SIGNATURE OF THE CANDIDATE

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ABSTRACT

The **Blogging Platform** is a web-based content management system designed to allow users to register, log in, create, edit, publish, and manage blog posts effectively. The platform provides a clean and responsive interface where users can write and read blogs, while also supporting comments and administrative moderation. It uses HTML, CSS, and JavaScript for the frontend, with a DBMS such as MySQL for backend data management. Each blog post, user profile, and comment is stored in a normalized relational database to ensure data integrity and reduce redundancy. User authentication is secured with encrypted passwords to prevent unauthorized access. The admin module helps monitor and remove inappropriate content to maintain platform standards. CRUD operations are implemented throughout to enable dynamic content handling. The system also includes basic performance optimizations and scalability considerations. It is lightweight, making it suitable for personal, academic, or organizational use. The project highlights the role of DBMS in real-time blogging platforms. It provides an efficient, user-friendly environment for content sharing and digital expression.

ABSTRACT WITH POs AND PSOs MAPPING

ABSTRACT	POs MAPPED	PSOs MAPPED
The Blogging Platform is a web-based application designed to allow users to create, publish, manage, and interact with blog posts. The system supports user registration, secure login, content creation with text and multimedia, comment and like functionality, and an admin panel for content moderation. The platform is built using a relational database management system (RDBMS) to handle user data, post content, comments, and interaction history efficiently. It aims to foster online expression and knowledge sharing through an intuitive user interface. Key features include CRUD operations on blogs, user role management, responsive design for multi-device support, and secure session handling.	**PO1-3** **PO2-3** **PO3-3** **PO4-3** **PO5-3** **PO6-3** **PO7-3** **PO8-3** **PO9-3** **PO10-3** **PO113** **PO12-3**	**PSO1 – 3** **PSO1 – 3**

Note: 1- Low, 2-Medium, 3- High

DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

VISION

To become a renowned hub for AIML technologies to producing highly talented globally recognizable technocrats to meet industrial needs and societal expectation.

MISSION

Mission of the Department

M1 To impart advanced education in AI and Machine Learning, built upon a foundation in Computer Science and Engineering.

M2 To foster Experiential learning equips students with engineering skills to tackle real-world problems.

M3 To promote collaborative innovation in AI, machine learning, and related research and development with industries.

M4 To provide an enjoyable environment for pursuing excellence while upholding strong personal and professional values and ethics.

PROGRAM EDUCATIONAL OBJECTIVES (PEO's)

PEO1 Excel in technical abilities to build intelligent systems in the fields of AI & ML in order to find new opportunities.

PEO2 Embrace new technology to solve real-world problems, whether alone or as a team, while prioritizing ethics and societal benefits.

PEO3 Accept lifelong learning to expand future opportunities in research and product development.

PROGRAM SPECIFIC OUTCOMES (PSO's)

PSO1 Expertise in tailoring ML algorithms and models to excel in designated applications and fields.

PSO2 Ability to conduct research, contributing to machine learning advancements and innovations that tackle emerging societal challenges.

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LIST OF ABBREVIATIONS

S. NO.	ACRONYM	ABBREVIATION
1	UI	User Interface
2	UX	User Experience
3	DBMS	Database Management System
4	HTML	Hyper Text Markup Language
5	CSS	Cascading Style Sheets
6	JS	JavaScript
7	SQL	Structured Query Language
8	CRUD	Create, Read, Update, Delete
9	CMS	Content Management System
10	OTP	One-Time Password

LIST OF FIGURES

CHAPTER 1
INTRODUCTION

1.1 OBJECTIVE

The primary objective of the **Blogging Platform** project is to design and develop a user-centric web application that allows individuals to express their thoughts, ideas, and expertise in the form of blog articles. In the current digital age, blogging has become a popular medium for sharing information, educating others, showcasing skills, and building communities. This platform aims to offer a structured environment for content creation, management, and interaction.

The system is developed with the goal of implementing all essential CRUD (Create, Read, Update, Delete) functionalities for blog posts and user interactions. It ensures that users can register and log in securely, create new blog posts, edit or delete their existing content, and view posts published by others. It also facilitates user engagement by enabling readers to comment on blog posts, thereby promoting interactive learning and communication.

Furthermore, the system includes an **admin module** to provide additional oversight and control. Administrators are given the authority to manage user accounts, review reported posts or comments, and remove inappropriate content, thereby maintaining the quality and safety of the platform.

Security is also a key concern, and the objective includes implementing secure authentication methods (such as password encryption) to protect user data and prevent unauthorized access. The platform is designed with scalability in mind, making it easy to extend with additional features like tagging, image uploads, or SEO optimization in future iterations.

1.2 SCOPE OF THE PROJECT

The **Blogging Platform** is designed to serve as a lightweight yet functional content management system (CMS) tailored for users who wish to share ideas, experiences, and information through blog articles. The scope of the project is broad and flexible, making it suitable for a variety of users including students, professionals, writers, developers, educators, and organizations.

At its core, the system allows users to register, log in, and manage their blog content within a secure and intuitive web interface. Once authenticated, users can perform standard CRUD operations—Create, Read, Update, and Delete—on their blog posts. The posts can be viewed publicly, and readers have the ability to interact through comments. This promotes user engagement and community-building.

The system also supports administrative features. Admin users can monitor and moderate content posted by users to prevent misuse or publication of inappropriate material. Admins can also manage user accounts, delete spam comments, and take actions against violators, which ensures a controlled and safe blogging environment.

The scope of the project includes multiple functional modules:

- **User Management Module**: Handles registration, login, session management, and user roles.
- **Blog Post Management Module**: Allows users to create, edit, view, and delete blog entries.
- **Commenting Module**: Enables readers to comment on blog posts and authors to reply.
- **Admin Control Module**: Provides moderation features for content and users.

From a technical perspective, the project integrates frontend technologies like HTML, CSS, and JavaScript with backend scripting (PHP/Python/Node.js) and a structured DBMS (MySQL/PostgreSQL) to store all user-generated content securely. It also

ensures that data operations are efficient, consistent, and reliable by applying DBMS principles such as normalization and referential integrity.

This project is not limited to personal blogging. It can be customized for educational institutions (students and faculty blogs), internal company announcements, technical communities, or niche interest groups. Overall, the scope encompasses both current functionalities and future possibilities, making the project valuable as a learning model and a practical product.

1.3 OVERVIEW OF THE SYSTEM

The **Blogging Platform** is a full-stack web application that enables users to create, manage, and publish blogs through an intuitive interface integrated with a structured database. The system is built using a combination of front-end technologies, server-side scripting, and a relational database management system (DBMS), offering a seamless content management experience.

The platform operates in a **client-server architecture**, where users interact with the system through a web browser (client), which communicates with the backend server to fetch or store data in the database. It supports two primary types of users: **regular users** (blog writers/readers) and **administrators** (moderators).

The core functionalities of the system include:

- **User Registration and Login**: New users can register with a valid email address and secure password. Once authenticated, they gain access to the dashboard where they can create and manage their blogs.
- **Blog Creation and Management**: Users can write blog posts, edit them, update content, or delete them. Each blog includes a title, body content, date of publication, and optionally a cover image or tags.
- **Content Display**: Blogs are displayed on the home page or blog listing page in reverse chronological order. Visitors can click to read full blog posts.

- **Commenting System**: Readers can post comments on blog posts. This allows feedback and builds interaction between the author and audience.
- **Admin Dashboard**: Admins have access to manage all user-generated content. They can view, edit, or delete any post or comment if it violates content guidelines. Admins also manage user access rights.

User Interface(UI): The UI is designed to be simple, clean, and responsive. It adjusts based on the screen size and device type, offering accessibility from desktops, tablets, and smartphones. Navigation is clear, and all key features (login, post, comment) are accessible with minimal clicks.

Backend Functionality: The backend handles business logic, validation, session handling, and communication with the database. It processes incoming data (like new posts), stores it securely in the database, and retrieves it for display when required.

