



# Hygieia Homeopathy Mobile App Developer's Manual

Version 1.1

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# Homeopathic Clinic LLC

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## Revision History

Date	Version	Description	Author
04/17/2021	1.0	Initial Draft	Barbara Amoros
04/20/2021	1.1	Added remaining details for database access.	Barabra Amoros

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## 1. Introduction

### 1.1. Purpose

The purpose of this document is to provide an extensive guide for developers who want to maintain, improve, or add a new feature to the Hygieia Homeopathy app. This document describes how to access the project, install the necessary dependencies, modify the code, and access the database. Anyone who wants to learn more and understand the technical aspects of this project should reference this manual.

### 1.2. Project Overview

The Hygieia Homeopathy Clinic provides basic knowledge of homeopathy. People use our time-tested methods to trust in their own body's recovery functionality. Homeopathy is a holistic natural system of medicine and helps you to recover from all types of illnesses naturally, while strengthening your immune system, increasing the energy and vitality. Our team's goal is to provide the client a fully functional mobile app for easier content viewing, patient management, appointment making, and patient messaging.

### 1.3. Technology Stack and Document Overview

The Hygieia Homeopathy application's front-end is built with web technologies such as HTML, CSS, Typescript and the popular framework, Angular. Our backend is handled by Firebase, an app-development platform on Google Cloud, which also provides us with analytics, distribution, authentication, and website hosting.

#### 1.3.1. Ionic

Ionic is an open source framework that allows developers to build apps for all major app stores and the mobile web from a single codebase. This tool was very useful for developing an app that would work for both target os: iOS and Android, while at the same time allowing the clinic's staff to perform maintenance on the website. All of this, using the same code.

## 1.3.2. Angular

Angular is a platform and framework for building single-page client applications using HTML and TypeScript.

## 1.3.3. Capacitor

Capacitor provides a consistent, web-focused set of APIs that enable an app to stay as close to web standards as possible, while accessing rich native device features on platforms that support them.

## 1.3.4. Firebase

Firebase is a Backend-as-a-Service app development platform developed by Google Cloud that provides hosted backend services such as a realtime database, cloud storage, authentication, crash reporting, machine learning, remote configuration, and hosting.

### 1.3.4.1. Authentication

Our app uses firebase authentication to verify the identity of admin users trying to perform any CRUD operation on the app's images, blog posts, quote, and information. Firebase authentication backend services will verify those credentials provided by admin users in a web portal and return a response to the client.

### 1.3.4.2. Hosting

The admin portal is part of the progressive app that can be accessed from any browser. We are hosting this web application using Firebase, and deploy new changes with one command.

### 1.3.4.3. NoSQL Firestore

Cloud Firestore is a flexible, scalable database for mobile, web, and server development. It keeps our data in sync across client apps through real time listeners and offers offline support for mobile and web.

#### 1.3.4.4. App Distribution

We are using this service to provide the Android application to testers and keep track of crashes and usage.

#### 1.3.4.5. Analytics

Free unlimited service provided by Firebase which gives us and the clinic's staff more information about our users and key events. The SDK automatically captures a number of events and user properties and also allows us to define our own custom events to measure the things that uniquely matter to The Homeopathic Clinic's business.

## 2. Development Environment Setup

### 2.1. IDE

Our project has been developed using VSCode. This IDE can be downloaded for free on your computer from the following link:

<https://code.visualstudio.com/download>

Just choose your computer's operating system and follow the installation setup. You can use a different IDE like IntelliJ, but we have based this manual on VSCode setup. Make sure to reference your IDE of choice documentation from any variations.

### 2.2. Git

Our project lives in a private GitHub repository. It can be found in the following link:

[https://github.com/barbieamoros/ionic\\_tabs](https://github.com/barbieamoros/ionic_tabs)

You can fork it and add your new changes, or download a zip file containing the source code and initialize your own repository with the code. Feel free to use the platform of your choice (GitLab, BitBucket, etc...)

