**Software Engineering Economics**

**Project Proposal**

**Project Domain: Social Media Website (MERN Stack)**

**Project Title: Social Hub**

**Group Members:**

**Naresh Kumar (K21-3840)**

**Ahmad Noor Khan (K21-3841)**

**Israr Ali (K21-3842)**

**Taha Jawaid (k21-3881)**

1. **Features to be Implemented:**
2. **User Authentication:**

Secure user authentication using Node.js and MongoDB for storage.

Sign up and log in functionality with email and password.

Authentication required for posting and viewing content.

1. **Content Posting:**

Users can create posts containing images and text.

Posted content is visible to all users on the platform.

Support for multimedia uploads with text descriptions.

1. **Profile Management:**

Users can manage their profiles, including updating profile pictures and personal information.

Customizable user profiles with details such as name, bio, and profile picture.

1. **Timeline Display:**

Implementation of a timeline to display the latest posts from all users.

Chronological order of posts to keep the timeline updated in real-time.

1. **User Interactions:**

Users can like and comment on posts.

Real-time updating of like and comment counts on posts.

Notifications for new likes and comments.

1. **Search and Filtering:**

Search functionality to find specific users or posts.

Filtering options for posts based on categories or tags.

1. **Responsive Design:**

Ensure a responsive user interface for various devices and screen sizes.

Utilization of CSS media queries, React.js queries, and responsive layout techniques.

1. **Error Handling and Logging:**

Implementation of error handling for graceful exception handling.

Logging of errors and debug information for troubleshooting and application stability.

1. **Performance Optimization:**

Optimization of page loading times.

Minimization of network requests for improved performance.

Implementation of lazy loading and caching techniques.

1. **Security Measures:**

Implementation of secure data storage for user credentials and posts.

Protection against common security vulnerabilities (e.g., cross-site scripting, cross-site request forgery).

1. **Project Workflow:**
2. **User Authentication Flow:**

New users sign up with their email and create a password.

Existing users log in using their email and password.

Authentication is required for posting and accessing personalized features.

1. **Content Posting Workflow:**

Users can create new posts with images and text.

Posted content is stored securely in the database.

Posts are displayed on the timeline for all users to see.

1. **User Interaction Workflow:**

Users can interact with posts by liking and commenting.

Real-time updates for likes and comments.

Notifications for new interactions.

1. **Profile Management Workflow:**

Users can update their profile information and profile pictures.

Customization options for personalizing user profiles.

1. **Search and Filtering Workflow:**

Users can search for specific users or posts.

Filtering options to narrow down posts based on categories or tags.

1. **Development Plan:**
2. **Backend Development:**

Set up a Node.js server using Express.

Connect to a MongoDB database for data storage.

Implement user authentication and authorization.

1. **Frontend Development:**

Create a React.js application for the user interface.

Design and implement components for user authentication, posting, and timeline display.

1. **Integration:**

Connect the frontend and backend components.

Implement data fetching and posting functionality.

1. **User Interaction and Notifications:**

Implement real-time updates for user interactions.

Integrate a notification system for new likes and comments.

1. **Search and Filtering Implementation:**

Develop search functionality for users and posts.

Implement filtering options for posts.

1. **Responsive Design and Optimization:**

Ensure responsive design for various devices.

Optimize performance through lazy loading, caching, and efficient data fetching.

1. **Security Measures Implementation:**

Implement secure storage of user credentials and posts.

Address common security vulnerabilities.

1. **Testing and Quality Assurance:**

Conduct thorough testing of the application.

Identify and fix bugs.

Ensure the security and stability of the application.

1. **Project Timeline:**

**Week 1-2**: Backend setup, user authentication, and database integration.

**Week 3-4:** Frontend development, including user interfaces for posting and timeline.

**Week 5-6:** Integration of frontend and backend components, testing data fetching and posting.

**Week 7-8:** Implementation of user interactions, notifications, and search functionalities.

**Week 9-10:** Responsive design, performance optimization, and security measures.

**Week 11-12**: Final testing, bug fixing, and documentation.

1. **Conclusion:**

Social Hub aims to create a user-friendly and secure social media platform where users can connect through multimedia posts. The project plan covers the entire development process, ensuring the implementation of key features and adherence to best practices in web development.