

Architecture Document

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1. Introduction and Overview:

Music Streaming Application is a freeware Application/Website which is currently Live at [], the audience of the Steaming Application is those who love to hear their own music playlist because in this website you can create your own playlist and upload your song which you might want to listen next time and the best part is that you can also share the specific song with your mate, you can like the music you love and add them to your favorite list.

2. System Architecture:

- Provide an overview of the high-level architecture of the system, including its components and how they interact with each other.
- Describe the client-server architecture, where the web application acts as the client and communicates with backend servers to fetch and stream music.

3. Frontend and Backend Architecture:

This application uses React, Zuatang, and TailwindCSS as frontend and backend technologies. It also uses Next-JS which has its own methods for fetching data and does not need any backend.

4. Streaming Infrastructure:

- For audio streaming, our Music Streaming Application utilizes Supabase as the storage database solution.
- Supabase is a powerful platform that provides a combination of database and storage services, making it ideal for handling the storage and retrieval of audio files for our music streaming service.
- With Supabase, we can efficiently store and manage user-uploaded songs, playlists, and music metadata, ensuring our users' smooth and seamless experience.
- The integration of Supabase as our storage database enables us to deliver a reliable and scalable music streaming service, providing users with a vast collection of songs accessible at their fingertips.

5. User Authentication and Authorization:

- - Our Music Streaming Application utilizes Clerk to ensure secure user authentication.
- Clerk is a robust authentication and identity management solution that offers a variety of authentication mechanisms, including OAuth, JWT, and password less logins.

- With Clerk, users can sign up, log in, and reset their passwords securely, making the authentication process seamless and user-friendly.
- Additionally, Clerk allows us to manage user access permissions effectively. We can define roles and permissions to control user access to various features and functionalities within the application.
- By leveraging Clerk's capabilities, we ensure that our users' accounts are protected, their data is secure, and they have a smooth and hassle-free experience while using our music streaming service.

6. Scalability and Performance:

- Our Music Streaming Application is designed with scalability and performance in mind. As user traffic increases, our system automatically scales its resources to accommodate the growing user base. This ensures that our application continues to perform optimally, delivering a smooth and enjoyable music streaming experience for all users. Our ongoing monitoring and optimization efforts help maintain excellent performance levels, ensuring our app works fine even with increased usage.

7. Security:

- Detail the security measures in place to protect user data, prevent unauthorized access, and guard against common web vulnerabilities.

8. Deployment and Hosting:

Our Music Streaming Application is currently hosted on Vercel, a cloud-based hosting platform known for its simplicity and scalability. The deployment process involves pushing updates to our code repository, and Vercel automatically builds and deploys the latest version of our application.

Vercel offers seamless integration with Next.js, our chosen framework, allowing us to take advantage of its server-side rendering capabilities for improved performance. Additionally, Vercel's global content delivery network (CDN) ensures that users worldwide can access the application with low latency and fast loading times.

By leveraging Vercel's cloud-based infrastructure, we can easily handle increased traffic and efficiently manage the hosting environment. This setup ensures a reliable and responsive music streaming experience for our users on the Sound Vibe Lemon application hosted at the following link:

<https://sound-vibe-lemon.vercel.app/>

Vercel's scalability, performance, and ease of deployment enable us to focus on delivering the best music streaming experience to our users without worrying about infrastructure management.

9. Third-party Integrations:

- As part of our Music Streaming Application, we have integrated the following third-party APIs and services:

1. **Clerk:** We use Clerk for user authentication and identity management. Clerk provides various authentication mechanisms, including OAuth and password-less logins, ensuring secure and hassle-free user authentication.
2. **Vercel:** Our application is hosted on Vercel, a cloud-based hosting platform. Vercel offers seamless integration with Next.js, our chosen framework, providing server-side rendering capabilities and a global content delivery network (CDN) for optimal performance.

10. Future Improvements and Roadmap:

As an internship project, it's essential to identify potential areas for future improvements and upgrades to showcase your understanding of the project's scalability and long-term potential. Here's a plan for future enhancements and a roadmap for your Music Streaming Application:

- User Profiles and Social Features:
- Music Recommendations and Personalized Playlists:
- Advanced Search and Filters:
- Offline Listening and Downloads:
- Playlist Collaboration and Sharing:
- Social Media Integration:
- Lyrics and Song Information:
- Podcasts and Audio Content:
- Multiple User Authentication Providers:
- Continuous Performance Optimization:
- Integration with Music Licensing and Rights Management:
- User Feedback and Analytics: