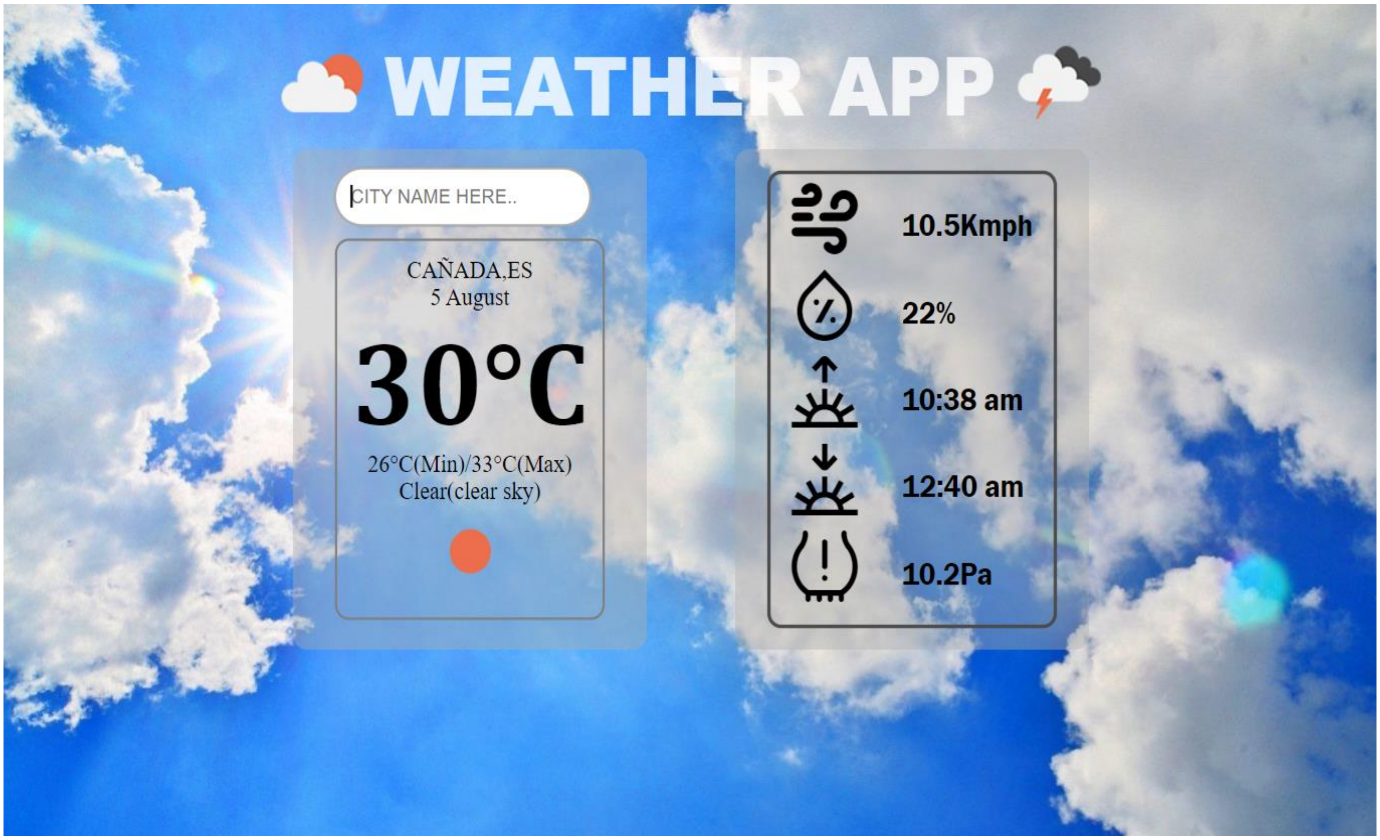
Weather App



CAÑADA,ES
5 August

30°C

26°C(Min)/33°C(Max)
Clear(clear sky)

10.5Kmph
22%
10:38 am
12:40 am
10.2Pa

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Weather Forecast
A real time weather app

Introduction

Weather forecasting is the application of science and technology to predict the conditions of the atmosphere for a given location and time.
Human beings have attempted to predict the weather informally
for millennia and formally since the 19th century. Weather forecasts are made by collecting quantitative data about the current state of the atmosphere at a given place and using meteorology to project how the atmosphere will change.

