Minor Project Report
Of
"SocialHub"
In partial fulfilment for the award of the degree Of
BACHELOR OF COMPUTER APPLICATION
[B.C.A]
Year 2024-2025

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BCA-5th SEMESTER

Submitted to:

SHRI SHAMBHUBHAI V. PATEL COLLEGE OF
COMPUTER SCIENCE & BUSINESS MANAGEMENT

Affiliated to
Veer Narmad South Gujarat University

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Introduction:-

Project Profile

Project title	SocialHub
Front end	HTML, CSS, Bootstrap, JavaScript,tailwind CSS,jQuery,AJAX
Back end	Django(python)
Database	MongoDB
Product type	Website
Browser	Google chrome and more
Internal guide	Prof. Divya Padhiyar
Submitted to	Shri Shambhubhai v. Patel college of computer Science & Business management
Developed by	Krish Prajapati

1.Introduction to SocialHub:-

SocialHub is a comprehensive social media management platform designed to help businesses and individuals effectively manage their social media presence. It offers a range of tools for scheduling, monitoring, and engaging with content across multiple social media platforms. The platform is widely used by marketers, content creators, and customer support teams to streamline their social media activities, manage campaigns, and interact with their audience in real-time.

1.1 About the Project

- **Social Media Scheduling:** Plan and automate posts across various platforms like Facebook, Instagram, Twitter, LinkedIn, etc.

- **Social Listening:** Monitor mentions, keywords, and trends to track brand reputation and engagement.
- **Analytics and Reporting:** Gain insights into the performance of social media campaigns with detailed reports on reach, engagement, and growth.
- **Collaboration Tools:** Facilitate teamwork by assigning tasks, setting up approval workflows, and integrating with project management systems.
- **Customer Support Integration:** Manage customer queries and comments from all social platforms in one unified inbox.

1.2 Problem Observations

1. **1. Problem Identification:**

2. **What:**
   1. Difficulty in scheduling posts for multiple platforms.
   2. Delays in loading analytics reports.
   3. Notifications for messages or comments not appearing on time.
   4. Issues with social media account connections (e.g., disconnection from platforms like Instagram or LinkedIn).
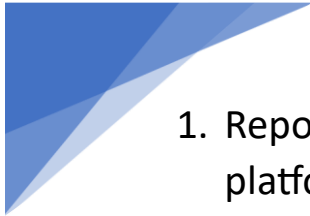   5. User interface lagging or freezing while navigating the platform.

3. **Where:**
   1. Occurs specifically in the "Content Calendar" section.
   2. Analytics page shows loading delays.
   3. Notification center fails to display real-time alerts.
   4. Occasional issues in the account integration page.

4. **When:**
   1. Post scheduling issues occur intermittently during peak traffic times.
   2. Analytics delays noted at the end of each month when reports are generated.
   3. Notifications not showing up consistently, especially after working hours.
   4. Disconnects happen randomly, often after API updates from social platforms.

5. **Who:**

1. Reported by social media managers and marketing teams using the platform for scheduling posts and monitoring engagement.
2. Analytics delays reported by users generating performance reports for their campaigns.

1.3 Pros of the SocialHub

1. **Efficiency**: The SOCIALHUB automates the process of entering, updating, and retrieving academic results, reducing the administrative workload and minimizing errors.
2. **Real-Time Access**: Students and parents can access academic results instantly, improving communication and transparency. Real-time data ensures that students and parents are always aware of academic performance.
3. **Data Security and Integrity**: Using a centralized database, the system ensures that student data is securely stored and can be easily accessed without the risk of data loss or unauthorized manipulation.
4. **Report Generation**: The system allows for the automatic generation of reports, which can be shared with students and parents or printed for school records, streamlining the result dissemination process.
5. **Accessibility**: Since the system is web-based, it can be accessed from anywhere with an internet connection, enabling students and parents to view results from the comfort of their homes.

1.4 Cons of the SocialHub

Information Sharing and Awareness:-

1. **News and Updates:** Social media is a major source of breaking news and real-time updates from across the globe.
2. **Education and Learning:** Social platforms provide access to educational resources, webinars, tutorials, and discussions on diverse topics.
3. **Awareness Campaigns:** Organizations and individuals use social media to raise awareness about social, political, and environmental issues.
4. **System Maintenance**: Regular maintenance and updates are necessary to ensure the system runs smoothly and remains secure. This could require technical expertise and ongoing support.

2. System Environment

2.1 Hardware Used

The hardware components required for developing, hosting, and using the **SocialHub** include:

- **Server Hardware**: A reliable server with at least 4 GB RAM, 500 GB storage, and a multi-core processor to host the web application. The server needs to run 24/7 to ensure availability for students, parents, and administrators. Cloud-based servers like AWS, Google Cloud, or Digital Ocean can also be used for scalability.
- **Client Machines**: End-users such as school administrators, students, and parents can access the system using various devices. These include:
    - Desktops or laptops with any modern browser (Chrome, Firefox, Safari).
    - Mobile devices like smartphones or tablets with internet access.
- **Networking Equipment**: To facilitate smooth communication between the server and clients, basic networking infrastructure such as routers, switches, and an internet connection is required. Schools may need to ensure stable internet access to both administrators and students for uninterrupted access to the system.
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2.2 Software Used

The **SocialHub** relies on various software tools for both development and deployment:

- **Operating System**:
    - **Server-Side**: Linux-based servers (Ubuntu, CentOS) are preferred for their reliability and cost-effectiveness, although Windows servers can also be used.
    - **Client-Side**: Any OS (Windows, macOS, Linux, Android, iOS) that supports modern web browsers.
- **Backend Development**: Django is an open-source web framework that simplifies the development of complex, database-driven websites. It emphasizes reusability, less code, and quick development, making it an ideal choice for building robust and scalable applications.

- **Database Management**: MongoDB is employed as the database mymanagement system. It stores All Useres details, results, and other related data in an organized and secure manner.
- **Frontend Development**: The system's user interface is created using HTML5, CSS3,tailwind CSS,JQuery and JavaScript. A CSS framework such as Bootstrap is used to ensure responsive design, making the platform accessible on both desktop and mobile devices.
- **Web Server**: Apache or Nginx serves as the web server to handle requests from users and deliver the appropriate content, managing the communication between the user's device and the application's backend.
- **Version Control**: Git is used for tracking changes in the codebase, allowing for collaborative development and better code management.
- **Database Configuration**

  - Django supports multiple databases such as SQLite (default), PostgreSQL, MySQL,MongoDB and others. For production applications, using PostgreSQL or MySQL is recommended.

3. Problem Specification

3.1 Introduction, Objective, and Purpose

Introduction: The **SocialHub Project** is a comprehensive social media management platform designed to automate the process of managing multiple social media accounts across various platforms. It enables businesses, marketing teams, and social media managers to efficiently plan, execute, and analyze their social media strategies from a single, unified dashboard.

