roadmap.sh

Android Developer

Step by step guide to becoming an Android developer in 2023

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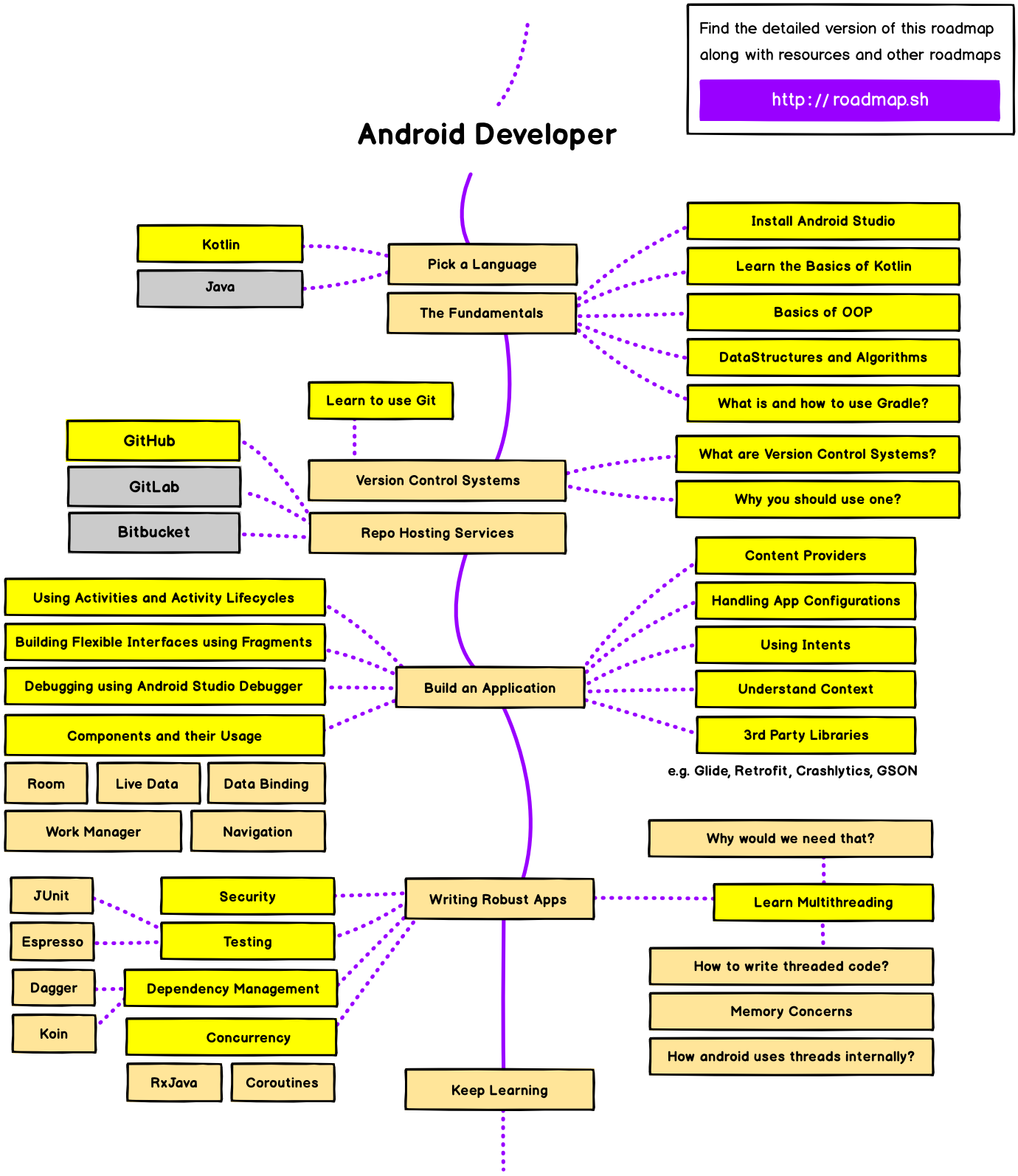
The intent of this guide is to give you an idea about the Android development landscape and to help guide your learning if you are confused. Before we start, please note that the roadmap is opinionated, and you might have different opinions than those of the author. Having said that, **we would love to hear your opinions** and incorporate them in the roadmap if suitable.

