PROJECT REPORT

Course : Software Engineering - CS301

INSTITUTE NAME : INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, DHARWAD (IIITDWD)

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ROLL NO. : 21BCS025

CLASS : 4TH SEM CSE SEC 'A'

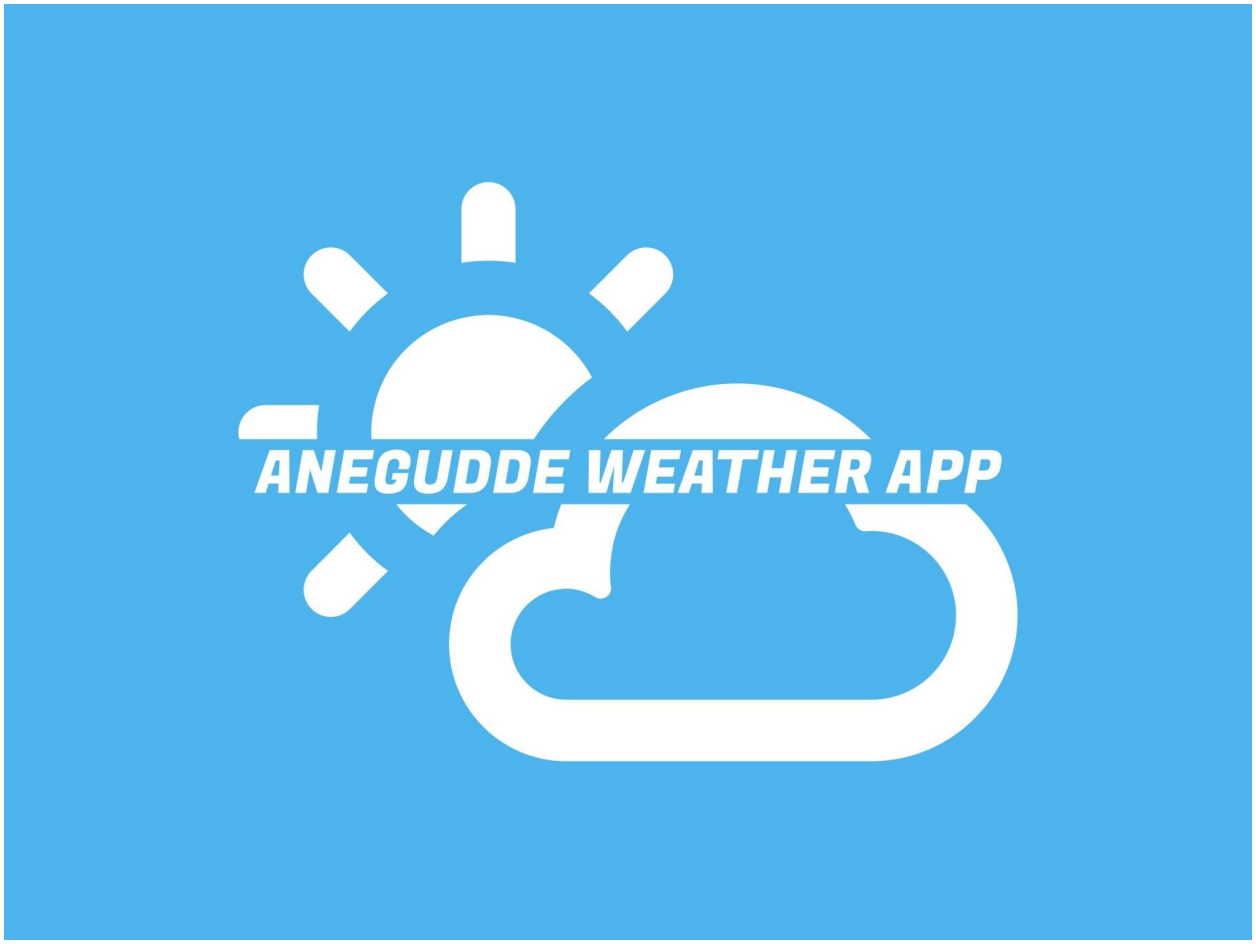
GITHUB PROFILE - https://github.com/Chaturth-R

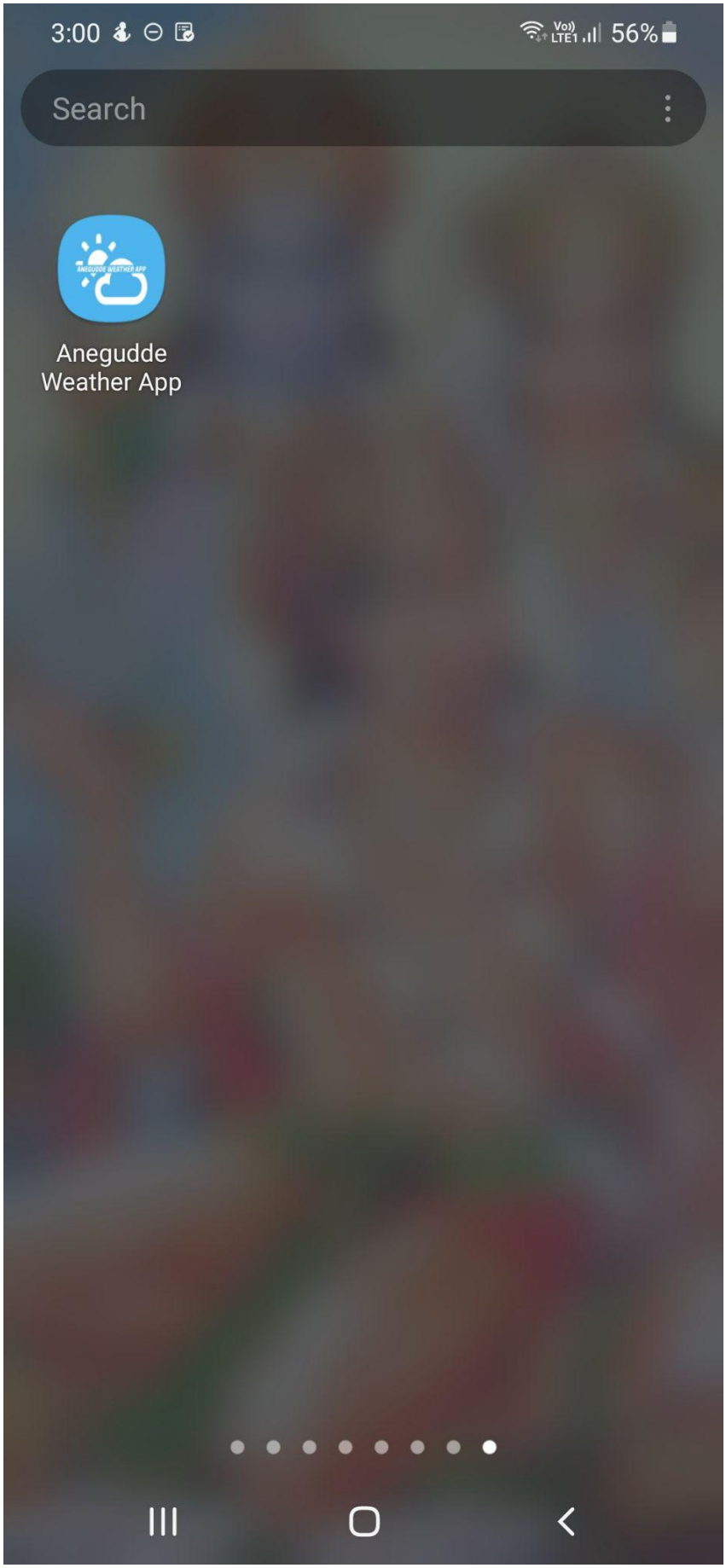
PROJECT NAME : A weather app that utilizes a weather API to display current and forecasted weather information.

APP NAME : ANEGUDDE WEATHER APP

TEAM NAME : ANEGUDDE WEATHER APP

Anegudde Weather App Logo


ANEGUDDE WEATHER APP


3:00
56%
Search
Anegudde
Weather App

Introduction to Anegudde Weather App

Anegudde Weather App is an innovative weather app that utilizes a weather API to display current and forecasted weather information, weather news and weather YouTube Videos. It has been designed with scalability, security and SMART goals in mind.

The app has been developed using Flutter, a free and open-source UI software development kit created by Google and used to develop applications for Android, iOS, Windows, Mac, Linux, Google Fuchsia and the web.

Design Criteria

The design of Anegudde Weather App was based on scalability, security and SMART goals. Scalability ensures that the app can grow and expand to meet the needs of the users. Security ensures that the app is safe and secure to use. SMART goals are specific, measurable, adoptable, responsive and time-bound.

The app has been designed with a user-friendly interface and intuitive navigation. It also has a feature that displays weather

information for the location. The app also includes weather news and weather YouTube videos related to the weather.

Prototype Design

The prototype design of Anegudde Weather App was created with scalability, security and SMART goals in mind. The design includes a user-friendly interface and intuitive navigation. It displays weather information for location. The app also includes weather news and Weather YouTube videos related to the weather.

The design is also optimized for mobile devices, making it easy to use on the go.

Unique App Features

- Current Weather Information: The app displays the current weather conditions, including temperature, humidity, wind speed, and direction, for the user's place.
- Hourly,Daily and weekly Forecasts: The app provides hourly , daily and weekly weather forecasts, allowing users to plan their activities and outings accordingly.
- Weather News: The app features a section dedicated to weather-related news and updates for a region, keeping users up-to-date with the latest weather-related developments.

