

Android Development with Kotlin



About this course

Prerequisites

1. Experience in an object-oriented programming language
2. Comfortable using an IDE
3. Familiar with using GitHub
4. Access to a computer and internet connection
5. (Optional) Android device and USB cable

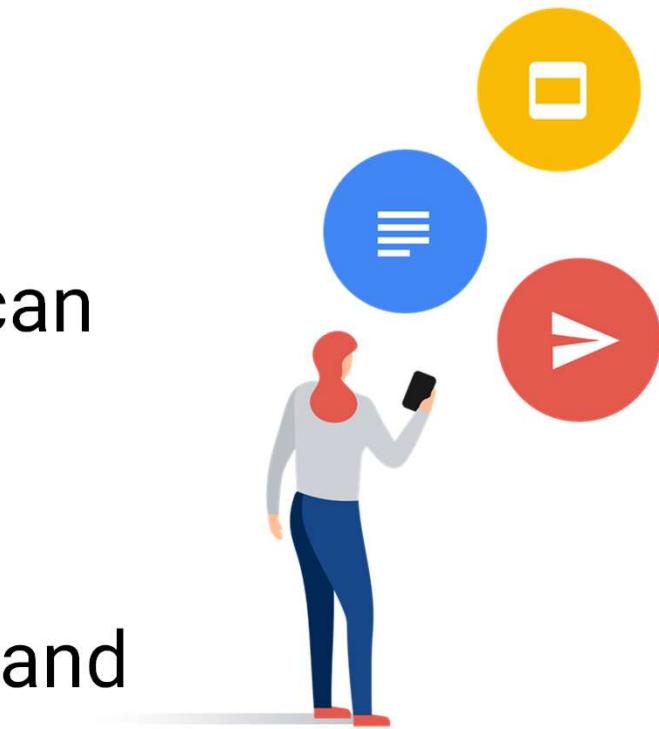
What you'll learn

1. How to build a variety of Android apps in Kotlin
2. Kotlin language essentials
3. Best practices for app development
4. Resources to keep learning



The opportunity

1. Mobile devices are becoming increasingly commonplace
2. Mobile apps connect users to information and services that can improve their quality of life
3. Many industries have yet to be revolutionized through mobile, and offer great opportunities for new businesses and solutions