There are multiple ways to develop applications for Android; you can go down the path of hybrid application development where **Flutter**, **React-Native**, or **NativeScript** are the most common

Answering the question of hybrid vs native is out of the scope of this roadmap. This roadmap is focused on native Android app development, but if you are interested in learning any hybrid framework, my personal preference is **React-Native** and I would recommend you check out the **Frontend Developer Roadmap**.

Complete Roadmap

Here is the full version of the roadmap in a single image and after that we have the broken down version with the resources and links to learn more about each of the boxes.

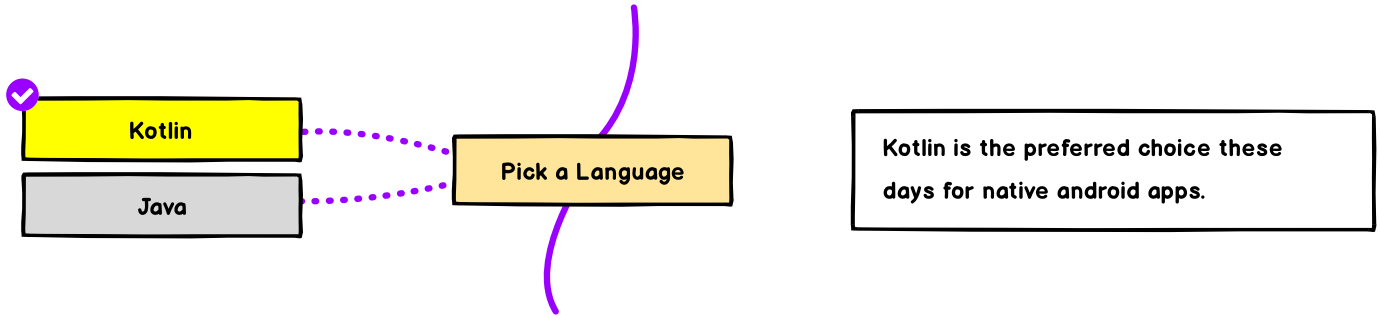


Broken Down Version

Below is the broken down version of the roadmap with links and resources to learn more about each of the items listed in the complete roadmap above.

Pick a Language

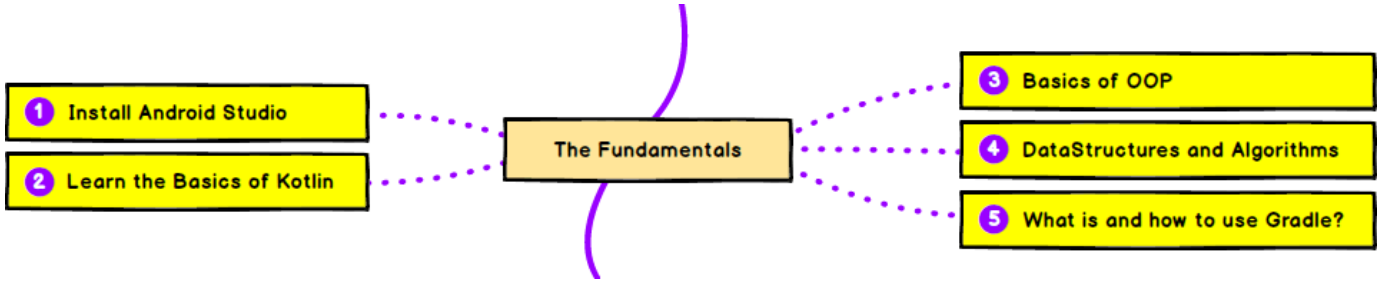
For the languages, you can develop Android apps either by using Kotlin or Java.



Although, you can use both **Kotlin** and **Java** to develop native Android apps, **Google announced in 2019** to make Kotlin the preferred way of developing Android applications. If you were to start learning Android development today, Kotlin should be your language of choice.

The Fundamentals

Install **Android Studio** and learn the basics of Kotlin to get started.