Database Layer: The database maintains structured tables for users, blog posts, comments, and admin actions. Relationships between entities (e.g., user to post, post to comment) are enforced using foreign keys. The schema is normalized to avoid redundancy and improve data consistency.

Security Features: Security mechanisms such as password hashing, session expiration, input validation, and SQL injection prevention are implemented to protect user data and maintain system integrity.

Overall, the Blogging Platform offers a complete environment for managing digital content. It focuses on usability, performance, and secure content delivery, making it a practical solution for individuals and institutions looking to share knowledge or engage in community discussions.

1.4 IMPORTANCE OF DBMS IN BLOGGING SYSTEMS

A **Database Management System (DBMS)** is a vital component of any dynamic web application, and its importance is particularly significant in content-heavy systems like blogging platforms. The blogging system involves a continuous flow of data from multiple users, including blog articles, user credentials, comments, categories, and timestamps. Managing this large volume of data in a reliable, organized, and secure manner is made possible through the use of a DBMS.

The **key role of the DBMS** in this project is to provide a structured way to store, retrieve, update, and manage user-generated content. Each piece of information—such as a blog post or a user profile—is stored in a database table with defined relationships and constraints. By enforcing data integrity rules (like primary and foreign keys), the DBMS ensures consistency in data storage and eliminates duplication or invalid entries.

Major benefits of DBMS in the blogging system include:

- All blog posts, user details, and comments are stored in properly designed tables. SQL queries can be used to retrieve specific blogs, user-specific content, or the latest articles efficiently.
- Blog platforms involve one-to-many and many-to-one relationships (e.g., one user can have many blog posts; one post can have many comments). These relationships are implemented using foreign keys, ensuring that the database reflects real-world interactions accurately.
- By defining data types, constraints (e.g., NOT NULL, UNIQUE), and validation rules at the database level, DBMS ensures that invalid or redundant data is not stored.

- Sensitive data such as passwords are stored securely using encryption/hashing, and the DBMS supports access control mechanisms to allow only authorized access to particular data (e.g., only an admin can delete posts by others).
- In case of unexpected server failure or crashes, DBMSs like MySQL or PostgreSQL support automatic backup and data recovery features to protect against data loss.
- As more users join the platform and the number of blog posts grows, the DBMS can scale to manage increasing data without performance issues. Indexing and optimized queries help maintain system speed.
- With the DBMS, the platform can support advanced features such as search queries, tag/category filters, user analytics, and post popularity metrics by executing aggregate and join operations.
- The database is normalized to reduce redundancy and improve performance. Proper indexing and schema design lead to faster query execution and better resource usage.

In summary, the DBMS serves as the **foundation** of the blogging platform, enabling it to function smoothly and efficiently. It ensures that all data-related operations—from user login to blog publishing and comment management—are handled reliably and securely. Without a robust DBMS, the system would face challenges in data consistency, security, scalability, and maintainability.

1.5 TECHNOLOGIES USED

- The **Blogging Platform** is developed using a combination of front-end, back-end, and database technologies. Each layer of the application—presentation, logic, and data storage—is built using tools and frameworks that are reliable, secure, and scalable. These technologies work together to deliver a responsive, interactive, and fully functional web-based blogging system.

The main technologies used in this project are categorized as follows:

1. Front-End Technologies (Client Side)

- **HTML**

  HTML is used to structure the content of web pages. It defines the layout of forms, text fields, buttons, navigation bars, and blog containers on the platform.

- **CSS**

  CSS is used to enhance the visual presentation of the website. It provides styling features like fonts, colors, spacing, and responsiveness to ensure a smooth user experience across devices.

- **JavaScript**

  JavaScript adds interactivity to the platform. It is used for real-time form validation, dynamic content loading, and user interface enhancements like comment toggling or modal pop-ups.

- **Frontend**

  Frameworks like Bootstrap are used for responsive design. ReactJS can be used to build reusable UI components and manage state more efficiently.

2. Back-End Technologies (Server Side)

- **PHP/Python(Flask/Django)/Node.js:**

  The server-side logic is implemented using backend scripting languages. These technologies handle form submissions, user authentication, routing, and database interactions.

- **PHP** is simple and widely used for database-connected applications.

- **Python** with Flask/Django provides robust MVC architecture and is ideal for handling multiple modules.
- **Node.js** is suitable for building scalable APIs and real-time features.
- **Authentication Tools:**

  Passwords are encrypted using hashing libraries like **bcrypt** to ensure secure login. Session management is handled using cookies or tokens (JWT).
- **Routing**

  The backend follows the Model-View-Controller architecture for separation of concerns, improving maintainability and scalability.

3. Database Management System

- **MySQL**

  The platform uses a relational database to store structured data like user profiles, blog posts, comments, and admin actions. MySQL and PostgreSQL are chosen for their reliability, ACID compliance, and SQL support. Database normalization is applied to reduce redundancy and improve data efficiency.
- **SQLQueries**

  Structured Query Language (SQL) is used to perform all data-related operations such as INSERT, SELECT, UPDATE, and DELETE. Complex joins and aggregate functions help in generating reports, filtering blogs, and managing users.

4. Development Tools and Libraries

- **XAMPP/WAMP/LocalServer:**

  Used for running PHP-based applications locally along with MySQL.

- **VSCode**

  Modern code editors with syntax highlighting and debugging support.

- **GitHub**

  Used for version control, project backup, and team collaboration.

- **Email Integration**

  SMTP-based email services can be added for features like account verification, password reset, or blog notifications.

5. Optional Enhancements

- Platforms like Heroku, Vercel, or AWS can be used to deploy the application online.
- Tools like Quill.js or TinyMCE can be integrated to allow formatting in blog posts (bold, italic, lists, images).
- JavaScript-based filters or SQL LIKE queries can be used to search blog posts by title, tag, or author.

The technology stack is chosen to ensure performance, reliability, and ease of use for both developers and users. Together, these tools and frameworks help in building a professional blogging system that is secure, scalable, and ready for real-world deployment.

CHAPTER 2

LITERATURE SURVEY

This section reviews relevant literature on the development of the **Blogging Platform** follows a structured and iterative methodology aimed at building a reliable, user-friendly, and secure web application. The project is designed using the principles of **Software Development Life Cycle (SDLC)**, with a focus on requirement gathering, database design, modular implementation, and testing. This chapter describes the planning, analysis, and design aspects that serve as the foundation for the system.

2.1 REQUIREMENT ANALYSIS

The first step in developing the blogging platform is to identify both **functional** and **non-functional** requirements. These requirements define what the system should do and the constraints under which it should operate.

Functional Requirements:

- User Registration and Login
- Creating, Editing, Deleting, and Viewing Blog Posts
- Commenting on blog posts
- Admin functionalities: view/delete posts or comments, manage users
- Responsive navigation and content display

Non-Functional Requirements:

- Usability: Simple and user-friendly interface
- Performance: Fast data retrieval and minimal load time
- Security: Password encryption, session control, and SQL injection protection
- Scalability: Easily extendable to include more features
- Maintainability: Code is modular and well-documented.

