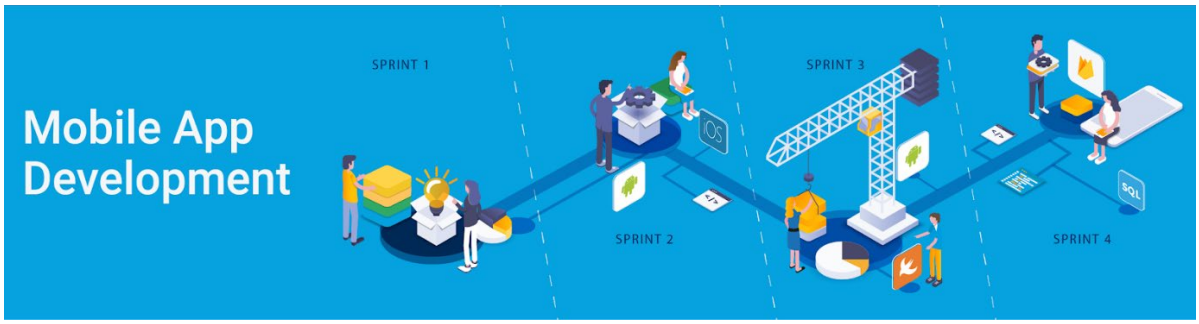

Tech Guides

Here you will find some useful tools and tutorials that will help you through this course to develop your mobile app. Note that it is not mandatory to use these tools, but they will be quite helpful.

Android (Kotlin/Java)

Kotlin language	Some useful guides if you are new with Kotlin language. Kotlin Koans for learning the basics of the language https://play.kotlinlang.org/koans/overview
Databases	These are some possible options you can use for your app. But you are free to choose the database system you want. **Remote:** • Cloud Firestore or Realtime Database. https://firebase.google.com/docs/firestore/rtdb-vs-firestore • Get started with Cloud Firestore https://firebase.google.com/docs/firestore/quickstart • Add the Realtime Database SDK to your app https://firebase.google.com/docs/database/android/start • Get Started with Cloud Storage on Android https://firebase.google.com/docs/storage/android/start • PostgreSQL as a Service https://docs.holistics.io/guides/setup-db/postgresql-elephantsql • Low-code backend to build modern apps https://www.back4app.com/ **Local:** • **Room**: Android Room with a View: Short tutorial on how to integrate room in a simple app https://developer.android.com/codelabs/android-room-with-a-view-kotlin#13 • Save data in a local database using Room https://developer.android.com/training/data-storage/room • **Shared preferences**: Save key-value data https://developer.android.com/training/data-storage/shared-preferences
Architecture	Common Android Architectures (MVC vs MVP vs MVVM): https://anmolsehgal.medium.com/common-android-architectures-mvc-vs-mvp-vs-mvvm-afd8461e1fee
Authentication	• Facebook: https://www.youtube.com/watch?v=M2earjn-XXQ&list=PLNdFk2_brsRcaGhfeeiVkW72qTYcn_nfQ&index=4 • Login and email https://www.youtube.com/watch?v=dpURgJ4HkMk&t=1003s