- User-Friendly Interface: The app features a user-friendly interface that is easy to navigate, with intuitive icons and design elements.
- Weather YouTube Videos :The app features weather-related YouTube videos and updates for a region.

Demonstration of App

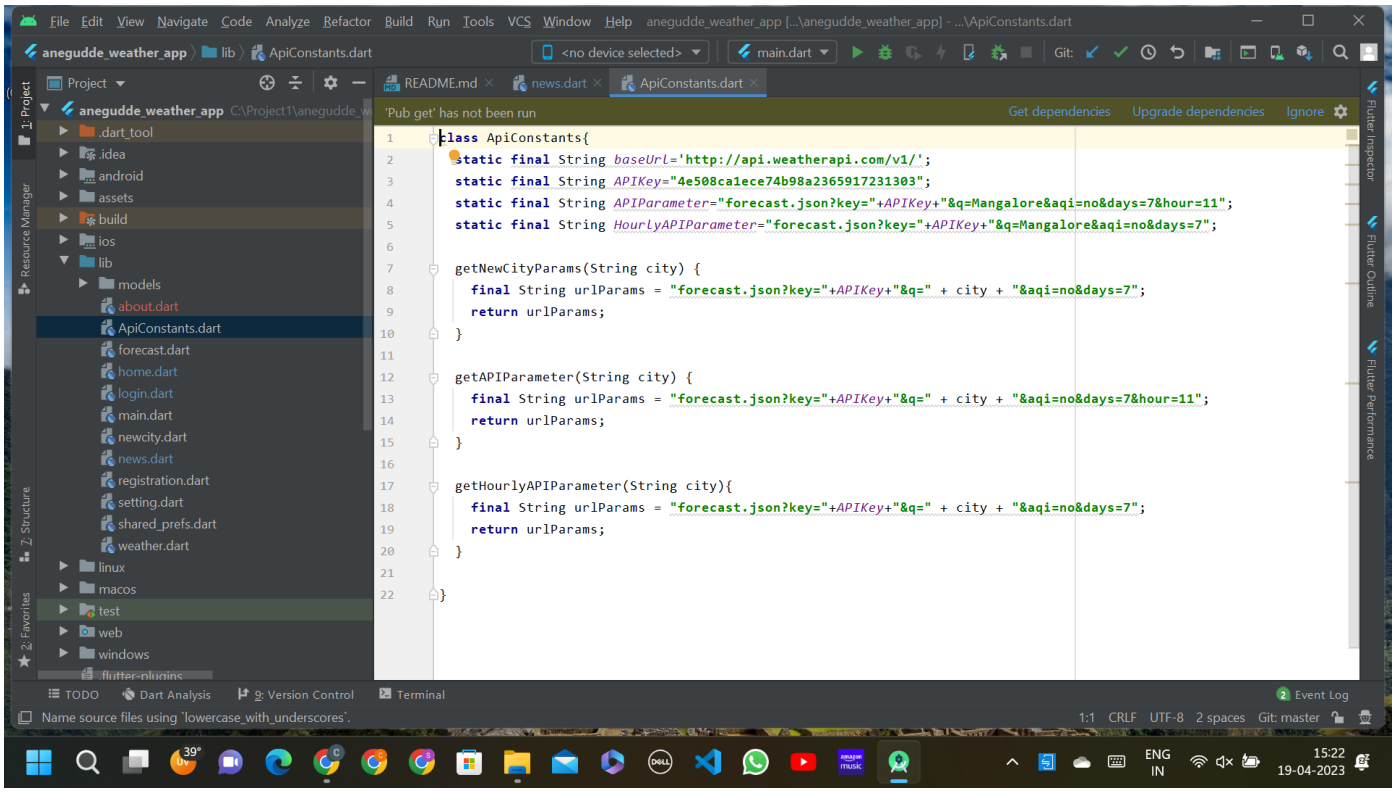
An Anegudde Weather App was demonstrated to show how the app works. The demonstration showed how the app can be used to view current and forecasted weather information, weather news and weather information. The demonstration also showed how the app can be customized to the user's preferences.

The app was also demonstrated to show how the app is optimized for mobile devices, and can be used. The demonstration also showed how the app can be used to view weather information for the location.

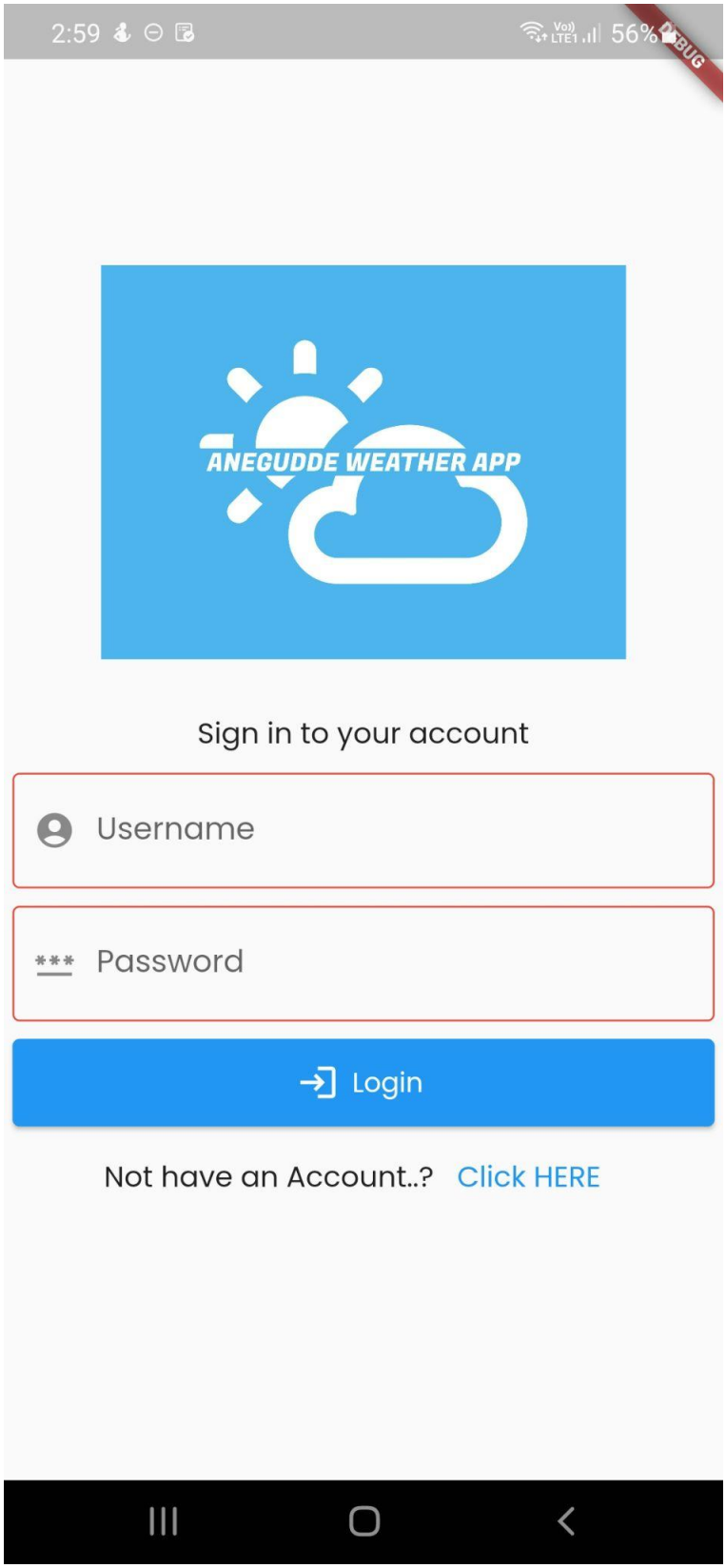
API Integration

The ANEGUDDE WEATHER APP integrates with the Weather API to provide accurate weather data and forecasts for the region. The app uses the API to retrieve weather data and

