

The system design of our health monitoring application integrates various technologies to ensure seamless data flow, user interaction, and administrative control. Here's a detailed explanation of the key components and technologies:

Electronic Data Capture Web Application (Kinexus Client):

- The Kinexus web application is the primary interface for doctors to access and manage patient data.
- **Framework:** Built using the React framework for a responsive and dynamic user interface.

Server-Side (Kinexus-api):

- **Role:** Acts as the server-side application responsible for handling requests and managing data flow.
- **Communication with React App:** Handles requests from the Kinexus web application for tasks such as patient enrollment, deletion, and data monitoring.
- **AWS Lambda Integration:** Invokes AWS Lambda functions to fetch and process data from the AWS RDS database. This ensures efficient and scalable serverless computing.
- **Nodemailer Integration:** Utilizes Nodemailer for email communication. Sends notifications to patients for data uploads and 'magic links' for doctor login verification.

AWS RDS:

- **Database Storage:** Stores structured patient data, facilitating efficient retrieval and management.

AWS Lambda Functions:

- **Role:** Invoked by the server-side application to perform specific tasks, such as fetching and updating patient data.
- **Integration with RDS:** Fetches and updates patient data in the AWS RDS database.

iOS Mobile Application:

- **Purpose:** Allows patients to upload their health data conveniently.
- **Integration with Apple HealthKit API:** Utilizes the Apple HealthKit API to collect patient health data directly from the iOS device.

AWS Amplify:

- **Hosting the Electronic Data Capture Application:** The Kinexus web application is hosted using AWS Amplify, providing hosting services.

General System Design:

1. **Doctor-Patient Interaction:**

- Doctors interact with the Kinexus web application to manage patient data.
- Patient data is collected through the iOS mobile application.

2. **Data Flow:**

- Kinexus-API processes requests from the Kinexus web application.
- Patient data from the iOS app is fetched via the Apple HealthKit API.
- AWS Lambda functions to handle data processing, interacting with the AWS RDS database.

3. **Communication:**

- Nodemailer facilitates communication by sending notifications to patients and 'magic links' for doctor verification.

4. **Scalability and Hosting:**

- AWS Amplify ensures scalability by hosting the Kinexus web application.

By using these technologies, the system provides a robust and efficient platform for doctors to monitor patient data, patients to conveniently upload health information, and seamless integration between the web and mobile applications. The use of AWS services ensures scalability, reliability, and efficient handling of data transactions.