# Flutter for Jobseekers

*Learn Flutter and take your cross-platform app development skills to the next level*

**Hans Kokx**

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# Dedicated to

*My beloved daughter,*
*Devon "Derren" Dean*

# About the Author

**Hans Kokx** is a seasoned expert in the field of mobile application development, computer networking, and computer systems security. Driven by a passion for exploring the intersection of app development and computer security, he has become a trusted advisor in the industry.

Mr. Kokx holds degrees in Computer Systems Security and Computer Networking from Washtenaw Community College, where his research focused on the interconnection of computer systems and the security of the data transmitted between them. His work as a network security engineer paved the way for him in software development.

Throughout his career, Mr. Kokx has worked with companies and consumers alike to discover how people use (and often misuse) software. Driven by a passion for better experiences for users, he transitioned his career into software quality assurance, where he learned the economics of building software. His expertise in building high-quality applications that align business objectives with the ever-evolving digital landscape is informed by his time understanding users and helping to deliver bug-free features.

Mr. Kokx is the founder and an active member of the online Flutter community on the Matrix chat protocol, where he contributes to the growth, development, and understanding of Flutter developers' knowledge of industry standards and best practices. He also volunteers his time as a mentor for aspiring developers, guiding them through the nuances of building applications and troubleshooting any issues which may arise.

In his spare time, Mr. Kokx enjoys traveling and immersing himself in different cultures, always seeking inspiration for new dishes to cook at home. He is also an avid photographer, with some of his works being published in calendars, newspapers, and across the world.

# About the Reviewer

**Monty Rasmussen** has worked in a number of software industries, including education, process simulation, web design, real-time utility monitoring, medical software, and even gaming. He's a former officer of the Google Developer Group Salt Lake, but left to become a Google Developers Expert (GDE) for Angular, Dart, and Flutter. He has tech articles published on SitePoint and Dart Academy (**https://dart.academy**).

When Google announced Dart in 2011, it was love at first sight. Monty followed its development all the way to its 1.0 release on November 14, 2013 (his birthday, coincidentally), and he's been optimistic about the web's prospects as a serious application platform ever since. Now, he loves using frameworks that allow him to publish to multiple platforms from a single code base, like Flutter.

# Acknowledgements

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And finally, I want to thank each and every reader for their support in picking up this book. Without you, there simply wouldn't be a point to all of this.

# Preface

In today's rapidly evolving job market, the ability to adapt, learn, and master new technologies is crucial for jobseekers aiming to stand out from the crowd. Among the myriad technologies that have emerged in recent years, one has gained remarkable popularity and revolutionized the way we build mobile applications - Flutter.

Welcome to "Flutter for Jobseekers," a comprehensive guide designed to equip you with the skills and knowledge needed to leverage Flutter in your job search journey. Whether you are a seasoned professional exploring new avenues or a fresh graduate embarking on your career, this book is tailored to empower you with the tools necessary to succeed in the job market using Flutter.

Flutter, developed by Google, has emerged as a powerful and versatile framework for building beautiful, fast, and cross-platform applications. Its unique approach of using a single codebase for multiple platforms has made it a favorite among developers and organizations alike. With Flutter, you can create stunning user interfaces, implement complex functionality, and deploy your apps to both Android and iOS platforms seamlessly.

In "Flutter for Jobseekers," we recognize the importance of mastering this game-changing technology as part of your job search strategy. We will take you on a journey through the core concepts of Flutter, starting from the fundamentals and gradually building up to advanced topics. You'll learn how to set up your development environment, understand Flutter's widget system, handle user input, navigate between screens, and utilize various plugins and packages to enhance your app's capabilities.

Furthermore, this book goes beyond just technical aspects. We understand that finding a job involves more than writing code. Throughout these pages, we will also provide valuable insights into how Flutter fits into the job market, the demand for Flutter developers, and the specific skills and experiences that employers seek. We will guide you on how to showcase your Flutter expertise effectively in interviews, build a portfolio that impresses recruiters, and navigate the job application process successfully.

Whether you are aspiring to be a Flutter developer, looking to switch careers, or simply curious about this exciting technology, "Flutter for Jobseekers" will serve as your reliable companion. We have structured this book with clarity and conciseness, offering step-by-step explanations, practical examples, and real-world scenarios that will accelerate your learning and give you the confidence to apply your Flutter skills in real job situations.

Remember, jobseekers who adapt to new technologies and embrace innovation are more likely to excel in their careers. Flutter has rapidly gained momentum in the app development industry, and by mastering it, you position yourself as a highly desirable candidate in the job market.

Let this book be your guide to mastering Flutter for jobseekers. Embrace the opportunities it presents, invest in your skills, and unlock a world of possibilities in your professional journey. Good luck!

**Chapter 1: Introduction to Flutter –** Learn about the history of application development, with a focus on mobile applications. Find out what Flutter is, including who developed it and why, and the history of the development of Flutter.