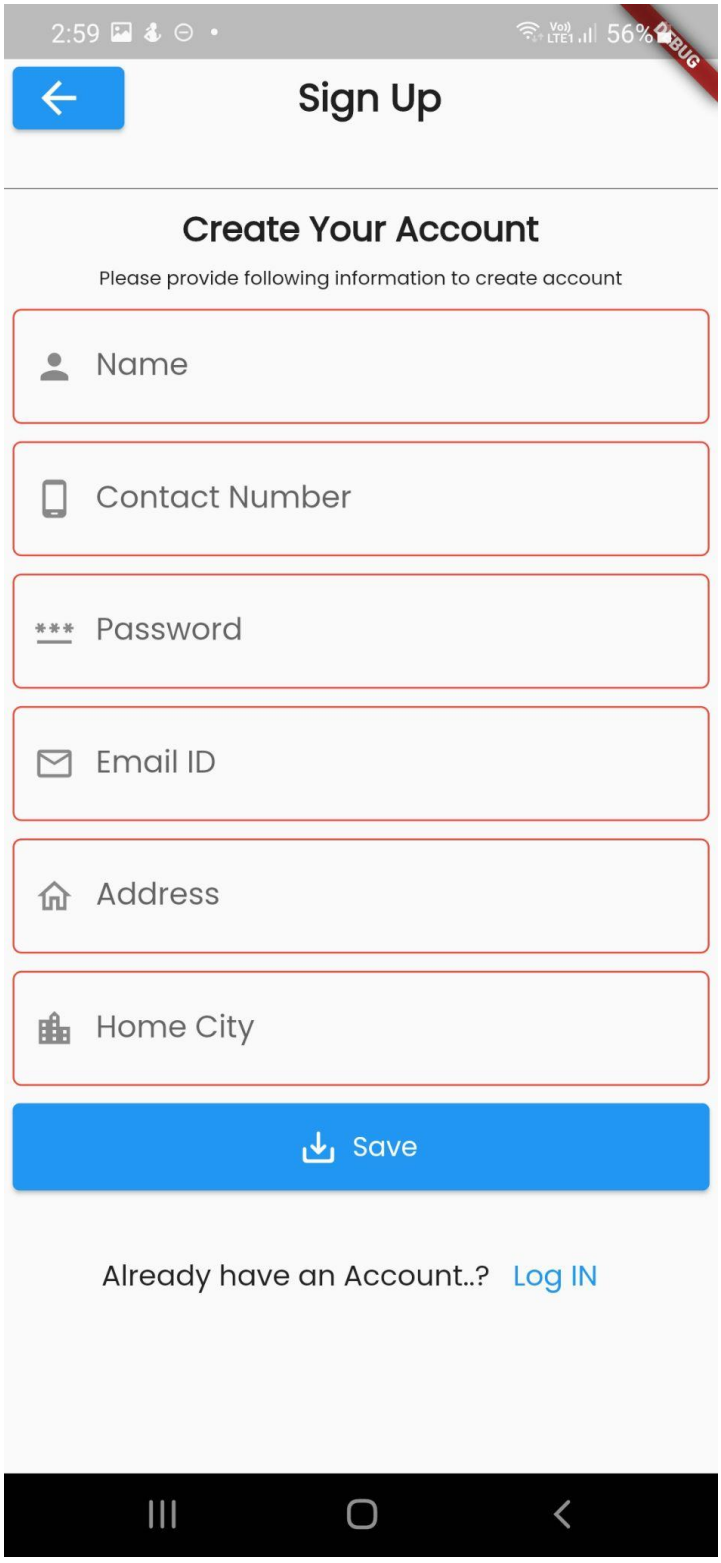
updates every minute to ensure that users have up-to-date information.



