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Objectives

Motivation: Credit card fraud is at an all time high due to popularity of cyber retail making ID checks difficult. Current online payment systems often only use username/password and e-mail authentication. PayTel adds biometric authentication to increase security.

Purpose: To create a system for secure transactions utilizing front-facing mobile cameras to perform facial recognition as well as fingerprint and username/password authentication.

System: Web portal and database for managing transactions and users, and a mobile app for users to perform secure transactions with other users.

Security

First Level: Valid Google login required for account.

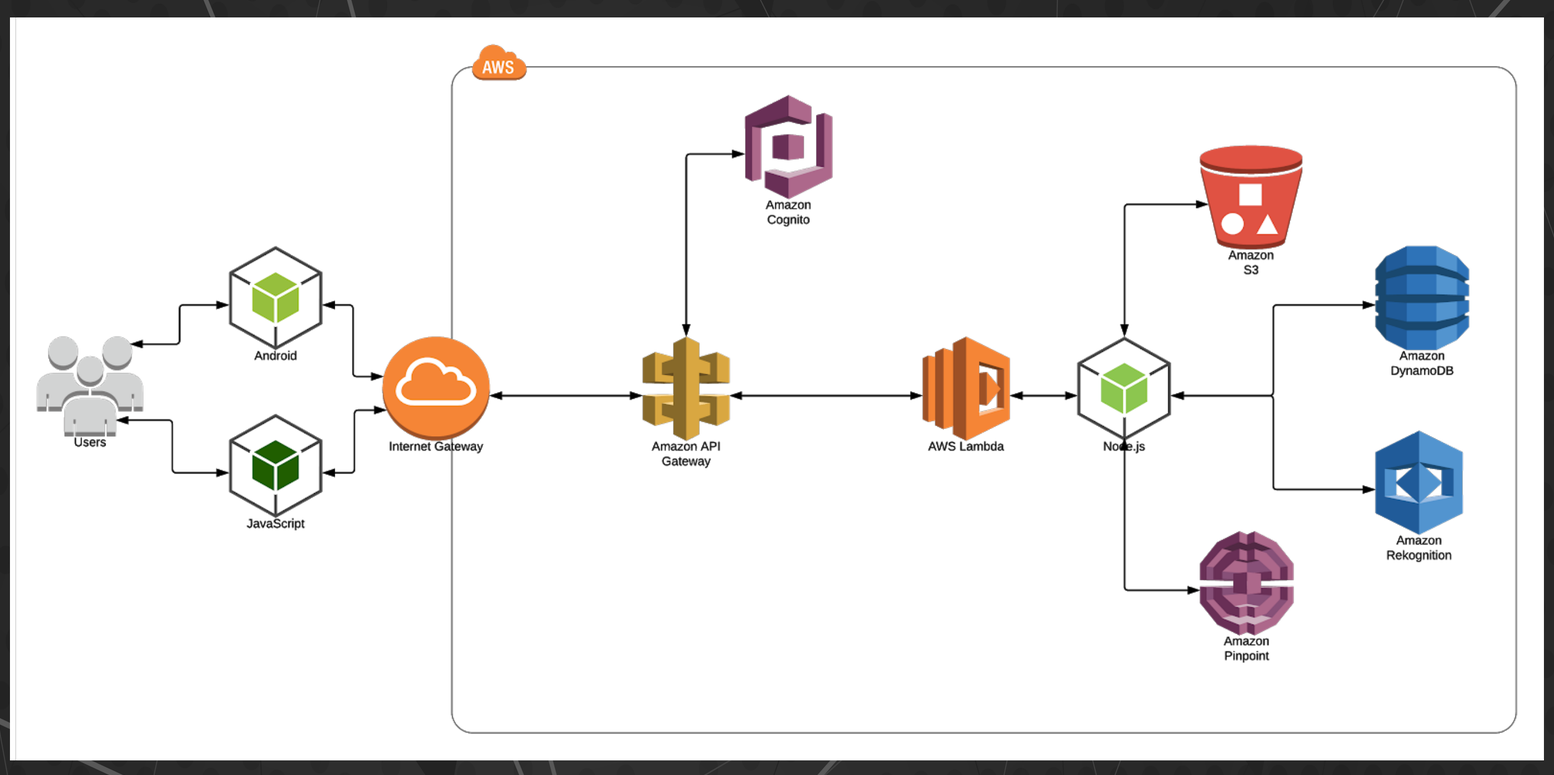
Second Level: Facial recognition check requiring a random specific pose to be performed.