## 2.3. Install Ionic, Angular and Capacitor

The following instructions have been adapted from the official ionic documentation: <https://ionicframework.com/docs/intro/environment>

### 2.3.1. Node & NPM

*Node*: Node is a runtime environment that allows JavaScript to be written on the server-side.

*Npm*: the package manager for node. It allows developers to install, share, and package node modules

You will need to install Node.js in order to run ionic. The following is the installation site:

<https://nodejs.org/en/download/>

Choose your computer's operating system and follow the installation instructions. Ionic documentation recommends choosing the LTS version for better compatibility.

You can verify node's successful installation by running the following commands:



```
node --version
```

```
npm --version
```

## 2.3.2. Ionic CLI & Extra dependencies

You should have a node.js installed in your machine by now. It's time to install ionic. Run the following command:

```
npm install -g @ionic/cli
```

After this installation you should be able to run our web application. Go to VSCode and open the project either from GitHub or the source code's zip file.

We have other npm dependencies to install before our project is ready to run. For your reference, while I was assembling this developer's manual, I ran the following command in order to know which dependencies I installed during the development phases.

```
npm install @angular/cli@10.1.6
```

```
npm install firebase-tools@9.10.0
```

```
npm install capacitor-resources@2.0.5
```

```
npm install @ionic/pwa-elements
```

A good advice I wish I knew sooner is that if you cannot run the application, there is probably something wrong with the npm packages. Try to read the output and npm install any package it tells you that cannot be found.

It's now time to run the app. Use the following command under the project's directory:

*ionic serve*

After the program is compiled, this command will open a tab in your browser of choice. For the url you will see:

localhost:8100

You will see our application with the size of your screen, but we do not want that.

- Go to the navigation of your browser and look for developer;s tools
- Find 'Enter Responsive Design Mode'

After that, you will be able to see the application as if you were using a mobile device.

## 3. Project Structure

If you desire to add a new feature to the app, understanding how an angular project works is a must. We will provide some basic ideas, but you will need to follow a tutorial in order to understand what is going. The following is our project's structure, and we have pointed out the directories you need to be aware of.

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If you want to create a new screen, running the following command is very useful:

```
ionic g page <name>
```

## 4. iOS Development

Before you start reading this section, it is important to know that only users with macOS operating systems will be able to develop applications for devices running iOS.

There are two workflows for developing iOS apps with ionic, but our entire project we have only used xcode since it's the most stable way.

### 4.1. XCode

Xcode is the IDE for creating native iOS apps. It includes the iOS SDK and Xcode command-line tools. You can download it for free from:

<https://developer.apple.com/download/>

Follow the installation prompts. Once you have successfully installed it, run the following command:

```
xcode-select --install
```

In order to download or even develop iOS apps, you will need to code sign it. If you only intend to use the application in your personal device, you can login with your apple id.