Objective: The primary objective of **SocialHub** is to provide a comprehensive and user-friendly platform for managing and optimizing social media activities across multiple platforms. By automating and streamlining tasks such as content scheduling, audience engagement, and performance analysis, SocialHub aims to help businesses, marketers, and social media managers improve efficiency, maximize the impact of their social media campaigns, and enhance their overall digital presence.

- **Key Objectives:**

- **Simplify Social Media Management:**
    - Provide a centralized platform for users to manage multiple social media accounts from a single interface, reducing the complexity of switching between platforms.
    - Automate post scheduling and publishing, allowing users to plan and execute campaigns efficiently without manual intervention.
- **Enhance Audience Engagement:**
    - Enable real-time monitoring of social media interactions, including comments, direct messages, and mentions, ensuring that businesses can respond quickly and maintain meaningful engagement with their audience.
    - Improve customer service by offering a unified inbox for managing all social media conversations, promoting timely responses.
- **Data-Driven Decision Making:**
    - Provide detailed analytics and reporting tools that offer insights into social media performance, helping users track key metrics such as engagement, follower growth, and campaign success.

- o Enable users to analyze audience sentiment and adjust content strategies to improve outreach and effectiveness.
- **Facilitate Team Collaboration:**
  - o Offer collaboration features that allow teams to work together seamlessly on social media content creation, approval processes, and task management.
  - o Ensure role-based access control to streamline workflows while maintaining the security and integrity of the platform.
- **Scalability and Flexibility:**
  - o Design a scalable platform that caters to small businesses, large enterprises, and marketing agencies, allowing for customizable features and flexible subscription plans.
  - o Ensure that the platform is adaptable to the changing needs of the industry, with the ability to incorporate new social media platforms and features as they emerge.

Purpose: The primary goal of SocialHub is to provide a seamless experience for managing social media content, interactions, and analytics. It allows users to schedule posts, track engagement, monitor trends, and interact with audiences across platforms such as Facebook, Instagram, Twitter, LinkedIn, and more. The platform is designed to save time, improve productivity, and enhance the effectiveness of social media campaigns.

3.2 System Model

The system follows a **client-server architecture**:

- **Client-Side (Frontend)**: Users and administrators interact with the application through a web browser. The frontend uses HTML5, CSS3, and JavaScript,JQuery,AJAX to ensure a responsive and interactive interface.
- **Server-Side (Backend)**: The server handles the business logic, user authentication, and database interactions. Django manages user requests and communicates with the MongoDB database to fetch or store data.
- **Database**: MongoDB is used to manage large volumes of users records efficiently. Tables for Users post data, profile data, account creation are designed to ensure easy retrieval and management.
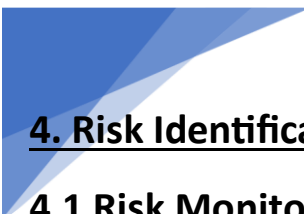
3.3 Feasibility Study

Feasibility Study for SocialHub Project

A feasibility study assesses the practicality and potential success of the **SocialHub Project**, a social media management platform designed to streamline and optimize social media activities.

- **Technical Feasibility**: The technologies required (Python, MongoDB, HTML, CSS, JavaScript) are well-established and widely used, making it technically feasible to build the system. Technical feasibility focuses on whether the SocialHub platform can be developed with available technologies and resources.
- **Operational Feasibility: -** Operational feasibility evaluates how well the SocialHub platform will function and integrate with business operations and customer needs.
- **Market Feasibility: -** Market feasibility focuses on the demand for the SocialHub platform and its potential to succeed in the competitive landscape of social media management tools.
- **Financial Feasibility:-** Financial feasibility assesses the cost of developing and maintaining SocialHub, as well as its revenue potential.

Overall Feasibility Conclusion

The SocialHub project is **feasible** across technical, operational, market, financial, and legal dimensions. With a strong market demand for social media management tools and a solid business plan, SocialHub has a high potential for success. Key next steps include securing funding, assembling a development team, and executing a marketing strategy to position SocialHub as a leading platform in the industry.

4. Risk Identification and Management

4.1 Risk Monitoring

The following risks may impact the success of the project:

- **Continuous Evaluation:** Ensure that risks identified in the planning stages are being monitored throughout the project lifecycle.
- **Mitigation Assessment:** Verify that risk mitigation strategies are effective and adjust them as needed based on evolving circumstances.
- **Identification of New Risks:** Detect any new risks that may arise during development, deployment, or operation.
- **Communication:** Keep stakeholders informed of the risk status and any adjustments made to the risk management plan.
- **Risk Reporting :-**Provide transparent and structured reports on the current risk status to stakeholders, project managers, and team members.

5. Technology Used for Development

The **SocialHub** uses a variety of modern technologies:

- **Frontend Technologies**:
  - **HTML5**: Provides the structure of the web pages.
  - **CSS3**: Enhances the presentation, ensuring the website is visually appealing and responsive across devices.
  - **JavaScript**: Adds interactivity to the application, allowing for dynamic content updates without refreshing the page.
- **Backend Technologies**:
  - **Django** Handles the server-side operations, including form submissions, user authentication, and data processing. Django efficiently communicates with the database and delivers the requested information back to the client.
- **Database**:
  - **MongoDB**: A MongoDB database system used for storing and managing users' information and academic results.
  - a popular, open-source, document-oriented database management system (DBMS) that stores data in flexible, JSON-like documents
- **Web Server**:
  - **Apache/Nginx**: These servers are responsible for handling requests from the frontend and ensuring that the appropriate data or resources are delivered to the user.

6. Planning

6.1 System Planning:- System planning is a crucial step in ensuring that the **SocialHub Project**, a social media management platform, is well-designed, scalable, secure, and aligned with business goals. This section provides a detailed overview of the key components involved in planning the SocialHub system, including its architecture, hardware and software requirements, scalability, security, and integration strategies.

Planning the development of the **SocialHub** includes the following steps:

- **Requirement Gathering**: This involves collecting and documenting the functional and non-functional requirements of the system from Useres.
- **System Architecture**

  - The system architecture of SocialHub must support real-time social media management, large amounts of data processing, and high availability. A **3-tier architecture** is recommended to ensure scalability, separation of concerns, and easy maintainability**.**

    2.1. Presentation Layer (Frontend):-

    - **Technology Stack:** React.js, HTML5, CSS3, JavaScript, This layer is responsible for the user interface (UI) that users interact with. It will provide features like drag-and-drop scheduling, visual dashboards for analytics, and real-time notifications for social media interactions.

    2.2. Application Layer (Backend):-

    Technology Stack: Django (Python) (for real-time services), REST APIs, GraphQLProcessing and storing social media data in the database.

