

SENG 511 Assignment 1

Weather Application

Forecasting Mini Project

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Release Planner Login

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Features

Wind Chill and Humidex Calculator

Calculates the estimated wind chill and humidity when given air temperature, windspeed, and dewpoint. This can be used to confirm the accuracy of the wind chill and humidity of the user's region, or if this data was unavailable at the time of the user's request.

Weather Radio

This feature provides short term and long term forecasts through audio. The app would connect the user to a radio station that broadcasts the weather for the day, as well as long term predictions. Severe weather forecasts would be included.

UV Risk and Precautions

Shows the current UV for the user's location. An expected max UV radiation for the day and will issue a warning if it is too dangerous for the user to be outside unprotected. The UV index will be a range from 0 to 10, with levels above 10 being extreme. Each level will include brief description about its effects and ways the user can protect themselves from UV rays.

Severe Weather Warnings

Describes the severity, estimated duration, location, and date/time of upcoming hazardous weather. The user would be warned about how close they are to the danger zone, and would suggest a plan of action depending on the type of weather warning.

Severe Weather Safety Guides

Severe weather guides offer possible emergency plans for the user and their family during hazardous weather. This will include (but is not limited to) the location of emergency shelters, important items that should be prepared ahead of time, as well as guides for house/building evacuation.

Seasonal Allergies Information

Describes pollen concentrations in the air for different allergens for a selected location. Displays severity of pollen as: low, moderate, high, very high, and not available. This will also display the scientific and common names for each pollen present in the air so the user knows if it is safe for them to go out without medication.

Protecting Health from the Weather Guides

Provides information on how to prepare for the current weather, such as wearing sunscreen or staying indoors to avoid pollen. Guides for protecting the user's health during severe weather will also be available to read at any time.

Precipitation Outlook

Shows probability of precipitation within the user's selected region. Date and time intervals can be changed by the user. Precipitation data will include the chances for hail, snow, rain, drizzle, sleet, and hail.

Marine and Coastal Weather Display

Provides weather forecasts with a focus on wind speeds, wave heights/speeds, and visibility depending on the location selected by the user. In the case of severe marine weather, a warning for the affected area will be issued with details on the duration and weather conditions.

Long-term Weather Forecast System

Shows a weekly forecast of the weather over a 7-day period. Long-term forecasts will include weather predictions up to 7 days after the current date. Details about the weather include the estimated highest/lowest daily temperature, humidity, wind speed, and probability of precipitation. An icon of the weather condition will be displayed for each day in the forecast.

Historical Weather Data and Models

Displays past climate changes and historical severe weather occurrences over a selected time interval in days, months, or years. The data includes various graphs and charts to display trends in the weather. This can be downloaded as an excel sheet for record keeping.

Downloading Weather Data for Offline Viewing

For users that will lose access to weather app data, they have an option to download the current weather predictions to take with them. This data can be manually deleted by the user when they are finished with it.

Daily Weather Spotlight

Displays coldest and hottest temperatures within a province or country. The location can be changed by the user to show the different weather spotlights for that day. The weather spotlight cannot display temperatures on days other than the current date.

Air Quality Display

Provides details on the current humidity, wind speed/direction, and air pressure. Also displays warnings for smog/smoke in the user's location.

Short-Term Weather Forecasting System

Shows an hourly forecast of the weather over a 24-hour period. Intervals of short-term forecast are three hours, stating the highest/lowest daily temperature, humidity, wind speed, and probability of precipitation. An icon of the weather condition is also displayed.

Relationship

The forecasting mini project provides the main features of the weather app project. This will provide data and information on the weather, and how to prepare for it. Compared to the other mini projects, this has low dependency/loose coupling and does not require any of the other mini projects to run successfully. While the weather would depend on the user's location, this can be manually set by the user. Some accessibility settings from the User Customization mini project-- such as light and dark themes-- will affect the look and feel of this mini project, but it is able to run without these external features. The data that this Forecasting mini project uses will be shared with the Weather Map mini project, but the functionality of both is different.

Forecasting will be able to run independently of the Weather Map if it was released on its own. In relation to the Multimedia and Astronomy mini projects, Forecasting is separate from these in data and function.