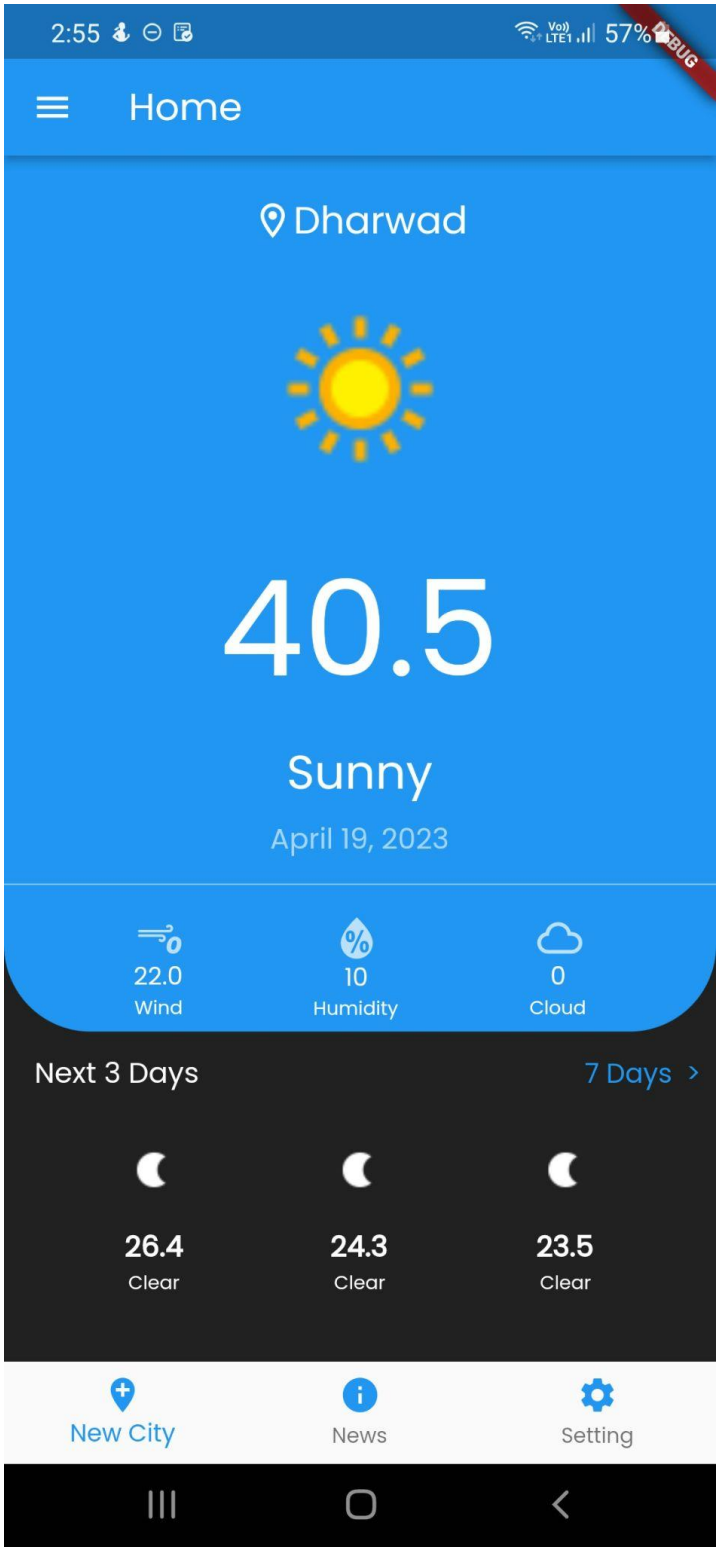
LOGIN SCREEN



SIGNUP SCREEN



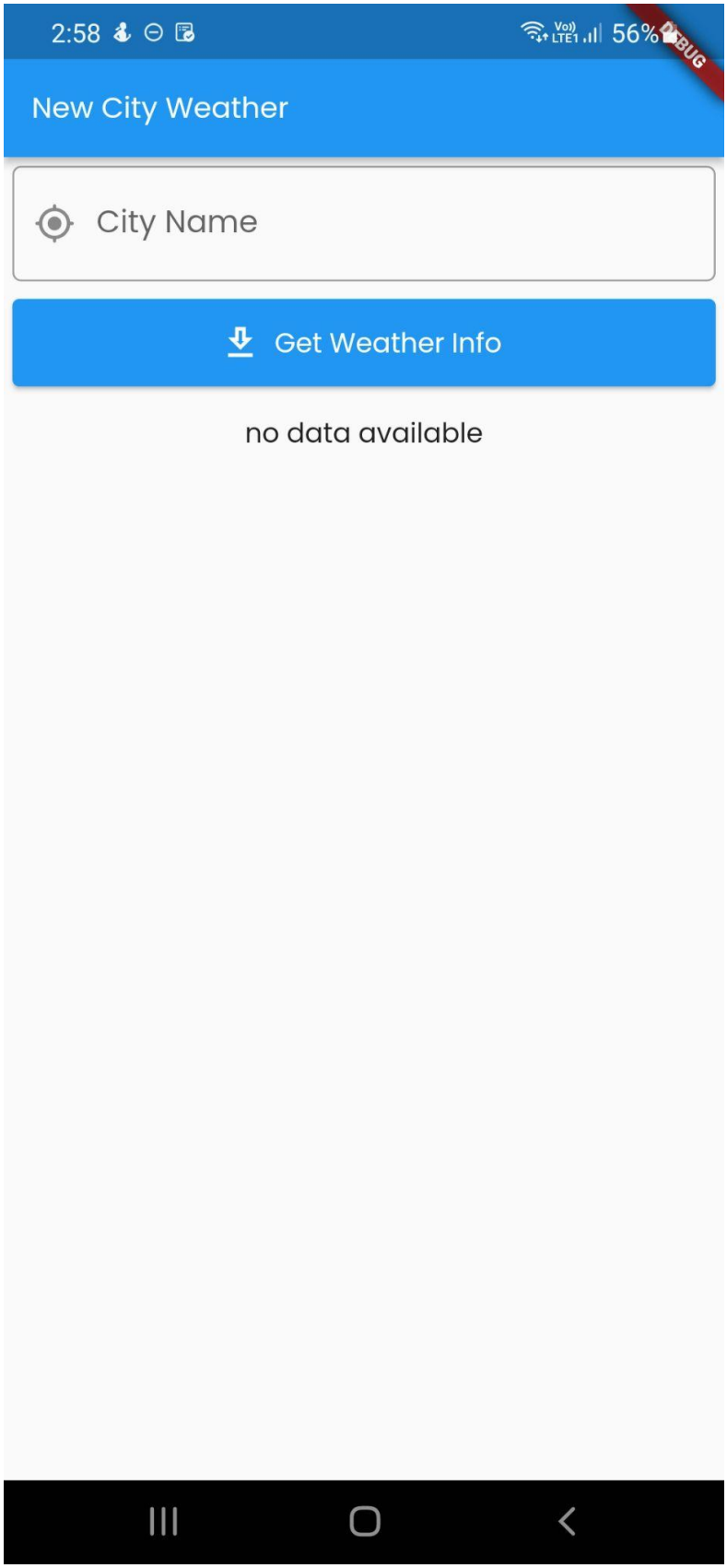
HOME SCREEN



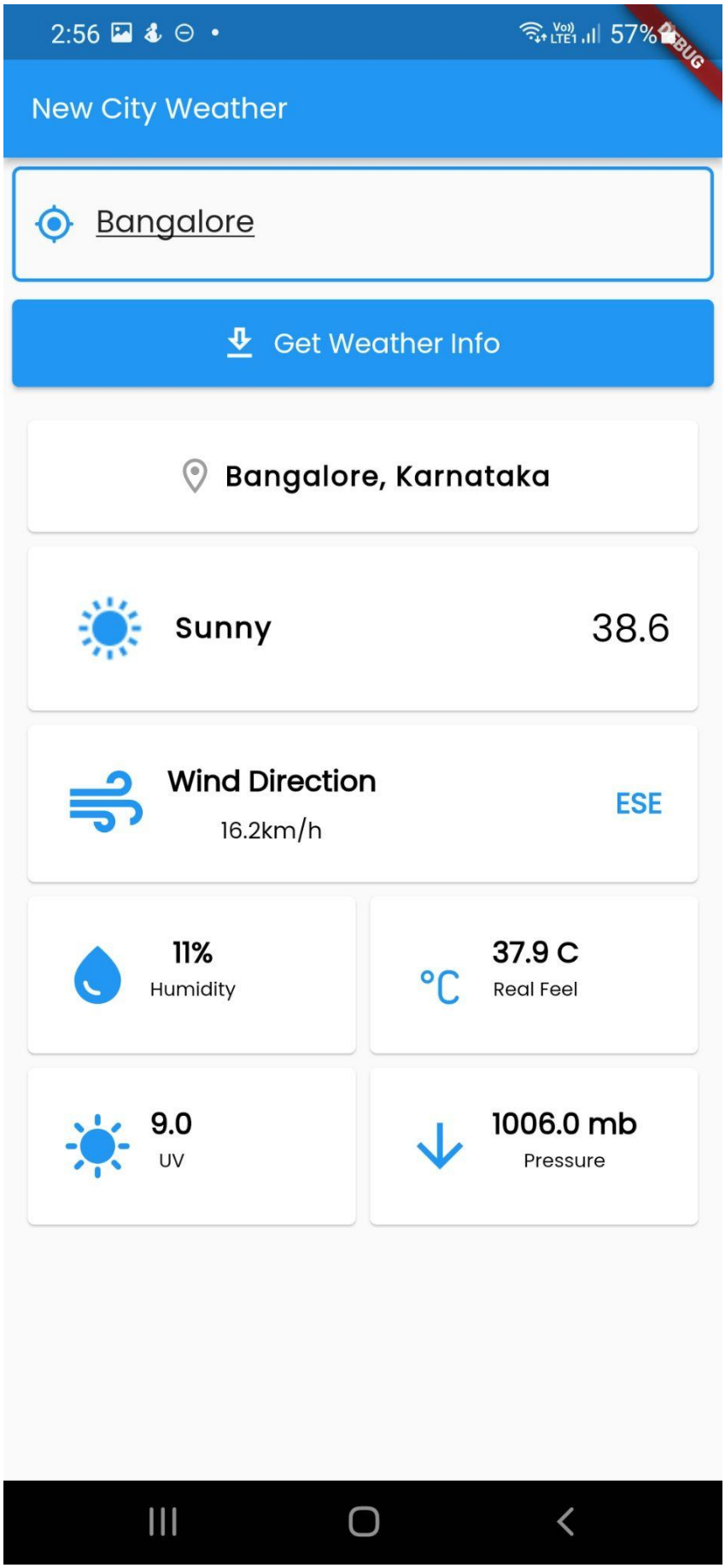
The home screen of the app provides you with all the important weather details of your current location such as temperature, humidity, pressure, and a weather forecast. This information is displayed in an easy-to-read format and is constantly updated to provide you with the most accurate and up-to-date information.

Below the weather details section, you will find three useful widgets: "New City" and "Weather News" and "Settings".

New City Weather Screen



The "New City" widget allows you to easily switch between different locations and view their weather information. This is particularly useful for travelers who want to stay informed about the weather conditions in their destination.


