ANDROID APPLICATION DEVELOPMENT

Overview:
This 4 days' program covers intermediate to Advanced topics. Please go through the topics in detail.

Pre-Requisites
- Java Programming Experience.
- Good understanding and practical experience in Object Oriented Programming.

Target Audience
Software Professionals with working experience of Java programming Language.

Duration
4 days

Day 1

1. Android OS .5
    a. Evolution of Android
    b. What's new in Android
    c. Android OS architecture
    d. Application Execution Environment
2. Application Development Essentials 1.0hr
    a. Application Components
        i. Activity, Service, Content Provider, Broadcast Receiver
        ii. Why component based architecture?
    b. Application Resources
    c. Intents
3. Activities 1.5hr
    a. Activities and View
    b. Creating and Launching Activities
    c. Activity and Data Flow
    d. Returning Data back from Activity
    e. Managing Activity State (in case of activity restarts)
    f. Activity Task Stack
4. Fragment 1.5hr
    a. Introduction to Fragments
    b. Creating Fragments
    c. Fragment Manager and Transaction
    d. Fragment Backstack
    e. Life-cycle of Fragment
    f. Communication between Fragments
5. User Interface 3hr
    a. Introduction & Overview
        i. View, ViewGroup, Layout & Widget

        ii. View properties and transformations
    b. Layouts
        i. Linear
        ii. Frame
        iii. Relative
        iv. Grid
    c. Layout best practices

Day 2

6. Intents .5hr
    a. Intent Routing
    b. Implicit Intents
    c. Intent Resolution
7. Adapter based Views 2hr
    a. ListView, GridView
    b. Introduction to Adapters
    c. Built-in Adapters
    d. Writing Custom Adapters
    e. Best Practices for handling images
8. Background Work 2hr
    a. Java Threading
    b. Android Threading
    c. Loopers
    d. AsyncTask
    e. Handlers
    f. Messages & Runnables
9. Services .5hr
    a. Services Application Component
    b. IntentService
    c. Alarm Manager

Day 3 & Day 4

1. Custom View, Compound Views,
    a. Android View System
        i. View Tree Traversal
    b. Custom View
        i. Measure, Layout and Drawing
    c. Compound View
2. Android NDK
    a. NDK basics
    b. JNI basics
    c. Creating JNI wrapper
    d. Access Java Objects in Native Code
    e. Calling java call back methods from Native code
    f. Threads in native code

3. Concurrency
    a. Long running tasks with Service
    b. Job Scheduler API for background work
    c. Executor framework
        i. Concurrent hashmap
        ii. CountdownLatch, CyclicBarrier

4. Material UI
    a. Material design basics
    b. CardView
    c. RecyclerView

5. Performance
    a. Android Monitor
    b. Measuring and Tracking CPU performance
        i. TraceView
    c. Measuring and Tracking Memory
        i. Android Memory Monitor
        ii. Allocation Tracker
        iii. Memory Analyzer Tool
            1. how to avoid, identify and fix memory leaks (heap dump analysis)