2.2 ENTITY-RELATIONSHIP (ER) DIAGRAM

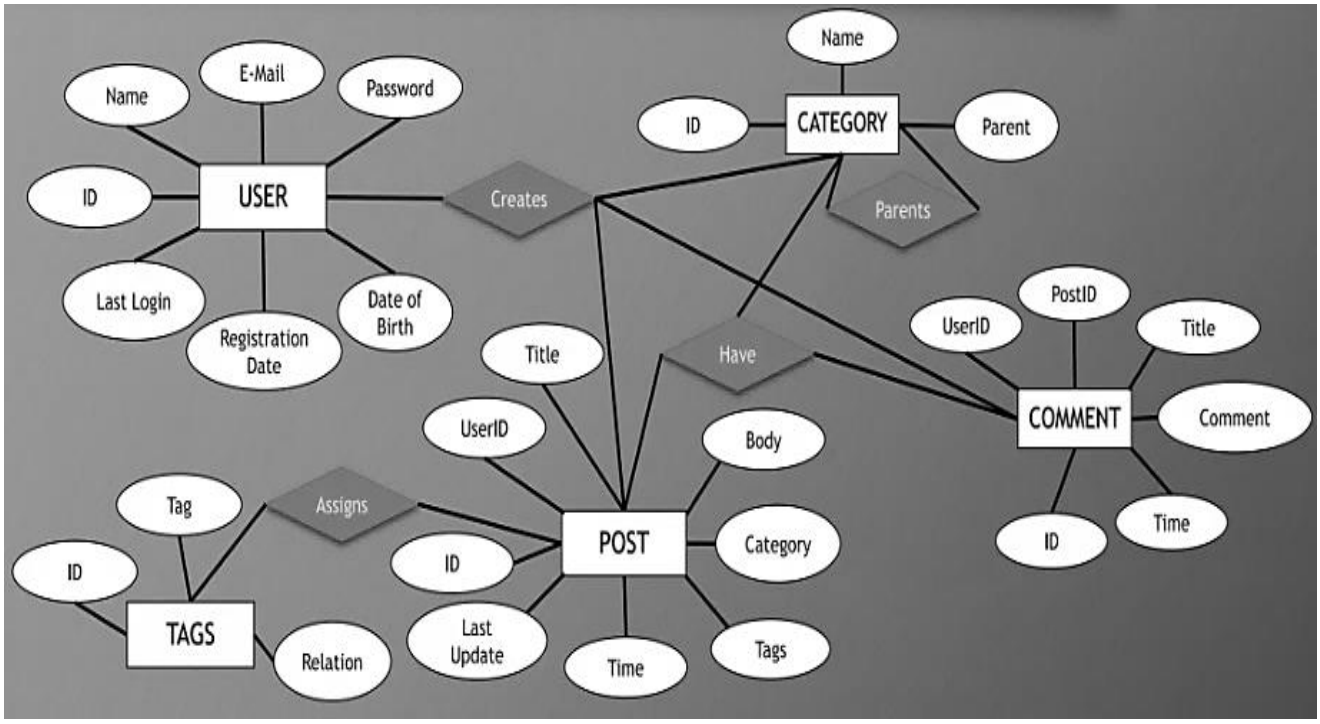

Figure 2.2.1 Entity Relationship

The ER Diagram illustrates how different entities in the blogging system are connected. It provides a blueprint for structuring the database.

Main Entities:

- **User**: Stores user details like ID, name, email, and password
- **BlogPost**: Contains post ID, title, content, author ID (foreign key), date, and optional tags
- **Comment**: Includes comment ID, comment content, associated post ID, and user ID
- **Admin**: Subset of users with additional privileges

Relationships:

- One user can write multiple blog posts (1-to-many)
- One post can have multiple comments (1-to-many)
- One admin can manage multiple users/posts/comments

2.3 RELATIONAL SCHEMA

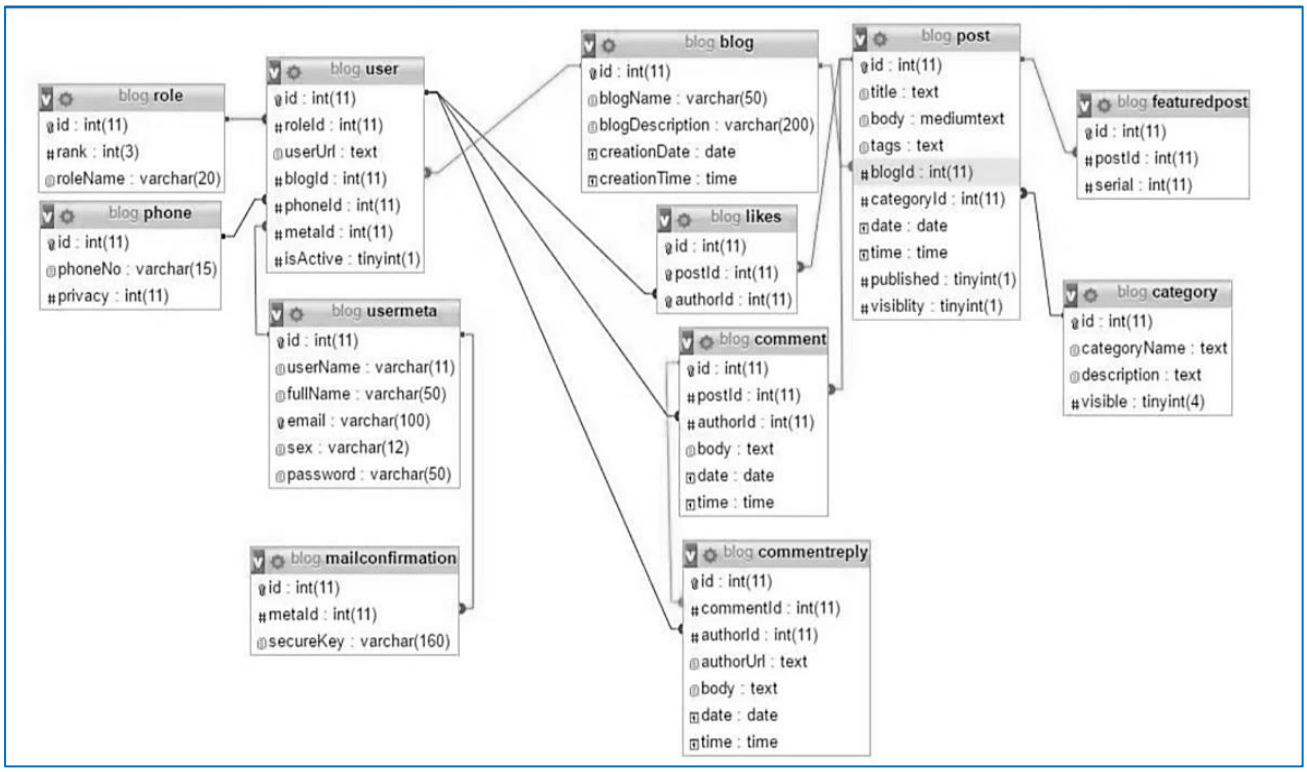

Figure 2.3.1 Relational Schema

Based on the ER diagram, the relational schema outlines how data is structured into tables and how they relate through keys.

Schema Example:

- **Users(UserID,Name,Email,Password,Role)**
  → UserID is Primary Key
- **BlogPosts(PostID,UserID,Title,Content,PostDate)**
  → PostID is Primary Key, UserID is Foreign Key
- **Comments(CommentID, PostID, UserID, Content, CommentDate)**
  → CommentID is Primary Key, PostID and UserID are Foreign Keys

This schema is normalized to reduce redundancy and ensure data integrity.

2.4 NORMALIZATION PROCESS

Normalization is the process of organizing data in the database to reduce duplication and ensure efficient access. The blogging platform applies the first three normal forms:

- **1NF (First Normal Form):** Ensures atomicity of data (no repeating groups or arrays in a single column)
- **2NF (Second Normal Form):** Ensures that all non-key attributes are fully dependent on the primary key
- **3NF (Third Normal Form):** Eliminates transitive dependency between non-key attributes

Example:

- Blog tags or categories, if implemented, would be moved to a separate table to avoid repetition.

This leads to a clean, efficient, and scalable database.

2.5 SYSTEM ARCHITECTURE OVERVIEW

The architecture of the blogging platform follows a **three-tier model**:

1. **Presentation Layer (Frontend):**
   Built using HTML, CSS, and JavaScript. It includes user interfaces for login, dashboard, blog posting, reading, and commenting.
2. **Application Layer (Backend):**
   Developed using PHP, Python, or Node.js. This layer processes user input, handles business logic, communicates with the database, and sends responses back to the client.
3. **Data Layer (Database):**
   Managed using MySQL or PostgreSQL. It stores all persistent data including user information, blog posts, and comments.