2:56
57%
DEBUG
New City Weather
Bangalore
Get Weather Info
Bangalore, Karnataka
Sunny
38.6
Wind Direction
16.2km/h
ESE
11%
Humidity
37.9 C
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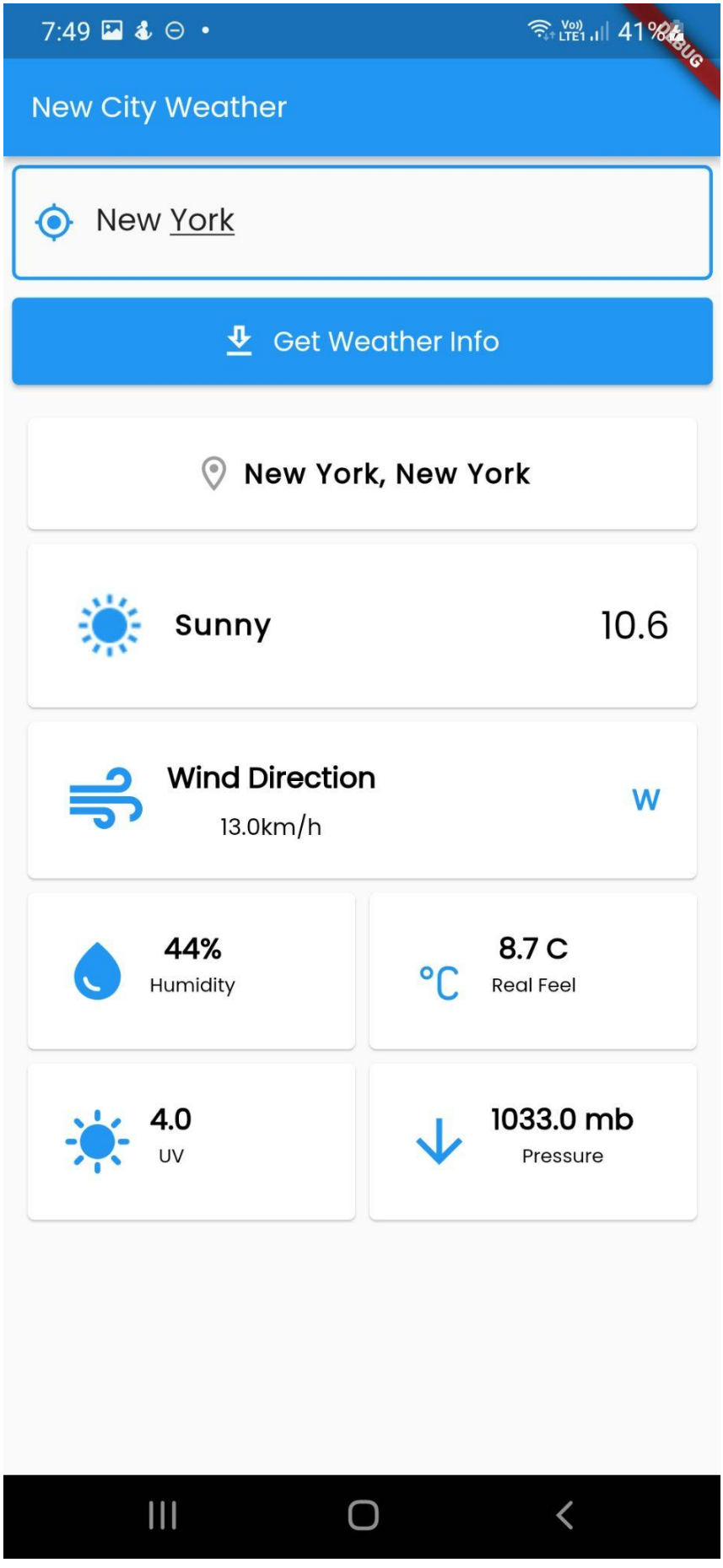
UV
1006.0 mb
Pressure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DEBUG
New City Weather
New York
Get Weather Info
New York, New York
Sunny
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Wind Direction
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Real Feel
4.0
UV
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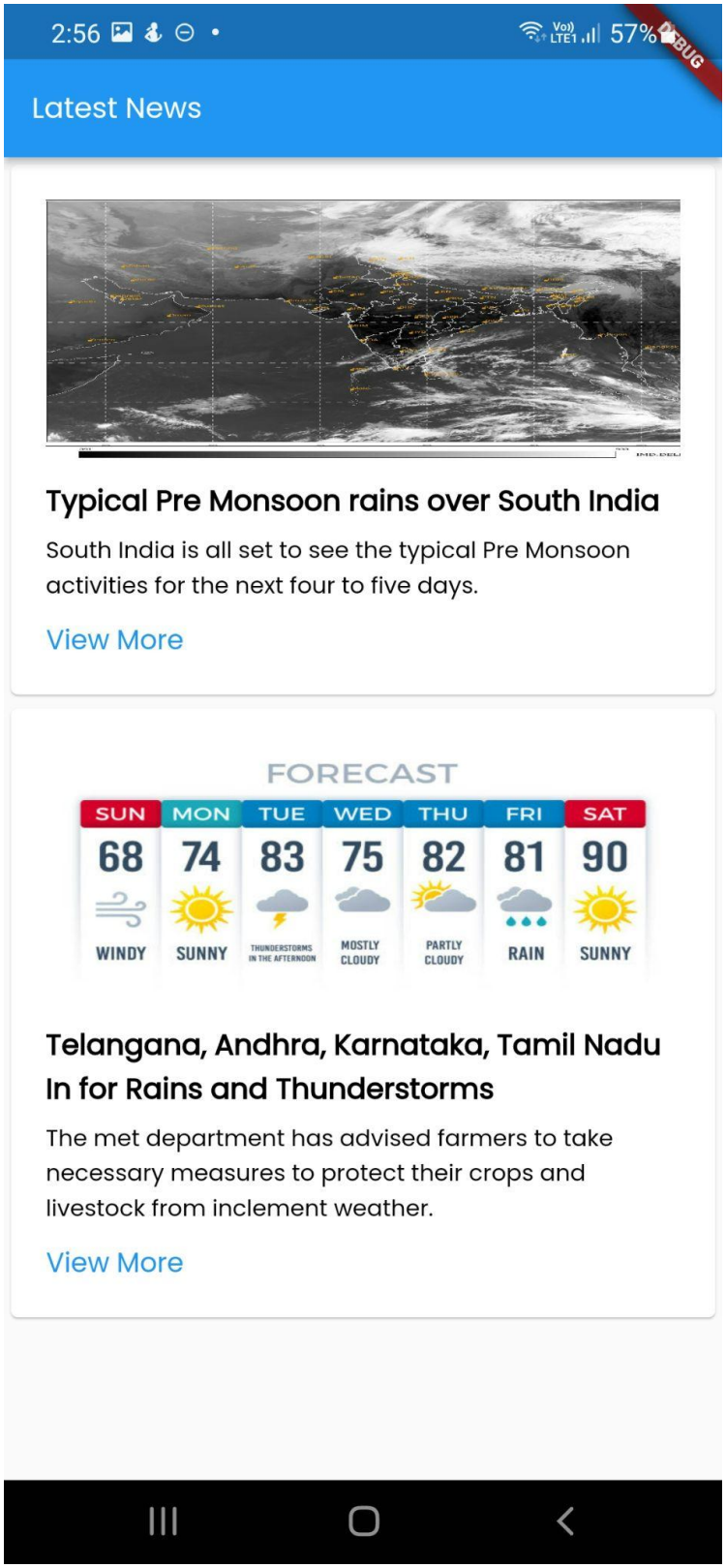
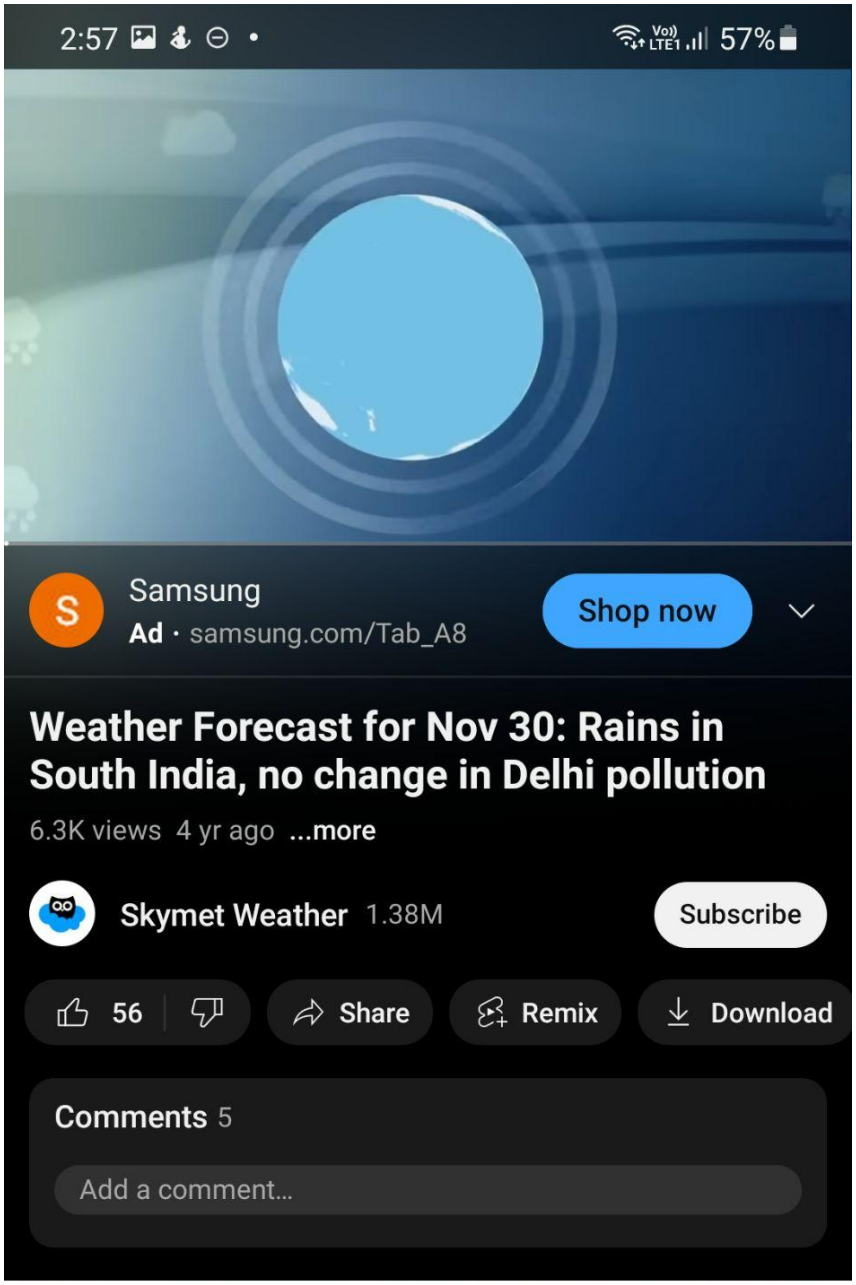
Pressure

Weather News Screen with YouTube Integration



The "Weather News with YouTube Integration" widget provides you with the latest Weather news and Weather YouTube videos and updates related to weather, such as severe weather warnings, natural disasters, and more. This information can help you stay informed and prepared in the event of severe weather conditions.


2:57
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WEATHER NEWS AND ANALYSIS

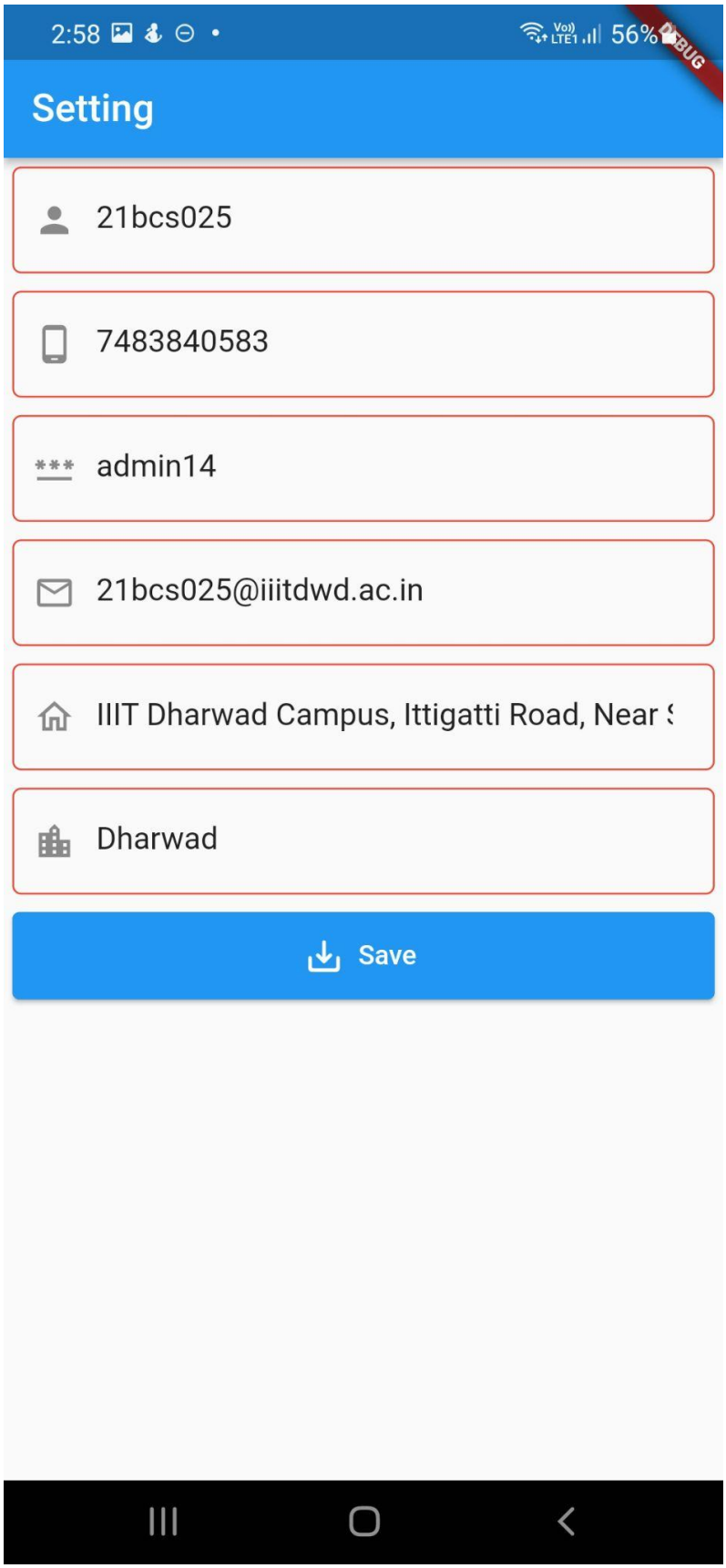
TYPICAL PRE MONSOON RAINS OVER SOUTH INDIA

