CSD3156 Cloud Group Project Proposal

CoSnap

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Project Proposal for CoSnap: A Cloud-Based Collaborative Image Gallery

Introduction

CoSnap aims to revolutionize the way we share memories by offering a cloud-hosted image gallery designed for collaborative use. This platform will enable users to upload, organize, and share photos effortlessly, making it an ideal tool for capturing moments together, whether during holiday trips, family gatherings, or collaborative projects. By leveraging cloud storage services, CoSnap provides a scalable, secure, and accessible environment for users to create groups, add members, and define tailored access permissions, fostering a community-centric sharing experience.

Project Description

CoSnap aims to provide a solution to the challenge of sharing and managing photos among different users. By utilizing a cloud-based architecture, the application ensures that users can access their photos from anywhere, at any time, without worrying about storage limitations on their personal devices. CoSnap will enable users to create galleries for specific events, add contributors, and control access permissions, simplifying photo sharing and collaboration.

Goals and Objectives

- To develop a user-friendly web-based image gallery that supports collaborative photo sharing.
- To implement robust access controls for managing user permissions within shared galleries.
- To ensure high availability and reliability of the service through cloud hosting.

Scope of Work

- Design and development of the CoSnap web application.
- Integration with cloud storage services for photo uploads and organization.
- Implementation of group features, including creation, membership management, and permission settings.
- Development of a secure authentication and authorization system for user accounts.

Project Objectives

- To develop CoSnap, a user-friendly, web-based image gallery that emphasizes collaboration and privacy.
- To enable users to seamlessly upload, organize, and share images within groups.
- To implement robust access controls, allowing users to specify view, upload, and delete permissions within their groups.
- To ensure high availability and reliability of the service through the use of cloud hosting solutions.

Target Audience

- Families and friends looking to share memories of events, holidays, and gatherings in a private, collaborative space.
- Organizations and clubs requiring a platform to share and manage images related to their activities or events.
- Photographers and artists seeking a collaborative space to share and receive feedback on their work.

System Architecture and Key Components

- **Frontend**: A responsive web application built using React.js, providing an intuitive user interface that is accessible on various devices.
- **Backend**: Node.js with Express.js framework, handling API requests, authentication, and interaction with cloud storage.
- **Database**: PostgreSQL for managing user data, group information, permissions, and image metadata.
- **Cloud Storage**: AWS S3 for efficient and secure storage of photos.
- **Authentication and Security**: Implementation of OAuth and JWT for secure user authentication and authorization.
- **Cloud Hosting**: Deployment on AWS Elastic Beanstalk for scalability and ease of management.

Features and Functionalities

- **User Authentication**: Secure sign-up and login process, ~~with support for social media logins.~~
- **Group Galleries**: Users can create groups, invite members, and manage group settings.
- **Access Permissions**: Group creators can set permissions for each member, controlling who can view, upload, or delete photos.
- **Photo Upload and Organization**: Easy-to-use upload functionality, with options for organizing photos into albums or tags.
- **Collaborative Features**: Tools for members to comment on photos, rate them, or suggest edits.

Milestones and Timeline

The project will be completed within a 3-week timeframe with the following milestones:

Week	Task	Objective
1	**Project Setup & Design**	**Initialize project, design UI/UX.**
2	**Development (Backend & Frontend)**	**Implement core functionalities.**
3	**Testing, Debugging, and Deployment**	**Finalize, test, and deploy the web application.**

Project Plan and Timeline

The development of CoSnap is planned over a 6-week period, divided into phases of planning, development, testing, and deployment.

Week 0: Planning and Design

- Requirements gathering and finalization.
- System architecture design and selection of cloud services.
- UI/UX design prototyping.

Week 1: Development

- Setup of cloud environment and development of backend services.
- Front-end development and integration with the backend.
- Database setup and integration with AWS S3 for photo storage.

Week 2: Testing

- Functional testing, UI/UX testing, and security testing.
- Performance optimization and bug fixing.

Week 3: Deployment and Launch

- Final deployment to AWS Elastic Beanstalk.
- Launch and monitoring of application performance.

Week 1: Project Setup & Design

- **Programmer 1 (Lead Developer)**: Set up project repository, define coding standards, and oversee initial project setup on AWS. Begin backend setup with Node.js and Express.js.
- **Programmer 2 (Frontend Developer)**: Start designing the UI/UX of CloudPics using React.js, focusing on responsive design for cross-device compatibility.
- **Programmer 3 (Backend Developer)**: Work with Programmer 1 to set up the backend architecture, focusing on API development for user authentication and image upload functionalities.
- **Programmer 4 (Database Specialist)**: Set up SQL, design database schema for user data, groups, and permissions.
- **Programmer 5 (Cloud Specialist)**: Begin integration with AWS S3 for image storage, setting up buckets and ensuring secure access control.

Week 2: Development (Backend & Frontend)

- **Programmer 1**: Continue developing and refining the backend, focusing on group management and permissions logic.
- **Programmer 2**: Implement the frontend interfaces for gallery viewing, image upload, group creation, and user settings based on the initial designs.
- **Programmer 3**: Develop the RESTful API endpoints for all frontend functionalities, ensuring smooth data flow between the frontend and backend.
- **Programmer 4**: Optimize database interactions for performance and scalability, implement queries for efficient data retrieval.
- **Programmer 5**: Finalize AWS S3 integration, set up AWS Elastic Beanstalk for deployment, and ensure proper configuration for scalability and security.

Week 3: Testing, Debugging, and Deployment

- **Programmer 1**: Oversee the integration of frontend and backend components, assist with debugging and testing.
- **Programmer 2**: Conduct thorough UI/UX testing across different devices and browsers, refine designs based on feedback.
- **Programmer 3**: Test all API endpoints, ensure security and reliability of data transmission.
- **Programmer 4**: Implement final database optimizations, conduct stress tests to ensure scalability.
- **Programmer 5**: Ensure deployment readiness, perform final security checks on cloud configurations, and assist with launching the application.

This detailed breakdown ensures that each programmer has a clear understanding of their responsibilities and contributes effectively to the project's success. Regular team meetings will be scheduled to discuss progress, address challenges, and ensure that the project remains on track for completion within the allocated timeframe.

Conclusion

CoSnap represents an innovative approach to photo sharing and collaboration, offering a secure, scalable, and user-friendly platform for shared photo experiences. Through the integration of cloud technologies and a focus on community-driven features, By focusing on user experience, privacy, and community engagement, CoSnap is poised to become a go-to platform for anyone looking to share their memories in a meaningful way. This project proposal outlines a clear path towards creating a secure, scalable, and user-friendly platform that meets the modern user's needs.