    2.3. Data Layer (Database):-

    - **Technology Stack:** MongoDB (for unstructured data, if needed)
    - **Description:** This layer manages all data storage, including user profiles, social media content, posts data,friendship data, and logs.
   - **Key Features:**

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- **Flexible schemas**: MongoDB is schemaless, allowing developers to modify collection schemas without waiting for the database to be ready.
- **Indexing:** Indexing can significantly improve performance and throughput by reducing the number of full documents that need to be read.
- **Sharding:** MongoDB's horizontal scaling feature, sharding, allows data to be distributed across multiple data nodes. This makes it easier to scale up or down to accommodate changes in data.

- **Development**: During the development phase, the backend and frontend are coded. Frontend developers work on user interfaces, while backend developers implement server-side logic and database interactions.
- **Testing**: Both unit testing (testing individual components) and integration testing (testing the entire system as a whole) are carried out to ensure the system functions as expected and is free from bugs or vulnerabilities.
- **Deployment**: Once the system has been tested, it is deployed on a live server, allowing real-time access to users. The server is monitored to ensure uptime and optimal performance.

- **Security Tools:** SSL/TLS encryption, OAuth2 for authentication. Firewall, Intrusion Detection Systems (IDS).

6.2 Timeline Chart

week	1	2	3	4	5	6	7	8	9	10
Date	23	24	27	31	1	5	16	27	3	10
Month	July				august				September	
Activity										
Domain Under-standing	■	■								
Farther Analysis	■	■	■	■	■					
Learning Process	■	■	■	■	■	■	■	■		
Design	■	■	■	■						
Coding & Testing					■	■	■	■		
Documentation						■	■	■	■	
Filnal Documentation								■	■	■

7. System Analysis

7.1 Database Design
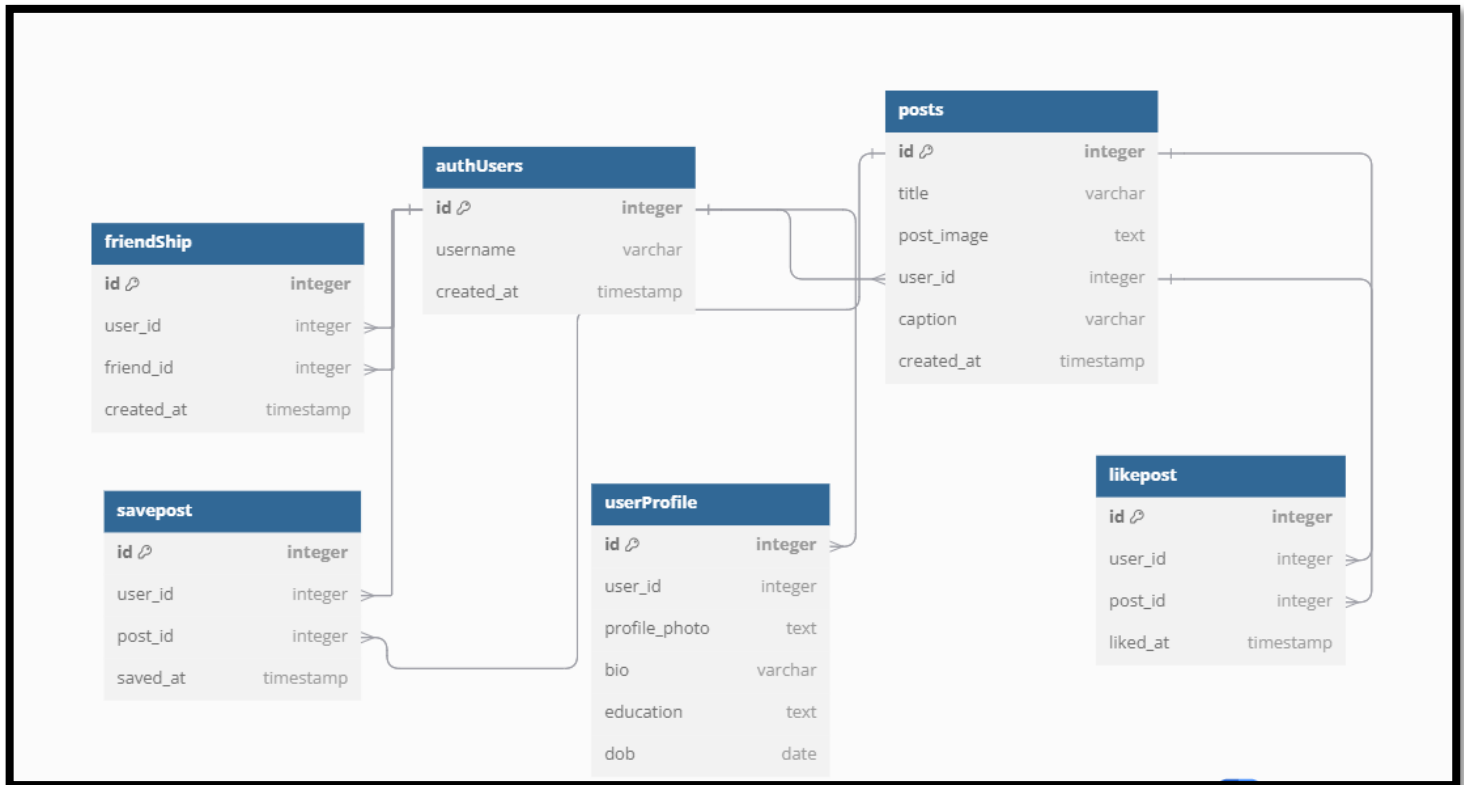
7.2 ER Diagram :-
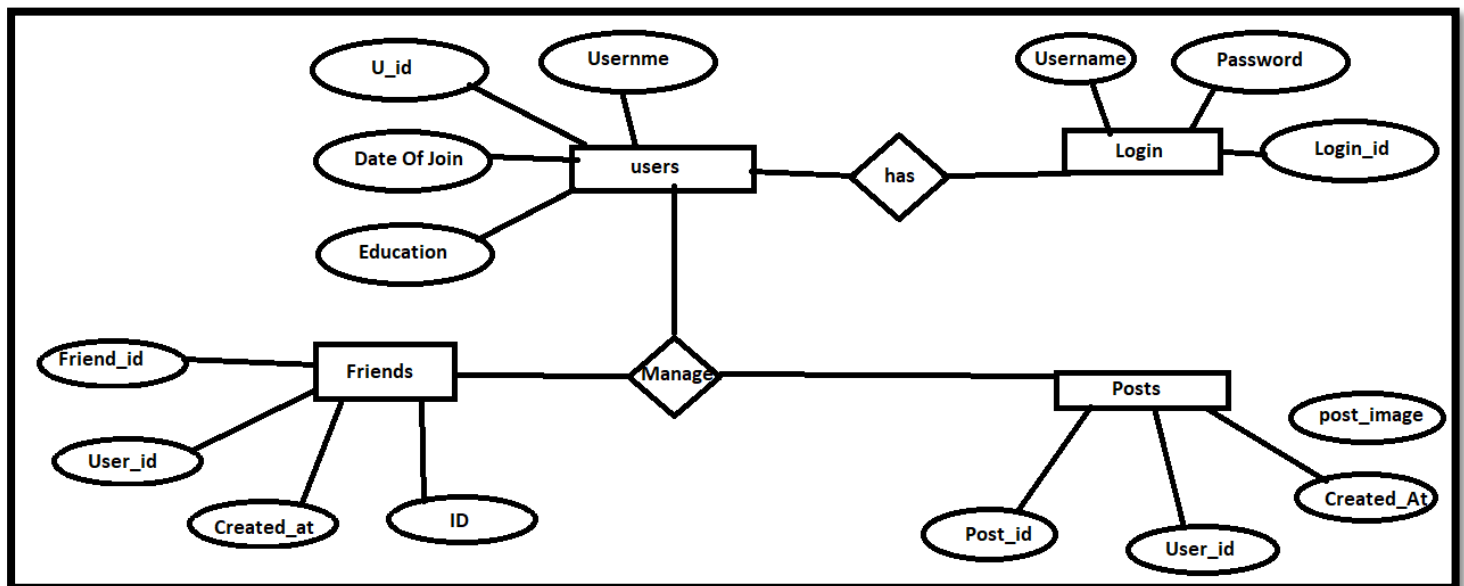
7.3 DFD Diagram

