FitBit Health Tracker

DEC 1610

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UnityPoint Health - Client

Introduction

The main objective of this project is to aggregate data from various wearable devices, such as FitBit and Apple Watch, via an IPhone/Web application to allow for analysis by healthcare professionals without requiring patients to physically meet with their healthcare providers. This is important because one of the largest costs to healthcare providers is when patients set up face to face appointments frequently. Allowing healthcare professionals to monitor and assess a patient's medical data remotely will ideally cut down on this cost.

To do this, data must be able to integrate with Electronic Medical Records. The solution we came up with was to record wearable data from the IPhone for Apple Watch and implement a way for users to acquire their FitBit data through the IPhone or Web application using the public FitBit APIs. We created a REST API web application to store and format the wearable data for further processing (trends) and future retrieval. Our secondary objectives included improving upon the the UI/UX of the IPhone application as well as implementing additional authentication possibilities, such as Facebook and Google.

To improve the UX we did some research on current wearable applications and modeled our screens with those designs in mind. The UI of the IPhone application was designed using Unity Point style and color standards.

Intended Users and Uses

- Users include patients, healthcare providers, and administrators
- Patients are able to view health data over a period of time understand their health.
- Healthcare providers can view patient records at a glance to reduce time it takes to provide care.
- Adminstrators have access to system to verify reliability and push releases

Platform

Angular, Node.js, MongoDB, Spring by Pivotal, iOS

Functional Requirements

- User with FitBit account can authenticeticate with FitBit developer API
- Retrieve user data based on health metric, such as heart rate, steps, calories, sleep, and weight
- Query health metrics based on date.
- Store user's historical data as JSON.

Requests Make requests to the FitBit API

Run Query `/body/log/weight/date/2016-03-01/1m.json`


```
{
  "weight": [
    {
      "bmi": 27.46,
      "date": "2016-02-22",
      "logId": 1456185599000,
      "source": "API",
      "time": "23:59:59",
      "weight": 165
    },
    {
      "bmi": 27.46,
      "date": "2016-02-24",
      "logId": 1456358399000,
      "source": "Web",
      "time": "23:59:59",
      "weight": 165
    }
  ]
}
```

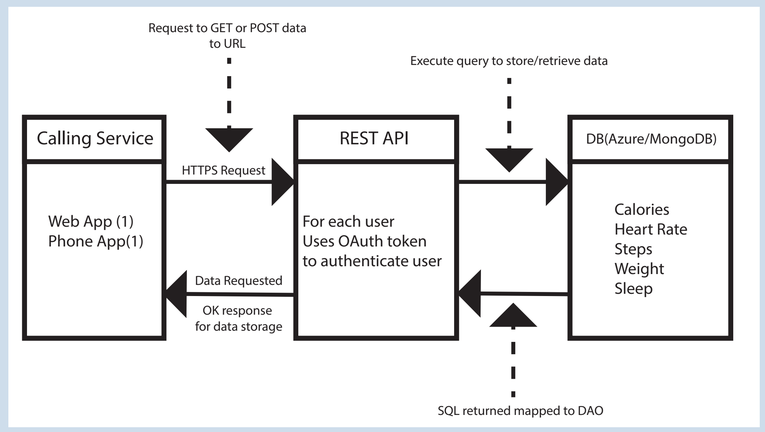

Non-Functional Requirements

- Only authenticated FitBit user can view app.
- Allow multiple users to login.
- Display data in visually appealing manner in accordance with UnityPoint standards
- NodeJS and SpringBoot are widely supported

Cardio Over the past 30 days

59	67	62
Min Heart Rate	Max Heart Rate	Average Heart Rate

Zone Minutes/Day

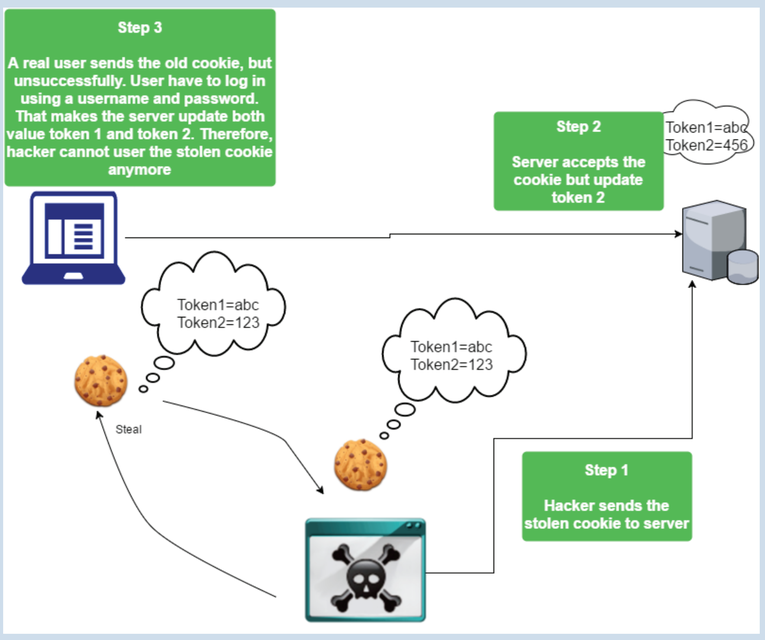


Testing

- Continuous Integration with GitHub and pull requests
- Angular Service Testing with Jasmine
- Agile Methodology

Technical Difficulties/Obstacles

- Unable to acquire some device API's eg Garmin.
- Could not access UnityPoint's database.
- FitBit and Healthkit data non relational
- iPhone app development requires a mac machine



Moving Forward

- Integrate iOS app with Node Server
- Gather more data on several FitBit users and clients
- Demonstrate this tool to a care provider and gather feedback
- Improve UI components to better display patient data