	• Gmail: https://www.youtube.com/watch?v=bBJF1M5h_UU • Microsoft on Android https://firebase.google.com/docs/auth/android/microsoft-oauth
Material design	Java https://material.io/resources/tutorials#android-java Kotlin https://material.io/resources/tutorials#android-kotlin
App monitoring and analytics:	**Crashlytics:** firebase Crashlytics is a lightweight, real-time crash reporter that helps you track, prioritize, and fix stability issues that erode your app quality**.** • Documentation: https://firebase.google.com/docs/crashlytics • Integration with google analytics: https://firebase.google.com/docs/crashlytics/start-using-analytics#swift • Export data to BigQuery: https://firebase.google.com/docs/crashlytics/bigquery-export • Integration of BigQuery with DataStudio: https://cloud.google.com/bigquery/docs/visualize-data-studio?hl=es-419 **Custom events:** Firebase allows you to create customized events for your application. https://firebase.google.com/docs/analytics/events?platform=android&hl=es-419#kotlin+ktx_1 **Performance Monitoring:** Firebase Performance Monitoring is a service that helps you to gain insight into the performance characteristics of your iOS, Android, and web apps https://firebase.google.com/docs/perf-mon **Google Analytics:** With Google Analytics you can measure user activity for activities screens. https://developers.google.com/analytics/devguides/collection/android/v4/start?hl=es **Track screens**: Sometimes, Google Analytics does not report the user's activity in certain windows, for example, in fragments when working in Kotlin. Therefore, it becomes necessary to define these events manually. https://firebase.google.com/docs/analytics/screenviews
Firebase	• Firebase is a Google's mobile application development platform that helps you build, improve, and grow your app. https://medium.com/firebase-developers/what-is-firebase-the-complete-story-abridged-bcc730c5f2c0 • Add Firebase to your Android project https://firebase.google.com/docs/android/setup
Multithreading	To avoid overloading the main thread it is a good idea to use multithreading. • Coroutines in **Kotlin**: https://developer.android.com/kotlin/coroutines/coroutines-adv • **Asyntask**: Java/Kotlin https://developer.android.com/reference/android/os/AsyncTask
General courses:	• Android (Java) Fundamentals Course (https://developer.android.com/courses/fundamentals-training/overview-v2). • Android (Kotlin) Advanced Course (https://developer.android.com/codelabs/advanced-android-kotlin-training-welcome#0). • Android (Java) Advanced Course (https://developer.android.com/courses/advanced-training/overview).

More Android tutorials:	News and tutorials (https://www.youtube.com/channel/UCV31octs5hft6bZmokUgQlA)

Flutter

Dart language	Some useful guides if you are new with the language. How to use the Dart language https://dart.dev/tutorials
Databases	These are some possible options you can use for your app. But you are free to choose the database system you want. **Remote:** • Get started with Cloud Firestore https://firebase.flutter.dev/docs/firestore/usage/ • Add Realtime Database to your app https://firebase.flutter.dev/docs/database/overview/ • Cloud Storage for Flutter https://pub.dev/packages/firebase_storage • Low-code backend to build modern apps https://www.back4app.com/docs/flutter/graphql/flutter-crud-app-example **Local:** • **SQLite**: Persist data with SQLite https://flutter.dev/docs/cookbook/persistence/sqlite • Medium. Using SQLite in Flutter. https://medium.com/flutter-community/using-sqlite-in-flutter-187c1a82e8b • **Shared preferences**: Store key-value data on disk https://flutter.dev/docs/cookbook/persistence/key-value
Authentication	• Using Firebase Authentication https://firebase.flutter.dev/docs/auth/usage/ • https://firebase.flutter.dev/docs/auth/social/ • Google Sign In With Flutter https://medium.com/flutterdevs/google-sign-in-with-flutter-8960580dec96
Architecture	Flutter Architecture Samples (https://fluttersamples.com/)
Material design	Flutter (https://material.io/resources/tutorials#flutter)
App monitoring and analytics:	**Crashlytics:** Firebase Crashlytics is a lightweight, real-time crash reporter that helps you track, prioritize, and fix stability issues that erode your app quality**.** https://firebase.flutter.dev/docs/crashlytics/overview/ **Performance Monitoring:** Firebase Performance Monitoring is a service that helps you to gain insight into the performance characteristics of your iOS, Android, and web apps https://firebase.flutter.dev/docs/performance/overview/ **Google Analytics for Firebase:** With Google Analytics you can measure user activity for activities screens. https://firebase.flutter.dev/docs/analytics/overview/ **Track screens**: How to automatically track screen transitions to get insights of user engagement https://medium.com/koahealth/how-to-track-screen-transitions-in-flutter-with-routeobserver-733984a90dea

Firebase	• Firebase is a Google's mobile application development platform that helps you build, improve, and grow your app. https://medium.com/firebase-developers/what-is-firebase-the-complete-story-abridged-bcc730c5f2c0 • Add Firebase to your Flutter app https://firebase.google.com/docs/flutter/setup?platform=android
Multithreading	• Flutter has not multithreading ☹ , but you can learn about asynchronous programming in Flutter: https://dart.dev/codelabs/async-await
General courses:	• Dart Codelabs (https://dart.dev/codelabs) • Flutter Codelabs (https://flutter.dev/docs/codelabs)
Packages and repositories	Awesome Flutter repository (https://github.com/Solido/awesome-flutter) Packages of dart and Flutter (https://pub.dev/)

