



## Introduction to Android Development

### ANDROID TRAINING COURSE SYNOPSIS

Android is Google's operating system for mobile devices. Using the Android SDK, developers can develop applications on the Android platform using the Java Programming language. In this course, participants will learn the basics of various techniques to program their Android devices. This feature-packed course will show you how to get started in Android development, right from the start till deployment.

### ANDROID TRAINING COURSE LENGTH AND TIME

This class is 2 days long. Class time is 9:00 a.m.- 4:00 p.m. Breaks are scheduled throughout the day and lunch is typically scheduled 12-1. Students provide their own lunch.

### WHAT YOU WILL LEARN IN THIS ANDROID TRAINING COURSE

- Your First Android Application
- Android and Model-View-Controller
- The Activity Lifecycle
- Debugging Android Apps
- Your Second Activity
- Android SDK Versions and Compatibility
- UI Fragments and the Fragment Manager
- Creating User Interfaces with Layouts and Widgets
- Displaying Lists with ListFragment
- Using Fragment Arguments
- Using ViewPager
- Dialogs
- Audio Playback Using MediaPlayer
- Retained Fragments
- Localization
- The Action Bar

### ANDROID - ENROLLMENT

Please see our Enrollment Page (<http://www.ledet.com/enroll>) for our enrollment form.

### LOCATIONS FOR THIS ANDROID TRAINING COURSE

We have training centers in Atlanta, Houston, Chicago, Denver, San Diego and Washington DC. We also offer classes at a network of rental facilities. We offer private onsite training and instructor-led, live online training. If coming to a rental facility, please double-check the location of your class with our office to make sure you get to the right location.

### PREREQUISITES FOR THIS ANDROID TRAINING COURSE

Knowledge of programming and object-oriented programming concepts. Java programming experience recommended.

### GOALS FOR THIS ANDROID TRAINING COURSE

Sterling Ledet and Associates realizes the importance of education and we take pride in being able to offer you classes that are more custom fit to your needs. Call us at (877) 819-2665 if you have any special questions or e-mail us at [sales@ledet.com](mailto:sales@ledet.com).

### DISCLAIMER

Our goal is to make sure your class meets your objectives, not ours. Therefore, all of our outlines are treated as guides to help steer the workshop. This outline does not guarantee that all the topics listed will be covered in the time allowed. The amount of material covered is based on the skill level of the student audience. We may change or alter course topics to best suit the classroom situation.

# Introduction to Android Development

## LESSON 1 - YOUR FIRST ANDROID APPLICATION

App Basics  
Creating an Android Project  
Navigating in Eclipse  
Laying Out the User Interface  
The view hierarchy  
Widget attributes  
Creating string resources  
Previewing the layout  
From Layout XML to View Objects  
Resources and resource IDs  
Wiring Up Widgets  
Organizing imports  
Getting references to widgets  
Setting listeners  
Running on the Emulator  
For the More Curious: Android Build Process  
Android build tools

## LESSON 2 - ANDROID AND MODEL-VIEW-CONTROLLER

Creating a New Class  
Generating getters and setters  
Model-View-Controller and Android  
Benefits of MVC  
Updating the View Layer  
Updating the Controller Layer  
Running on a Device  
Connecting your device  
Configuring your device for development  
Adding an Icon  
Adding resources to a project  
Referencing resources in XML  
Challenge: Add a Listener to the TextView  
Challenge: Add a Previous Button  
Challenge: From Button to ImageButton

## LESSON 3 - THE ACTIVITY LIFECYCLE

Logging the Activity Lifecycle  
Making log messages  
Using LogCat  
Rotation and the Activity Lifecycle  
Device configurations and alternative resources  
Saving Data Across Rotation  
Overriding onSaveInstanceState(Bundle)  
The Activity Lifecycle, Revisited  
For the More Curious: Testing onSaveInstanceState(Bundle)  
For the More Curious: Logging Levels and

Methods

## LESSON 4 - DEBUGGING ANDROID APPS

The DDMS Perspective  
Exceptions and Stack Traces  
Diagnosing misbehaviors  
Logging stack traces  
Setting breakpoints  
Using exception breakpoints  
File Explorer  
Android-Specific Debugging  
Using Android Lint  
Issues with the R class

## LESSON 5 - YOUR SECOND ACTIVITY

Setting Up a Second Activity  
Creating a new layout  
Creating a new activity subclass  
Declaring activities in the manifest  
Adding a Cheat button to QuizActivity  
Starting an Activity  
Communicating with intents  
Passing Data Between Activities  
Using intent extras  
Getting a result back from a child activity  
How Android Sees Your Activities  
Challenge