Third Level: Fingerprint authentication for transaction verification.

Issues: Possible for pictures of a person to be used for facial verification, but random pose requirement helps to mitigate

Backend: All connections to the backend are encrypted .

Backend System Design



Cognito: Secure user login from various sources

Rekognition: AI driven facial rekognition

API Gateway / Lambda: Serverless computing

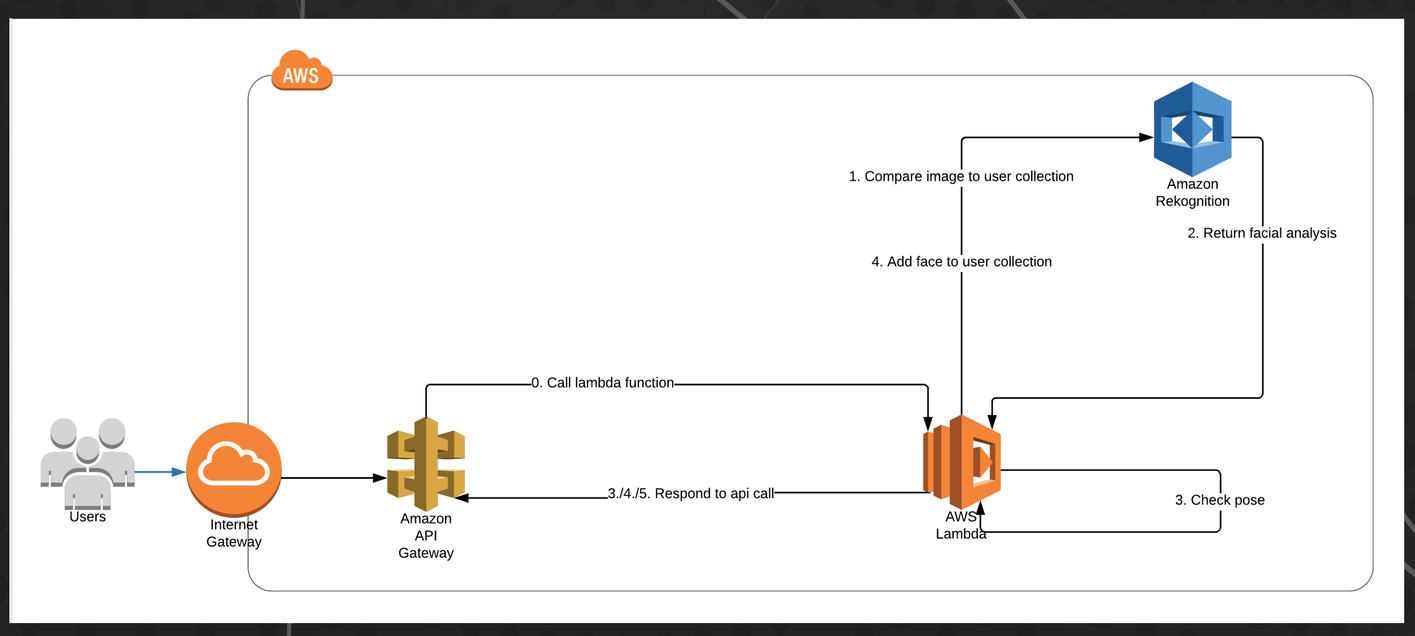
DynamoDB / S3: NoSQL database and object storage

Testing

Data Selection:
- Edge case data(depositing a non-positive amount of money)
- Duplicate data (creating a username that exists),
- Data of conflicting data types

Unit Testing:
- Unit testing was done as development progressed
- Tracking utilizing the Android emulators recording feature

System:
- Done using the black box method



Collaboration Tools & software

Facial Rekognition

Emotions

DISGUSTED HAPPY SURPRISED
ANGRY CONFUSED CALM SAD

FaceDetails

EYES OPEN MOUTH OPEN SMILE