Level 0 –DFD:-
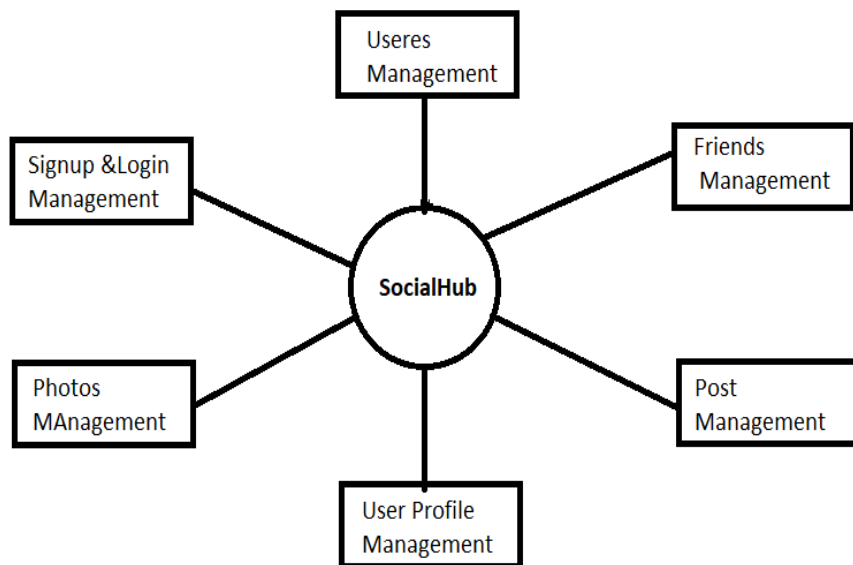
Level 1 – DFD
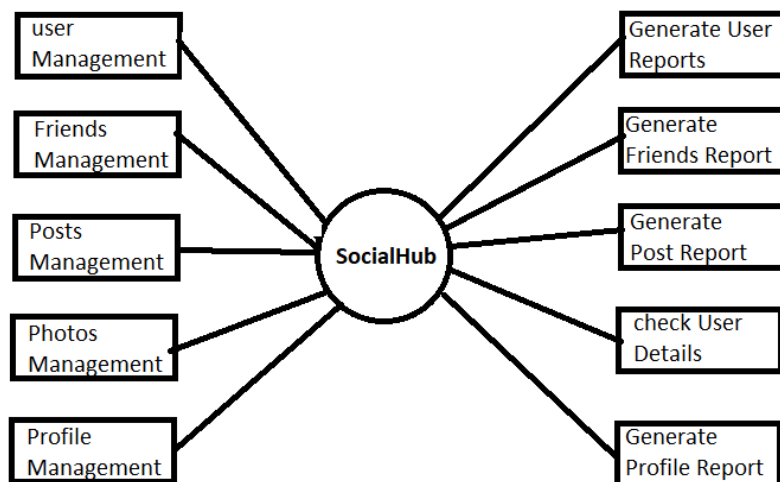
Level-2 DFD of User account maintenance
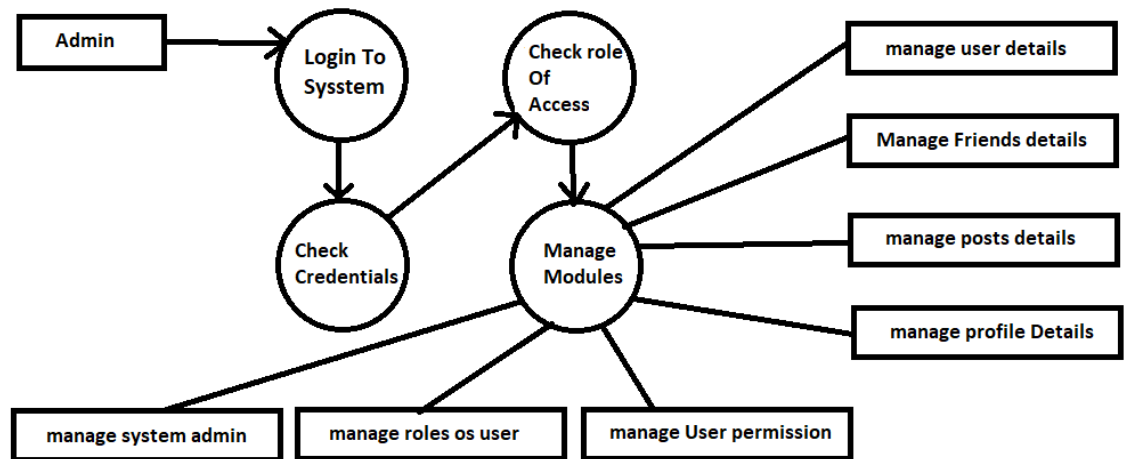
Level-2 DFD of Posts information management
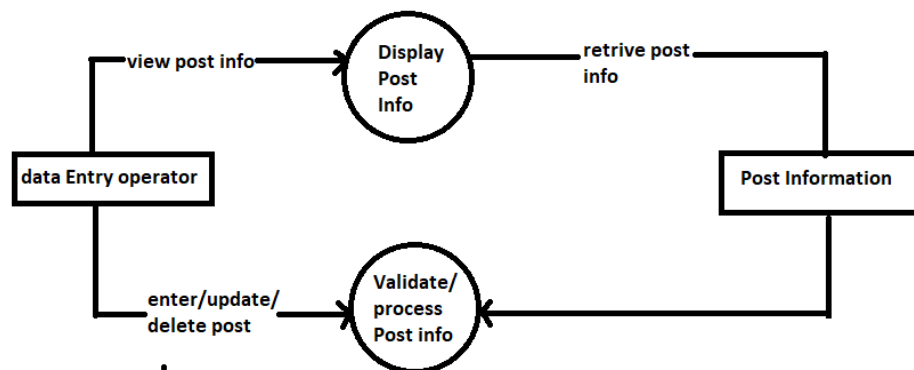
7.4 Data Dictionary