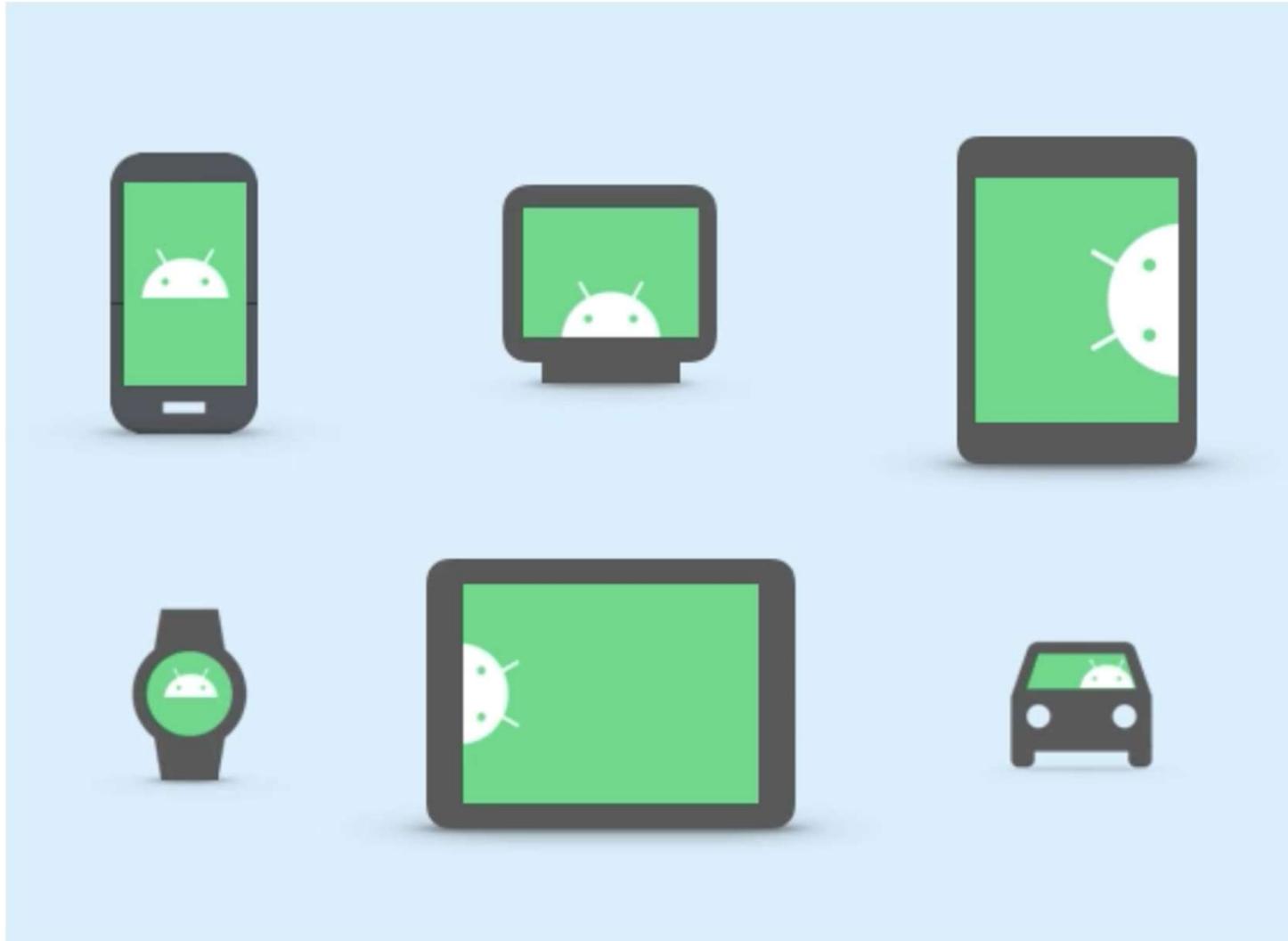


Android

- Open-source mobile platform
- 15 major platform releases so far
- 2.5 billion monthly active Android devices
- 2+ billion monthly active Google Play users



Available across different form factors



Build Android apps in Kotlin



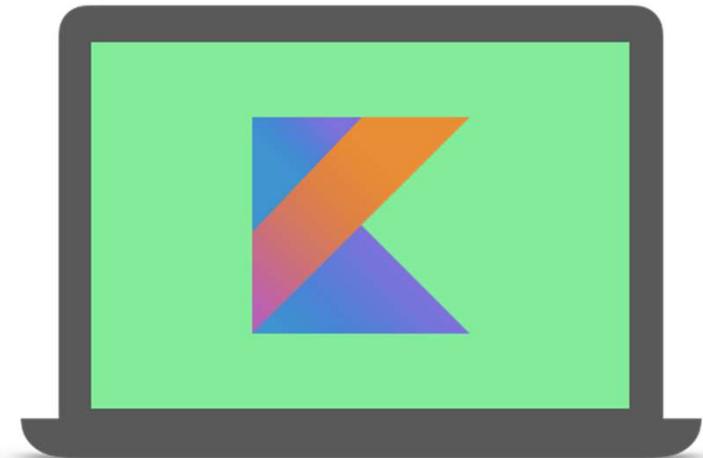
Kotlin

A modern programming language that helps developers be more productive.