The system uses RESTful API routes to handle requests such as:

- GET /blogs – fetch list of blogs
- POST /login – authenticate user
- POST /comment – add new comment
- DELETE /blog/{id} – delete blog post (admin only)

Security features like password hashing, session tokens, and input validation are included across all layers.

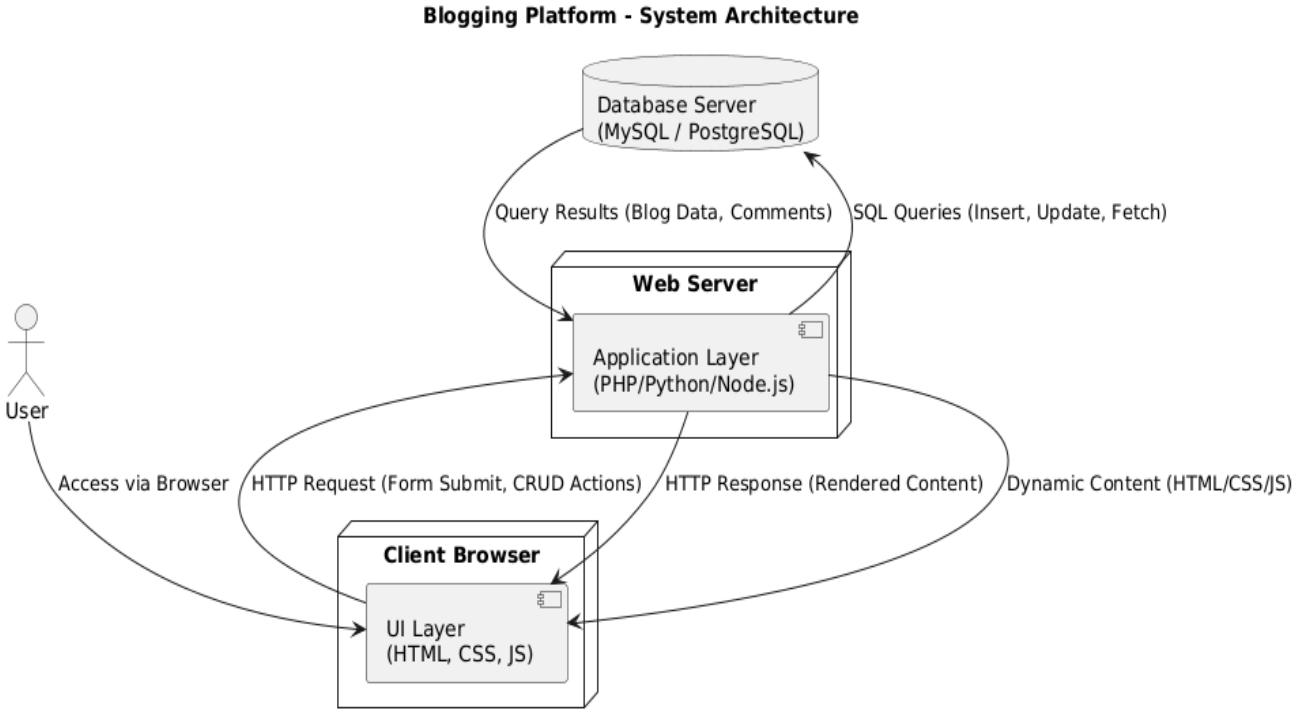

Figure 2.5.1 System Architecture

The methodology adopted for the Blogging Platform ensures a balance between functionality, performance, and maintainability. Through careful requirement analysis, proper schema design, normalization, and layered architecture, the project establishes a strong foundation for building a robust, secure, and user-friendly blogging application.

CHAPTER 3

PROJECT METHODOLOGY

The **Blogging Platform** is structured as a modular web application where each component is responsible for a specific functionality. Adopting a modular design helps in achieving separation of concerns, maintainability, and scalability. This chapter describes each major module in detail, explaining their roles, features, and the way they interact with other parts of the system.

3.1 USER MANAGEMENT MODULE

The User Management Module handles all functionalities related to user accounts, such as registration, login, logout, session handling, and user role management. It plays a vital role in authentication and authorization, ensuring that only valid users can access the platform's features.

Key Features:

- User Registration: Allows new users to sign up by entering their name, email, and password. Passwords are hashed before storage for security.
- Login/Logout: Validates login credentials and maintains user sessions. Session or token-based mechanisms are used for user identification during the session.
- Role Assignment: Differentiates between regular users (blog writers/readers) and administrators (moderators).
- Account Validation (Optional): Option to send confirmation emails or OTP-based verification to ensure authenticity.

Functionality Flow:

1. User fills the registration form.
2. Input is validated and stored in the database with encrypted password.
3. On login, credentials are verified and a session is initiated.
4. Based on the user role, access to features is granted (e.g., admin dashboard for admins).

3.2 BLOG MANAGEMENT MODULE

This is the core functional module of the system. It allows users to create, view, update, and delete blog posts. It also supports the listing of blog posts on the homepage or blog feed.

Key Features:

- **Post Creation:** Authenticated users can create new blog posts using a user-friendly interface. Each blog contains a title, content, timestamp, and author reference.
- **Edit & Delete:** Authors can update or delete their own posts.
- **Display:** All blogs are retrieved from the database and displayed in reverse chronological order for readers.
- **Drafting & Publishing (Optional):** Users may be given the option to save drafts or publish content immediately.

Functionality Flow:

1. User clicks on "New Blog" and enters blog content.
2. Blog is saved in the database with user ID and timestamp.

3. Blogs are fetched and listed on the blog page.
4. Edit/Delete options are shown only for the author of that blog.

3.3 COMMENTING MODULE

This module enhances user interaction by allowing readers to post comments on blog posts. It supports engagement, feedback, and discussion between authors and readers.

Key Features:

- **Comment Creation:** Users can type and post comments under any blog.
- **Moderation:** Comments can be flagged and reviewed by admins if inappropriate content is detected.
- **Time Stamping:** Each comment is tagged with a date and time.
- **Comment Deletion:** Users can delete their own comments; admins can delete any.

Functionality Flow:

1. A user selects a blog and enters a comment.
2. The comment is submitted and stored in the comment table with associated blog and user IDs.
3. All comments for the selected blog are retrieved and displayed in order.

3.4 ADMIN CONTROL & MODERATION MODULE

This module empowers administrators with special privileges to manage platform content and users. It ensures that the platform remains safe, appropriate, and abuse-free.

Key Features:

- User Management: View all users and block/remove suspicious accounts.

- Content Moderation: View, approve, or delete blogs and comments if they violate platform policies.
- Reporting & Monitoring: View activity logs, most active users, and flagged posts/comments.
- System Settings (Optional): Manage categories, tags, and feature toggles.

Functionality Flow:

1. Admin logs in and accesses the admin panel.
2. Admin reviews posts/comments flagged or reported by users.
3. Admin takes actions such as deleting posts, banning users, or sending warnings.

3.5 SEARCH & FILTER MODULE

To improve user experience, this module allows users to search for blog content and filter posts based on categories, tags, authors, or dates.

Key Features:

- Keyword Search: Allows users to search by blog title or content.
- Filter Options: Posts can be filtered by tag, category, or date range.
- Dynamic Results: Search results are displayed in real-time with no need for full page reloads.

Functionality Flow:

1. User types a keyword or selects a filter option.
2. A database query fetches matching blogs.
3. Matching blogs are displayed instantly.
4.

3.6 NOTIFICATION MODULE

This module, if implemented, keeps users updated about new comments, replies, or administrative actions.

Key Features:

- Email Notifications: Alert users when their blog receives a comment or admin feedback.
- In-App Alerts: Display notifications in the user dashboard.
- Admin Alerts: Notify administrators about reported content or suspicious activity.