`

```
┌─────────────────────────────┐   ┌─────────────────────────────┐   ┌─────────────────────────────┐
│            User             │   │            psots            │   │          savePost           │
├─────────────────────────────┤   ├─────────────────────────────┤   ├─────────────────────────────┤
│ user_id int(10) not null    │   │ user_id int(10) not null    │   │ id int(10) not null         │
│ username varchar(15)        │   │ post_id int(10)             │   │ post_id int(10)             │
│ password int(10)            │   │ id int(10) not null         │   │ saved_At date               │
│ joined_at  timestamp        │   │ post_image varchar(10)      │   │ user_id int(10) not null    │
│                             │   │ caption varchar(20)         │   │                             │
│                             │   │ likes int(30)               │   │                             │
│                             │   │ created_at date             │   │                             │
└─────────────────────────────┘   └─────────────────────────────┘   └─────────────────────────────┘

┌─────────────────────────────┐   ┌─────────────────────────────┐   ┌─────────────────────────────┐
│          likePost           │   │        user_profile         │   │         FriendShip          │
├─────────────────────────────┤   ├─────────────────────────────┤   ├─────────────────────────────┤
│ id int(10) not null         │   │ id int(10) not null         │   │ id int(10) not null         │
│ user_id int(10)             │   │ user_id int(10)             │   │ user_id int(10)             │
│ post_id int(10)             │   │ profile_photo               │   │ friend_id int(10)           │
│ liked_at date               │   │ varchar(20)                 │   │ created_at int(10)          │
│                             │   │ bio varchar(30)             │   │                             │
│                             │   │ education varchar(20)       │   │                             │
│                             │   │ dob date                    │   │                             │
└─────────────────────────────┘   └─────────────────────────────┘   └─────────────────────────────┘
```

