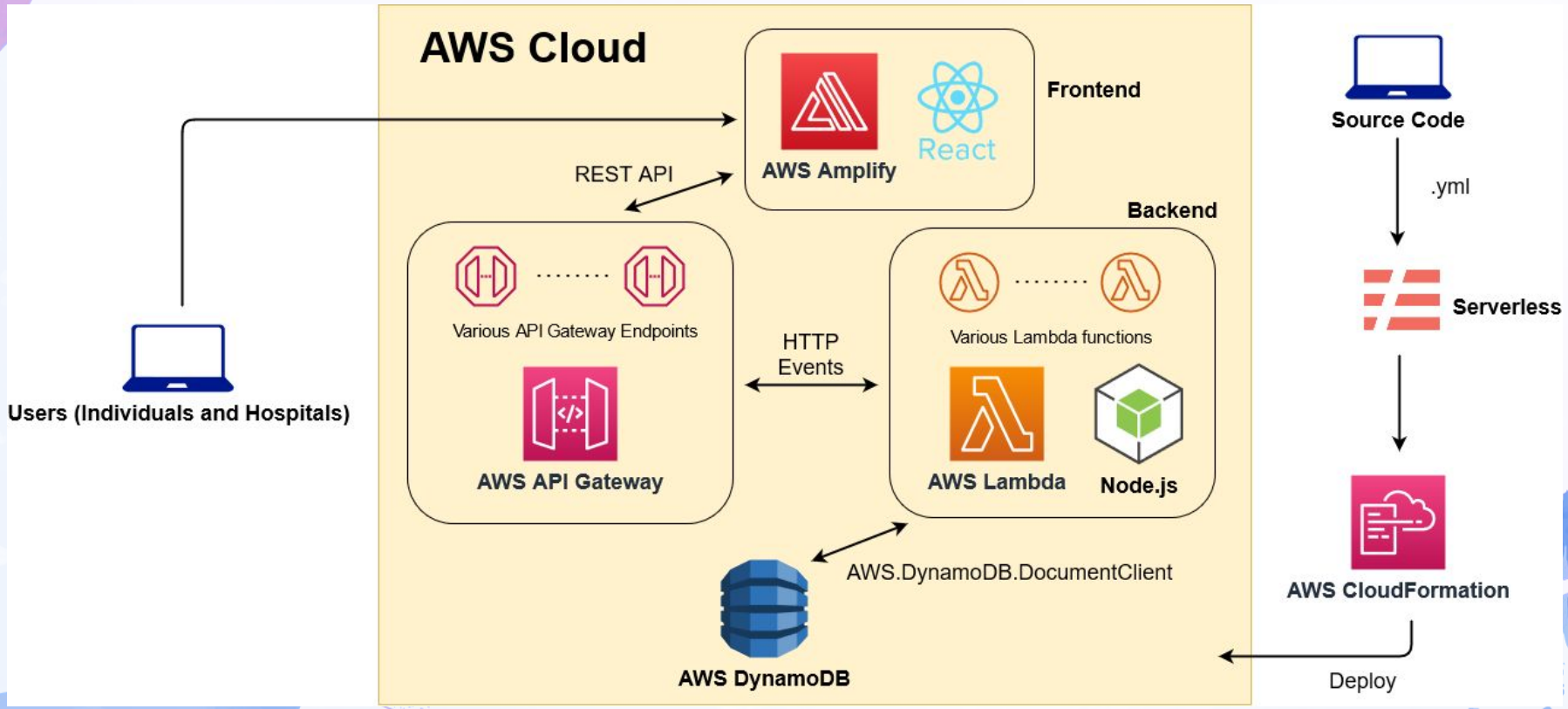
Blood Management System

Kevin Jiang & Crystal Wang
ECE 465 Cloud Computing

Purpose

- SaaS application to facilitate blood bag collection & distribution
- Distributed, scalable full-stack software
- A common communication system between hospitals
- Allow individuals access to more information
- Serverless backend allows for flexible and efficient service