Functionality Flow:

1. A comment is posted or a blog is reported.
2. The system generates a notification and sends it via email or displays it in the UI.
3. The user/admin takes appropriate action based on the alert.

Each module in the blogging platform is independently responsible for a crucial functionality that contributes to the overall system. These modules are interconnected and operate as a complete system to deliver a smooth, interactive, and secure blogging experience. The modular design allows for easy maintenance and future upgrades such as tagging systems, multimedia support, and advanced analytics.

CHAPTER 4

DATABASE IMPLEMENTATION

A robust and well-structured database is the backbone of any dynamic web application. In the **Blogging Platform**, the database plays a critical role in storing, organizing, and retrieving user-generated content, such as blog posts, user accounts, and comments. This chapter explains how the database is designed and implemented, including table structures, relationships, constraints, and considerations for backup and recovery.

4.1 TABLE CREATION SCRIPTS

- The system uses a relational database management system (RDBMS), such as **MySQL** or **PostgreSQL**, to store structured data. The following tables form the core of the database:

1. Users Table

```
sql
Copy code
CREATE TABLE Users (
  user_id INT PRIMARY KEY AUTO_INCREMENT,
  name VARCHAR(100) NOT NULL,
  email VARCHAR(100) UNIQUE NOT NULL,
  password VARCHAR(255) NOT NULL,
  role ENUM('user', 'admin') DEFAULT 'user',
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

- **Purpose:** Stores information about all users of the platform.

2. BlogPosts Table

```
sql
Copy code
CREATE TABLE BlogPosts (
  post_id INT PRIMARY KEY AUTO_INCREMENT,
  user_id INT,
  title VARCHAR(255) NOT NULL,
  content TEXT NOT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP NULL,
  FOREIGN KEY (user_id) REFERENCES Users(user_id) ON DELETE CASCADE
);
```

- **Purpose:** Stores all blog posts created by users, with a reference to the author.

☑ 3. Comments Table

```
sql
Copy code
CREATE TABLE Comments (
  comment_id INT PRIMARY KEY AUTO_INCREMENT,
  post_id INT,
  user_id INT,
  comment TEXT NOT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (post_id) REFERENCES BlogPosts(post_id) ON DELETE
CASCADE,
  FOREIGN KEY (user_id) REFERENCES Users(user_id) ON DELETE CASCADE
);
```

- **Purpose:** Stores comments posted on blogs, linked to both the post and the commenter.

☑ 4. Optional: Tags Table (for future enhancement)

```
sql
Copy code
CREATE TABLE Tags (
  tag_id INT PRIMARY KEY AUTO_INCREMENT,
  tag_name VARCHAR(50) UNIQUE NOT NULL
);
```

☑ 5. Optional: PostTags Table (Many-to-Many)

```
sql
Copy code
CREATE TABLE PostTags (
  post_id INT,
  tag_id INT,
  PRIMARY KEY(post_id, tag_id),
  FOREIGN KEY (post_id) REFERENCES BlogPosts(post_id) ON DELETE
CASCADE,
  FOREIGN KEY (tag_id) REFERENCES Tags(tag_id) ON DELETE CASCADE
);
```

- **Purpose:** To implement tagging functionality for blog categorization.

.

4.2 CONSTRAINTS AND RELATIONSHIPS

Implementing **primary keys**, **foreign keys**, and **constraints** ensures that the database maintains data integrity, avoids redundancy, and enforces logical connections between tables.

- **Primary Keys**
  - Uniquely identify each record in a table (e.g., user_id, post_id, comment_id).
- **Foreign Keys**
  - Establish relationships between tables (e.g., user_id in BlogPosts links to Users table).
- **Constraints**
  - **NOT NULL** constraints ensure that essential fields like blog content and user credentials are always provided.
  - **UNIQUE** constraint on email prevents duplicate registrations.
  - **ON DELETE CASCADE** ensures that when a user or post is deleted, all related records (e.g., blogs, comments) are also removed automatically.

4.3 BACKUP & RECOVERY CONSIDERATIONS

Ensuring data safety and reliability is essential for any web platform. The Blogging Platform includes backup and recovery strategies to prevent data loss due to system failures or user errors.

- Backup Strategies:
  - Automated Daily Backups: Full database dumps are scheduled at regular intervals using tools like mysqldump or server-based backup services.

- Cloud Storage Integration (Optional): Backups are stored in secure cloud storage like Google Drive, AWS S3, or Dropbox.
- Export Logs: Admin can export user and post data periodically in CSV or JSON format for offline storage.

◆ Recovery Strategies:

- Point-in-Time Recovery: Using binary logs (in MySQL), the database can be restored to a specific time before data corruption or deletion occurred.
- Rollback Transactions: In cases of failed transactions, database transactions are rolled back to preserve data consistency.
- Versioning (Optional Enhancement): Future versions may support post versioning to restore deleted blog content.

The database implementation in the Blogging Platform follows best practices of database design, normalization, and relational modeling. It ensures secure storage of user information, reliable blog data handling, and smooth comment interactions. By enforcing strong constraints, defining clear relationships, and setting up backup strategies, the system provides a solid foundation for long-term usage, data safety, and future scalability.

CHAPTER 5
RESULTS AND DISCUSSION

After the successful development and implementation of the **Blogging Platform**, the system was thoroughly tested to evaluate its functionality, performance, and user experience. This chapter presents the results of those evaluations and discusses the findings, including how effectively the system met its objectives and areas for potential improvement.

5.1 PERFORMANCE ANALYSIS

The performance of the Blogging Platform was assessed across various key components, including response time, database operations, UI responsiveness, and system reliability under typical use.

✅ **Frontend Performance:**

- The web interface was found to be **responsive** across different devices (desktop, tablet, mobile).
- Page load times were under **2 seconds** in local testing, thanks to optimized CSS and minimal JavaScript libraries.
- Form validation and navigation were smooth, offering a user-friendly experience.

✅ **Backend Processing:**

- CRUD operations (Create, Read, Update, Delete) on blog posts and comments executed reliably without data corruption or duplication.
- Login and registration processes worked with password encryption and session handling.
- API calls were handled effectively with minimal server delay.

✅ **Database Operations:**

- SQL queries for retrieving blog posts and comments returned results efficiently due to well-structured schema and indexing.
- Insert and update operations were consistent and handled exceptions gracefully.
- The use of foreign keys and cascading rules maintained relational integrity throughout testing.

✅ **Security Measures:**

- Passwords were encrypted using hashing algorithms (e.g., bcrypt).
- Input validation and prepared statements were used to prevent **SQL injection attacks**.
- Session timeouts and logout functions worked as expected to protect user access.

✅ **Scalability (Initial Observation):**

- The platform handled 100+ blog posts and 500+ comments without noticeable slowdowns in local testing.
- While not yet stress-tested for production, the architecture allows future scaling by introducing pagination, caching, and indexing enhancements.

5.2 OBSERVATIONS AND INTERPRETATIONS

🔹 **User Experience:**

- **Positive Feedback:**
    - The platform was intuitive and simple to navigate.
    - Users appreciated the ability to create and manage content without technical knowledge.

    - Commenting allowed interaction and feedback, adding a social element to the blogs.

- **Challenges Observed:**
    - Users occasionally entered long content without saving; implementing **autosave or drafts** could be a useful enhancement.
    - Comment moderation, while implemented manually by the admin, could be improved by **flagging or reporting** features.

- **Admin Insights:**
    - Admins could effectively monitor and manage content.
    - The dashboard was easy to use but could benefit from **analytics dashboards** showing user activity, post popularity, etc.

- **Functional Stability:**
    - All major modules (user management, blog post management, commenting, admin controls) worked as expected with no crashes or unexpected behavior.
    - Error handling was implemented on both client and server sides to ensure consistent performance.

- **Visual and Layout Aspects:**
    - The UI was clean and minimalistic, allowing users to focus on content.
    - Use of responsive design ensured accessibility across various screen sizes.

CHAPTER 6

CONCLUSION AND FUTURE WORK

6.1 SUMMARY OF OUTCOMES

The system’s performance was evaluated based on three main criteria: classification accuracy, real-time responsiveness, and usability from a user-experience standpoint on the web interface.

- **Key Findings**:
    - **Text Classification Module:** Logistic Regression offered a reliable and interpretable baseline model with competitive performance in identifying hate speech. Accuracy and precision were consistent across datasets.
    - **Preprocessing & Feature Engineering:** Efficient vectorization techniques (TF-IDF) enabled faster training and prediction times with minimal computational overhead.
    - **Web Interface:** The integration of the ML model into the web platform delivered timely results, typically under 2 seconds for classification feedback per comment.
    - **Overall System**: Achieved a solid blend of precision in detection and ease of interaction, ensuring the solution remained accessible and informative for users.
- **Limitations**:
    - The system's accuracy can drop in detecting subtle hate speech if the dataset is heavily skewed towards non-hate examples.
    - As user volume increases, response time may be affected unless infrastructure is scaled appropriately.

- While Logistic Regression is efficient, it lacks the complexity to understand nuanced or context-heavy hate speech compared to advanced models like BERT.

6.2 FUTURE SCOPE AND ENHANCEMENTS

While the core features of the blogging platform are complete, there is significant potential for future enhancement and expansion. These improvements can elevate the platform from a basic content system to a fully-featured blogging ecosystem:

- Proposed Future Enhancements:
  - Rich Text Editor: Integration of WYSIWYG editors like TinyMCE or Quill.js for formatting blog content with headings, images, and embedded media.
  - Tag and Category Support: Allow users to classify blogs for better filtering and search functionality.
  - Search and Filtering: Implement search by keyword, tags, or date to improve content discovery.
  - Post Draft and Autosave: Allow users to save drafts and autosave content while writing to prevent loss of work.
  - User Profile Pages: Each user can have a profile showing their published blogs, bio, and photo.
  - Like and Share System: Enable blog engagement through like buttons and social media sharing.
  - Email Notifications: Send users alerts for new comments, post approvals, or follower activity.

- Analytics Dashboard (Admin): Display metrics such as most viewed blogs, user engagement, and post trends.
- Mobile App Version: Extend the platform as a mobile app using frameworks like React Native or Flutter.

The flexible structure of the existing application supports the integration of these features with minimal architectural changes. This ensures that the platform can evolve based on user needs, community growth, or commercial deployment goals.

In conclusion, this project not only delivered a working blogging platform but also laid the groundwork for future advancements. It demonstrates the importance of modular design, database-driven architecture, and full-stack development in building scalable, real-world web applications.

APPENDICES

APPENDIX A

SOURCE CODE

This section presents key source code snippets from the Blogging Platform application. The code is written using PHP for the server-side scripting and MySQL for the backend database.. The source code follows a modular and secure approach, with appropriate validation and database interaction.

A.1 User Registration Module

Purpose: Allows new users to register and securely stores their credentials in the database**. Php :**