8. Designing

8.1 User Interface

Landing Page :-

`
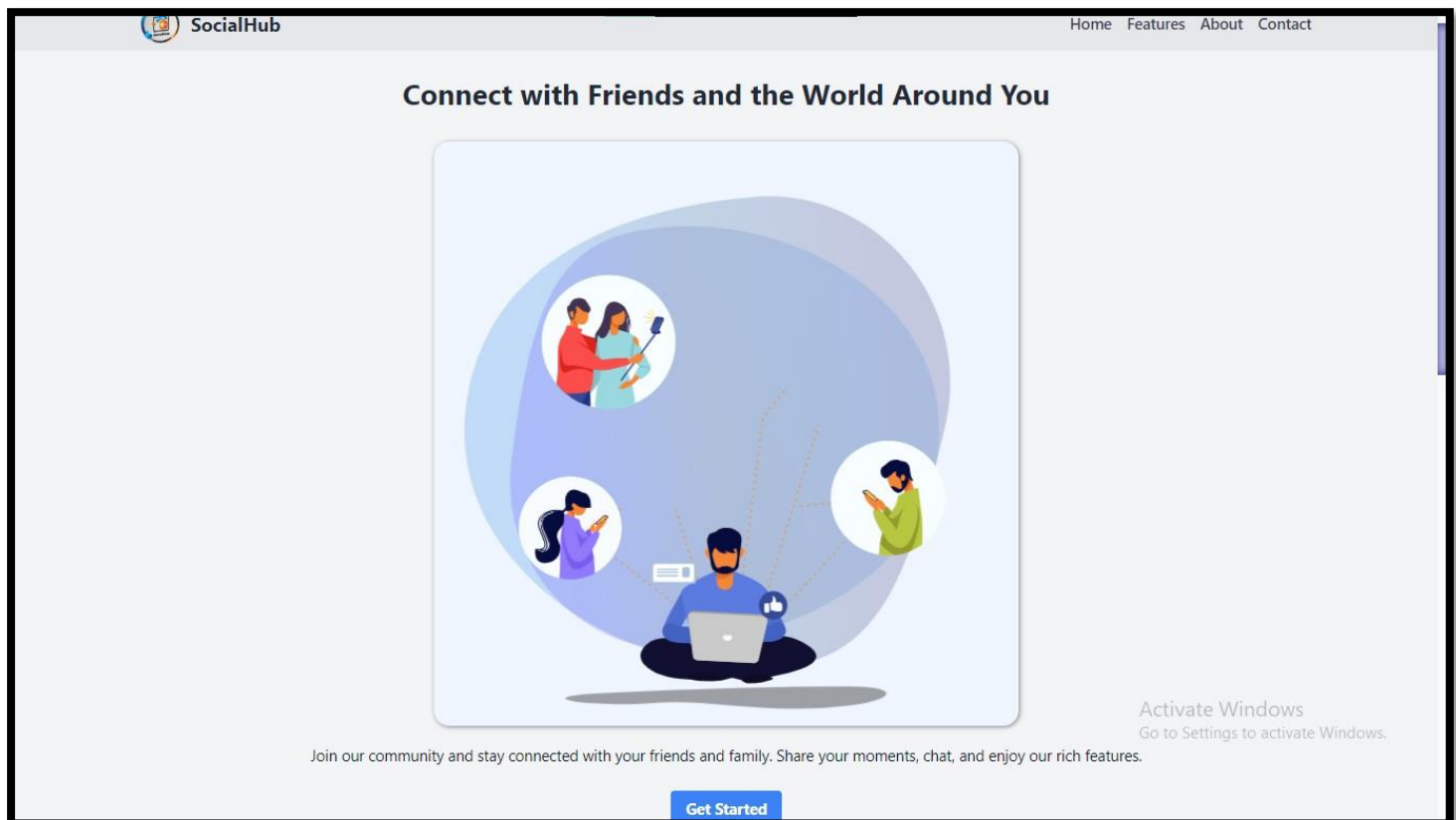
Homepage :-

SocialHub
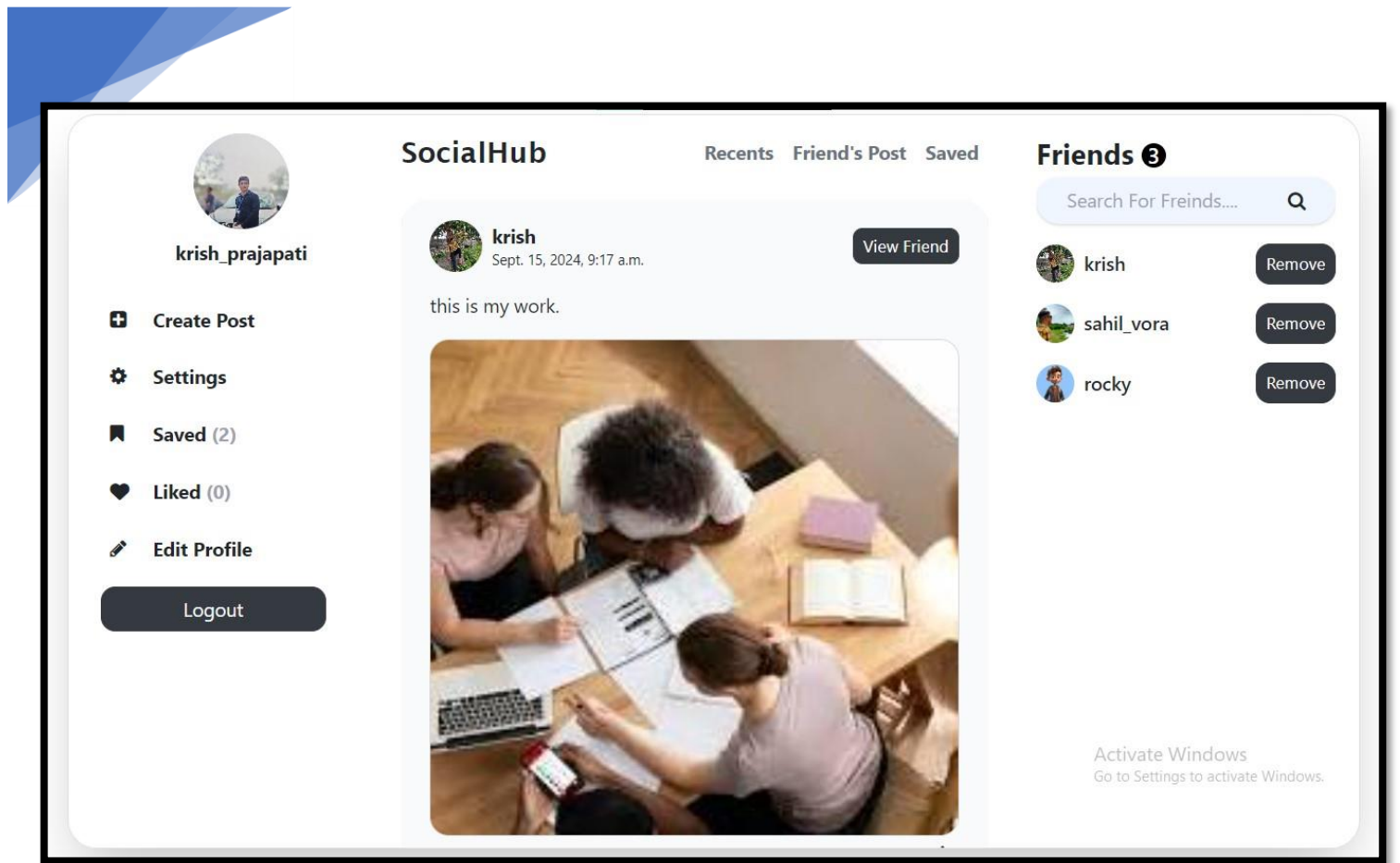
User Profile :-
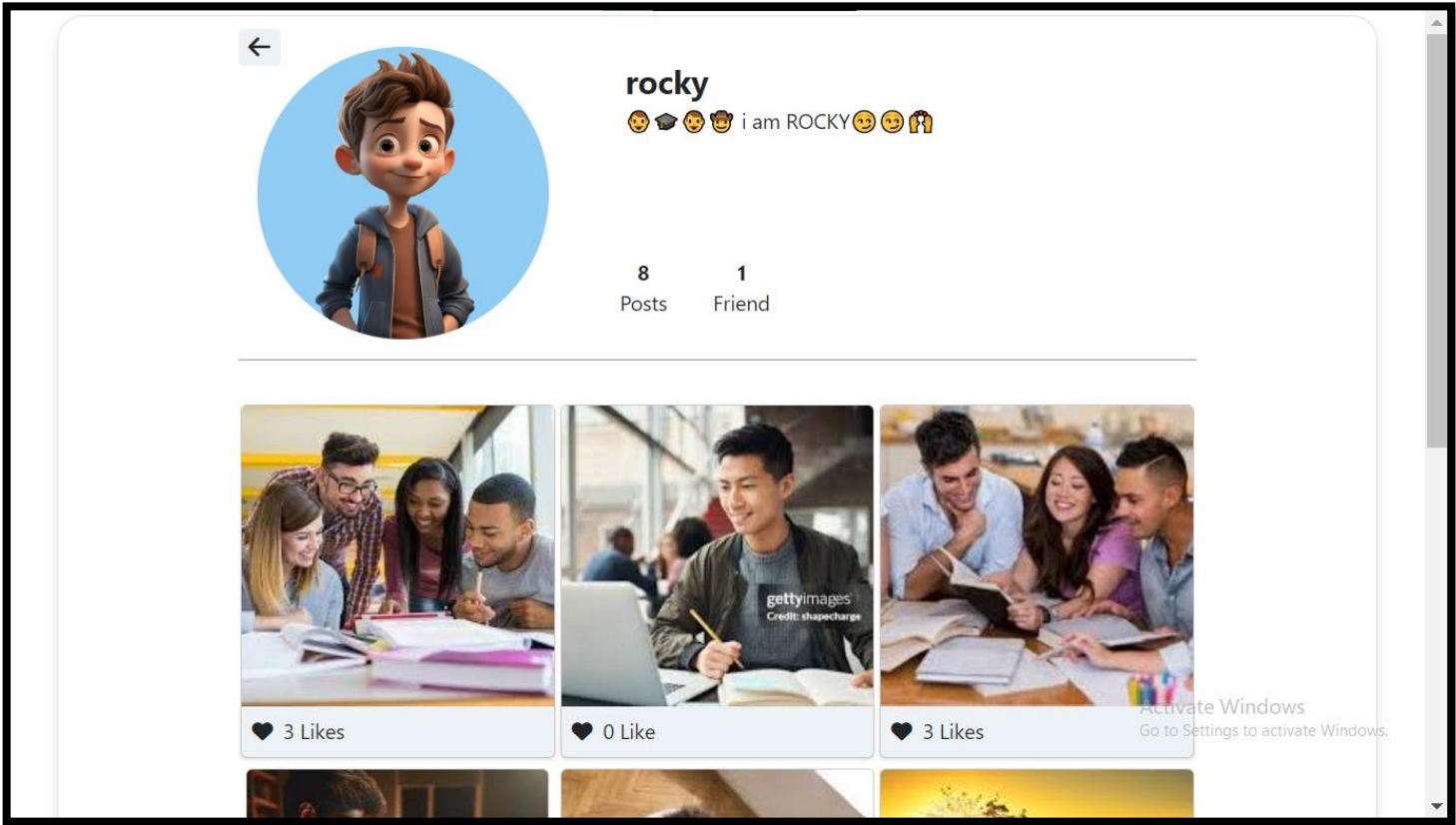
Friends_list :-