March 28, 2023 6:41 PM | Skymet Weather Team

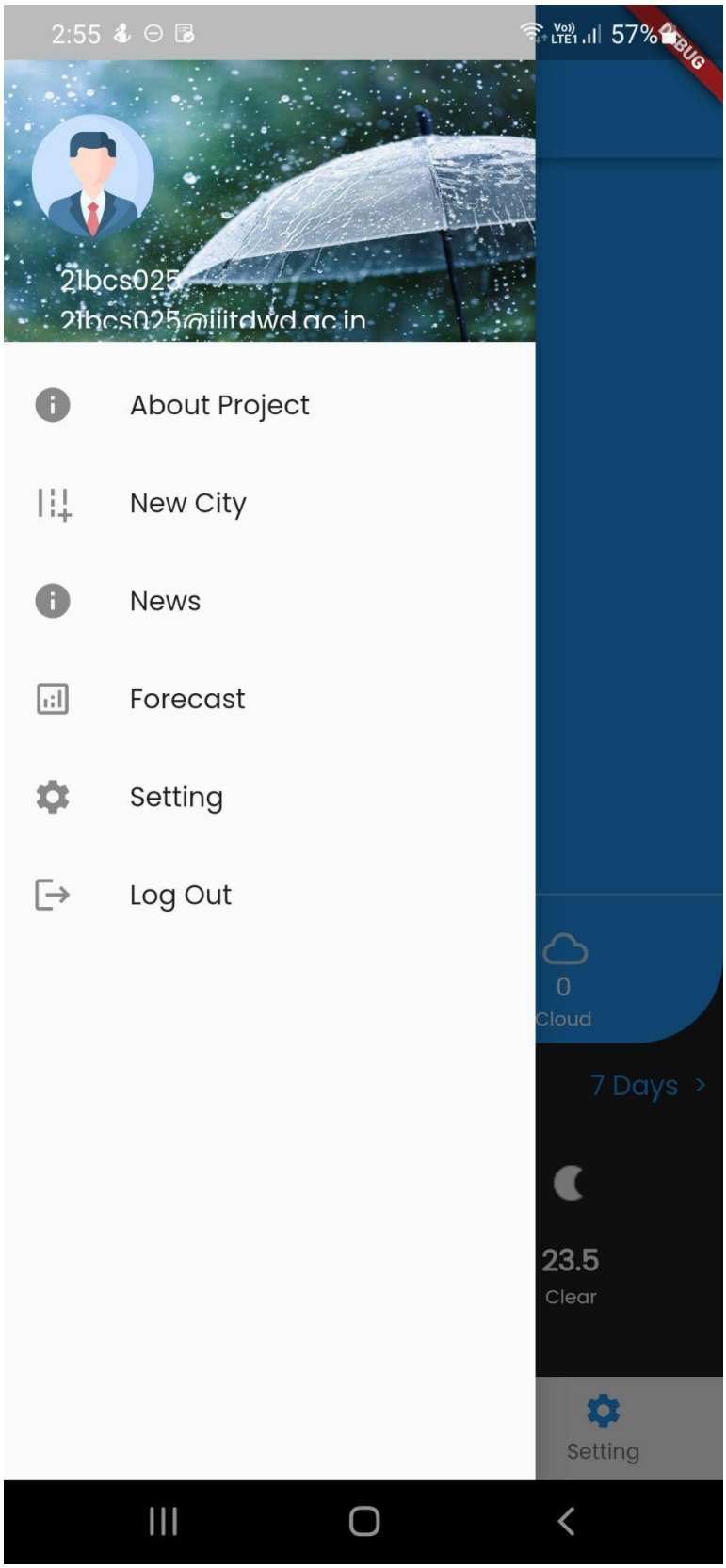
South India is all set to see the typical Pre Monsoon activities for the next four to five days. These rains will be attributed to the semi-permanent feature, Circulation over interior South Tamil Nadu and a Peninsular trough which keeps oscillating.

Not all areas will be seeing rain simultaneously and rainfall activity will not be too intense as well. Rains could be in some pockets for short durations but will be seen

Settings Screen



The app also includes a "Settings" section where you can customize your experience. Like you can edit your profile details.

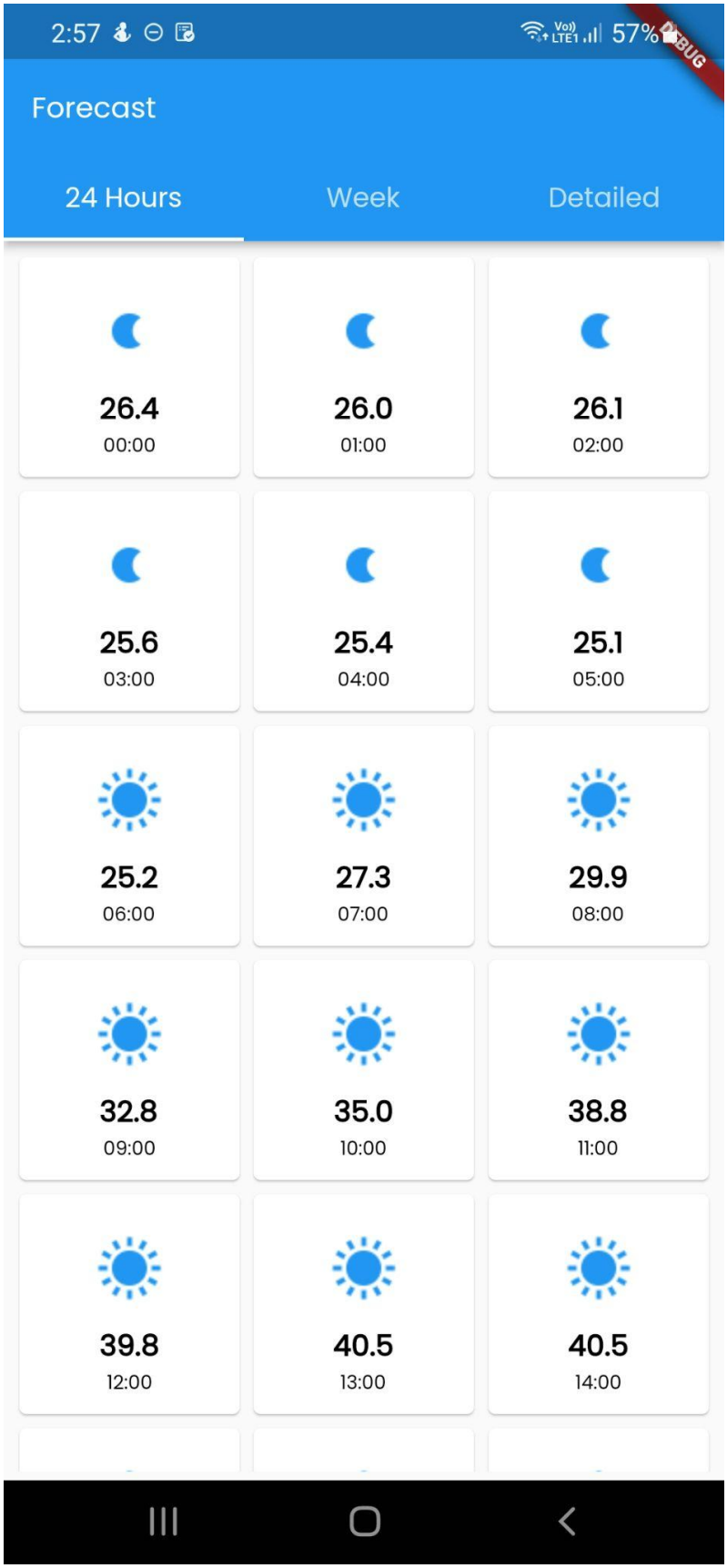


Menu Screen

The app features a comprehensive menu that provides you with all the information and tools you need to stay informed about the weather.

Let's take a closer look at what's included in the menu which includes "New City" ,"Weather News" , "Weather Forecast", "Settings" and "Logout".

