

ANDROID

Programming Concepts

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Dedication

For Bob

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Preface

Mobile device users experience their environments through a variety of computing screens. The devices most often used are computers, tablets, and phones. Users today increasingly expect a connected and highly personalized experience that is seamless across all connected devices, including television, home automation gadgets, wearable computers, and cars. Android is the operating system that powers many of these connected devices. As of early 2015, Android is the largest installed base of any mobile platform.

Initially created by Android Inc. by a team led by Andy Rubin, the Android operating system was acquired by Google in 2005. The first commercial version of Android was released in 2008 on an HTC phone named Dream; also known as the T-Mobile G1. Since its initial release, the operating system has undergone an extreme metamorphosis, evolving quickly and frequently, with new and updated versions released at an unprecedented rate.

As a Linux-based system, Android is run as an open source project; this means that anyone can adapt the code for his or her own purposes. This permissive model makes Android unique in that it allows companies and developers to modify and distribute the software freely. Device manufacturers creating phones and tablets often customize the Android operating system to the specific needs of their particular mobile devices.

In this text, readers will learn how to design and implement applications that will run on a variety of Android-driven devices. Building sophisticated applications that are optimized, responsive, and able to perform complex interactions at fast speeds requires patience, skill, and practice. The concepts and techniques you will learn in this text will provide you with the building blocks needed to master the art of mobile programming.

Text Objectives

This text was conceived with two types of individuals in mind: programming students and professional software developers who wish to broaden their expertise. It is essential that readers know how to program in an OOP language, preferably Java,

before using this text. For non-Java programmers, familiarization with the Java API is recommended.

This text is intended as a textbook, not as a tutorial. We have designed the text, using an easy-to-understand and straightforward approach, to integrate key concepts relating to application development that students see daily on Android devices. Each chapter presents Android concepts and methodologies with complete abbreviated application examples that are relevant to current platforms.

How to Use This Text

The first three chapters provide an introduction to the foundation of application development. Chapter 1 incorporates two step-by-step tutorials to help readers get started in creating basic applications. Chapters 2 and 3 provide key core concepts for building well-designed applications. It is important that readers are comfortable with these early chapters before proceeding.

After reading the first three chapters, Chapters 4 through 9 do not need to be read in sequential order. Readers wishing to acquire the most invaluable concepts first should start with Chapter 4 and proceed to Chapters 7, 8, and 9; however, multithreading concepts (discussed in Chapter 6) are a prerequisite for the last three chapters. A detailed reading of Chapter 5 is not required for Chapter 6.

Instructor and Student Resource Material

The following ancillary materials are available on the text website:

go.jblearning.com/CornezAndroid

- Source code files for lab examples
- Instructor's Manual containing solutions to end-of-chapter exercises
- Lecture Slides in PowerPoint format
- Test bank

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