iOS

Swift language	Some useful guides if you are new with the language. • **A Swift Tour** https://docs.swift.org/swift-book/GuidedTour/GuidedTour.html • **Swift Tutorial** https://www.tutorialspoint.com/swift/index.htm • **Udacity free course** https://www.udacity.com/course/learn-swift-programming-syntax--ud902
Databases	These are some possible options you can use for your app. But you are free to choose the database system you want. **Remote:** • Get started with Cloud Firestore https://firebase.google.com/docs/firestore/quickstart#ios • Low-code backend to build modern apps https://www.back4app.com/docs/ios/parse-swift-sdk • Core Data Tutorial https://www.youtube.com/watch?v=6XASUd7h5-s&list=PLMRqhzcHGw1aDYKmCuqXQ_IqpWpJlpoJ3&ab_channel=CodeWithChris • Realm Database Tutorial for iOS https://www.youtube.com/watch?v=PmsJW59rNY8&ab_channel=CodeWithChri **Local:** • **SQLite**: Persist data with SQLite https://www.raywenderlich.com/6620276-sqlite-with-swift-tutorial-getting-started • **UserDefaults**: Store key-value data on disk https://developer.apple.com/documentation/foundation/userdefaults
Authentication	• Authenticate Using Microsoft on iOS https://firebase.google.com/docs/auth/ios/microsoft-oauth • Swift - Integrate Firebase with Azure Active Directory Authentication https://medium.com/@susanna2222/swift-integrate-firebase-with-microsoft-authenticate-c8f1d42b11f1
Architecture	• iOS Architecture Patterns: https://medium.com/ios-os-x-development/ios-architecture-patterns-ecba4c38de52

	• MVVM Swift UI https://www.youtube.com/watch?v=1IlUBHvgY8Q&ab_channel=LetsBuildThatApp
Material design	• iOS Objective-C (https://material.io/resources/tutorials#ios-objective-c) • iOS Swift (https://material.io/resources/tutorials#ios-swift)
App monitoring and analytics:	**Crashlytics:** Firebase Crashlytics is a lightweight, real-time crash reporter that helps you track, prioritize, and fix stability issues that erode your app quality**.** https://firebase.google.com/docs/crashlytics/get-started?platform=ios **Performance Monitoring:** Firebase Performance Monitoring is a service that helps you to gain insight into the performance characteristics of your iOS, Android, and web apps https://firebase.google.com/docs/perf-mon/get-started-ios **Get started with Google Analytics:** With Google Analytics you can measure and analyze user activity. https://firebase.google.com/docs/analytics/get-started?platform=ios **Track screens**: How to automatically track screen transitions to get insights of user engagement https://firebase.google.com/docs/analytics/screenviews#swift
Firebase	• Firebase is a Google's mobile application development platform that helps you build, improve, and grow your app. https://medium.com/firebase-developers/what-is-firebase-the-complete-story-abridged-bcc730c5f2c0 • Add Firebase to your iOS project https://firebase.google.com/docs/ios/setup?hl=es
Multithreading	• Gran central dispatcher (Swift) https://www.raywenderlich.com/5370-grand-central-dispatch-tutorial-for-swift-4-part-1-2
General courses:	• Swift: https://www.hackingwithswift.com • Create your first app (https://docs.swift.org/swift-book/GuidedTour/GuidedTour.html) • Courses (https://www.raywenderlich.com/ios/paths/learn)
Channels and videos	• (MoureDev): https://www.youtube.com/watch?v=MyzZnIR5gC4 • (Code with Chris): https://www.youtube.com/channel/UC2D6eRvCeMtcF5OGHf1-trw

Community

Each platform has its own community including Slack, Youtube channel, etc. You can join to different communities in the following links.

- Flutter on StackOverFlow (https://stackoverflow.com/tags/flutter)
- Flutter Youtube channel https://www.youtube.com/playlist?list=PLOU2XLYxmsIJ7dsVN4iRuA7BT8XHzGtCr)
- Flutter community (https://flutter.dev/community)
- Kotlin StackOverFlow: https://stackoverflow.com/questions/tagged/kotlin
- Survey to be added to slack kotlin community: https://surveys.jetbrains.com/s3/kotlin-slack-sign-up