# Hands-On Training

# for

# Android and iOS

# Software Developers

**COGENT LOGIC**

# Hands-On Training Conquers the Learning Curve

Your mobile development projects are important. We give you the knowledge and skills to get started and to move ahead through advanced technologies and development techniques. From UI to cryptography, from robust, service-based apps to JNI, we provide the breadth and depth to get you up to speed quickly.

Our training courses are produced by professional software developers. We've put in the years of hard work mastering Android and iOS, discovering best practices and solving problems ... so you don't need to!

# Cryptography Training from Cogent Logic

Our three-day hands-on course *Cryptography for Java Developers* targets pure Java and Android-based systems and comprises:

1 Introduction to Cryptography
2 Cryptographic Service Providers
3 Symmetric Key Cryptography
4 Cryptography for Android Apps
5 Asymmetric Key Cryptography
6 Digital Signatures
7 Authenticated Encryption

8 Digital Certificates (X.509)
9 Public Key Infrastructure
10 Key Stores and Trust Stores
11 SSL and TLS (JSSE)
12 Accessing LDAP Servers with JNDI
13 Certificate Revocation Lists and OCSP
14 Privilege Management Infrastructure

Appendix: How to Achieve Absolute Security: one-time pads and isolated systems!

We added the appendix recently. It covers the current climate of back-door attacks and systemic compromise of hitherto secure computer systems. You *can* achieve absolute security if you want it. In practice, you will most likely make a determination as to what is sufficient security for your needs!

This course is for Java developers. No prior knowledge of cryptography is assumed. Course fee: £1800 (inc. VAT).

Almost all other courses are of five days duration and cost £2500 (inc. VAT).

Delegates are provided with lunch, snacks and drinks.

Delegates bring their own laptop (Windows, Mac or Linux for Android; Mac of iOS).

## Starting Android App Development

If you are new to Android, we can get you up to speed quickly with our five-day starter course. There are around 70 worksheets on this course. It's thorough and you'll enjoy it!

1 Introduction to Android and Mobile Devices
2 Development Environment Setup
3 Eclipse and Emulators
4 Application Architecture and Lifecycle
5 XML, the Manifest and Resources
6 Resources and R.java
7 Activities and Intents - Alerts and Logging
8 Declarative/Programmatic User Interface Design
9 The Action Bar
10 Standard Dialogs
11 Debugging and the Android Debug Bridge
12 Common Controls and Colours
13 Layout Managers
14 AQuery
15 Screen Orientation, Form Factors and Features
16 Smartphones and Tablets in the Same App
17 Adapters
18 Menus
19 Managed Dialogs
20 List Views
21 Interoperability Between Multiple Activities

22 Electronic Mail
23 Permissions and File I/O
24 Preferences
25 Camera and Gallery
26 Relational Databases and SQLite
27 Data Binding
28 Encapsulating Data Access
29 Lint
30 Assertions and Unit Testing with JUnit
31 Test Driven Development with JUnit
32 Content Providers and SMS
33 Audio and Video
34 Acceptance Testing
35 Robotium
36 Robolectric
37 2-D Animation and Touches
38 Fragments (compatibility libraries)
39 Localization
40 Supporting Multiple API Levels
41 Submitting Apps to Google Play

## Software Development with Java

If you don't yet know Java or want a refresher, we have a five-day course that covers everything Java and comprises:

Building, Running and Debugging Java Applications, Control and Data Constructs, Encapsulation, Inheritance, Polymorphism, Exception Handling, The Eclipse IDE, Class Diagrams, Packages and Java Archives, Annotations, Assertions and Unit Testing, Event Listeners, The Collections Framework, Recursion and Memoization, Generics and Autoboxing.

In common with all Cogent Logic courses, emphasis is placed on hands-on work. You will write a lot of software! That's how to assimilate knowledge and develop skills that enable you to hit the ground running when you return to your job.

# Android UI Development

This course builds on *Starting Android App Development* by covering UI-specific software in detail. You will get a great deal of hands-on work that comprises:

1 Activities, Layouts and Intents
2 Declarative Versus Programmatic UI Implementation
3 AQuery
4 Resources Across Multiple Device Types
5 Dimensions
6 Colours, Images and Drawables
7 Controls
8 Overlays (FrameLayout)
9 View Flipper
10 View Pager
11 Space and GridLayout
12 Custom Components (controls)
13 Mulit-Touch and Gesture Input
14 Accessibility
15 Localization
16 Persisting UI State
17 Dialogs
18 Drag and Drop
19 Styles and Themes
20 Fragments (Master/Detail)
21 Fragment Lifecycle
22 Fragment Transactions
23 Action Bars
24 Overflow Menus
25 Drawers
26 App Widgets
27 UI Animations

This course lasts four days and costs £2,000 (inc. VAT).

# Custom On-Site Courses

We can deliver training courses at your offices for up to 10 delegates for a fully-inclusive price of £9,500 (inc. VAT).

Most customers prefer to take one or more of our standard courses but we are always happy to customise courses to fit your requirements. Typically, let use know what modules you want from the full range of courses!

# Advanced Android App Development

If you are an experienced Android developer who needs to tackle more demanding projects, this course is for you! Straight off the bat, we'll let you into a little-known secret: most Android apps are brittle. They contain business logic in all the wrong places and those that make use of database access typically do so at the wrong time! In fact, most Android developers do not know how to build robust apps that stand up to hundreds of thousands of users hitting edge cases. Most apps don't scale: after a while there are too many activities and fragments linked by fragile references.

So, in module 7 we show you how to write apps that are clean, robust, easy to maintain and something to build a reputation upon. Then we proceed to cover a wealth of advanced topics.

