Android Syllabus

Introduction to Android

- Overview of Android
- Java Editions and comparison with Android
- Android Apps – Design, Vendor, Behavioral Classification

Android Architecture Overview

- Android Architecture
- Application Frameworks
- Android Libraries, Run time, Dalvik Virtual Machine

Setup of Android Development Environment

- System Requirements
- Java, Eclipse and Android SDK Installation
- Android SDK and Tools
- Android Virtual Devices & Device Definitions

Your Android Application

- Android Application Design
- Using Photoshop for Graphic Designing
- Android Application Wireframes (screens)

Your First Android Application

- Creating Android Application
- Creating Configurations
- Testing the app: AVD, Active Device
- Android Project Structure and Manifest file

Publishing to the Play Store

- Release process and Release build of Android Application
- Signing the .apk file
- Preparing the Store Listing page

- Content Rating
- Distributing the Application
- Merchant Registration for Paid Applications

Activities

- About XML – approach to design layouts
- Views and Layouts
- View properties
- Linear Layout vs. Relative Layout vs. Frame Layout vs. Absolute Layout
- Localization of UI
- Best practices for targeting various form factors: phone, tablet, TV
- Best practices when working designing Android UI

Android Testing

- Creating a Test Project for Android project
- Working with Test Packages
- Writing test cases

Fragments

- Designing fragments
- Fragments life cycle
- Fragment management and integration

User Interfaces

- Creating the Activity
- XML versus Java UI
- Selection Widgets, Using fonts
- Common UI components
- Handling UI events: a bit about listeners

Advanced UI

- Adapters
- Complex UI components

- Menus and Dialogs
- Tabbed Activities
- Navigation Drawer
- Animations
- Create activity layouts programmatically
- Testing and optimizing UI

Android Material Design

- What is material?
- Material properties and Styling / Animations
- Material Patterns

Resources

- Overview of Android Resources
- Creating Resources
- Using Resources
- Drawable Resources
- Animation Resources

Broadcast Receivers

- Broadcast receiver usage patterns: when and why to use them
- Implementing a broadcast receiver
- Registering a broadcast receiver via the manifest file and Programmatically

Background Services

- Overview of Android services
- Service lifecycle
- Declaring a service
- Registering a service
- Starting and stopping a service
- Threads and other concurrency considerations with services
- Bound versus unbound services
- Remote versus local services

Intents

- Working with Intents
- Explicit and implicit intents
- Using Intents as messaging objects
- Intents to start components expecting results

Storing and Retrieving Data

- Storage Model selection criteria
- Shared preferences
- Internal Storage – Files
- External Storage – SD Card
- Testing the created files, tools

SQLite Database

- Introducing SQLite
- SQLiteOpenHelper and creating a database
- Opening and closing a database
- Working with cursors
- Inserts, updates, and deletes

Native Content Providers

- Content provider types
- Searching for content
- Adding, changing, and removing content
- Native Android Content Providers
- Accessing Contact Book, Calendar

Custom Content Providers

- Custom Content Provider classes
- Publishing content providers

Web Services

- Understanding Web Services
- Web Services Architecture
- Building Server side components
- Publishing web services

- REST based web services
- Accessing Web Services
- Integrating Web Services with mobile client
- Overview of networking
- Checking the network status and web service status
- Working with HTTP to access the web services

Parsing, Parsers

- Document Object Model (DOM)
- Simple API for XML (SAX)
- JavaScript Object Notation (JSON)
- Parsing XML and JSON

Location Based Services

- Using Location Manager, Location Provider
- GPS and Network based tracking
- Testing the application using KML files
- Simulation of the locations on the active device
- Location Listeners and Proximity Alerts

Integrating Google Maps

- API Version 2 of Google Maps
- User Interface – MapFragments
- API key generation
- Registrations in the manifest file
- Google Map, Camera Positions
- Adding Markers, Circles, Polylines
- Google Maps Directions API

Telephony

- Telephony background
- Accessing telephony information
- Monitoring data activity and connectivity
- Working with messaging SMS

Multimedia in Android

- Playing Audio & Video
- Recording Audio & Video
- Customizing Camera & Capturing Photos
- Voice Recognition
- Text To Speech

Bluetooth

- Controlling local Bluetooth device
- Discovering and bonding with Bluetooth devices
- Managing Bluetooth connections
- Communicating with Bluetooth

Social Networking Integrations

- Facebook Integration

Debugging and Testing Android Apps

- Logcat
- Debugger
- Traceview
- HierarchyViewer
- Monkey Runner
- UIAutomator