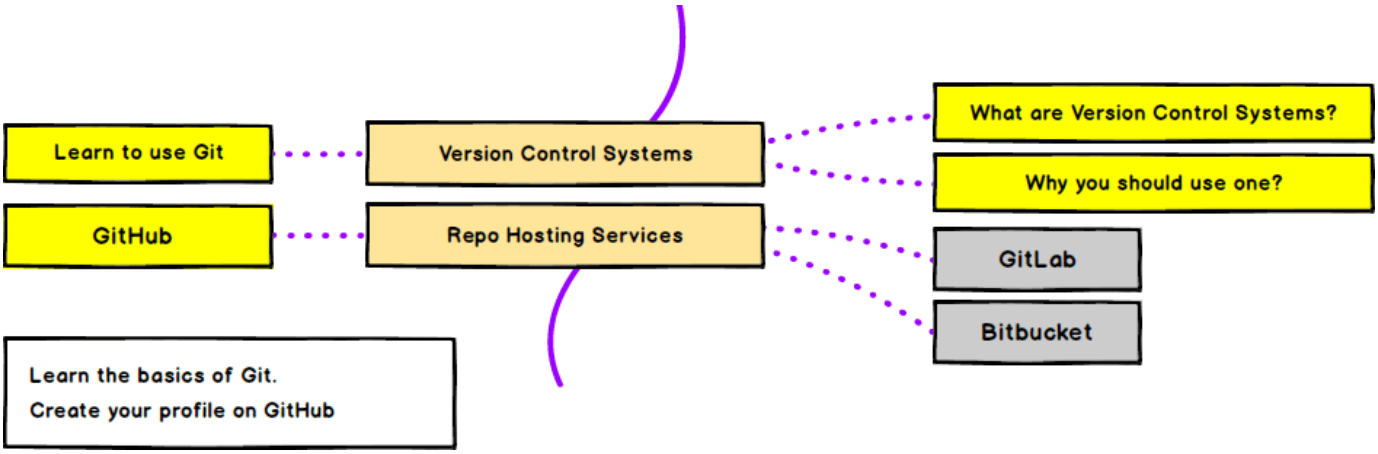


We have also listed down some free resources which you can use for the items listed in the image above. If you have some better ones, please do suggest. Also, you don't need to go through all of them, just go through them and pick what you like.

- **Learn the basics of Kotlin**
- **Kotlin Docs** and **Official Kotlin Tutorials**
- **Data Structures and Algorithms**. Also **check this**.
- **Kotlin Data Structures**
- **Algorithms and Data Structures in Kotlin**
- **Gradle**
- **Getting started with Gradle** Note: Android Studio comes with a working installation of Gradle, so you don’t need to install Gradle separately in that case.

Version Control Systems

Version Control Systems record your changes to the codebase and allow you to recall specific versions later. There are multiple Version Control Systems available, but **Git** is the most common one these days.

