

# SkyCast: Weather Application

Thank you for choosing our Weather Information and Location Display app! This manual will guide you through the steps to use the app effectively and make the most out of its features.

## 1. Installation

To install the Weather Information and Location Display app on your Android device, follow these steps:

- 1.1. Open the Google Play Store on your Android device.
- 1.2. Search for "Weather Information and Location Display" in the search bar.
- 1.3. Locate the app in the search results and tap on it.
- 1.4. Tap the "Install" button to begin the installation process.
- 1.5. Once the installation is complete, you can find the app on your device's home screen or app drawer.

## 2. App Permissions

The Weather Information and Location Display app requires the following permissions to function properly:

- Location: This permission is required to access your device's GPS or network-based location services to display your current location.
- Internet: This permission is necessary to retrieve weather information from external APIs and store/cache data using DynamoDB.
- Accelerometer: This permission allows the app to utilize the accelerometer sensor for dead-reckoning location estimation.

During the installation process, the app will request these permissions. Please ensure that you grant the necessary permissions for optimal app functionality.

### 3. App Features

The Weather Information and Location Display app offers several features to enhance your user experience. Let's explore each feature in detail:

- **Current Location Display:** The app utilizes your device's GPS or network-based location services to display your current location on the screen. This feature provides real-time location information.
- **Weather Information:** The app fetches weather details from external sources using Lambda functions. It displays information such as wind speed, weather description, temperature, apparent temperature, and humidity. This data is updated regularly for accurate and up-to-date weather information.
- **Caching with DynamoDB:** To ensure fast access to weather information, the app stores/cache weather data using DynamoDB. This caching mechanism helps retrieve previously fetched weather data quickly, reducing the need for frequent API calls. Additionally, clearing the cache is handled by EventBridge Scheduler which calls a lambda function that deletes the entries in the table.
- **Dead-reckoning Algorithm:** The app utilizes the accelerometer sensor in your device to estimate your relative location. This algorithm helps conserve battery power by minimizing the reliance on GPS or network-based location services. It provides a low-energy consumption solution while still providing approximate location information.

### 4. Usage Instructions

*Accessing Weather Information:*

1. Upon launching the app, you will be presented with the main screen.
2. The app automatically detects your current location and displays it on the screen.
3. To view the weather details, scroll down on the screen.

4. The weather information section will display details such as wind speed, weather description, temperature, apparent temperature, and humidity.
5. The app regularly updates the weather information to provide the latest data.

*Enabling Location Display:*

1. By default, the app displays your current location on the screen.
2. If you wish to disable the location display, tap the "Settings" icon (usually represented by a gear or three dots) on the app screen.
3. In the settings menu, locate the "Location Display" option.
4. Toggle the switch to disable the location display if desired.
5. To re-enable the location display, follow the same steps and toggle the switch back on.

*Utilizing Dead-reckoning Algorithm:*

1. The dead-reckoning algorithm provides an estimate of your relative location with reduced energy consumption.
2. To utilize this feature, ensure that your device's accelerometer sensor is enabled.
3. The app automatically activates the dead-reckoning algorithm when the accelerometer sensor is available.
4. The estimated relative location will be displayed on the screen along with the current location.
5. Please note that the dead-reckoning algorithm provides approximate location estimation and may not be as accurate as GPS or network-based location services.

## **5. Troubleshooting**

If you encounter any issues while using the Weather Information and Location Display app, please try the following troubleshooting steps:

1. Ensure that your device has a stable internet connection.

2. Check that you have granted the necessary permissions to the app, including location, internet, and accelerometer permissions.
  3. Restart the app and check if the issue persists.
  4. If the weather information does not update, try refreshing the screen or reopening the app.
  5. If the app crashes or freezes, close it and relaunch it.
  6. If none of the above steps resolve the issue, uninstall and reinstall the app.
- If the problem persists, please refer to the "Support and Contact Information" section of this manual for further assistance.

### **Support and Contact Information**

If you require further assistance or have any inquiries related to the Weather Information and Location Display app, please contact me:

Email: [rivera.davidkyle@gmail.com](mailto:rivera.davidkyle@gmail.com)

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