Weather Forecast Screen

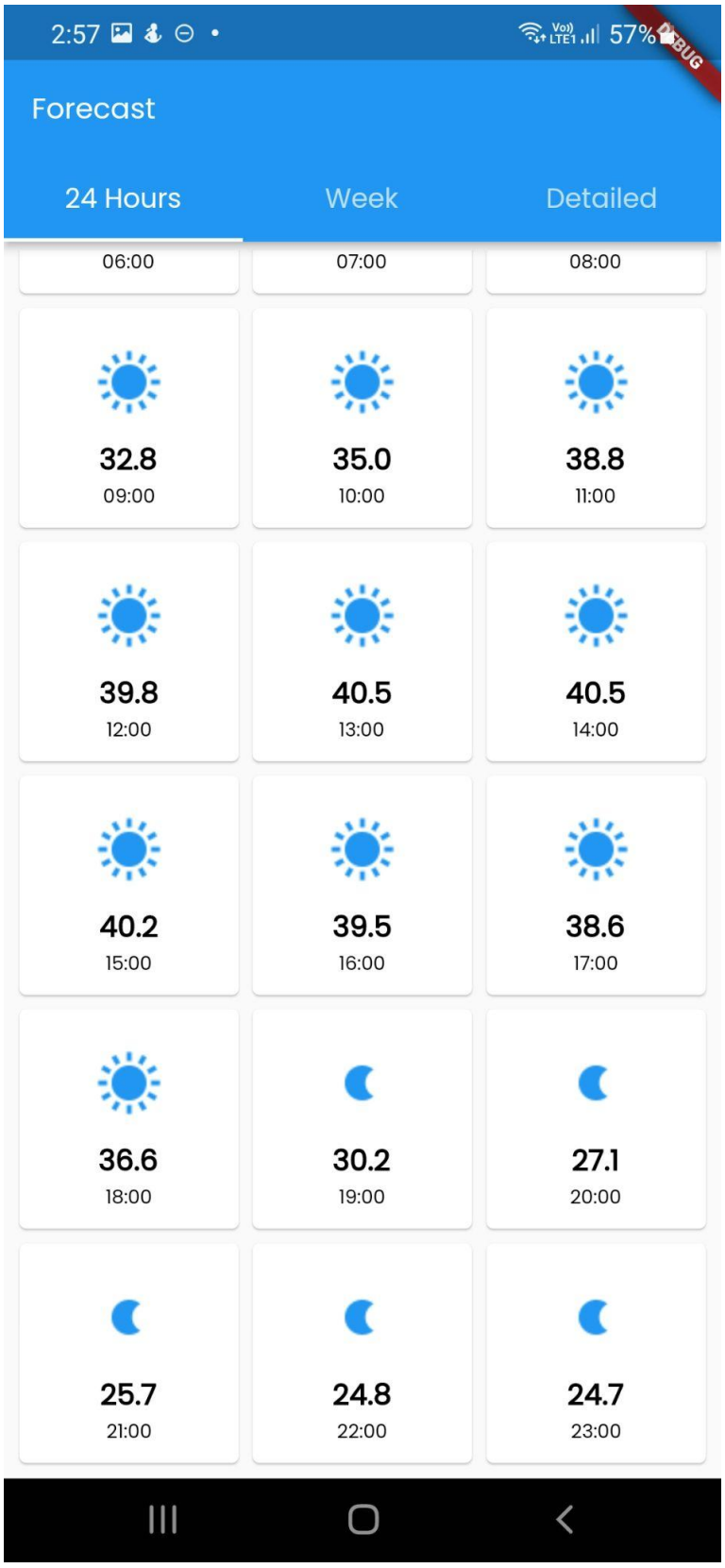


This feature provides users with up-to-date information about the weather, helping users make informed decisions about their daily activities. The weather forecast feature is divided into three sections: 24 hours, weekly.

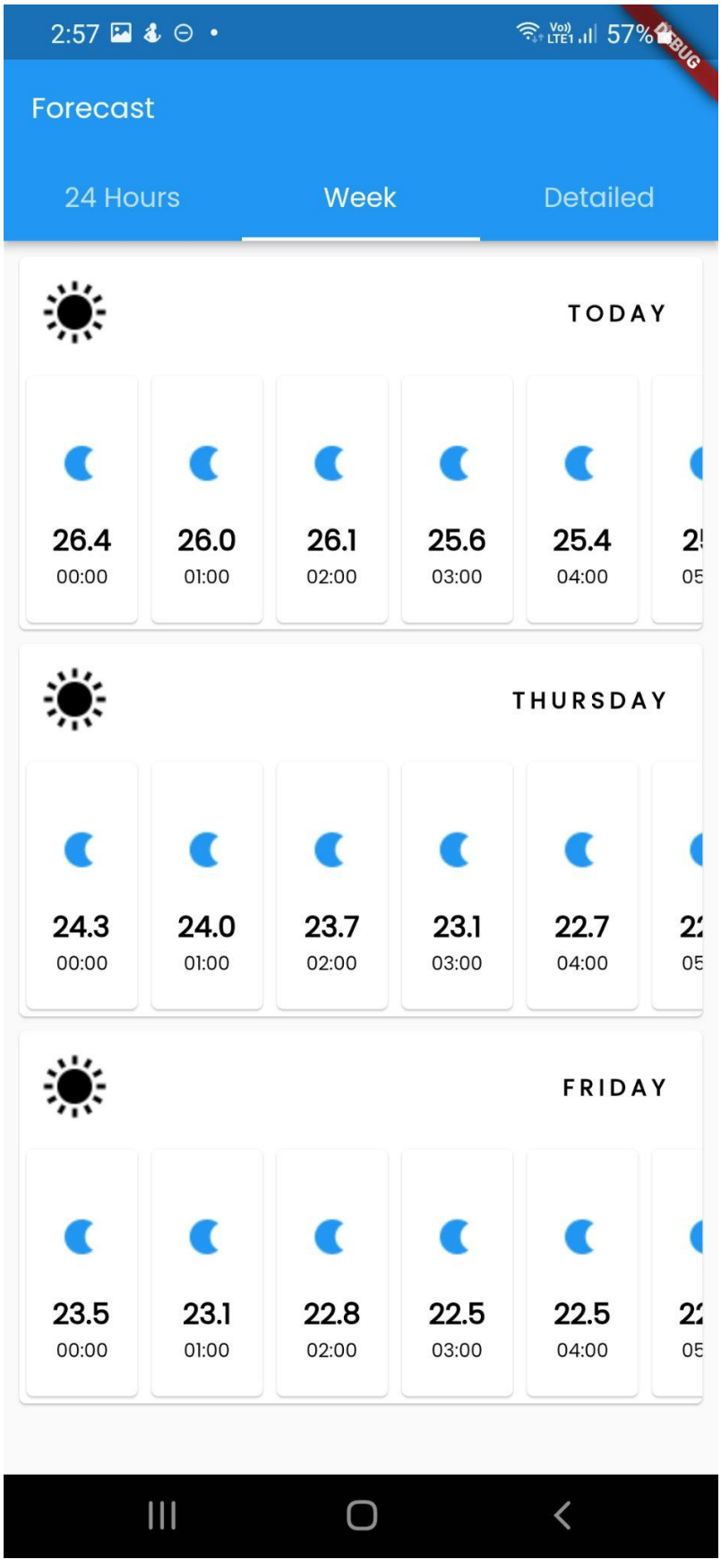
24 Hours

The 24 hours section provides a detailed hour-by-hour forecast, including temperature and other important weather information for each hour. This information is updated frequently to provide you with

the most accurate information possible. With this information, you can easily plan your day and be prepared for any changes in the weather.

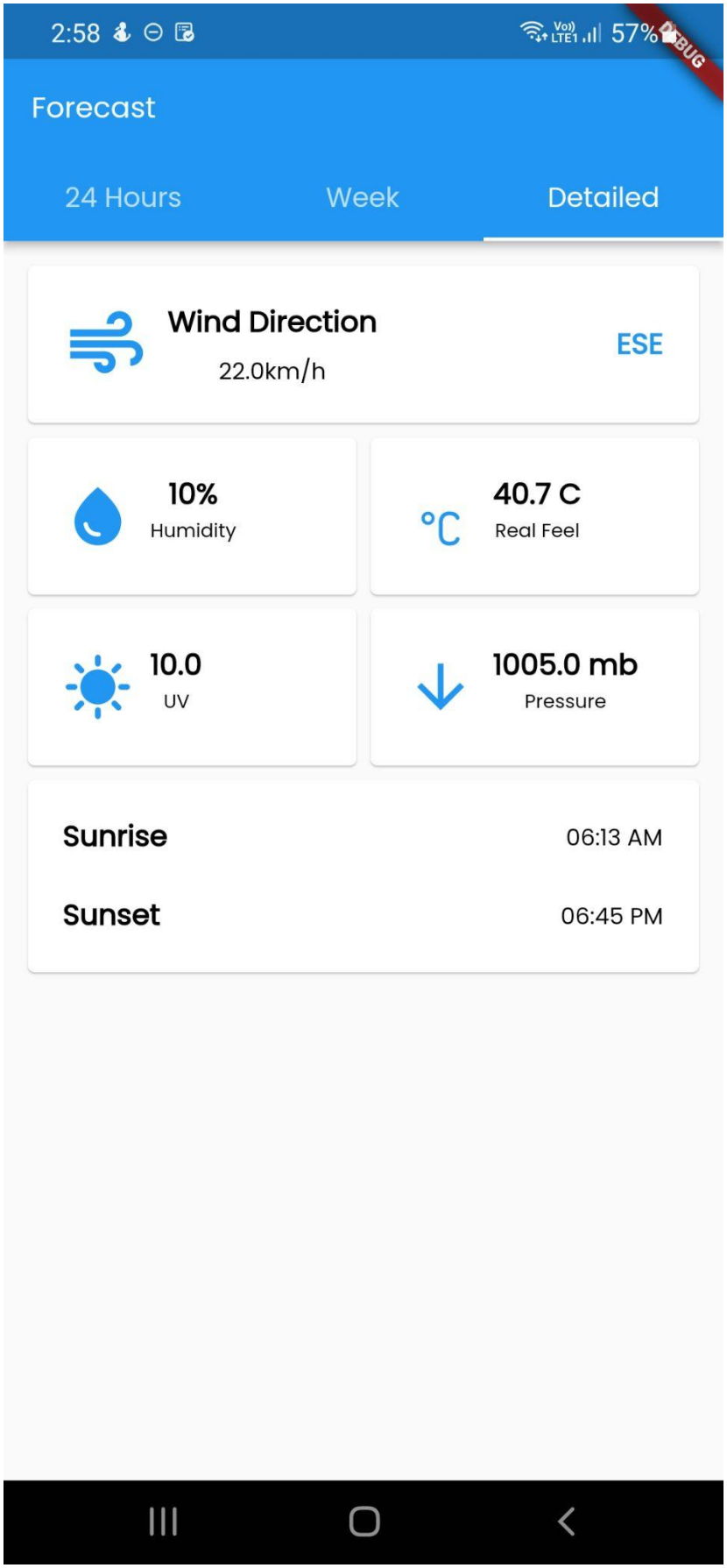


Weekly Weather Forecast



The weekly section provides a comprehensive day forecast, including temperature and other important weather information. This information can help you plan your week, from choosing the best days to go for a picnic to preparing for potential weather-related events.

