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Interim Report

Semester-IV

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Objectives of the Study

- To create a social media platform similar to Instagram that incorporates key features such as user sign-up, secure login, profile management, and the ability to share media posts.
- To leverage AWS cloud services for separately hosting both the frontend and backend, while efficiently managing user data and media content.
- To implement JWT-based authentication along with secure password hashing methods to enhance security.
- To independently deploy the frontend and backend on AWS EC2 instances, utilizing Route 53 for routing custom domains. CloudFront will not be used in this initial deployment phase.

Scope of the Study

The project scope includes:

- Developing a social media app that is responsive and emphasizes content created by users.
- Facilitating the creation of posts, sharing of images, users' liking and commenting on posts, and following other users.
- Utilizing AWS EC2 for hosting both the frontend and backend, while employing AWS S3 solely for image storage (if applicable).
- Securely hosting the backend on AWS EC2, with integration to MongoDB Atlas for scalable data management solutions.
- Not including features for real-time messaging or stories.

Methodology

Agile-based incremental development approach:

- Analyzing requirements and designing the user interface.
- Developing the frontend using React.js, incorporating routing and state management.
- Creating the backend with Express.js, utilizing JWT for authentication and RESTful APIs.
- Integrating with MongoDB Atlas for the storage of users and posts.
- Implementing secure image uploads via S3 (when applicable).
- Deploying on AWS EC2 with ongoing testing and version control.

Research Design

- **Frontend:** The frontend is a React application hosted on an AWS EC2 instance with secure API connections.
- **Backend:** The backend consists of a Node.js application using Express on AWS EC2, providing secured RESTful APIs.
- **Authentication:** User authentication is handled using JSON Web Tokens with hashed passwords (bcrypt).
- **Database:** A MongoDB Atlas cluster is linked to EC2 for the purpose of storing user information and post metadata.
- **Media Storage:** Media files are securely stored in AWS S3 buckets.
- **Content Delivery:** Currently, there is no CDN implemented; access is provided directly through the public IP/domain of EC2.
- **Routing & Domains:** Domain management is executed using AWS Route 53 for custom domains.

Data Collection Method

User-generated input is collected through:

- Forms for registration and login.
- Pages for editing user profiles.
- Interfaces for creating posts that allow both image uploads and text input.
- User interactions like likes and comments submitted through the interface.

Sampling Method

User testing was performed manually throughout the development process. No particular statistical sampling technique was applied. The emphasis was on confirming system functionality and user navigation.

Data Analysis Tools

- Postman: Utilized for checking backend endpoints.
- MongoDB Atlas GUI: Employed for managing and querying collections.
- AWS Console: Used for managing EC2, S3, and IAM.
- React DevTools & Chrome DevTools: Applied for debugging frontend components and API interactions.

Conclusion

This interim stage of the Instagram Clone project showcases the integration of cloud infrastructure with full-stack development. By utilizing AWS services alongside modern web technologies, the platform delivers a scalable, secure, and responsive social media experience. Notable features of this phase include independent EC2 deployments, secure authentication, and domain management through Route 53.