**Chapter 2: Market Opportunities for Flutter Developers –** Dive into the explosive growth of Flutter's marketplace dominance and see how it compares to its competitors. Then, learn who is using Flutter and what they're using it for.

**Chapter 3: Installing Flutter and Configuring Your IDE –** Enjoy a comprehensive, step-by-step guide to setting up a development environment on your Mac or Windows computer. This chapter will introduce you to the tools you will be using, including where to download them, how to install them, and how to configure them for building applications with Flutter.

**Chapter 4: Introduction to Widgets –** In the world of Flutter, we like to joke that everything is a widget! Here, you'll learn exactly what a widget is and learn the difference between the different types of widgets. You'll also learn how Flutter takes the widgets you write and draws them to the screen.

**Chapter 5: Handling User Input –** An application wouldn't be an application if it didn't accept some sort of user input. Learn all about buttons, text input, checkboxes, and much more. Discover how to validate input and even build a simple signup form.

**Chapter 6: Using 3rd Party Libraries and External Assets –** In this chapter, you'll be introduced to Flutter's package management system, Pub. You'll learn how to include images and other assets in your application, and how to benefit from other developers' work by leveraging third-party packages to do amazing things.

**Chapter 7: Working with APIs and Asynchronous Operations –** Learn the basic concepts of asynchronous operations, such as reading and writing files to disk. Send data to APIs and learn how to work with the data they respond with, then discover data streams and the widgets we can use to handle the UI-portion of these operations.

**Chapter 8: Navigation and Routing –** Build a vocabulary to discuss the concepts of moving from screen to screen within an application. Then, explore a multitude of methods to accomplish it – from the most basic of basic approaches, to the most advanced methods used by some of the biggest applications around.

**Chapter 9: State Management and the BLoC –** Learn the difference between ephemeral state and persistent application state. Then, learn about some of the widgets and packages you can use to manage state of your application.

**Chapter 10: Reactivity and Platform-Specific Considerations –** Not all devices are made equal – and your apps will need to conform to each of them. Learn how to build responsive layouts, explore the power of dart:io to work with files and the filesystem, give your app an icon and splash screen, then discover how to make your app match the look and feel of some of the major operating systems today.

**Chapter 11: Debugging, Troubleshooting, and Performance Considerations –** Nobody gets it right the first time. That's why this chapter focuses on learning about the tools available to you for debugging when things go wrong. Learn the basic concepts of debugging and troubleshooting, as well as how to use your development tools to find and fix problems.

**Chapter 12: Creating Your First Application –** It's time to build your first application! Learn about the application you'll be building, discover resources for bringing it to life, and learn where to put the files. You'll also learn about code generation in this chapter.

**Chapter 13: Finding Flutter Jobs –** Learn how to find a job with your newly discovered superpower. Then, all your questions about finding a job, getting hired, and building your resume will be answered by industry professionals.

**Chapter 14: Preparing for and Succeeding in the Job Interview –** Every step of the interview process is broken down for you in this chapter. Learn exactly what to expect from each stage, and how to negotiate your compensation, and then we answer nearly 150 interview questions for you to study from!

**Chapter 15: Your Road Ahead –** The final chapter of this book focuses on the period immediately following accepting your job offer, all the way through your first days. There's advice about working in software development teams, as well as additional skills you'll need to seek out on your own to further your career.

# Code Bundle and Coloured Images

Please follow the link to download the
***Code Bundle*** and the ***Coloured Images*** of the book:

## https://rebrand.ly/26zpdb1

The code bundle for the book is also hosted on GitHub at **https://github.com/bpbpublications/Flutter-for-Jobseekers**. In case there's an update to the code, it will be updated on the existing GitHub repository.

We have code bundles from our rich catalogue of books and videos available at **https://github.com/bpbpublications**. Check them out!

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# Chapter 1
# Introduction to Flutter

## Introduction

Flutter is a portable UI toolkit created by Google and released as open-source to the community in 2015. Since its initial unveiling under the working name *Sky* by Google developer *Eric Seidel* at the 2015 Dart Developer Summit, Flutter has seen extraordinary growth — both in the toolkit itself and within the developer community.

The transformative nature of application development with Flutter has been the biggest catalyst for its explosive growth since its inception. With features such as stateful hot reload, a robust set of default UI elements, developer-friendly tooling, and the ability to run on a large variety of platforms natively with minimal code modification, it is no surprise that developers and companies alike have fallen in love with Flutter.

## Structure

In this chapter, we will discuss the following topics:

- An abridged history of apps
- The history of multi-platform app development

- A new multi-platform app development solution
- The rapid development of Flutter
- Why developers are flocking to Flutter
- Looking forward

# Objectives

This book aims to familiarize readers with the evolution of mobile applications, highlighting the industry's journey towards user-friendly frameworks like Flutter. It explores Flutter's significance and diverse applications, revealing surprising use cases across industries. Aspiring Flutter developers will gain valuable insights into career opportunities and be inspired to join the enthusiastic and supportive Flutter community.