Detailed Weather Information



This feature provides users with comprehensive information about the weather conditions in a specific place. The information is displayed in an easy-to-read format and includes details such as temperature, humidity, pressure, wind speed and much more information.

WEATHER NEWS WITH YOUTUBE INTEGRATION :

```
import 'package:annegudde_weather_app/models/NewsData.dart';
import 'package:flutter/cupertino.dart';
import 'package:flutter/material.dart';
import 'package:url_launcher/url_launcher.dart';

class News extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return MaterialApp(
    title: 'Latest News',
    home: NewsPage(),
    theme: ThemeData(
       primarySwatch: Colors.blue,
       fontFamily: 'Poppins'
    ),
  );
 }
}

class NewsPage extends StatefulWidget {
 @override
 State<StatefulWidget> createState() {
  return NewsPageState();
 }
}

class NewsPageState extends State<NewsPage> {
 @override
 Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text(
        'Latest News',
        style: TextStyle(
          fontSize: 15.0,
        ),
      ),
    ),
    body: Container(
      child: FutureBuilder<List>(
         future: getNewsData(),
         builder: (context, snapshot) {
```

```
if(snapshot.hasData){
 return ListView.builder(
    itemCount: snapshot.data!.length,
    itemBuilder: (context, index) {
     List newsData = snapshot.data!;
     return Card(
      child: Padding(
       padding: EdgeInsets.all(20.0),
       child: Column(
        crossAxisAlignment: CrossAxisAlignment.start,
        children: [
         Image.asset(
          newsData[index].imageUrl,
          height: 150,
          width: 400,
          fit: BoxFit.fill
         ),
         SizedBox(height: 10.0),
         Text(
          newsData[index].title,
          style: TextStyle(
              color: Colors.black, fontSize: 15, fontWeight: FontWeight.w600),
         ),
         SizedBox(height: 5.0),
         Text(
          newsData[index].description,
          style: TextStyle(
              color: Colors.black, fontSize: 12),
         ),
         SizedBox(height: 10.0),
         InkWell(
          onTap: () => viewMoreAction(newsData[index].sourceUrl),
          child: Text(
           'View More',
           textAlign: TextAlign.right,
           style: TextStyle(color: Colors.blue),
          ),
         )
        ],
       ),
      ),
     );
    }
 );
```

```
          }
          return Center(
            child: CircularProgressIndicator(
              color: Colors.blue,
            ),
          );
        }
      ),
    ),
  );
}

viewMoreAction(String url) async {
  final uri = Uri.parse(url);
  await launchUrl(uri, mode: LaunchMode.externalApplication);
}

Future<List> getNewsData() async {
  List<NewsData> newsList = [];

  newsList.add(
    const NewsData(
        imageUrl: 'detailed_forecast.jpg',
        title: 'Typical Pre Monsoon rains over South India',
        description: 'South India is all set to see the typical Pre Monsoon activities for the next four to five days.',
        sourceUrl: 'https://www.skymetweather.com/content/weather-news-and-analysis/typical-pre-monsoon-rains-over-south-india/',
        date: '2023-03-31'
    ),
  );
  newsList.add(
    const NewsData(
      imageUrl: 'forecast.jpg',
      title: 'Telangana, Andhra, Karnataka, Tamil Nadu In for Rains and Thunderstorms',
      description: 'The met department has advised farmers to take necessary measures to protect their crops and livestock from inclement weather.',
      sourceUrl: 'https://youtu.be/sxN3pZ8gaN4',
      date: '2023-03-31'
    ),
  );

  return newsList;
```

```
 }
}
```

Weather Api Integration :

```
class ApiConstants{
 static final String baseUrl='http://api.weatherapi.com/v1/';
 static final String APIKey="4e508ca1ece74b98a2365917231303";
 static final String
APIParameter="forecast.json?key="+APIKey+"&q=Mangalore&aqi=no&days=7&hour=11";
 static final String
HourlyAPIParameter="forecast.json?key="+APIKey+"&q=Mangalore&aqi=no&days=7";

 getNewCityParams(String city) {
  final String urlParams = "forecast.json?key="+APIKey+"&q=" + city + "&aqi=no&days=7";
  return urlParams;
 }

 getAPIParameter(String city) {
  final String urlParams = "forecast.json?key="+APIKey+"&q=" + city + "&aqi=no&days=7&hour=11";
  return urlParams;
 }

 getHourlyAPIParameter(String city){
  final String urlParams = "forecast.json?key="+APIKey+"&q=" + city + "&aqi=no&days=7";
  return urlParams;
 }

}
```

Technologies and tools used :

- **Flutter Framework: Flutter is a cross-platform mobile app development framework that allows developers to create high-performance, natively compiled apps for iOS, Android, and the web.**

- **Dart Programming Language: Flutter uses the Dart programming language, which is an object-oriented, class-defined, garbage-collected language that is easy to learn and has a syntax similar to that of Java or C#.**
- **Weather API: To fetch weather data for the app, I have used the Weather API, which provides current and forecasted weather data for locations worldwide.**
- **Android Studio: Android Studio is an integrated development environment (IDE) used for developing Android apps. It provides developers with tools for debugging, testing, and building Android apps.**
- **SQLite : SQLite is a C-language library that implements a small, fast, self-contained, high-reliability, full-featured, SQL database engine. SQLite is the most used database engine in the world. SQLite is built into all mobile phones and most computers and comes bundled inside countless other applications that people use every day.**

END USERS OF THE APP

- **Locals:** Local users of a weather app may use it to plan their daily activities, such as what clothes to wear, whether to bring an umbrella, or if they need to adjust their commute due to weather conditions. They may also use the app to monitor severe weather alerts, such as thunderstorms or hurricanes.

- **Tourists:** Tourists may use a weather app to plan their travel activities, such as sightseeing or outdoor adventures, based on the weather forecast. They may also use it to prepare for weather conditions that they are not accustomed to, such as extreme heat or cold.
- **Projects:** Depending on the type of project, users may use a weather app to monitor weather conditions that could impact the success of the project. For example, construction projects may need to track rain and wind conditions, while agricultural projects may need to track temperature and humidity.
- **Agriculture:** Farmers and other agricultural professionals may use a weather app to monitor weather conditions that could impact crop yields or livestock health. This could include temperature, rainfall, wind, and other factors that can affect plant growth and animal behavior.
- **Health:** Certain weather conditions can impact people's health, such as extreme heat, air pollution, or pollen levels. Health professionals and individuals with certain health conditions may use a weather app to monitor these conditions and plan accordingly.
- **Sports:** Outdoor sports and activities can be heavily impacted by weather conditions, such as temperature, wind, and precipitation. Sports enthusiasts may use a weather app to plan their activities or to track conditions during a game or competition.

Conclusion :

In conclusion, Anegudde Weather App is a must-have mobile application for anyone who wants to stay informed about the weather conditions in their area. The app's advanced technology, real-time updates, and accurate forecasts make it a reliable source of weather information. Moreover, the app's user-friendly interface makes it easy to use and cater to the individual needs of its users. Download Anegudde Weather App today and enjoy the benefits of staying informed about the weather conditions in your area.

EXPERIENCE :

Working on the ANEGUDDE WEATHER APP project alone was both challenging and rewarding. As the sole developer, I had complete control over the project's direction and could work at my own pace without worrying about conflicts with others.

However, I also had to take on many different roles, including project manager, designer, developer, and tester.I have used Agile method and followed all software life cycle.One of the most significant challenges I faced was teaching myself new skills. Although I did not had some prior experience with mobile app development required me to learn mobile app development and flutter.As I began to develop the app, I encountered various technical challenges that I had to

overcome on my own.For example, integrating the Weather API and implementing required me to read through documentation, experiment with different approaches, and debug errors. Despite these challenges, working on the ANEGUDDE WEATHER APP project alone allowed me to develop skills in different areas and gain a deeper understanding of the project's intricacies. I found that breaking the project down into smaller, achievable goals helped me stay motivated and avoid burnout.

Overall, working on the ANEGUDDE WEATHER APP project alone was a valuable learning experience that taught me the importance of self-motivation, persistence, and problem-solving. Although it was challenging at times, I am proud of the final product and the skills I gained along the way.

I have uploaded all the code files in the GitHub Ma'am.

GITHUB PROJECT -

https://github.com/Chaturth-R/CS301-SOFTWARE-ENGINEERING-PROJECT-ANEGUDDE-WEATHER-APP

THANK YOU MADAM!
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