Android Development Challenge

Problem Statement

Build an android app to retrieve weather information based on their searching criteria and render the searched results on dashboard screen. We just want to build an MVP version with a very limited set of functionalities:

1. The application is a simple Android application which is written by Java/Kotlin.
2. The application is able to retrieve the weather information from OpenWeatherMaps API.
3. The application is able to allow user to input the searching term.
4. The application is able to proceed searching with a condition of the search term length must be from 3 characters or above.
5. The application is able to render the searched results as a list of weather items.
6. The application is able to support caching mechanism so as to prevent the app from generating a bunch of API requests.
7. The application is able to manage caching mechanism & lifecycle.
8. The application is able to handle failures.
9. The application is able to support the disability to scale large text for who can't see the text clearly.
10. The application is able to support the disability to read out the text using VoiceOver controls.

Given

Weather API

11. URL: https://api.openweathermap.org/data/2.5/forecast/daily?q=saigon&cnt=7&appid=60c6fbeb4b93ac653c492ba806fc346d
12. Parameters:
13. q: name of city
14. cnt: number of forecast days
15. appid: application ID (no need to change)
16. units: Temperature. Unit Default: Kelvin, Metric: Celsius, Imperial: Fahrenheit.

Requirement:

User Interface

Expected Outputs

1. Programming language: Kotlin is required, Java is optional.
2. Design app's architecture (suggest MVVM)
3. Apply LiveData mechanism
4. UI should be looks like in attachment.
5. Write UnitTests
6. Acceptance Tests
7. Exception handling
8. Caching handling

9. Secure Android app from:
a. Decompile APK
b. Rooted device
c. Data transmission via network
d. Encryption for sensitive information
10. Accessibility for Disability Supports:
a. Talkback: Use a screen reader.
b. Scaling Text: Display size and font size: To change the size of items on your screen, adjust the display size or font size.
11. Entity relationship diagram for the database and solution diagrams for the components, infrastructure design if any
12. Readme file includes:
a. Brief explanation for the software development principles, patterns & practices being applied
b. Brief explanation for the code folder structure and the key Java/Kotlin libraries and frameworks being used
c. All the required steps in order to get the application run on local computer
d. Checklist of items the candidate has done.

Guidance

1. As an experienced Android Engineer, you're responsible for designing and implementing **Android application** with a clean way.
2. You don't need to build a complete application, **five items in the expected outputs are good enough**.
3. It is expected that this will usually take you about 3-4 hours to complete and will serve as a foundation for a later conversation with you. However, **there's no limitation regards how long you should do this assessment, you are free to do the assessment in more than one day as long as you're comfortable with that.**

4. You should treat this as a real-world application. While we do not expect for it to be deployed, it must be able to run locally.
5. You are free to use whatever Java/Kotlin libraries and frameworks you are familiar with, but Kotlin, MVVM with LiveData in Android Architecture Components are commonly used in VDC.
6. You are encouraged to take this test to show up your expertise about Architectural/OOP design patterns, principles and best practices as long as you have the right reason to use it.
7. You should commit your solution to a publicly accessible source control site (eg. Github or GitLab). Your submission just needs to be a link to the repository.

Last but not least, don't see this as a coding assignment, and don't limit it to coding only. Use it as a chance for you to show your expertise in software development, your ability to design a solution, and how passionate you are as an experienced ANDROID engineer! If you have knowledge and hands-on experience in other concerns other than coding such as solution architecture, infrastructure, cloud computing, containerised application etc. why not show it up!

At VDC, we're looking for developers, not coders!