Login :-
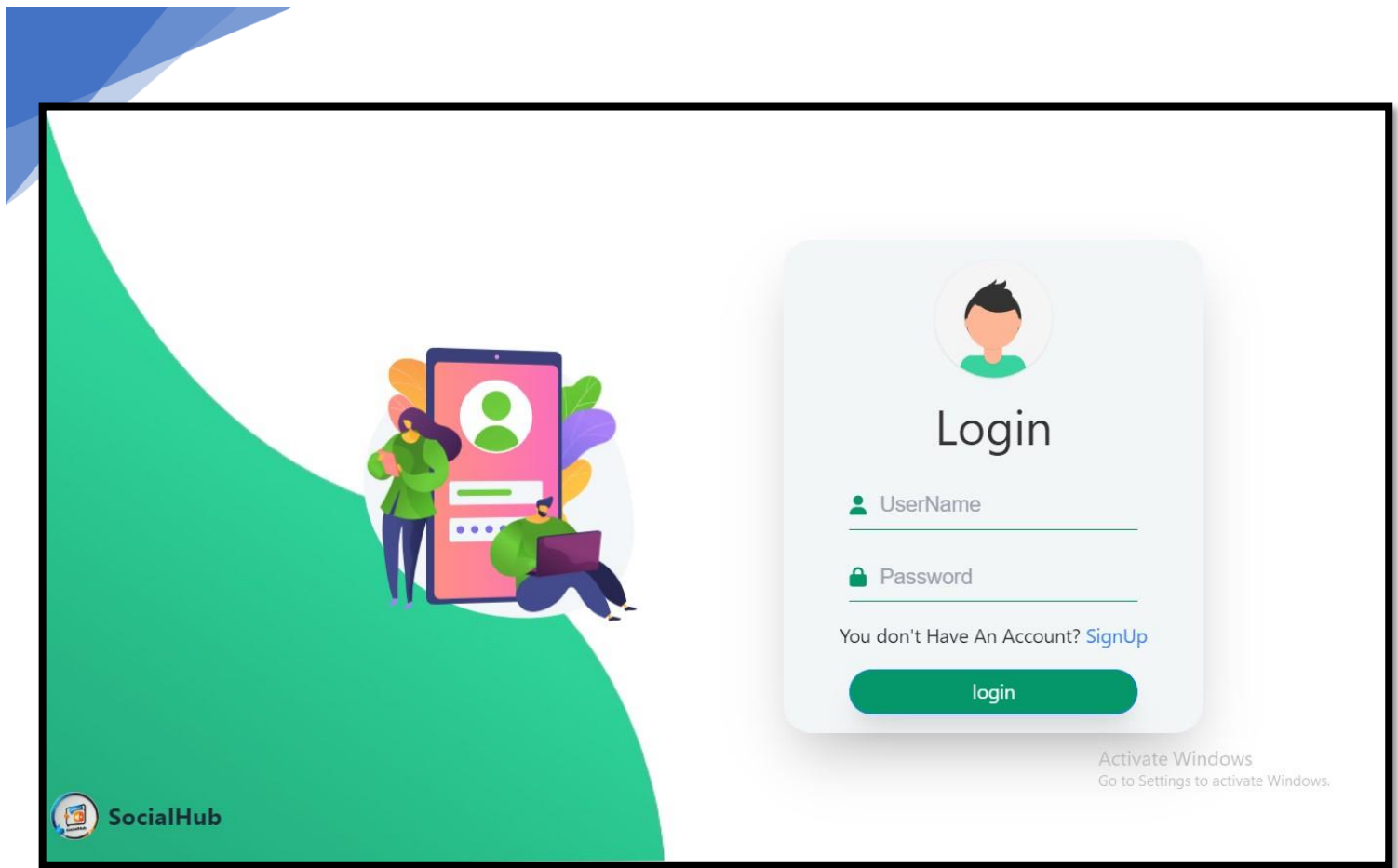
SignUp :-
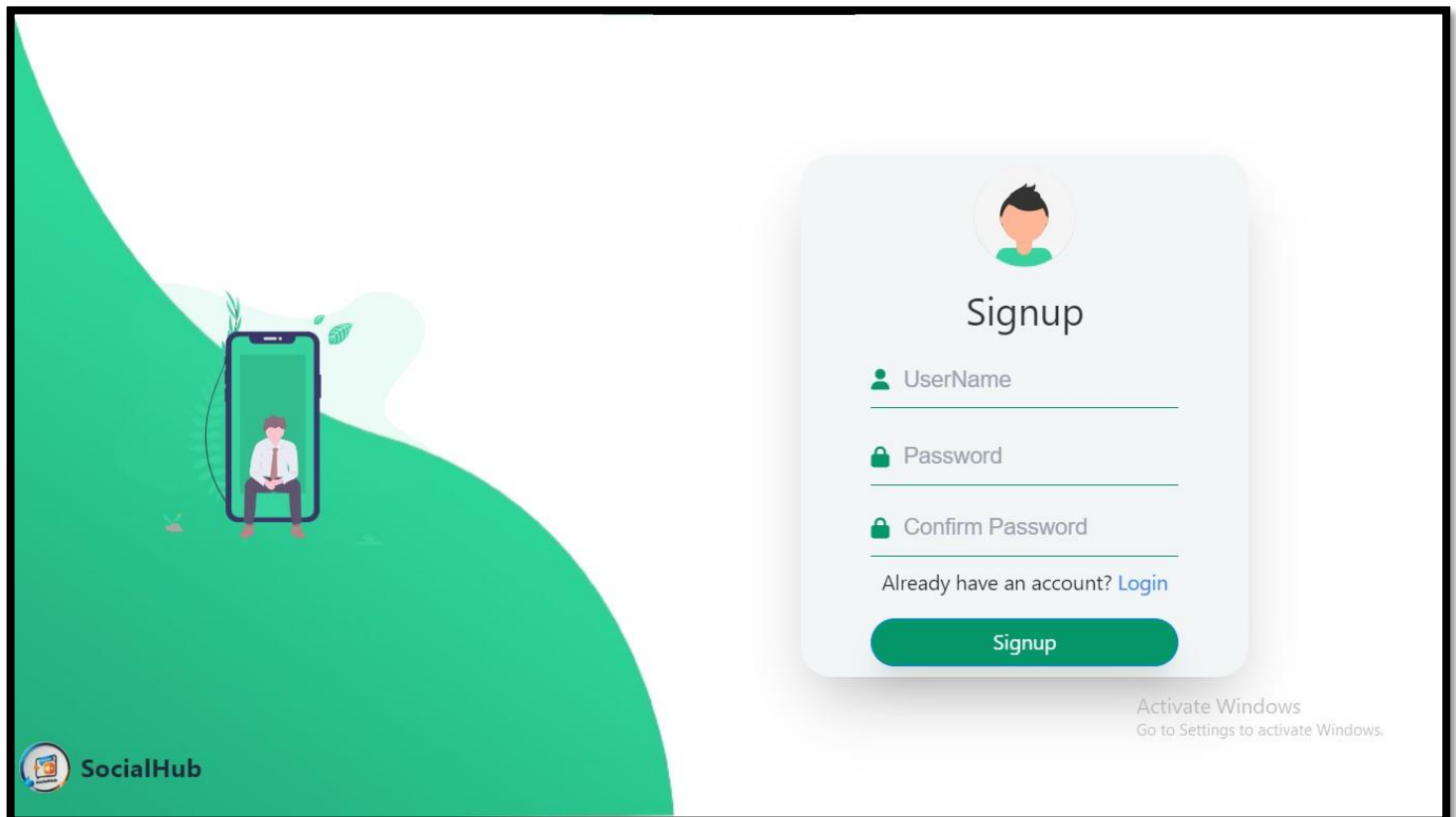
Posts Feed :-

