Watch Smarts

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Hardware

Explanation

Our smartwatch is a collaboration between health-computing, computer security, and portable hardware. The goal was to create a device that could effectively measure heart-rate while providing the wireless capabilities that all smart devices have. We have mostly achieved this goal, with exception to the physical implementation of the heart-beat sensor. This small roadblock was due to late shipments because COVID-19 and faulty hardware, but the software works perfectly.

Application

Video Demo

Basic Principles

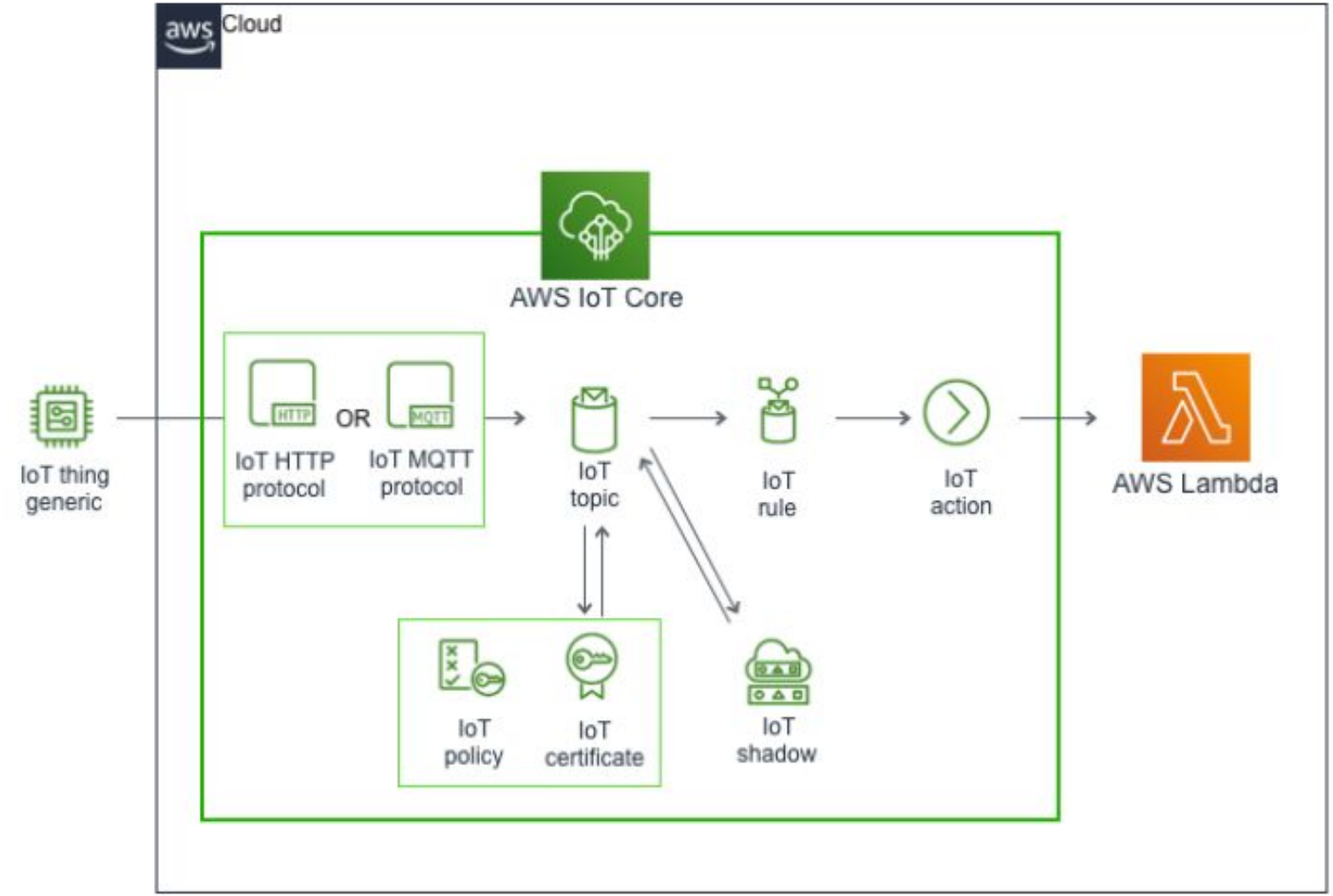
- Detect a panic attack
- Give the user options to help calm down
- 3 available options
  - Guided Breathing
  - Mindfulness Exercise
  - Forced Focus

Details

- Supposed to use heart rate monitor to detect panic attack
- Instead use buttons on watch
- Written in Arduino code
- Use watch face to give selections and walk through calming exercises