# An Abridged History of Apps

In March of 1996, a then-little-known company named *Palm* released their first personal digital assistant: the Pilot 1000. There were several failed attempts at a pocketable, personal, app-centric digital device prior to the Palm Pilot, but it was truly the Pilot which ignited what would eventually dominate the global smartphone market.

By 2007, with Apple's release of the first iPhone, followed by the first release of Android in 2008, smartphones were beginning to take shape. The hardware was moving toward multi-touch paradigms (thanks to *Steve Jobs*' forward-thinking approach). The days of a dedicated, physical keyboard, made popular by the Blackberry, were numbered.

With both iOS (then iPhone OS) and Android came modern apps, which Palm and, later, Blackberry helped lay the groundwork for. Apple's and Google's approaches to application development differed, however one common thread remained consistent: users' insatiable demand for apps.

As Apple and Google continue to battle for market share, apps are key in the fight to win over users. As of 2021, there were a reported 2.2 million apps in Apple's App Store and around 3.5 million in Google's Play Store (Ceci, L., 2021). An entire industry has been built around delivering apps of all types to users, regardless of their platform of choice. This has led to massive duplication of effort, as applications once written solely for iOS are then ported to Android, and vice versa.

On iOS, Swift superseded Objective-C as the language of choice in 2014. Likewise, in 2019, Google announced Java (superseded by Kotlin) as the less-preferred language for Android app development in 2019. Regardless of the platform or language, one thing was clear: targeting both iOS and Android would require your app to be written once for Android and then again for iOS, leaving you with two separate codebases to maintain.

# The History of Multi-Platform App Development

Due to the cost and hassle associated with maintaining separate iOS and Android codebases, many solutions were developed with varying amount of success to bridge the divide and unify multi-platform app development into a single codebase with a single development team.

Arguably, one of the earliest such attempts was by *Appcelerator, Inc.*, with their release of the *Titanium SDK* in December 2008 as an open-source framework for creating multi-platform applications using JavaScript. Similarly, *Nitobi* released *PhoneGap* in 2009, which focused on multi-platform app development using CSS3, HTML5, and JavaScript. Nitobi was later acquired by Adobe Systems in 2011, and PhoneGap was renamed first to *Apache Callback,* then finally to *Apache Cordova*.

In the years following the release of JavaScript-based multi-platform app frameworks, other companies tossed their hat into the ring with a variety of solutions. The most notable contenders of which were Xamarin and Facebook.

Xamarin, a subsidiary of Microsoft, released *Xamarin.Android* and *Xamarin.iOS* (formerly *Mono for Android* and *MonoTouch*, respectively) in 2011. By 2020, *Xamarin* had been merged into Microsoft's .NET framework as *.NET Multi-platform App UI (.NET MAUI)*. .NET MAUI applications are built in C# and able to target Android, iOS, and Windows.

Finally, Facebook (now also known as **Meta**) released *React Native* in 2015. *React Native* was derived from the *React* JavaScript library with an intent to target multi-platform devices rather than simply the Web. As of 2023, *React Native* remains in a pre-1.0 release state, and looks to continue that trend for a number of years to come.

It is easy to see that most of these multi-platform solutions employ the use of JavaScript as the underlying basis for creating apps, with the notable exception being *.NET MAUI*. JavaScript has a long history of developer support from the early days of the Web so JavaScript developers are plentiful and well-versed in creating

Web apps. With the advent of Google's V8 JavaScript engine, JavaScript has seen steady increases in speed and performance. Yet, the fact remains that JavaScript applications are still interpreted and rendered by a JavaScript rendering engine, resulting in an additional level of abstraction and a potential bottleneck in creating smooth, performant applications.

# A New Multi-Platform App Development Solution

Recognizing the need for a better solution, engineers at Google set to work on a new way of building multi-platform applications. Many frameworks and languages were evaluated during the early development phases of Flutter but eventually Dart was chosen over all others. Most important to the development team were four key pillars: increase developer productivity, allow for an object-oriented paradigm, be able to handle short-lived allocations quickly and efficiently in memory, and deliver extremely high-performance results. Many of the languages and frameworks evaluated delivered in some—but not all—of these categories. In the end, only Dart was able to deliver on every one of the four pillars that the team envisioned for Flutter. With Dart, the team had its first logo (*figure 1.1*):


***Figure 1.1**: The Dart logo*
*(Source: dart.dev)*

Once Dart was chosen as the language on which Flutter would be built, the team agreed upon the remaining goals that would drive their decisions throughout development. These goals would be:

- Applications built in Flutter should be highly performant, with a target frame rate of 120 Hz.
- Applications built in Flutter should be platform agnostic; able to run on Android, iOS, and more.
- Applications should be fully privileged and have full access to the underlying operating system.