SocialHub

krish
Sept. 15, 2024, 9:17 a.m.

View Friend

this is my work.

❤️ 2 Likes 🔖 saved

Edit Profile:-

Admin Side Design :-

Save Post Admin :-

9. Testing

In the **SocialHub** , testing is a crucial step to ensure the application is functioning as expected, providing accurate results, and offering a smooth experience for users . This section outlines the various types of testing that can be applied to SOCIALHUB to ensure its reliability and efficiency.

9.1 Software Testing

Software Testing in SOCIALHUB is a comprehensive process where the entire system is tested for functional correctness, reliability, and performance. The goal is to

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ensure that the system handles all required tasks, such as entering user details, generating post report, and viewing posts reports, without errors.

Key testing activities for SOCIALHUB include:

- **Functional Testing**: Verifying that all core functions, such as user details, generating post report, and viewing posts reports according to the requirements.
  - Example: Ensuring that when the admin enters details, the system calculates and stores profile correctly.
- **Non-Functional Testing**: Testing the system's performance, ensuring that it can handle multiple users and large datasets without slowdowns.
  - Example: Checking how the system performs during user data when multiple users are using it simultaneously.

9.2 Unit Testing

Unit Testing focuses on individual components or modules within the SOCIALHUB. Each function, such as useres sigup(registration), posts entry, or posts report generation, is tested in isolation to ensure that it operates correctly.

Key areas for unit testing in SOCIALHUB include:

- **Post like Calculation Module**: Ensuring that the system calculates the correct likes based on users likes.
- **user Data Entry**: Verifying that new user data is saved accurately in the database.
- **Report Generation**: Checking that the system generates accurate reports for users and admins without errors.

By running unit tests, the development team can catch bugs early, ensuring that each part of the system functions as expected before the modules are integrated.

9.3 System Testing :-

System Testing evaluates the entire SOCIALHUB in a fully integrated environment. The objective is to test the system's compliance with the specified requirements.

Key aspects of system testing include:

- **End-to-End Testing**: Checking the entire workflow, such as a student's journey from registration to result generation and report viewing.
  - Example: Testing whether a user can log in, view their posts,friends, and download their posts card without any issues.

- **Integration Testing**: Verifying that different modules (such as users data entry, posts calculation, and posts report generation) work together as intended.
- **Usability Testing**: Ensuring the system is user-friendly for both administrators (who input data) and users (who access the profile,add friends,view friends).

Overall, system testing ensures that the SOCIALHUB is ready for deployment.

10. References

Books:

1. **Pressman, R. S.** (2014). *Software Engineering: A Practitioner's Approach* (8th Edition). McGraw-Hill Education.
   - Focuses on software development processes, including unit, integration, and system testing for web-based applications.

2. **Somerville, I.** (2016). *Software Engineering* (10th Edition). Pearson.
   - Covers a broad range of software engineering topics, including software testing, system architecture, and quality assurance.

Websites:

3. **Guru99: Software Testing Tutorial**
   - URL: https://www.guru99.com/software-testing.html
   - A comprehensive resource on software testing methodologies, including unit testing, system testing, and integration testing, which are essential for developing a reliable SocialHub.

4. **Software Testing Help**
   - URL: https://www.softwaretestinghelp.com/
   - Offers detailed guides on various testing strategies, tools, and best practices, including for systems with databases like SOCIALHUB.

5. **Stack Overflow: Software Testing & Development**
   - URL: https://stackoverflow.com/
   - A platform for developers to find answers to common software testing and development questions. Many discussions are focused on practical implementation, including web-based systems.

6. **GeeksforGeeks: Software Engineering and Testing**
   - URL: https://www.geeksforgeeks.org/software-engineering/
   - Provides tutorials and articles about different phases of software engineering, including testing strategies that are highly relevant for systems like SOCIALHUB.

7. **DBDiagram: ERD Design Tool**
   - URL: https://dbdiagram.io/
   - A web-based tool that can be used to generate ER diagrams from SQL files. Useful for visualizing the data structure of SOCIALHUB during database design and testing.

Technology and Tools:

11.   **Django Documentation**
    - URL: https://docs.djangoproject.com/en/5.1/
    - Official documentation for Django, a common technology used in web development for projects like SOCIALHUB. Includes guidelines on testing django applications.

12.   **MongoDB Documentation**
    - URL: https://dev.mongoDB.com/doc/
    - Official documentation for MongoDB, providing insights into database management and queries, relevant for managing student results in a web application.

13.   **W3Schools:django MongoDB Tutorial**
    - URL: https://www.w3schools.com/python/python_mongodb_getstarted.as
    - A tutorial website offering guides for developing Django and MongoDB-based web applications. Ideal for developers building systems like SOCIALHUB with a MongoDB backend.