Once a human-only endeavor based mainly upon changes in barometric pressure, current weather conditions, and sky condition or cloud cover, weather forecasting now relies on computer-based models that take many atmospheric factors into account. Human input is still required to pick the best possible forecast model to base the forecast upon, which involves pattern recognition skills, tele-connections, knowledge of model performance, and knowledge of model biases. The inaccuracy of forecasting is due to the chaotic nature of the atmosphere, the massive computational power required to solve the equations that describe the atmosphere, the error involved in measuring the initial conditions, and an incomplete understanding of atmospheric processes. Hence, forecasts become less accurate as the difference between current time and the time for which the forecast is being made (the *range* of the forecast) increases. The use of ensembles and model consensus help narrow the error and pick the most likely outcome.

There are a variety of end uses to weather forecasts. Weather warnings are important forecasts because they are used to protect life and property. Forecasts based on temperature and precipitation are important to agriculture, and therefore to traders within commodity markets.

Temperature forecasts are used by utility companies to estimate demand over coming days. On an everyday basis, people use weather forecasts to determine what to wear on a given day. Since outdoor activities are severely curtailed by heavy rain, snow and wind chill, forecasts can be used to plan activities around these events, and to plan and survive them. In 2009, the US spent $5.1 billion on weather forecasting.

Purpose

The purpose of developing weather app is to fetch the data in the need of taking about weather worldwide. Another purpose for developing this software is to generate the report automatically at the end of the session or in the between of the session.

Project Specification

a. Real time weather forecasting.
b. Platform: Windows.
c. IDE: VSCode.
d. Takes user’s geolocation as input to provide weatherforecast
e. Hyper-Local Forecast: App will predict rain, storm, and weather based on the user current location.

f. Weather visualizations.
g. Can also take custom location as input to provide weatherdetails for that location. It is string based basically, so provides data for cities only.
h. REST API used to fetch data from www.openweathermap.org

Scenario Analysis

Screen and Interaction Analysis: The users will use this web app on smart phones, laptop, and tablets. All the information of this web app will be displayed fullscreen. Basically, the interactions include touch and click. For example, when users would like to view weather information, when they want to add a new city, they click the search icon and type in the city that they want.

Usage Analysis: Users can use this web app whenever they want, every day at home, on their way totravel, and other situations if they want to know weather information. User must be connected to the internet, being offline is not an option. Tip of the day is assumed to be useful for the user.

Environment Analysis: This web app can be used on laptop, smart phones, and tablet devices. It will beusing the Open weather API to get the weather information. It sends requests, and then get responses from the API through the internet. Uses Google APIs forgeolocation and keyword based search purposes (City details).

Deliverables

a. A properly working and executable file that will run in laptop, mobile and tablets.
b. A documentation that will provide details about the requirements, specifications, and other information.

Work Plan

a. Literature search and review:

We will study about HTML, CSS, and JavaScript, VSCode environment & features, use of APIs and JSON formatting the fetcheddata.

b. Analysis and modeling: Based on our gathered knowledge base, we will analyze the processes and make a prototype of theapplication.

c. Navigation and UI design:

We will design application layout and application flow. Also, we will design the splash screen.

d. Implementation:

From prototype we will start to integrate the modules together and we will finish all the features enlisted. Theprogram must be proper functioning and error free.