## LESSON 6 - ANDROID SDK VERSIONS AND COMPATIBILITY

Android SDK Versions  
Compatibility and Android Programming  
Honeycomb was big  
Minimum SDK version  
Target SDK version  
Build SDK version  
Adding code from later APIs safely  
Using the Android Developer Documentation  
Challenge: Reporting the Build Version

## LESSON 7 - UI FRAGMENTS AND THE FRAGMENT MANAGER

The Need for UI Flexibility  
Introducing Fragments  
Starting CriminalIntent  
Creating a new project  
Fragments and the support library  
Creating the Crime class  
Hosting a UI Fragment  
The fragment lifecycle  
Two approaches to hosting  
Defining a container view

Creating a UI Fragment  
Defining CrimeFragment's layout  
Creating the CrimeFragment class  
Adding a UI Fragment to the FragmentManager  
Fragment transactions  
The FragmentManager and the fragment lifecycle  
The Reason All Our Activities Will Use Fragments  
For the More Curious: Developing for Honeycomb, ICS, Jelly Bean, and Beyond

## LESSON 8 - CREATING USER INTERFACES WITH LAYOUTS AND WIDGETS

Upgrading Crime  
Updating the Layout  
Wiring Widgets  
More on XML Layout Attributes  
Styles, themes, and theme attributes  
Screen pixel densities and dp and sp  
Android's design guidelines  
Layout parameters  
Margins vs padding  
Using the Graphical Layout Tool  
Adding a new widget  
Editing attributes in properties  
Reorganizing widgets in the outline view  
Updating child layout parameters  
How android:layout\_weight works  
Summary of graphical layout tool  
Widget IDs and multiple layouts  
Challenge: Formatting the Date

## LESSON 9 - DISPLAYING LISTS WITH LISTFRAGMENT

Updating CriminalIntent's Model Layer  
Singletons and centralized data storage  
Creating a ListFragment  
An Abstract Activity for Hosting a Fragment  
A generic fragment-hosting layout  
An abstract Activity class  
ListFragment, ListView, and ArrayAdapter  
Creating an ArrayAdapter  
Responding to list item clicks  
Customizing List Items  
Creating the list item layout  
Creating an adapter subclass

## LESSON 10 - USING FRAGMENT ARGUMENTS

Starting an Activity from a Fragment  
Putting an extra

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Retrieving an extra  
Updating CrimeFragment's view with Crime data  
The downside to direct retrieval  
Fragment Arguments  
Attaching arguments to a fragment  
Retrieving arguments  
Reloading the List  
Getting Results with Fragments

Default resources  
Configuration Qualifiers  
Prioritizing alternative resources  
Multiple qualifiers  
Finding the best-matching resources  
More Resource Rules and Regulations  
Resource naming  
Resource directory structure  
Testing Alternative Resources

### LESSON 11 - USING VIEWPAGER

Creating CrimePagerActivity  
Laying out views in code  
ViewPager and PagerAdapter  
Integrating CrimePagerActivity  
FragmentManagerAdapter vs  
FragmentPagerAdapter  
For the More Curious: How ViewPager Really Works

### LESSON 12 - DIALOGS

Creating a DialogFragment  
Showing a DialogFragment  
Setting a dialog's contents  
Passing Data Between Two Fragments  
Passing data to DatePickerFragment  
Returning data to CrimeFragment  
Challenge: More Dialogs

### LESSON 13 - AUDIO PLAYBACK USING MEDIAPLAYER

Adding Resources  
Defining the layout for HelloMoonFragment  
Manually resetting the app theme  
Creating HelloMoonFragment  
Using a Layout Fragment  
Audio Playback  
Wiring buttons to play and stop  
Challenge: Pausing Audio Playback  
For the More Curious: Playing Video  
Challenge: Playing Video in HelloMoon

### LESSON 14 - RETAINED FRAGMENTS

Retaining a Fragment  
Rotation and Retained Fragments  
Retained Fragments: As Nice as All That?  
Rotation Handling and  
onSaveInstanceState(Bundle)  
For the More Curious: Rotation Before  
Fragments

### LESSON 15 - LOCALIZATION

Localizing Resources

### LESSON 16 - THE ACTION BAR

Options Menu  
Defining an options menu in XML  
Creating the options menu  
Responding to options menu selections  
Enabling Ancestral Navigation  
Enabling the app icon  
Responding to the Up button  
An Alternative Menu Item  
Creating an alternative menu file  
Toggling the menu item title  
"Just one more thing"  
Challenge: An Empty View for the List