4 million developers

60% of professional Android developers

70% of the top 1000 Android apps



Benefits of Kotlin

- Expressive and concise
- Safer code
- Interoperable
- Structured Concurrency

Idiomatic Kotlin

- Kotlin is at its best when used idiomatically
- Avoid just translating Java into Kotlin
- As you learn more Kotlin, you'll find easier, more concise ways to do things
- For a list of common Kotlin idioms, refer to the Kotlin Language Guide on [Idioms](#)

Learning experience

Course structure

4 units with a total of 13 lessons across 13 weeks

Unit 1 (3 weeks)

Get Started with Kotlin

Basics, Functions,
Classes & Objects,
Extensions

Unit 2 (3 weeks)

Introduction to Android

First App, Layouts,
Navigation

Unit 3 (6 weeks)

Android App Architecture

App Architecture, Data Persistence, Display Lists, Connect to Internet, Background Work

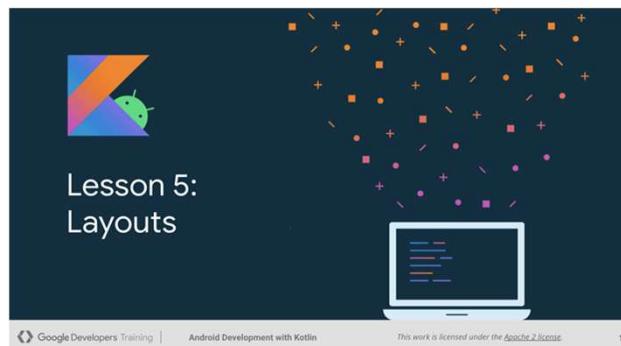
Unit 4 (1 week)

App Design

App UI Design

Lectures

We'll cover important topics together as a class.



Android devices

- Android devices come in many different form factors.
- More and more pixels per inch are being packed into device screens.
- Developers need the ability to specify layout dimensions that are consistent across devices.



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Default parameters

Default values provide a fallback if no parameter value is passed.

```
fun swim(speed: String = "fast") {  
    println("swimming $speed")  
}  
  
swim() => swimming fast  
swim("slow") => swimming slow  
swim(speed = "turtle-like") => swimming turtle-like
```

Use "=" after the type to define default values

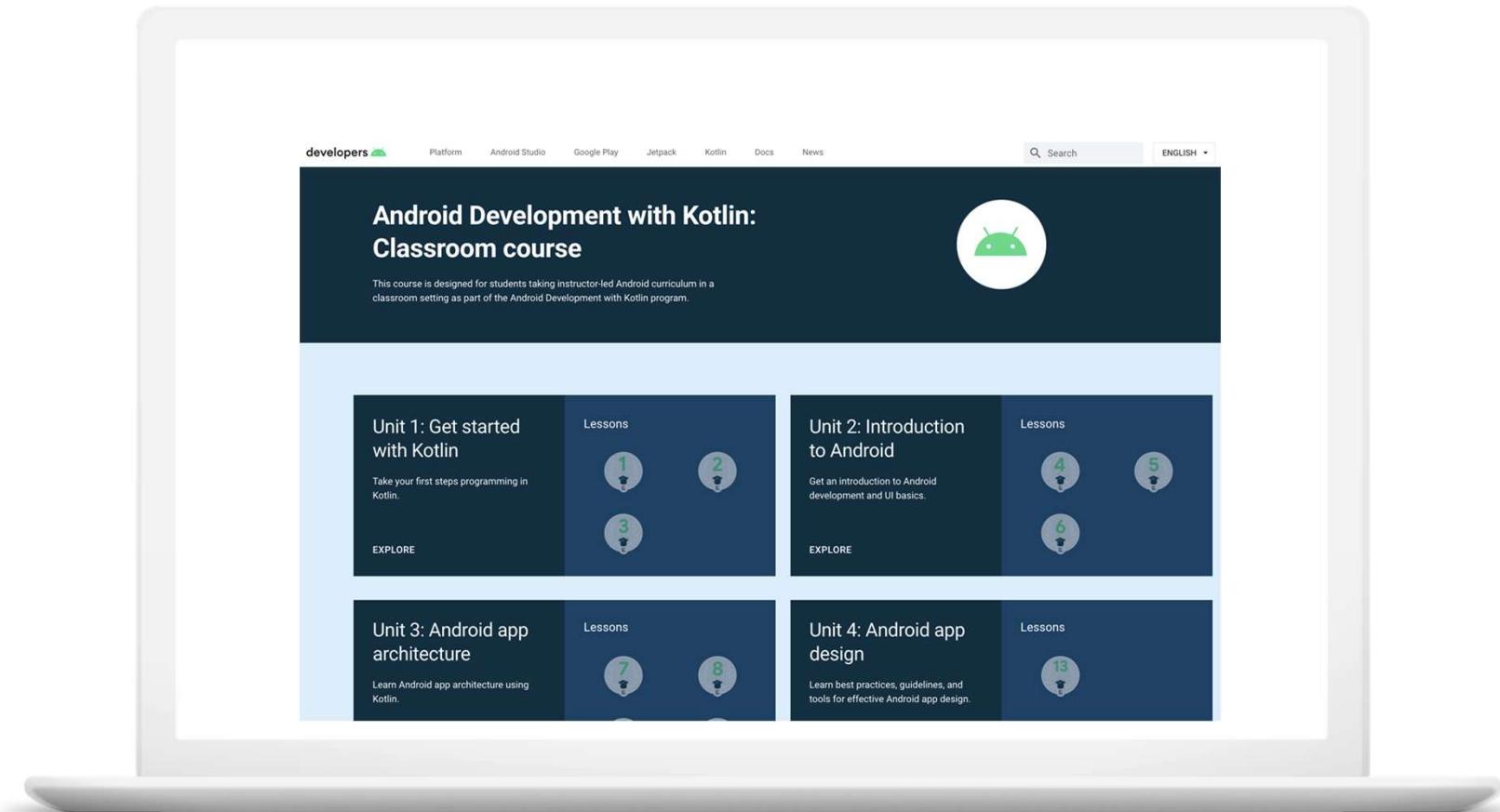
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Learning pathways