You will root a device on this course. That way, you can access the entire filing system and perform network protocol analysis. You need a rooted device for good Android development so a Nexus 7 is provided and it's yours to take away for use back at work.

1 Handling Multiple API Levels – Drag and Drop
2 WebKit (WebView and Javascript)
3 Broadcast Receivers and System Broadcasts
4 Notifications
5 Threading and AsyncTasks
6 Services
7 Building Robust Apps
8 Foreground Services
9 Library Projects
10 Timers
11 Implementing Content Providers
12 RESTful Web Services and JSON (Geocoding)
13 OAuth
14 Wakelocks
15 Sensors
16 Location Services and Maps
17 Rooting Devices for Debugging
18 File System Access
19 Network Protocol Analysis
20 Managing Network Connectivity (Airplane Mode and Network State Changes)
21 Near Field Communication (NFC)
22 Bluetooth
23 OpenGL ES
24 Google Cloud Messaging for Android (GCM)
25 Implementing Reliable Settings—Database Access
26 Automated Testing on Hundreds of Devices
27 Reducing Support Tickets: Self-Monitoring and Reporting Apps

# Android Development with JNI-NDK

This is an advanced course for developers with both C/C++ *and* Java experience and some knowledge of Android development. The course is for those needing to develop their own C and/or C++ libraries or to use C/C++ libraries from other sources using the Java Native Interface and the Native Development Kit.

Because the course covers rooting and installation of a userDebug build we provide a Nexus 7 for use on the course and to take back to work.

As the module list below shows, there is a great deal of in-depth material that comes from our real-world experience of developing JNI-based software full-time. We know how to make this stuff work and we'll show you how to make it work too!

1 What Is JNI and Why Use It?
2 Compiling C-C++ Programs
3 Writing C Functions and C++ Methods Callable From Java
4 Compiling C-C++ Programs with Eclipse
5 Mapping Strings and Other Data Types
6 Accessing Java from C-C++
7 Exception Handling
8 SWIG
9 Using Standard C Libraries and Open Source Libraries
10 JNI with Android--NDK
11 Using Native APIs
12 Debugging Native Code in Eclipse
13 Logging
14 Rooting Android Devices
15 Recovering and Interpreting Tombstone Files
16 Network Monitoring
17 Threading
18 Callbacks (C-C++ to Java)
19 Asynchronous Processing
20 TCP/IP Sockets
21 Android userDebug Build
22 Troubleshooting Memory Errors with Valgrind
23 Native Graphics
24 OpenGL ES
25 Native Sound (OpenSL ES)
26 NDK Profiler
27 Java Services
28 Java Notifications and Broadcast Receivers
29 Building Robust Apps with JNI

# Developing Mobile Applications with iOS

This course assumes you have Objective-C experience but little or no iOS knowledge and comprises:

1 Introduction to iOS and Mobile Devices
2 iOS Developer Registration
3 iOS Development Tools (Xcode, Interface Builder)
4 Device Provisioning
5 View-Based Applications and Interface Builder
6 Keyboards
7 Debugging
8 iPhone (iPod Touch) Versus iPad
9 Display Orientation, Icons and Images
10 Application Architecture and Life Cycle
11 Delegation Design Pattern and Accelerometer
12 Model-View-Controller Design Pattern
13 Table Views and Navigation-Based Applications
14 Tab Bar Controllers
15 GUI Controls
16 Dialog Boxes and Popovers
17 File I/O
18 Preferences and Settings
19 Core Audio
20 Relational Databases and SQLite
21 Core Data
22 Protecting User Data
23 Split Views
24 Documents
25 Electronic Mail
26 Multi-Touch and Gestures
27 Movie Player
28 Performance Tuning
29 Two-Dimensional Animation
30 Web Access
31 Core Location and Map Kit
32 Web Services (XML)
33 Custom Web Services (JSON)
34 Social Networks
35 Local and Push Notifications
36 Submitting an App to the App Store

# Software Development with Objective-C

If you do not have Objective-C experience, we can get you up to speed with this comprehensive course, comprising:

1 Introduction to Objective-C 2.0
2 Simple Objective-C Programs (printf)
3 Numbers and Text
4 Variables, Data Types, Constants, Casting
5 Pointers
6 Console Input (scanf), Data Processing
7 The Xcode IDE
8 Decisions
9 Loops
10 Arrays and Strings
11 Debugging
12 Foundation Framework Projects
13 Classes and Objects
14 Encapsulation, Properties, Accessors, Scope
15 Inheritance and Class Diagrams
16 Static Variables, Class Methods
17 The Foundation Framework
18 Numbers and Strings
19 Logging
20 Collections
21 Polymorphism, Categories and Protocols
22 Exception Handling
23 Memory Management
24 Assertions and Unit Testing with OCUnit
25 Test Driven Development with OCUnit
26 Revision Control with Git
27 Recursion and Memoization
28 Callbacks, Delegates and Blocks
29 File I/O
30 Interoperability with C and C++

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# 2014 Schedule

The following training events will be held in London (Barbican) during 2014:

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|---:|:---|
| 7 July | *Starting Android App Development* |
| 14 July | *Advanced Android App Development* |
| 21 July | *Android Development with JNI-NDK* |
| 28 July | *Cryptography for Java Developers* |
| 1 September | *Software Development with Java* |
| 8 September | *Software Development with Objective-C* |
| 15 September | *Starting Android App Development* |
| 22 September | *Developing Mobile Applications with iOS* |
| 29 September | *Android UI Development* |
| 6 October | *Advanced Android App Development* |
| 13 October | *Android Development with JNI-NDK* |
| 20 October | *Cryptography for Java Developers* |

All courses are of five days duration and cost £2500 except for *Android UI Development* which is four days at £2000 and *Cryptography for Java Developers* which is three days at £1800.

For further details:

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