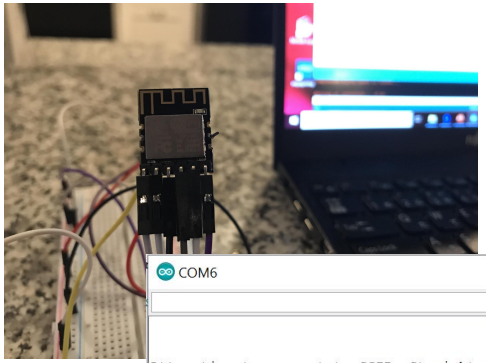
Video Demo - Website

Cloud


aws Cloud
AWS IoT Core
IoT thing generic
HTTP
IoT HTTP protocol
OR
MQTT
IoT MQTT protocol
IoT topic
IoT rule
IoT action
AWS Lambda
IoT policy
IoT certificate
IoT shadow

Making connection between ESP8285 with AWS IoT

WiFi Chip ESP8285

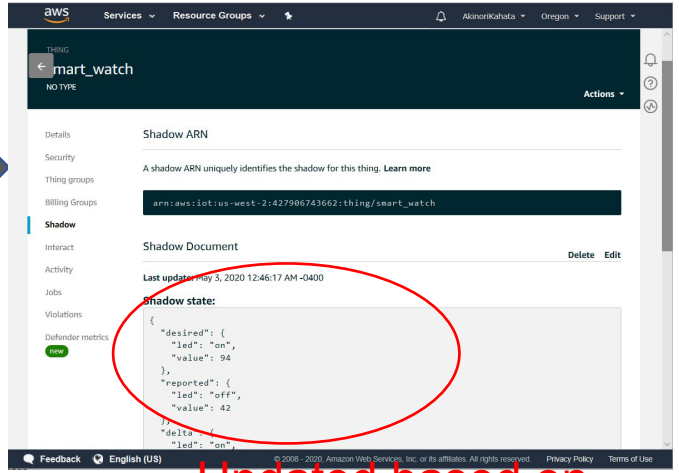


MQTT Protocol

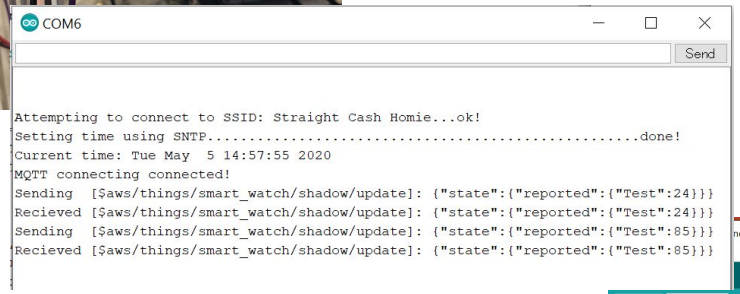
With SSL

AWS IoT Core

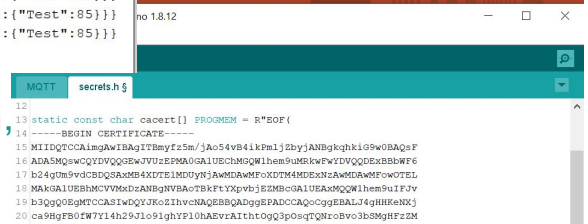
f.e. Device Shadow



Updated based on Device's information

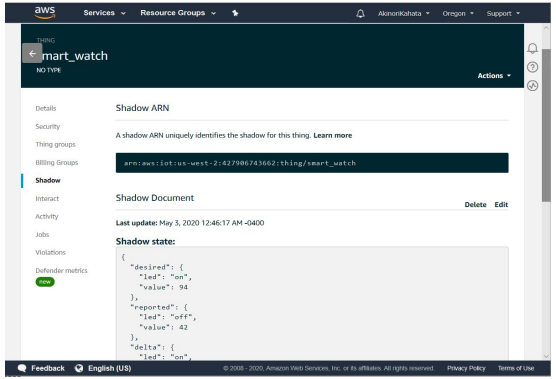


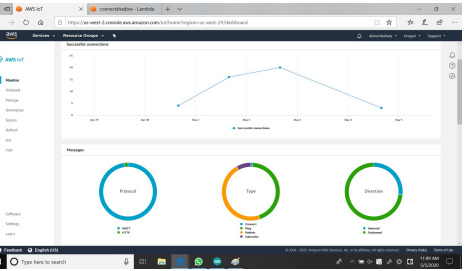
AWS IoT Provides the Certification,
and I set this to program



We can use AWS resources by using Lambda

AWS IoT Shadow





We can check the connection at IoT core

AWS provide S3 Default Encryption for S3 Buckets

AWS Lambda

Amazon Simple Storage Service

Amazon DynamoDB

- Program execution environment
- A lot of usage

(One Example)

- Extract the message from IoT Shadow
- Make the file
- Upload the Storage