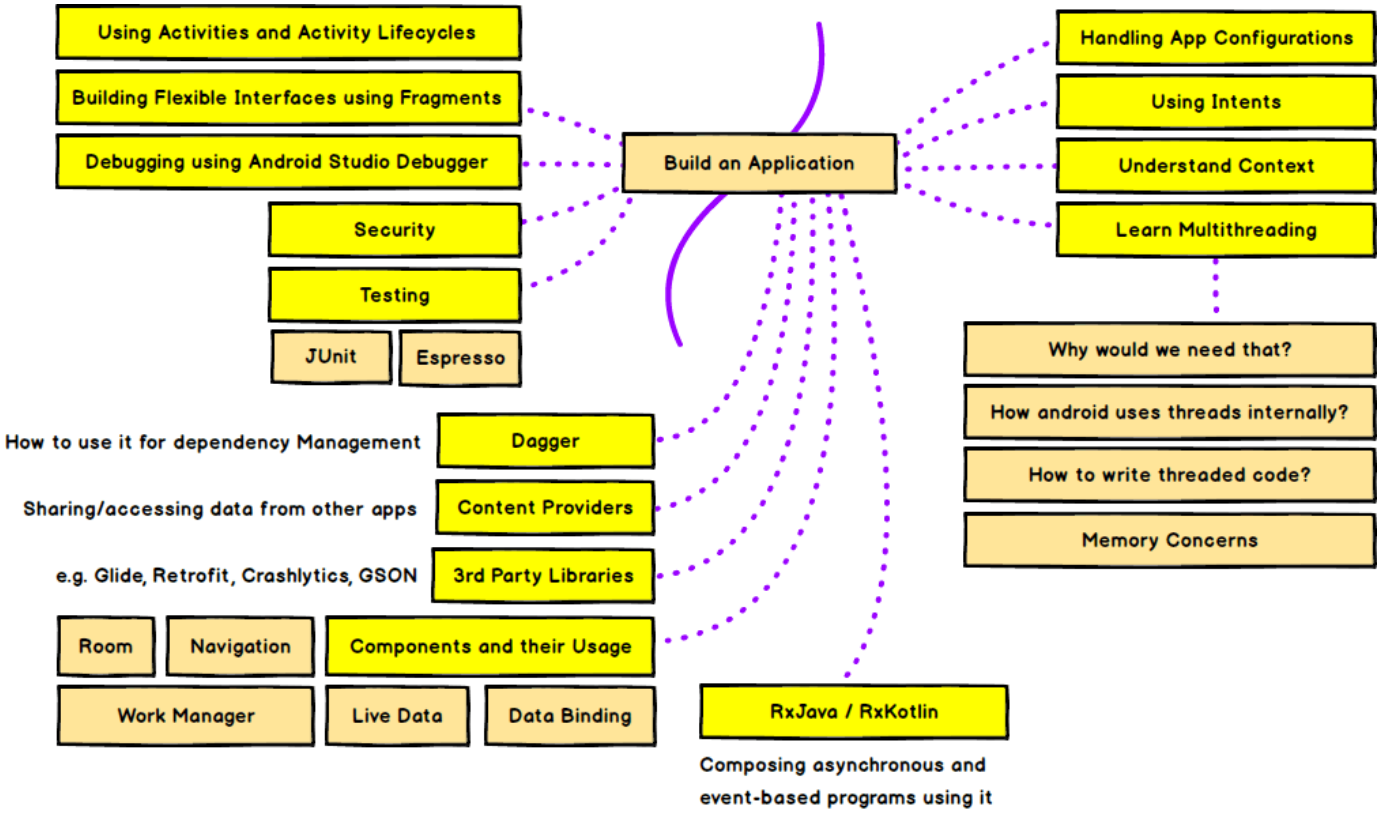


Here are some of the resources to get you started. Feel free to google and find something else that you find easier.

- Udacity — Version Control with Git
- GitHub Hello World

Building an Application

Here is the list of items that you are going to need when developing Android applications. Please note that this is an exhaustive list, and you don't need to know it all from the get-go. Get an idea of the items listed, and just start building some apps and keep the items listed in the back of your mind and have a deep dive when using them.



To learn more about the items listed in the image above, here are the links to the relevant docs.

- Using Activities and Activity Life Cycles
- Building Flexible Interfaces using Fragments
- Debugging using Android Studio Debugger
- Handling App Configurations
- Using Intents and Intent Filters
- Understand Context
- Learn about Multithreading
- Data Privacy
- Securing Network Data
- Dependency Injection
- Content Providers
- Glide, Retrofit, Crashlytics, GSON
- Room, Navigation, Work Manager, LiveData, Data Binding
- RxJava, RxKotlin
- Memory Management Overview

- Diving deeper into context-oriented programming in Kotlin

Jetpack Compose

Jetpack Compose is Android's modern toolkit for building native UI. It simplifies and accelerates UI development on Android. Quickly bring your app to life with less code, powerful tools, and intuitive Kotlin APIs.

- Jetpack Compose
- Material Design 3
- Getting started with Material Components

Free Resources

I would highly recommend watching **this free course** from Google on Developing Android Apps with Kotlin. You may also get started with this **free course** on the Android developer's page, where concepts are taught with the help of code labs, projects and quizzes, and you also earn badges as you learn that appear on your Google developer profile. Also, here are some of the resources to learn more about the topics listed above.

- Developing Android Apps with Kotlin
- Android Basics in Kotlin
- Android Developer Guides
- Kodeco

Wrap Up

That wraps it up for the Android developer roadmap. Again, remember to not be exhausted by the list; just learn the basics and start working on some project and the rest of the learnings will come along the way. Good luck!

For any suggestions, improvements and feedback, feel free to **submit an issue** or reach out to me on twitter **@kamranahmedse**.

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