



## Android Development Advanced

### ANDROID DEVELOPMENT ADVANCED COURSE SYNOPSIS

Using the Android SDK, developers can develop applications on the Android platform using the Java Programming language. In this course, participants will learn the advanced techniques to program their Android devices.

### PREREQUISITES FOR THIS ANDROID DEVELOPMENT ADVANCED TRAINING COURSE

Knowledge of programming and object-oriented programming concepts. Java programming experience recommended. We also recommend that you attend our Introduction to Android Development Training Course or have equivalent knowledge.

### WHAT YOU WILL LEARN IN ANDROID DEVELOPMENT ADVANCED TRAINING COURSE

- Saving and Loading Local Files
- Context Menus and Contextual Action Mode
- Camera
- Implicit Intents
- Two-Pane Master-Detail Interfaces
- Styles And Includes
- XML Drawables And 9-Patches
- HTTP & Background Tasks
- Loopers, Handlers, and HandlerThread
- Search
- Background Services
- Browsing The Web & WebView
- Custom Views and Touch Events
- Tracking the Device's Location
- Local Databases with SQLite
- Loading Asynchronous Data With Loaders
- Using Maps

### ANDROID DEVELOPMENT ADVANCED TRAINING COURSE LENGTH AND TIME

This class is 5 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.

### ENROLLMENT IN ANDROID DEVELOPMENT ADVANCED TRAINING COURSE

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

### ANDROID DEVELOPMENT ADVANCED TRAINING COURSE LOCATIONS

We have training centers in Atlanta, 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.

### GOALS FOR ANDROID DEVELOPMENT ADVANCED 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.

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## LESSON 1 - SAVING AND LOADING LOCAL FILES

Saving and Loading Data in CriminalIntent  
Saving crime data to a JSON file  
Loading crimes from the filesystem  
Challenge: Use External Storage  
For the More Curious: The Android  
Filesystem and Java I/O  
Accessing files and directories

## LESSON 2 - CONTEXT MENUS AND CONTEXTUAL ACTION MODE

Defining a Context Menu Resource  
Implementing a Floating Context Menu  
Creating the context menu  
Registering for the context menu  
Responding to an action  
Implementing Contextual Action Mode  
Enabling multiple selection  
Action mode callbacks in a list view  
Changing activated item backgrounds  
Implementing contextual action mode in  
other views  
Compatibility: Fallback or Duplicate?  
Challenge: Deleting from CrimeFragment  
For the More Curious: ActionBarSherlock  
Challenge: Using ActionBarSherlock  
Basic ABS integration in CriminalIntent  
More advanced integration  
Even more advanced integration

## LESSON 3 - CAMERA I: VIEWFINDER

Creating the Fragment Layout  
Creating CrimeCameraFragment  
Creating CrimeCameraActivity  
Adding activity and camera permissions to  
the manifest  
Using the Camera API  
Opening and releasing the camera  
SurfaceView, SurfaceHolder, and Surface  
Determining preview size  
Starting CrimeCameraActivity from  
CrimeFragment  
For the More Curious: Running Activities  
from the Command Line

## LESSON 4 - CAMERA II: TAKING PICTURES AND HANDLING IMAGES

Taking a Picture  
Implementing Camera callbacks  
Setting the picture size  
Passing Data Back to CrimeFragment

Starting CrimeCameraActivity for a result  
Setting a result in CrimeCameraFragment  
Retrieving filename in CrimeFragment  
Updating the Model Layer  
Adding a Photo class  
Giving Crime a photo property  
Setting the photo property  
Updating CrimeFragment's View  
Adding an ImageView  
Image handling  
Showing Larger Image in a DialogFragment  
Challenge: Crime Image Orientation  
Challenge: Deleting Photos  
For the More Curious: Deprecation in  
Android

## LESSON 5 - IMPLICIT INTENTS

Adding Buttons  
Adding a Suspect to the Model Layer  
Using a Format String  
Using Implicit Intents  
Parts of an implicit intent  
Sending a crime report  
Asking Android for a contact  
Checking for responding activities  
Challenge: Another Implicit Intent

## LESSON 6 - TWO-PANE MASTER- DETAIL INTERFACES

Adding Layout Flexibility  
Modifying SingleFragmentActivity  
Creating a layout with two fragment  
containers  
Using an alias resource  
Activity: Fragment Boss  
Fragment callback interfaces  
For the More Curious: More on Determining  
Device Size

