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CS 443 Project

Weather Application.

GitHub link for the project:

https://github.com/nerbGG/weatherApp

Project Description Document

1. Project Statement

As a team, we created a list of project ideas that could cover all the materials we learned in class. After looking at different options, we ended up making the weather app. The weather we designed will take the user's current location of the phone and display the weather. Also, the app will display the weather every hour with a display of the weather icon so the user can easily determine the weather forecast for each hour. The app also gives weather forecast information for the next seven days. This app also allows users to search for different cities and look for their weather forecast for each hour and the next seven days. The app also changes the background according to the weather conditions and if the user checks the weather in day or night time the app will change the background theme according to it. We are using two different APIs; one from the website FreeWeatherAPI and the second one is OpenWeatherAPI for the 7 days forecast.

2. Application Design

We defined two classes that will collaborate with the XML file. We have classes called WeatherRVAdapter and WeatherRVModal. These will collaborate with my XML file weather_rv_item.xml. These classes will help me up the card that will have the weather forecast for each hour. The main activity XML contains the main design file which includes the progress bar so when we open the app while fetching the data it will display the progress bar. We have an Image view that will basically display the theme of the day like if the user checks during day or night the background will change accordingly.

After that, there is a text view that will put the city name on the screen depending on the current location of the phone or what the user searches for. After that, we use the linear layout which has the input text field for the user input city name and the search icon there so the user can click it after inputting the city name. After that, we have one more that displays the current temperature in Fahrenheit. We have an image view that will hold the weather forecast icon for the current day. Following that, we have a text view which has weather condition.

We created a scroll view that will have the table layout and in that layout we display the seven days forecast information that includes temperature in F and the weather icon. We also created another XML file named big_rounded.xml which gives our rows a rounded view.

Finally, we called our recycler view which displays the cards holding the hourly weather forecast information.

3. Application Implementation and Evaluation

We first start creating the main activity XML file by setting all the required features for our app as mentioned in the "Application designed section". After that in the MainActivity.java, we created the variable for all required views as a private member. We also use two arraylists that will help us in displaying the temperature for seven days and their corresponding icons. Now after doing some research on how to implement the location manager we finally created the location manager object in the on create and using a reference code from stack overflow we call the location manager on the current location of the phone to get the city name. We also encountered an issue where the location manager was not working properly to get the phone's current location. To fix this, we set the default location to be Boston. We created onRequestPermissionResult() which asks the user to give an app the location permission. We implemented it by the use of a toast message and some reference code for the location manager.

We also do the use the setOnclickListener for the search icon. We us the toast message there so it will prompt on the screen to enter the city name. There is method to get weather info() which does the API call to out FreeWeatherApi from where we determine the latitude, longitude of the city, icon of the current day, temperature from the Jason file. We use the code for the API calls given to us as an example. We also created an ArrayList of type weatherRVModal which will basically object of that class. So we loop the Jason file for hourly data for the current day and store that data in an array list and it will display that data in form of a card and the user can scroll those cards to check the weather for a specific hour of a day.

We also created another method get dailyinfo() which will make an API call to open weather API to fetch the data for the next seven days of the forecast. We make handy use of the thread handler because each method we mention uses a thread so we just make the thread handler case for the threads and call it at the right place. We created a method that will set the data of temperature for the next seven days in the table view. We also used a reference code to help us to parse the JSON file and set the image of the weather forecast in the app.

We also created the WeatherRVAdapter class that extends the recycler view class and which basically used the Arraylist of type WeatherRVModal and we used lecture code as a reference to set the icon in the card and set the temperature value and other required values to display on each hour card.

4. References

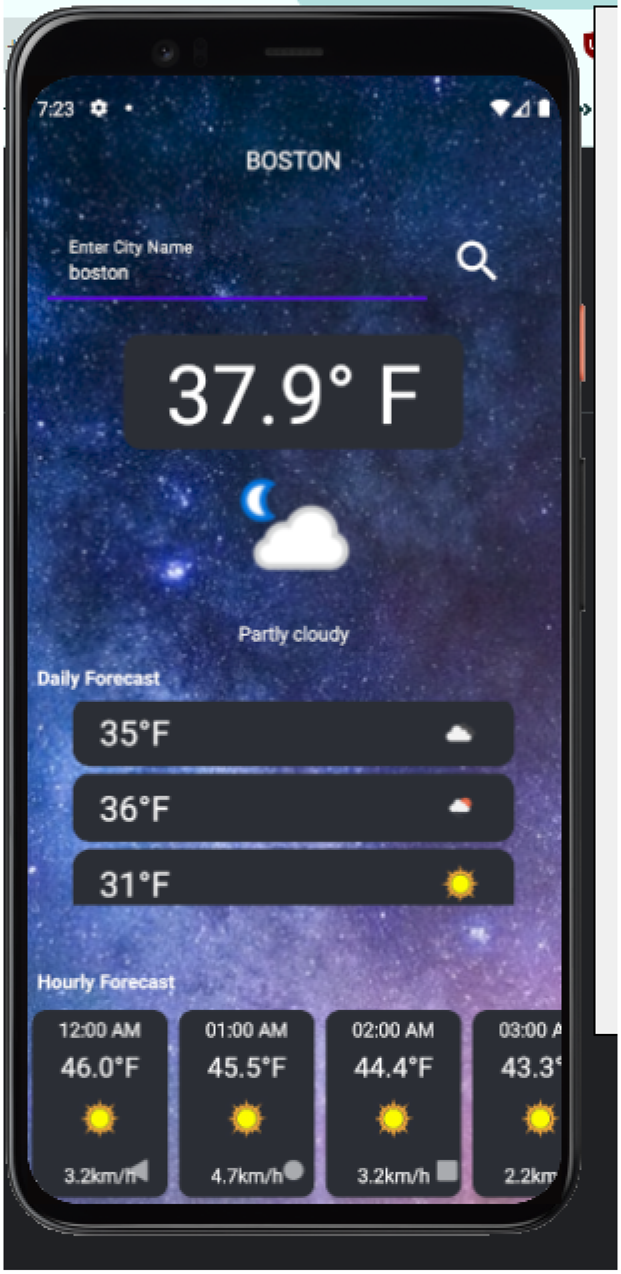
- Google
  - Finding the general java information about the API calls and parsing Jason files.
- PostMan
  - We use the postman website to run the API calls and see the Jason file for it so it will be easy for us to parse the JSON file that way.
- Stack Overflow
- Helped to set the XML file and helped while parsing the JSON file and determining the current location of the phone.
- Youtube
  - We referenced a youtube video about how to set up the image in the background and how to determine the current location of the phone.
- Lecture and Homework code as a reference.

5. Experiences and Thoughts

We as a team enjoyed building this app. We feel that we explored some new skills of the android studio while we try to solve the problems we encountered. We understand how to get the current location of the device, use of an array list of different class types. By doing this project, we learned more about classes and their use in android studio.

Some Ideas We had:

- We wanted to create a toggle so the user can pick between celsius and Fahrenheit.
- Use a different API for daily forecast because the current API we are using does not show the date and name of the days.
- Dynamically create each row for the daily forecast in MainActivity.



BOSTON

Enter City Name
boston

37.9° F

Partly cloudy

Daily Forecast

35°F

36°F

31°F

Hourly Forecast

12:00 AM	01:00 AM	02:00 AM	03:00 A
46.0°F	45.5°F	44.4°F	43.3°
3.2km/h	4.7km/h	3.2km/h	2.2km