*Xcode » Preferences » Accounts.*

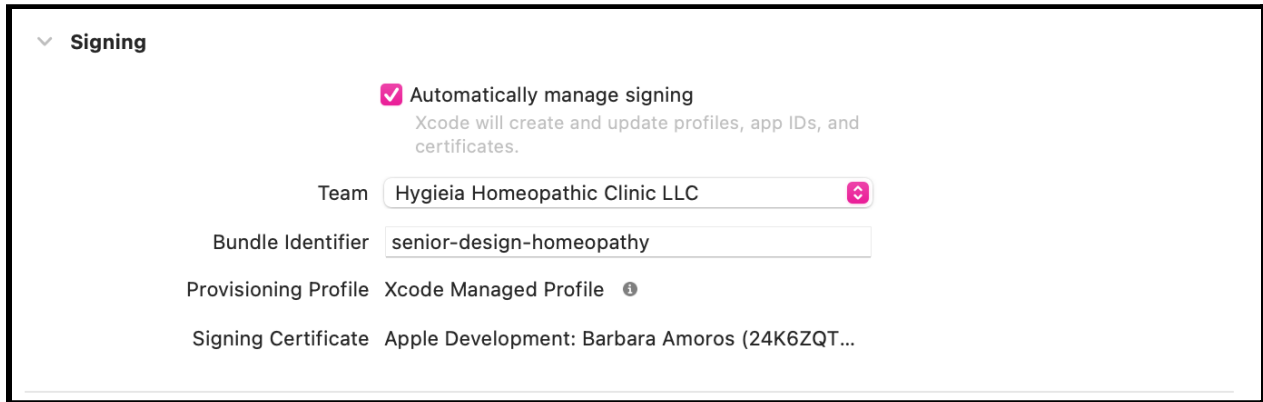
If you intend to distribute the app in the store, you will need to ask the Homeopathic Clinic to provide admin access to the Apple Developer Program. The Homeopathic Clinic joined the Apple Developer Program during April 2021, and they will have to renew their membership yearly in order to keep their app published in the store.

If you login with the credentials you will see this as the entity signing the app (make sure automatic signing is selected):

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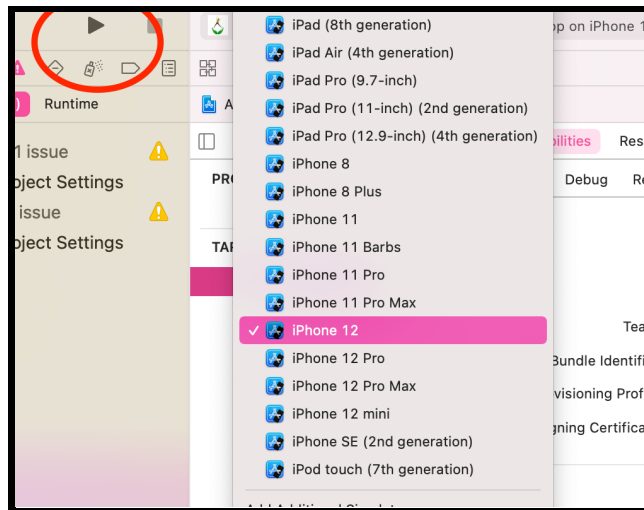


## 4.2. Simulator

The simulator is one of the greatest tools of xcode. If you want to see how your work looks on an actual device, this is the way to do it.

### Window » Devices and Simulators

Once you compile your code with xcode, you will be able to select a device and run your code there.



## 4.3. Render Code developed in VSCode

If you want to compile your code and open it in xcode, you will have to run the following commands from the terminal:

Every time there is a code change, you need to perform the following two commands in order to get the latest changes in xcode. They take care of producing the build.

```
Ionic capacitor copy ios  
Ionic capacitor open ios
```

## 4.4. Cocoa Pods

A recurring issue I run into while trying to develop for ios is the rendering of the cocoa pods. There is a formula that has fixed this issue for me most of the time.

```
cd ios/App  
pod install
```

Also, you will need to perform those two commands if you want to integrate a new SDK in your ios app through the pods.

## 4.5. Generate a build for distribution

If you want to distribute to testers or the app store, you will have to go through the following steps:

1. Ask the Homeopathic Clinic to give you admin access to their Apple Developer Account
2. Go to Certificates, Identifiers, and Profiles

3. You will need to generate a certificate for yourself
4. Download the identifier for the app with the bundle id 'senior-design-homeopathy'
5. Finally download the only profile
6. You will also require to request a key, this can be achieved from your computer's keychain
7. Go to xcode now.
8. Product > Archive
9. Distribute app
10. Choose your distribution method (App Store or Ad Hoc)

## 5. Android Development

Contrary to iOS Development, the Android development environment is open to any developer with any operating system.