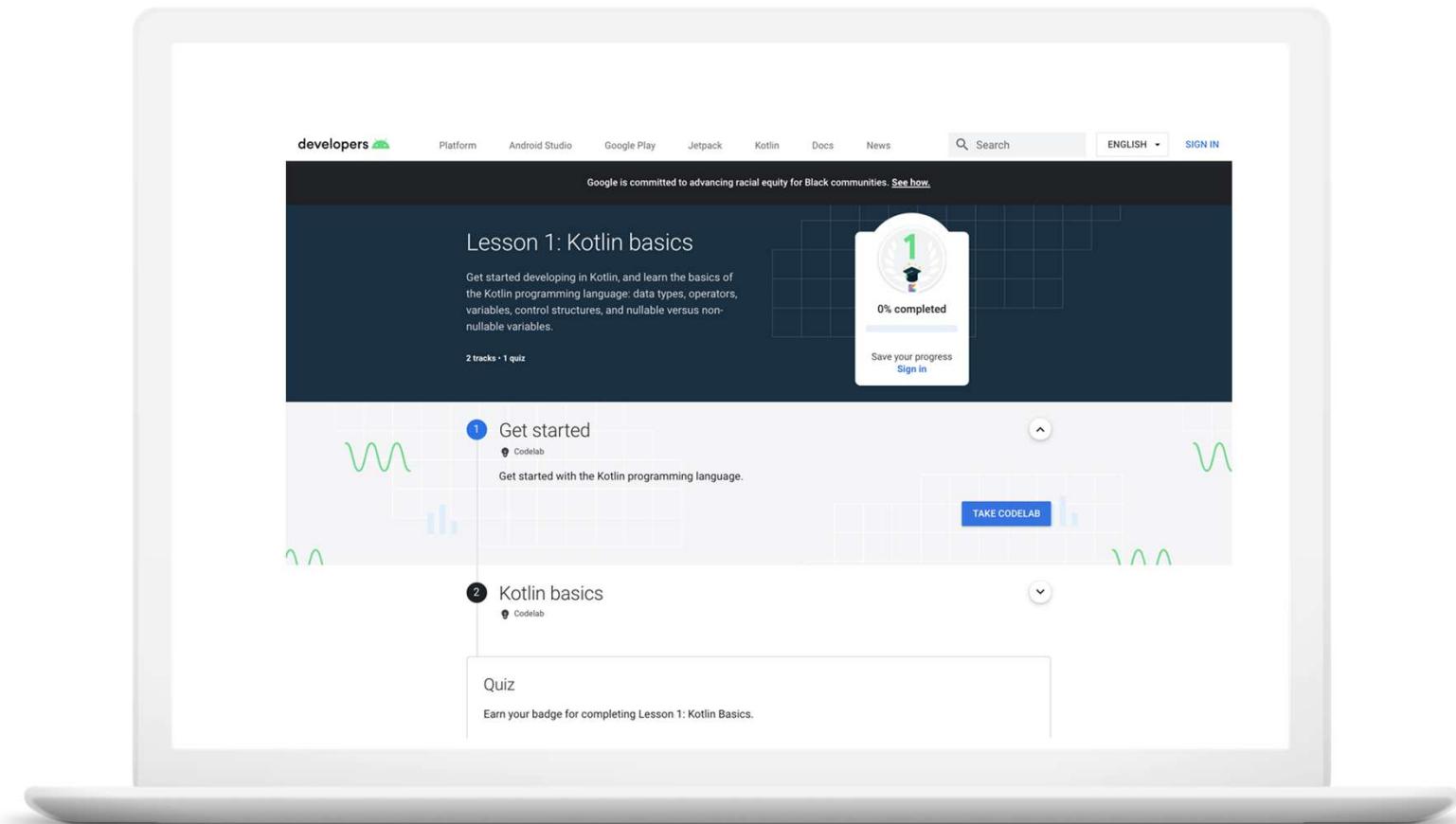
After each class,
complete the
corresponding
learning pathway with
articles and codelabs
to practice what you
learned.

