U14: TravSafe – Travel and Safety Guide

Project Advisor: Ahmed Banafa

Computer Engineering Department

Daniel, Saneel (BS Software Engineering) Patel, Shubham (BS Computer Engineering) Samavedam, Rohan (BS Software Engineering)

Introduction

Due to the COVID-19, travels are restricted at most of the places around the world. People often lack a clear advisory rating on the safety information when traveling to a destination. There are other dangers like protests, bad weather, wildfires, and political issues that might impact travel. It is important for travelers to understand the safety ratings for destination. There are very few existing apps in this domain that integrates travel and safety information. TravSafe is a travel and safety guide mobile application to enable users worldwide to understand the risks their destination possess.

Figure 1. TravSafe App Logo

The objective of TravSafe mobile application is to help travelers with an informed decision ensuring safe and healthy travels. TravSafe app will provide users with travel advisory ratings out 5 and also provide real-time COVID-19 statistics to get real-time data and safety information for different geographic locations worldwide. In addition, it will also provide them with weather, crime, and COVID news to better plan their travels.

Methodology

Project Architecture

TravSafe follows Microservice Architecture. Different functionalities of TravSafe are categorized into small individual microservices which are developed, tested, and deployed independently. Each of these services is responsible for a discrete task and can communicate with other services and databases through APIs.

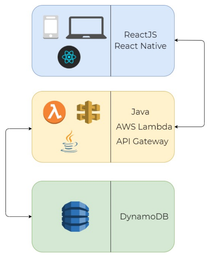

Figure 2. Architecture diagram

The diagram above illustrates the services that builds our app and how they interact with each other at a high-level. The frontend for our application is built using React Native and our backed is deployed on AWS Cloud.

Methodology

Low Level Architecture

The diagram below illustrates the services that will make up our app and how they interact with each other at a low-level.

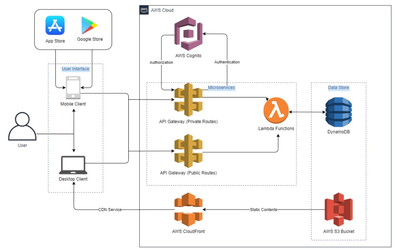

Figure 3. Low Level Architecture diagram

Component Design

1. Home Screen

The launch screen of our app has been designed to provided access to everyone without creating an account or signing in. It prompts the user to enter a destination that they want to travel to or look up for the safety information.

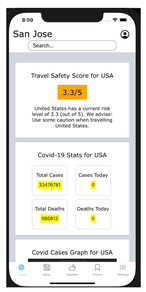

Figure 4. Home Screen 1

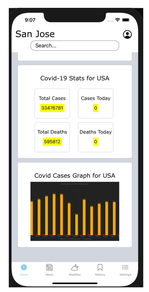

Figure 5. Home Screen 2

2. News Screen

The news feature provide users with latest news. It is based on the destination that the user searched for. It is divided into two sections. Crime tab provides users with news related to crime and danger. Covid tab provides all latest news related to covid.

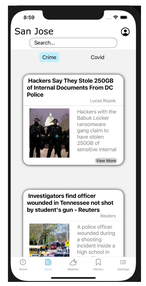

Figure 6. Crime News Tab

Figure 7. Covid News Tab

3. Weather Screen

The weather feature provides the updated and real-time weather information for the user destination. It also shows the prediction for the next 7 days.

Figure 8. Weather Screen 1

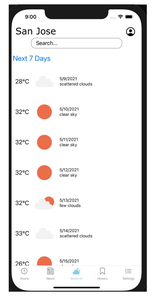

Figure 9. Weather Screen 2

4. History Screen

The history screen has been built to provide users with customized experience. It shows users their previous searches with the past travel safety score. It has a sign up and sign in screen where users can create an account.

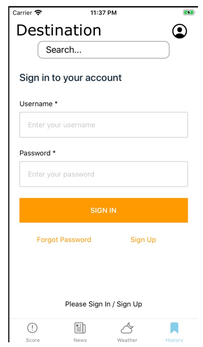

Figure 10. Sign In Screen History Tab

Deployment

1. Mobile

The front-end of the application is primarily a mobile application that is accessible from both iOS and Android platforms. We have used React Native as the primary technology for the front-end development. For the back-end development of our TravSafe application, we are using a set of AWS tools and services to set up a backend to enable data, authentication, storage capabilities, and deployment.

2. Microservices

We are utilizing AWS microservices to build the features of our application. Primarily, we are using AWS Amplify to deploy our app with its set tools and services to set up the backend. For storing user data and providing better user experience, we are using DynamoDB which is a NoSQL key-value database. We are implementing Cognito authentication into our app for user sign in and sign up.

To create and publish our APIs, we are using API Gateway. We are also utilizing AWS Lambda functions to run our code and fetch the functions response. These different services help us to monitor the application centrally.

To fetch reliable data, news, and information, we are utilizing open-source APIs to locate any potential health risks for a particular destination.

Using different services of AWS gave us an exposure to scale our application using cloud features.

Future Work

Performance

We would like to provide increased user experience to our app users by enhancing the backend infrastructure. If the scale of our app is increased, we will have to optimize our code and the resources to improve the application performance for Android and iOS users. We will also use fewer API requests that are required to fetch the resources for different pages. We will split up the data loading so that it improves the app performance. Different performance monitoring tools will help us to identify and increase our mobile app efficiency.

User Experience

To enhance user experience of our app, we could further implement additional functionalities. This includes scaling the app to provide real time alerts to the users. TravSafe has the potential to alert commuters for dangers along their routes so users can take an alternative route. We would also like to add flights and hotels functionality to make TravSafe a full integrated travel app for all users. We also plan to include tourist guides too better assist travelers through navigation.

In terms of application interface accessibility, we can make our interface more robust in terms of the design infrastructure. We would like to provide users with two different theme options for the app: dark mode or light mode.

Acknowledgements

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