System Overview



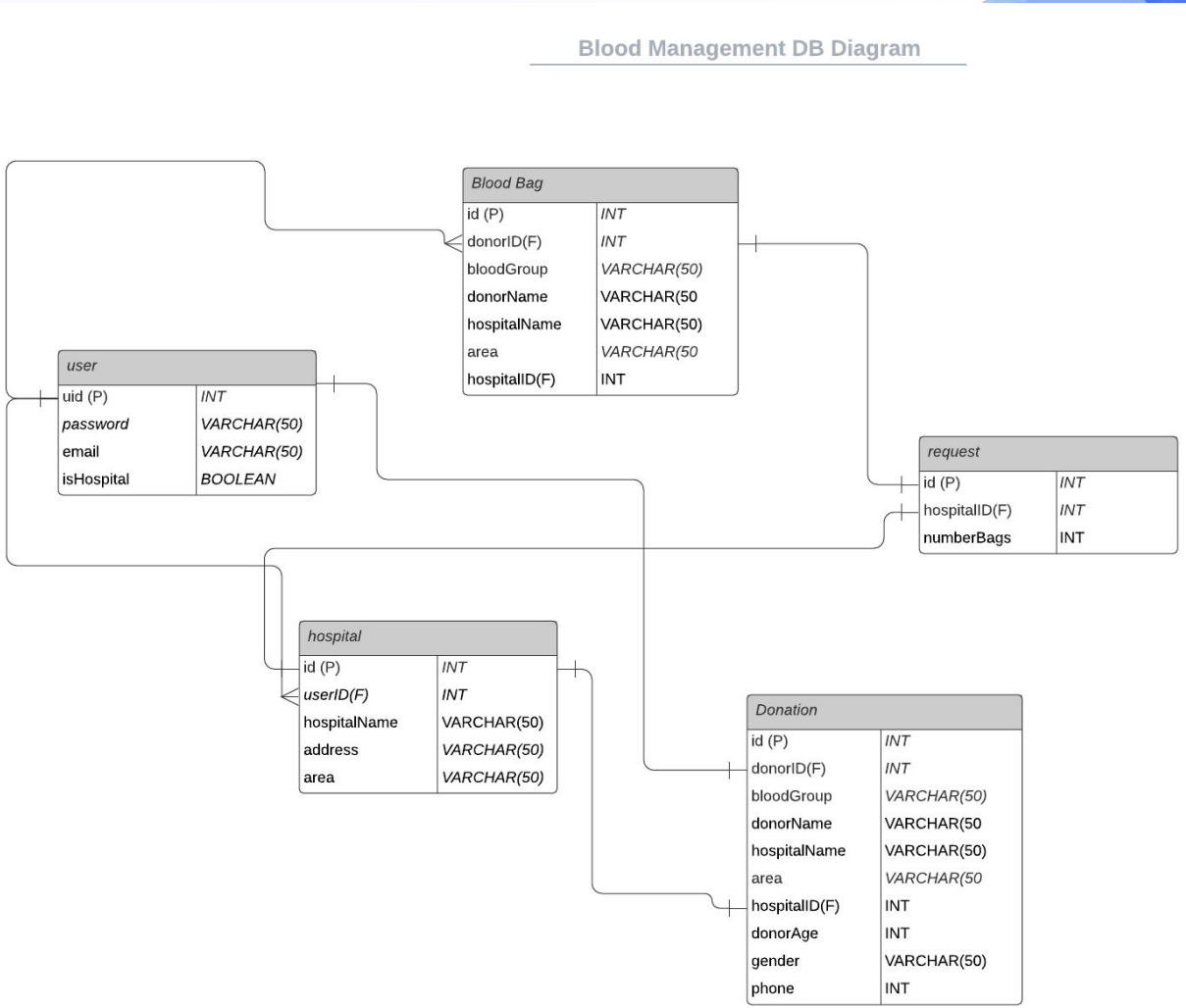
Database

DynamoDB, NoSQL

Multiple tables for different kinds of data

V1 UUID for primary key of each item

Data distributed in cloud, scalable and quickly accessible



Backend

Lambda functions written using Node.js

HTTP events

Separate functions for individuals/hospitals

Access DynamoDB services with AWS.DynamoDB.DocumentClient class from AWS SDK for JS

Functions include sorting and recommending algorithms before sending data to API endpoint.

Serverless Framework

Deploy all necessary Lambda functions and resources (S3, DynamoDB, IAM, etc.) onto Cloud

.yml configuration file for CloudFormation

Testing

Populate database with generated data and shell script

Some Lambda functions purely for populating and testing

Frontend

React on AWS Amplify

- API Gateway creates HTTP endpoints on the cloud
- React interact with the endpoint using the function fetch
- AWS amplify ensures a static hosting of the web pages

Functionalities

Individual Donor/Request

- View all blood bag availability
- Request blood bags
- Filter by blood type
- Register blood donation
- Recommendation algorithm to select the hospital in need for donation
- View appointments for donations & Requested blood bags

Hospital/Donation Center

- View blood bag availability with donor information for each center
- Filter by blood type
- Post urgent request for more blood bags
- Receive broadcasted urgent request from other hospitals
- View donor appointments at each hospital

Live Demo