## LESSON 7 - MORE ABOUT INTENTS AND TASKS

Setting Up NerdLauncher  
Resolving an Implicit Intent  
Creating Explicit Intents at Runtime  
Tasks and the Back Stack  
Using NerdLauncher as a Home Screen  
Challenge: Icons, Reordering Tasks  
For the More Curious: Processes vs Tasks

## LESSON 8 - STYLES AND INCLUDES

Setting Up the RemoteControl Project  
Setting up RemoteControlActivity  
Setting up RemoteControlFragment  
Cleaning Up with Styles

Finishing the Layout  
For the More Curious: include and merge  
Challenge: Style Inheritance

## LESSON 9 - XML DRAWABLES AND 9-PATCHES

XML Drawables  
State List Drawables  
Layer List and Inset Drawables  
Using 9-Patch Images

## LESSON 10 - HTTP & BACKGROUND TASKS

Creating PhotoGallery  
Networking Basics  
Asking permission to network  
Using AsyncTask to Run on a Background  
Thread  
You and Your Main Thread  
Beyond the main thread  
Fetching XML From Flickr  
Using XmlPullParser  
From AsyncTask Back to the Main Thread  
For the More Curious: More on AsyncTask  
Cleaning Up AsyncTasks  
Challenge: Paging

## LESSON 11 - LOOPERS, HANDLERS, AND HANDLERTHREAD

Preparing GridView for Displaying Images  
Downloading Lots of Small Things  
Communicating with the Main Thread  
Assembling a Background Thread  
Messages and Message Handlers  
Message anatomy  
Handler anatomy  
Using handlers  
Passing handlers  
For the More Curious: AsyncTask vs  
Threads  
Challenge: Preloading and Caching

## LESSON 12 - SEARCH

Searching Flickr  
The Search Dialog  
Creating a search interface  
Searchable activities  
Hardware search button  
How Search works  
Launch modes and new intents  
Simple persistence with shared preferences  
Using SearchView on Post-Android 30  
Challenges

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## LESSON 13 - BACKGROUND SERVICES

Creating an IntentService  
What Services Are For  
Safe background networking  
Looking for New Results  
Delayed Execution with AlarmManager  
PendingIntent  
Managing alarms with PendingIntent  
Controlling Your Alarm  
Updating options menu items  
Notifications  
For the More Curious: Service Details  
What service does (and does not) do  
A service's lifecycle  
Non-sticky services  
Sticky services  
Bound services

## LESSON 14 - BROADCAST INTENTS

Waking Up on Boot  
Broadcast receivers in the manifest  
How to use receivers  
Filtering Foreground Notifications  
Sending broadcast intents  
Dynamic broadcast receivers  
Using private permissions  
Receiving results with ordered broadcasts  
Receivers and Long-running Tasks

## LESSON 15 - BROWSING THE WEB & WEBVIEW

One Last Bit of Flickr Data  
The Easy Way: Implicit Intents  
The Harder Way: WebView  
Using WebChromeClient to spruce things up  
Proper rotation with WebView  
For the More Curious: Injecting JavaScript Objects

## LESSON 16 - CUSTOM VIEWS AND TOUCH EVENTS

Setting Up the DragAndDraw Project  
Setting up DragAndDrawActivity  
Setting up DragAndDrawFragment  
Creating a Custom View  
Creating BoxDrawingView  
Handling Touch Events  
Tracking across motion events  
Rendering Inside onDraw(...)  
Challenge: Rotations

## LESSON 17 - TRACKING THE DEVICE'S LOCATION

Getting Started with RunTracker  
Setting up RunActivity  
Setting up RunFragment  
Locations and the LocationManager  
Receiving Broadcast Location Updates  
Updating the UI with Location Data  
Faster Answers: the Last Known Location  
Testing Locations on Real and Virtual Devices

## LESSON 18 - LOCAL DATABASES WITH SQLITE

Storing Runs and Locations in a Database  
Querying a List of Runs From the Database  
Displaying a List of Runs Using CursorAdapter  
Creating New Runs  
Working with Existing Runs  
Challenge: Identifying the Current Run

## LESSON 19 - LOADING ASYNCHRONOUS DATA WITH LOADERS

Loaders and the LoaderManager  
Using Loaders in RunTracker  
Loading the List of Runs  
Loading a Single Run  
Loading the Last Location for a Run

## LESSON 20 - USING MAPS

Adding the Maps API to RunTracker  
Use a real device to test maps  
Install and use the Google Play services SDK  
Obtain a Google Maps API key  
Update RunTracker's manifest  
Showing the User's Location on a Map  
Displaying a Run's Path  
Adding Markers for Run Start and Finish  
Challenge: Live Updates