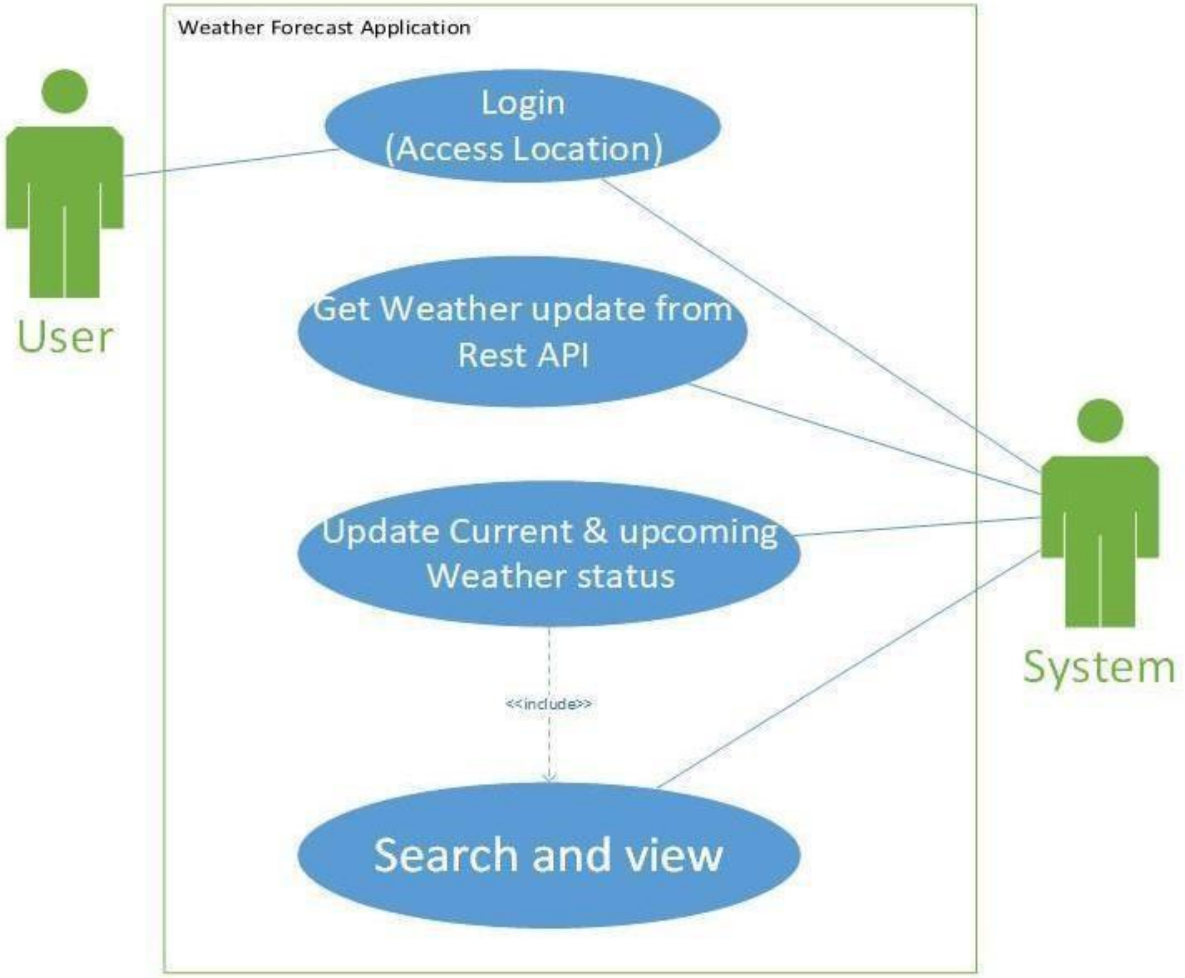
e. Testing and debugging:

Testing and debugging will be a challenging job for us,as we will let some people use the web app and note suggestions from them.Also,we always need to emphasize on the comprehensiveness of our data andthe magnificence of our UI.