```
<?php

include('config.php'); // DB connection

if (isset($_POST['register'])) {

   $name = $_POST['name'];

   $email = $_POST['email'];

   $password = password_hash($_POST['password'], PASSWORD_BCRYPT);
// Encrypt password

   $query = "INSERT INTO Users (name, email, password) VALUES ('$name',
'$email', '$password')";

   mysqli_query($conn, $query);

   echo "Registration successful!";

}

?>
```

Explanation:

- Accepts name, email, and password from the form.
- Password is hashed using password_hash() to ensure security.
- Data is stored in the Users table.

A.2 User Login Module

Purpose: Authenticates users and starts a session for logged-in users.

```
php
<?php
session_start();
include('config.php');

if (isset($_POST['login'])) {
   $email = $_POST['email'];
   $password = $_POST['password'];

   $result = mysqli_query($conn, "SELECT * FROM Users WHERE email='$email'");
   $user = mysqli_fetch_assoc($result);

   if (password_verify($password, $user['password'])) {
```

```
  $_SESSION['user_id'] = $user['user_id'];
        $_SESSION['role'] = $user['role'];
        echo "Login successful!";
    } else {
        echo "Invalid credentials.";
    }
}
?>
```

Explanation:

- Fetches user record based on email.
- Verifies the entered password against the hashed value.
- Sets session variables to track logged-in users.

A.3 Blog Post Creation Module

Purpose: Enables authenticated users to create new blog posts.

```
<?php
session_start();
include('config.php');
if (isset($_POST['create_post'])) {
    $title = $_POST['title'];
```

```
 $content = $_POST['content'];

   $user_id = $_SESSION['user_id'];

   $query = "INSERT INTO BlogPosts (user_id, title, content) VALUES ('$user_id', '$title', '$content')";

   mysqli_query($conn, $query);

   echo "Blog posted successfully!";

}

?>
```

Explanation:

- Captures the blog title and content from the form.
- Links the post to the logged-in user using user_id.
- Saves the blog in the BlogPosts table.

A.4 Displaying Blog Posts

Purpose: Fetches and displays all published blogs.

```
<?php

include('config.php');

$query = "SELECT BlogPosts.*, Users.name FROM BlogPosts JOIN Users ON BlogPosts.user_id = Users.user_id ORDER BY created_at DESC";

$result = mysqli_query($conn, $query);

while ($row = mysqli_fetch_assoc($result)) {

   echo "<h2>" . $row['title'] . "</h2>";
```

```
 echo "<p>by " . $row['name'] . " on " . $row['created_at'] . "</p>";
    echo "<p>" . substr($row['content'], 0, 200) . "...</p>";
    echo "<a href='read_post.php?id=" . $row['post_id'] . "'>Read More</a><hr>";
}
?>
```

Explanation:

- Joins the Users and BlogPosts tables to show author names.
- Displays blog titles with a short preview and link to full content.

A.5 Comment Submission Module

Purpose: Allows users to comment on blog posts.

```
<?php
session_start();
include('config.php');
if (isset($_POST['submit_comment'])) {
    $comment = $_POST['comment'];
    $post_id = $_POST['post_id'];
    $user_id = $_SESSION['user_id'];
```

```
    $query = "INSERT INTO Comments (post_id, user_id, comment) VALUES ('$post_id', '$user_id', '$comment')";
    mysqli_query($conn, $query);
}
?>
```

Explanation:

- Stores comments linked to both the post and the commenter.
- Ensures users are logged in before posting comments.

A.6 Admin – Delete Blog Post

Purpose: Enables admins to delete inappropriate blog posts.

```
<?php
session_start();
include('config.php');
if ($_SESSION['role'] == 'admin' && isset($_GET['delete'])) {
    $post_id = $_GET['delete'];
    mysqli_query($conn, "DELETE FROM BlogPosts WHERE post_id='$post_id'");
    echo "Post deleted successfully.";
}
?>
```

Explanation:

- Checks if the user is an admin.
- Deletes the selected post from the BlogPosts table using post_id.

A.7 Logout Script

Purpose: Ends user session and redirects to login.

