



Weather Ways: A weather and navigation application A Multidisciplinary Project

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Introduction

The objective of this project is to create an application which will provide information regarding weather and route tracking for the user while traveling.

This application aims to provide relevant weather information in a concise and helpful way. The goal is to allow users to make informed decisions about weather conditions so that long road trips are safer and less hectic.

Purpose

According to a AAA travel survey in 2019, approximately 100 million U.S adults were planning on taking a family vacation. Of these 100 million, around 53% planned on taking a road trip(Hall).

Weather conditions can change and turn hazardous very quickly, and these updates can be difficult for people to be aware of while driving. Certain conditions, such as a tornado, pose a very high risk of danger throughout a large area, and without updates drivers may be unaware.

Lighter weather conditions may also prove dangerous to travelers. Unexpected rain or snow can be stressful and downright dangerous to both inexperienced and experienced drivers.

Methods for Client development

The map view of the application must allow the user to create a route, generating weather data along the route simultaneously. Marker information will be placed in the database upon a successful server call. The route weather page should display limited weather information for each marker along the route. The specific location page should display a wider range of weather attributes on a single location. This page will be accessed through selecting individual markers. Google API's maps, geocoding, directions, and distance matrix will be required, as well as the Volley API for simple requests.

Methods for Server development

The database must hold information, for example: User identification, marker identification, latitude, longitude, location, user's arrival time, temperature, and the precipitation chance.
The server must be able to facilitate communication between both the database, the client, and OpenWeather. Providing the database with information about the routes the user will be tracking as well as live weather data from the OpenWeather API. The server must also be able to provide requested information back to the client.

Results

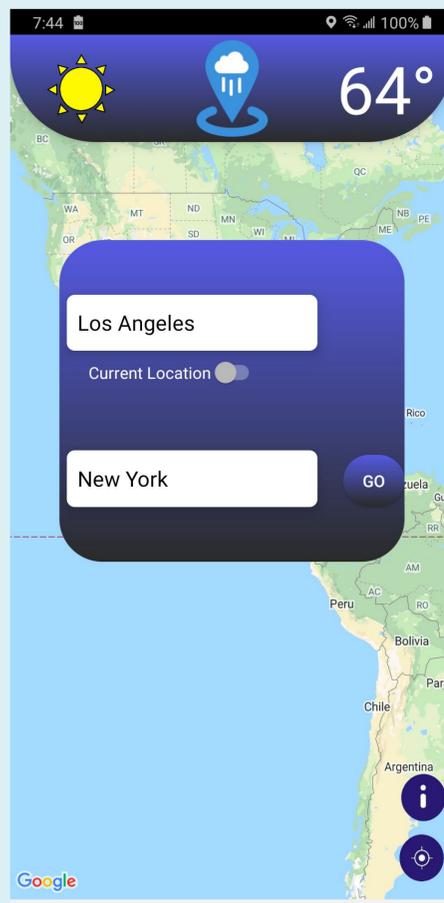
Server-database communication is in place as well as server-client communication. This allows the client to create and update markers in the database. The server also communicates with the OpenWeather API to get live weather data. This data is interpreted into the temperature and precipitation fields in the database that can be accessed as the client requests it. This information is updated at every marker-update request made by the client to keep the information in the database as accurate as possible.

The client application has three main pages. The initial page is a Google Maps API page in which the user may create a route. The list page is a page which displays the name, temperature, precipitation chance, and wind speed of locations along the route. The user may tap these items to access the detailed view of the location. The detailed page includes further weather information on the selected markers, including a description and humidity.

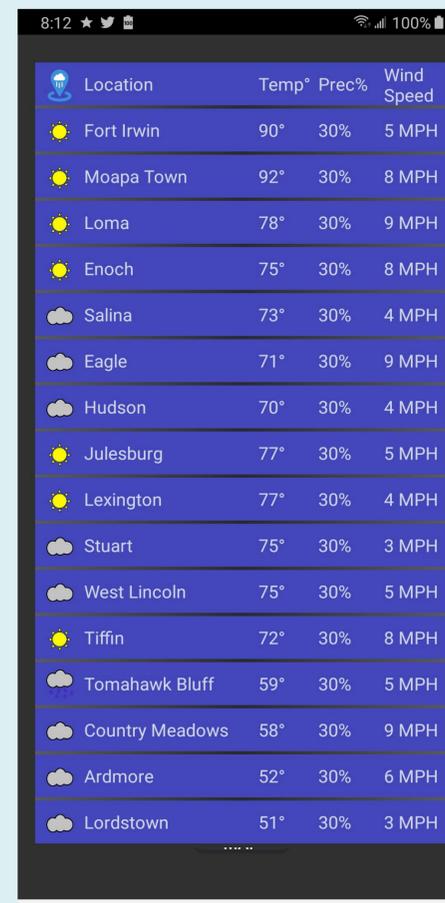
Future work on this project will include expanding the weather data available and providing alternative routing options based on incimate weather. Additional Google API's, such as Places, could also be added.

Conclusion

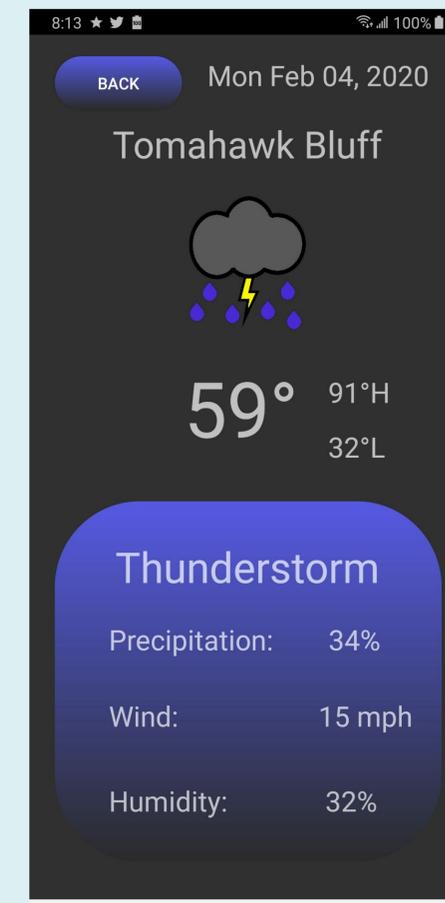
WeatherWays allows users to determine weather conditions along their route when they will arrive. The information provided by WeatherWays will allow people to make more informed decisions about their travel plans whether it is for business or recreational activities.



Map View: Allows users to create a route.



List View: Displays locations along the user's route.



In-depth View: Forcasted weather conditions for a location.

1. Hall, Julie. "AAA: Nearly 100 Million Americans Will Embark on Family Vacations This Year." AAA NewsRoom, 20 Mar. 2019, newsroom.aaa.com/2019/03/100-million-americans-will-embark-on-family-vacations/.