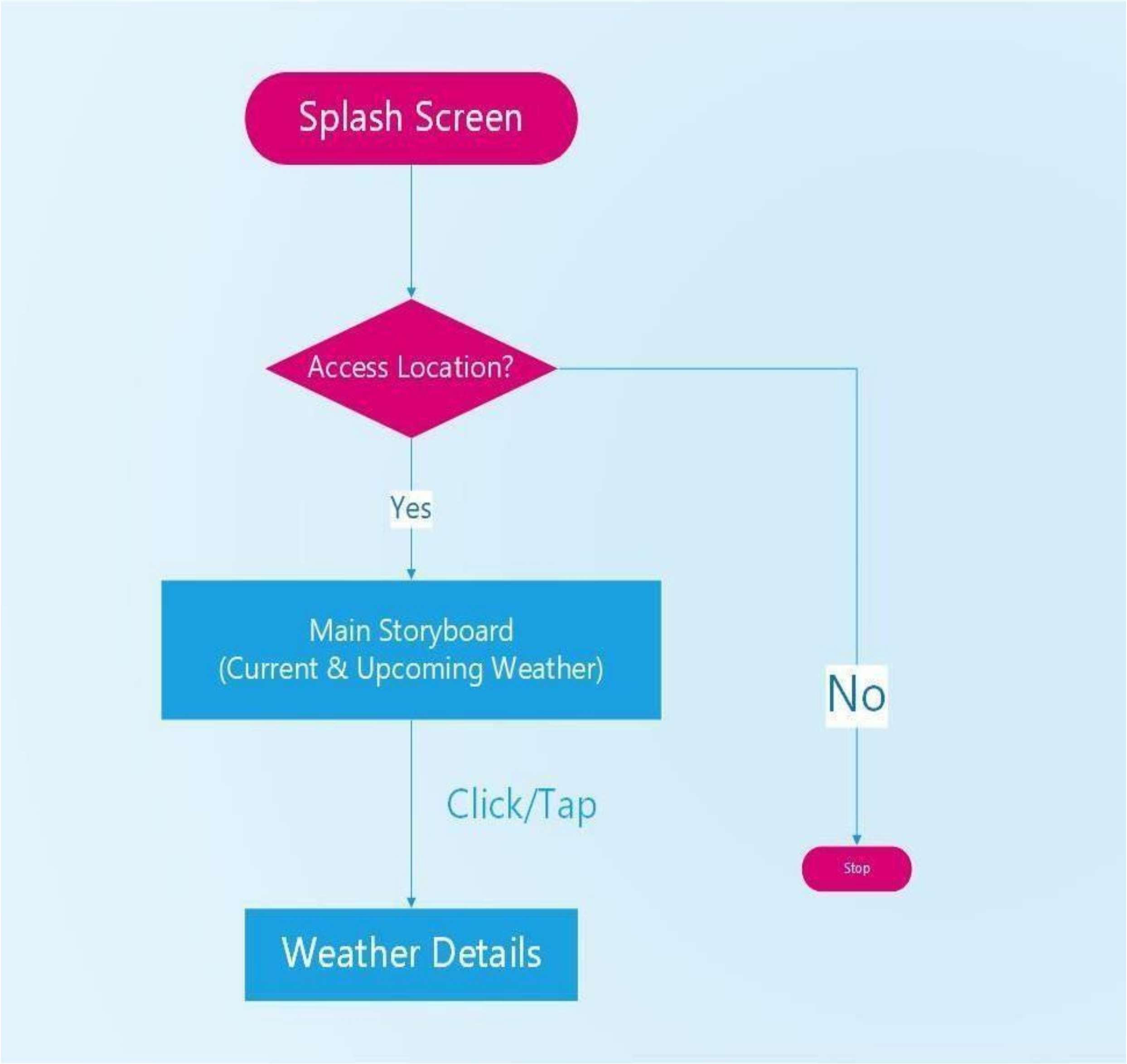
f. Work on final report and documentation:

We worked on the final report and software documentations. A proper functioning copy of the software shall be provided at the end of the assigned time period. We also kept track of our limitations and enlistedsome unimplemented features that we intend to work on soon.