### 5.1. Android Studio

Android Studio is the IDE for creating native Android apps. It includes the Android SDK, which will need to be configured for use in the command line. The Android SDK is a software development kit built for developers building for Google's Android Platform. It includes tools for building, testing, and debugging Android applications. You can download Android Studio from the following link:

<https://developer.android.com/studio/>

In the installation screen, finish installing the SDK.

### 5.2. Simulator

Just like the iOS Simulators, we will need to set up Android emulators with the AVD Manager. You can find them at

Configure >> AVD Manager

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You will need to create a virtual device. The ionic documentation recommends if unsure, to use the Pixel 2 with Pie (API 28) image. The following link has the Android documentation, which is more detailed with all the setup:

<https://developer.android.com/studio/run/managing-avds>

## 5.3. Gradle

Gradle is an open-source build automation tool that is designed to be flexible enough to build almost any type of software. We need to install this in order to be able to generate builds to run in the simulator. Once this tool is installed, you will not have to worry too much about it. The following is the installation link:

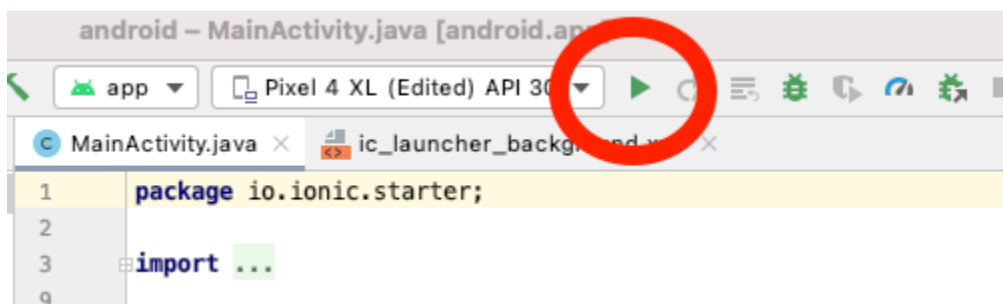
<https://gradle.org>

## 5.4. Launch and Develop

Now, you are ready to launch the project. Run the following command in your terminal:

```
ionic capacitor copy android  
Ionic capacitor open android
```

Open Android Studio, and click the following button in order to launch the simulator. Please note that it takes a while to get started.





## 5.5. Generate an .apk file for distribution

If you want to distribute the application to the store or testers, you will need to generate an .apk file. This process is a bit easier than in iOS.

Build > Build Bundles and APKs > Build APKs

A message will appear prompting you to go to the location of the .apk file in your computer, I recommend locating it there.

## 6. Progressive Web App

Progressive Web Apps use modern web capabilities to deliver fast, native-app experiences with no app stores or downloads, and all the goodness of the web. Besides working in iOS and Android, our app also works on the web. You can find it through this link:

<https://homeopathy-senior-design-212ca.web.app>

Everytime you push new code and deploy to production, you will be able to see the changes there instantly.

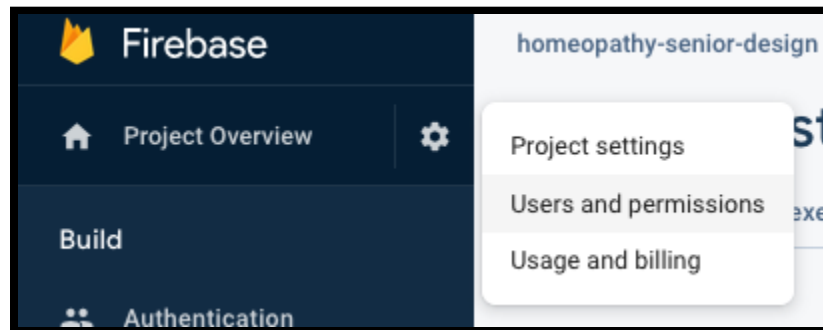
Whenever you make a change in the source code, you will have to run the following two commands:

```
ionic build --prod  
Firebase deploy
```

Let it compile and you will be able to see the changes.