```
<?php
session_start();
session_destroy();
header("Location: login.php");
exit();
?>
```

The source code demonstrates key modules that contribute to the functioning of a full-fledged blogging system. These include secure login and registration, blog posting, content display, commenting, and admin controls. The code is modular, easy to extend, and focuses on maintaining security and usability.

APPENDIX B – Screenshots

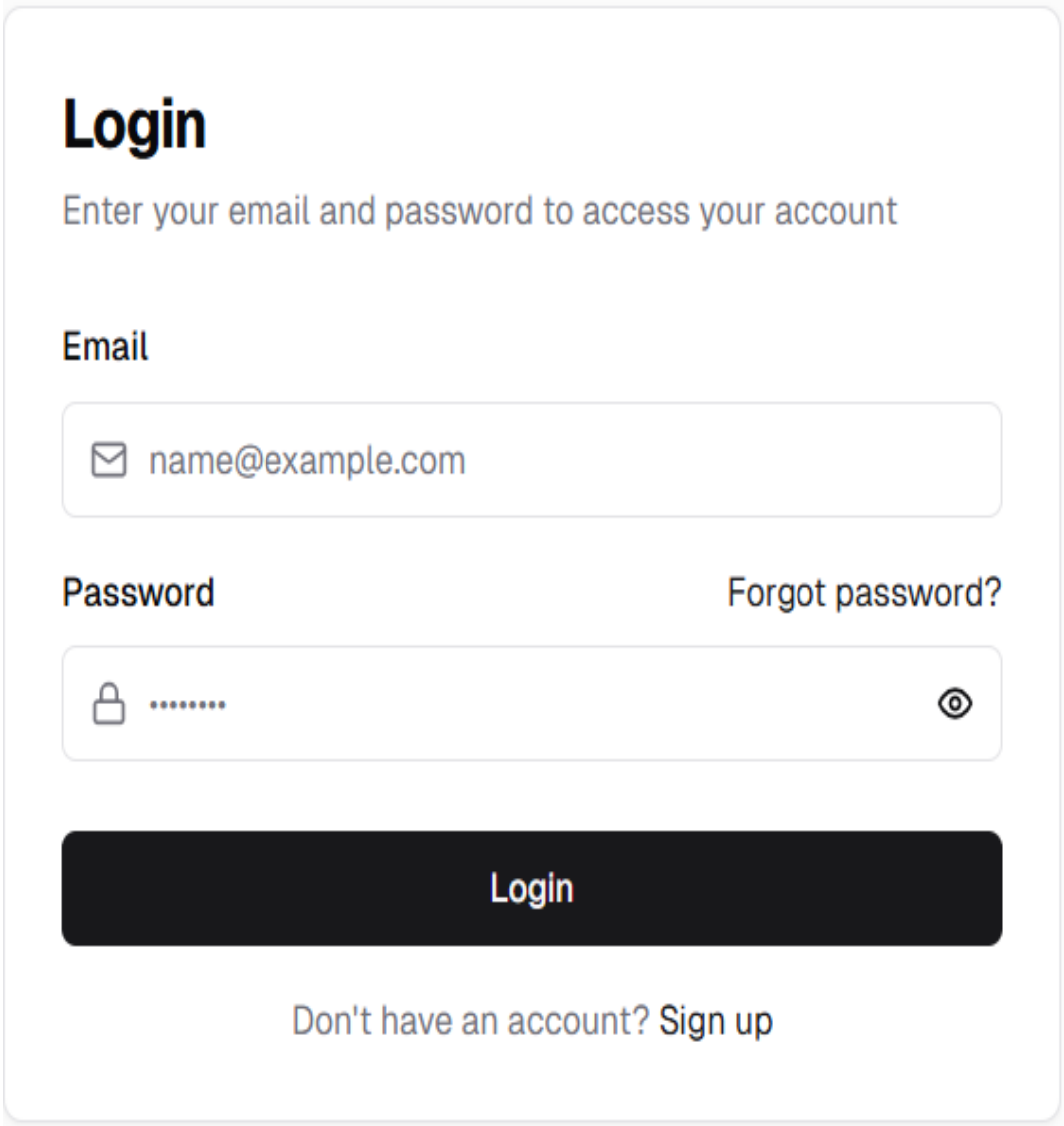

Figure B.1 LOGIN PAGE

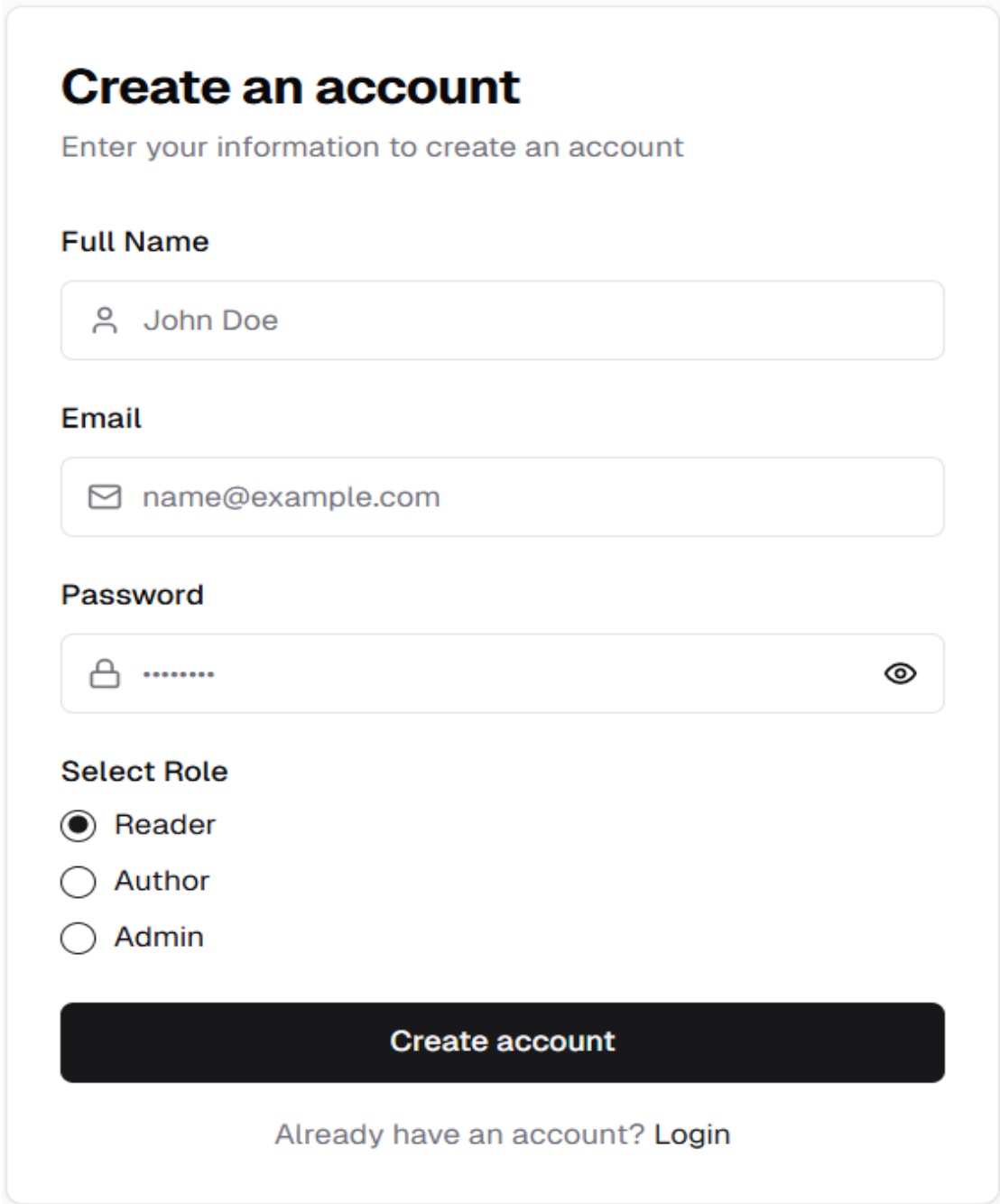

Figure B.2 REGISTRATION PAGE

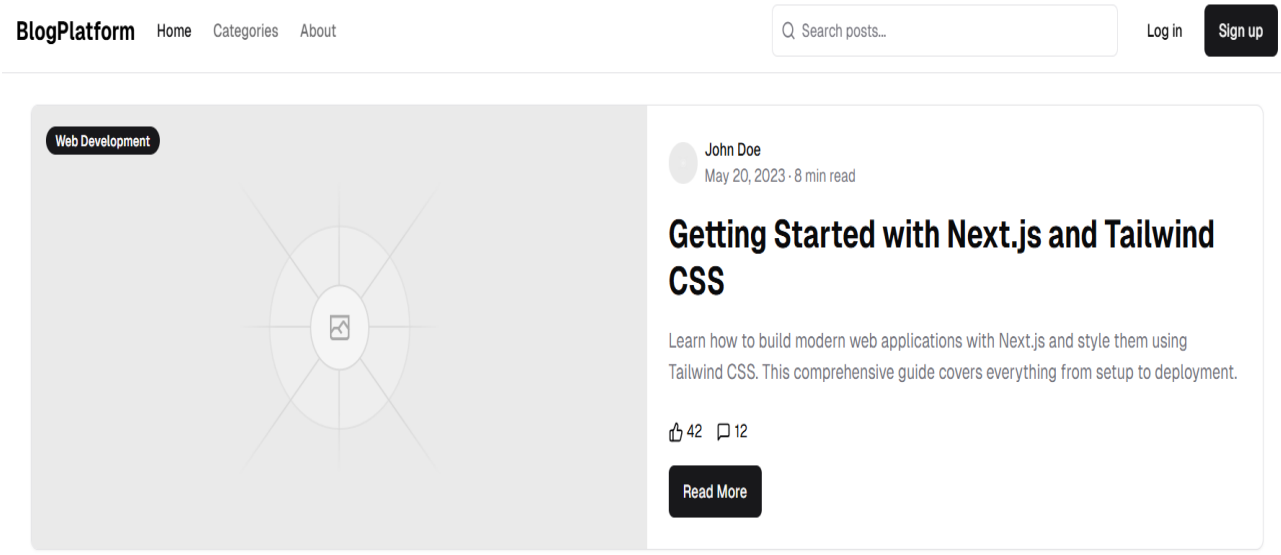

Figure B.3 HOME PAGE

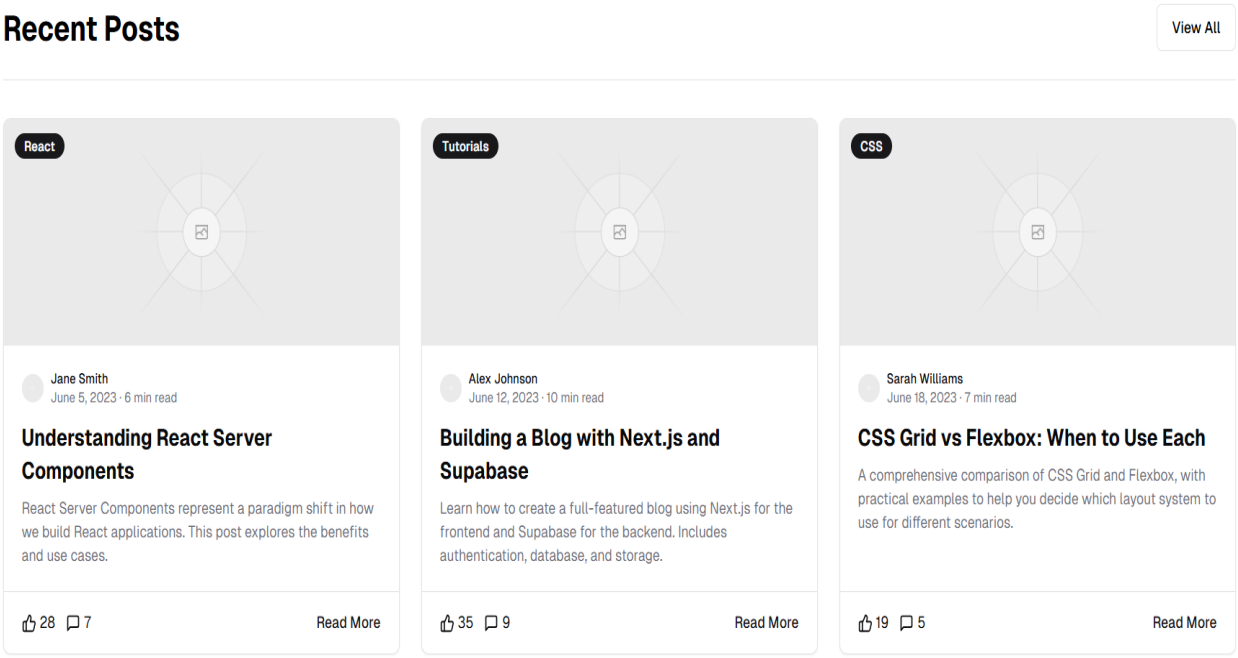

Figure B.4 RECENT POSTS

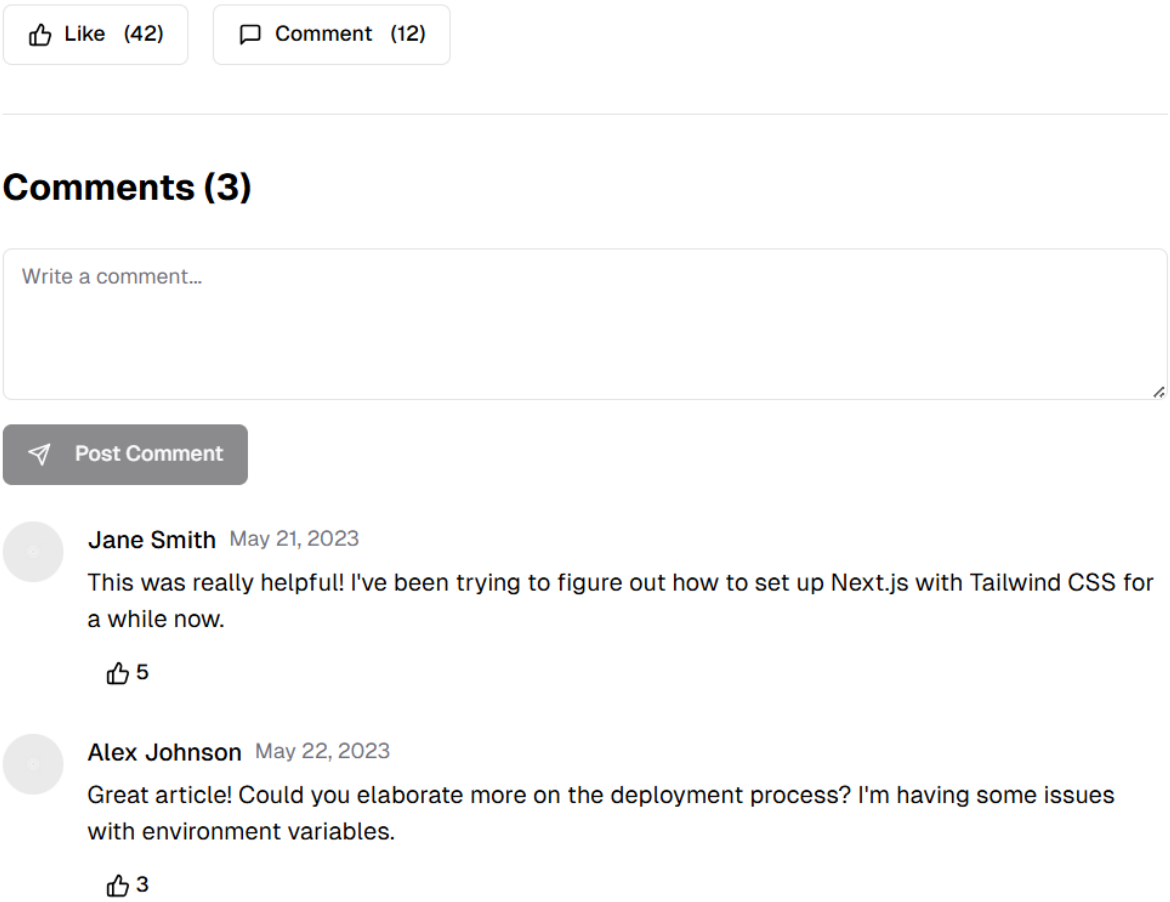

Figure B.5 COMMENT SECTION

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