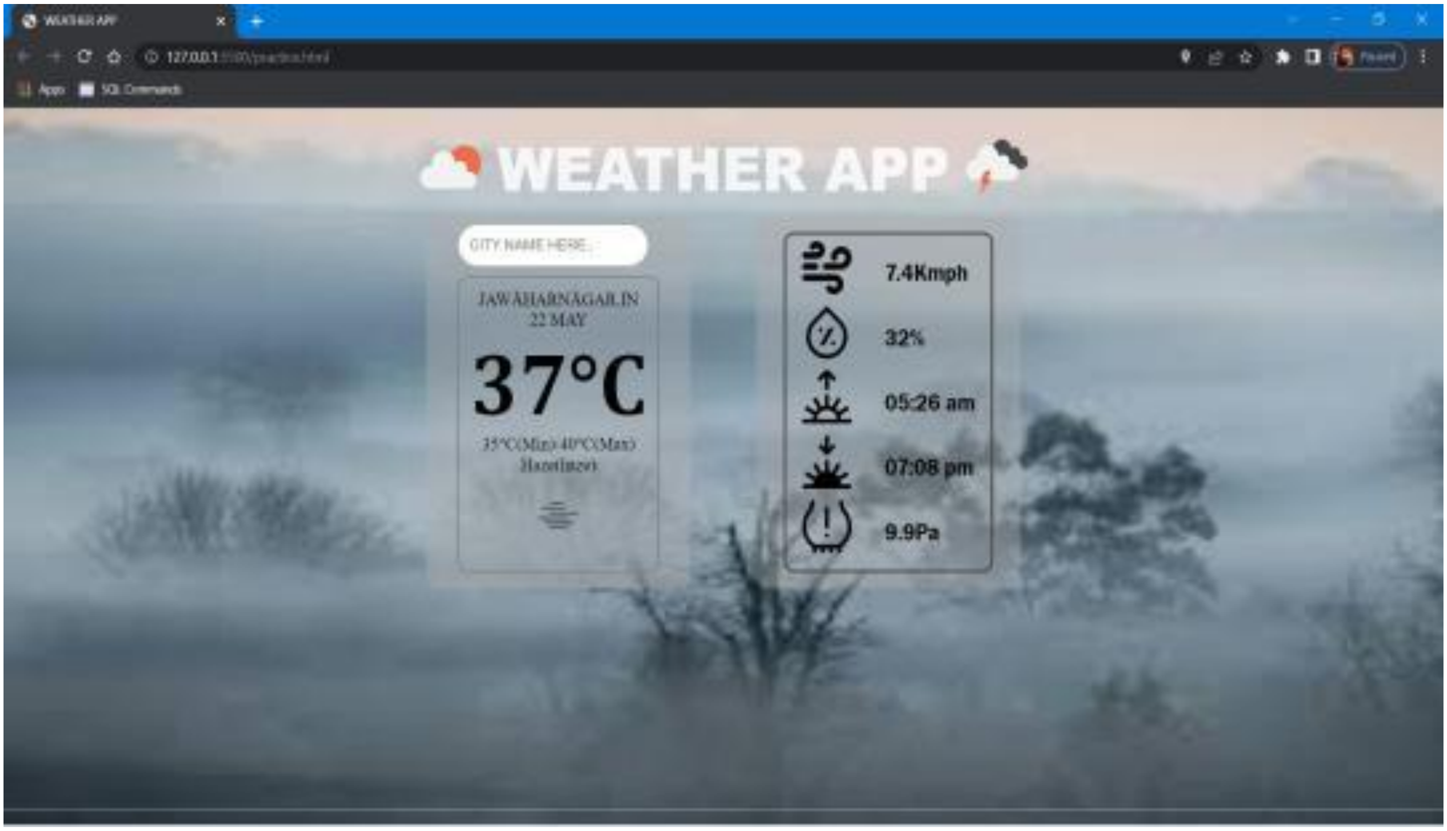
Use Case Diagram



UI diagram


Splash Screen
Access Location?
Yes
No
Main Storyboard
(Current & Upcoming Weather)
Click/Tap
Stop
Weather Details

Application Screenshots



WEATHER APP

CITY NAME HERE...

JAWAHARNAGAR,IN
22 MAY

37°C

35°C(Min) 40°C(Max)
Haze(haze)

7.4Kmph

32%

05:26 am

07:08 pm

9.9Pa

Reference

Several applications provided us a proper guideline on how toproceed. They are listed as follows: -

a)Dark Sky developed by The Dark Sky Company probably hasthe best visuals.

b)AccuWeather inc. developed the Accuweather app thatprovides the most comprehensive data comparatively.

c)Haze developed by Robocat & Taptanium is the mostsimplistic and gorgeous app one will ever find.

Limitations

a) Unpaid APIs provide incomplete services. Many detailscannot be fetched.

b) The GMS API (Google Manual Search) is actually keywordbased that might only provide data of few discrete locations. The data might not be precise and continuous.

c) Language diversity could have been implemented. Multilingual apps make it easy for users worldwide.

d) Current location is showing a bit different in desktop and laptop.

Unimplemented features

a)We intend to provide more detailed tips based on theregion, and health conditions (Dust allergy, heatstroke tendency etc.) of the user.

b)FAQ section based on detailed data might be quite handy. Itwill save the user's efforts and make it more convenient.

c)Using paid APIs to fetch more details might make the application more comprehensive and appealing. For example wind speed, precipitation & sea level values can be used to provide more intellectual tips.

d)Mobility of the traveler, their start & end points of the journey, their route of traveling (road, waterway, aerial) shall bestrongly focused. The application needs to be an aid for traveling users.

e)Recording User inputs to understand the user preferences and providing them necessary notifications needs to be kept inmind

f)Maybe someday soon, we will use AIs for moreprecision and accuracy.