The screenshot shows a 'Create an interactive Dice Roller app' codelab. On the left, a vertical sidebar lists 11 steps: 1. Before you begin, 2. Set up your app, 3. Create the layout for the app (which is currently selected), 4. Introduction to Activities, 5. Make the Button interactive, 6. Add the dice roll logic, 7. Adopt good coding practices, 8. Solution code, 9. Summary, 10. Learn more, and 11. Practice on your own. Below the sidebar is a 'Report a mistake' button and a 'Back' button. The main area is titled '3. Create the layout for the app' and contains instructions: 'Open the Layout Editor'. It shows a screenshot of the Android Studio Layout Editor with a single 'Hello World' TextView in the center. A note below says: 'Next you will add a Button to your app. A Button is a user interface (UI) element in Android that the user can tap to perform an action.' At the bottom right are 'BUTTON' and 'Next' buttons.

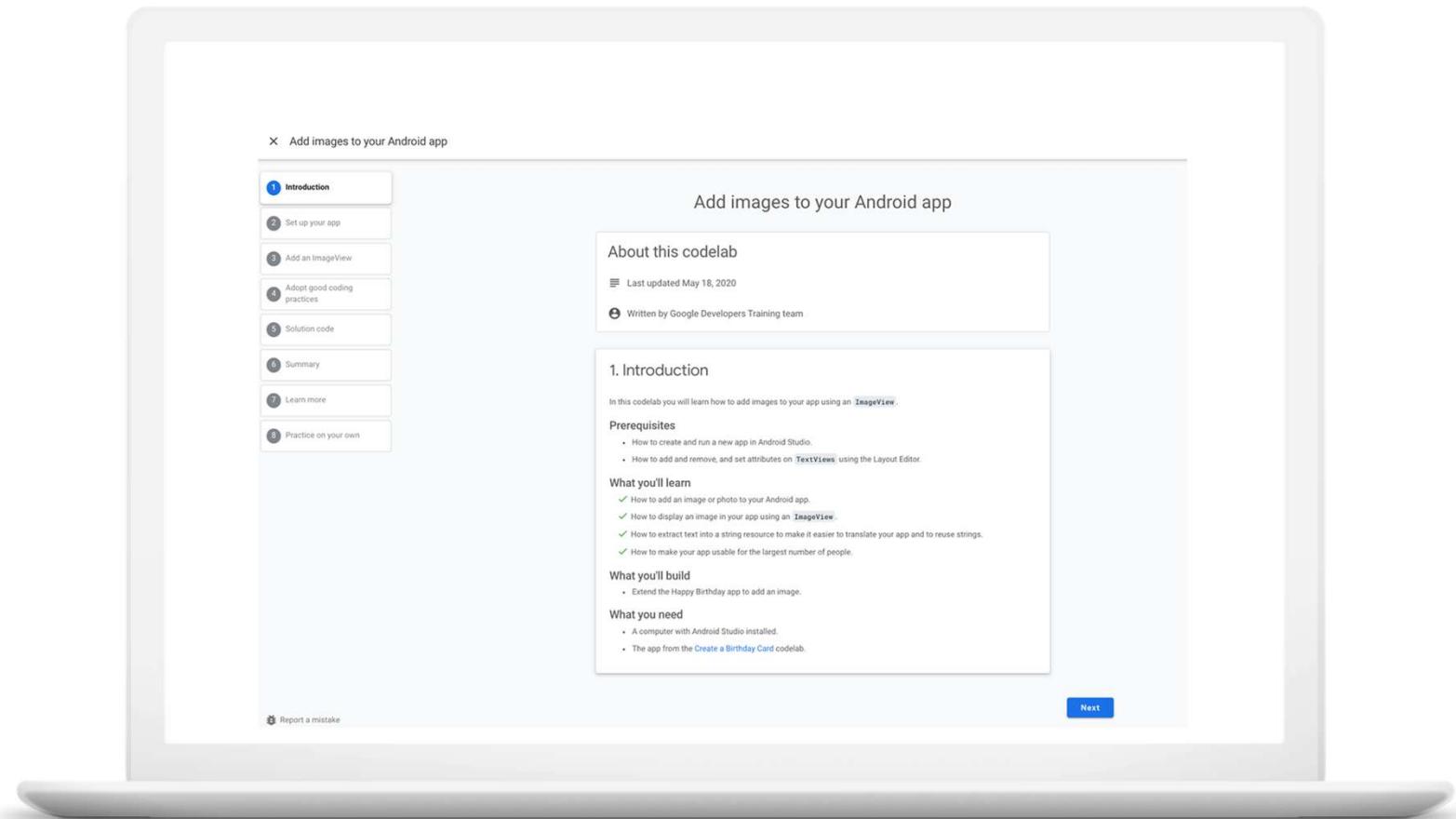
Accessing the pathways



Pathway



Codelab



Earn badges for your developer profile



K Kelly

Favorite Badges

Introduction to Kotlin Pathway May 28, 2020	Basic Layouts Pathway Jun 24, 2020	Android Studio Pathway Jun 24, 2020
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A screenshot of a developer profile page. At the top is a large orange circle with a white letter 'K' and the name 'Kelly' next to it. Below this is a section titled 'Favorite Badges' containing three items, each with a small icon, the badge name, and the completion date. Each item has a vertical ellipsis to its right.

What you need

To work through the Kotlin and Android examples in the Android Development with Kotlin labs you'll need to install the following software on your computer:

- Java Development Kit
- Java Runtime Engine (Windows only)
- IntelliJ IDEA
- Android Studio

Resources

Kotlin resources

- [Learn Kotlin](#) for a list of official reference materials
- [Kotlin Language Documentation](#) (downloadable PDF)
- [Kotlin Koans](#) for more snippets to practice with
- [Coding Conventions](#) for a coding style guide for the Kotlin language
- [Learn Kotlin by Example](#) for a set of small and simple annotated examples

Android and other resources

- Official Android developer website
- Android Developers Blog
- Android Developers Medium blog
- Android Developers YouTube channel
- @AndroidDev on Twitter
- Android Developer Newsletter
- Stack Overflow
- Offline documentation through SDK Manager