## 7. Access and Manage Firebase

I consider that one of the things that makes our app great is it's seamless integration with such a powerful tool as Firebase is. As mentioned in our introduction, we use firebase to manage authentication, hosting, database and distribution. In order to get access to the console, you will need to ask some admin from the Homeopathic Clinic's staff to give you access and assign you a role within their organization. If you are someone from the organization who wants to grant access to a new user, you need to find the following button:



1. Click on 'Users and permissions'
2. Add a member
3. Enter their email address and the role you want to give them
  - *Viewer*: Will not be able to change anything from the database, only view its contents
  - *Editor*: Will be able to edit the database but some other functionality will be limited
  - *Owner*: Will be able to have unlimited access to all firebase services.

### 7.1. Firestore CRUD Operations

All of our app's data is stored in Firebase, which is a Nosql database managed by Google Cloud. Find the 'Firestore' tab to the left of the console.

We currently have 9 different tables stored. They are:

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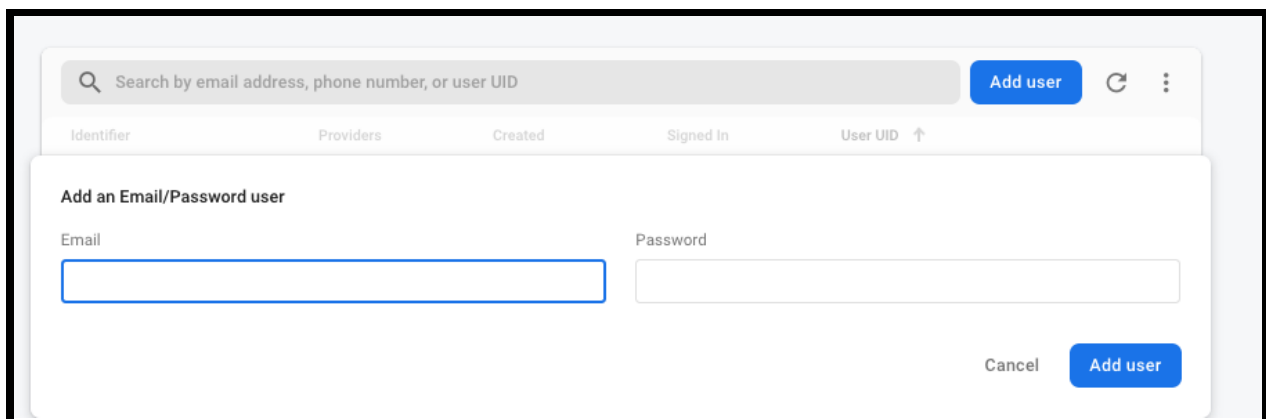
---

1. *Blog*: contains the blog posts from the home page
2. *Condition*: contains all the conditions, with symptoms and extra information provided by Dr. Sridharan
3. *Quote*: contains the quote of the day which is showed in the home page
4. *caseStudies*: contains links to case studies
5. *Forum*: stores all the posts from the forum feature
6. *Home images*: contains the paths to our API storage where home images are being stored
7. *learnMore*: Has all the information for the learn more page
8. *Medicines*: contains information about the medicines, the conditions and the symptoms
9. *Testimonies*: contains links to testimonies

The CRUD operations in these tables is self explanatory and any admin can create or delete them directly from the console.

## 7.2. Manage authenticated users

Go to authentication in the console, and add a user that you would like to give access to the admin portal.



The image shows a screenshot of the AWS IAM console's 'Add user' dialog box. At the top, there is a search bar with the placeholder text 'Search by email address, phone number, or user UID' and an 'Add user' button. Below the search bar, there is a table with columns: Identifier, Providers, Created, Signed in, and User UID (with an upward arrow). The 'Add an Email/Password user' dialog is open, showing two input fields: 'Email' and 'Password'. At the bottom right of the dialog, there are 'Cancel' and 'Add user' buttons.