

Android Application Development

Course 202 – 40 Hours

Overview

This course provides Android developers with the skills required to build android applications, services and other components all over the android stack. The curriculum includes writing a variety of android applications using java and native (C/C++) code.

Course Objectives

Upon completion of this course, students will be able to:

- Build android applications
- Manage activities
- Create and work with services
- Add native code

Who Should Attend

The course is designed for developers who want to master android application development.

Prerequisites

Students should have a working knowledge with at least one of the following programming language: C/C++/Java/C#

Course Contents

Android Overview

- History
- Android vs. Linux
- Android Stack
- Development tools
- Writing Application
- Using Log and Toast
- Using ADB
- Lab: write a simple application
- Application Components - overview
 - Activities
 - Services
 - Broadcast receivers

- Content providers

- Intents
- Building GUI
- Managing resources
- Manifest file
- Lab: writing application with activities and intents

GUI elements

- Building UI
- Layouts and common widgets
- Menus
- Dialogs
- Building dynamic UI using xml and code
- Handling events
- Lab: building Application with GUI

Processes and threads

- Creating threads
- UI threads
- AsyncTask
- Looper
- Handler
- Lab: working with threads

Android Services

- Android Services
- Binder and IPC
- Using System services
- Permissions
- Examples from system services (Location, Bluetooth, etc.)
- Lab: using system services
- AIDL
- AIDL types
- Custom types
- Custom permissions
- Building a service
- Building a client application
- Async-IPC
- Lab: creating a service

Data storage

- Data storage overview
- Shared preferences
- Files
- Databases
- Accessing web services
- Lab: using data
- Content providers
- Contents resolver
- URI
- Managing data: query, insert, update and delete
- Lab: content provider

Advanced features

- App Widgets
 - Overview
 - Implementation
- Android Media
 - Graphics
 - Audio
 - Video
 - External libraries and tools
- Android framework
- JNI and NDK
 - NDK tools
 - JNI overview
 - Types
 - Local and global references
 - Reflection
 - Exceptions
 - Using C++
 - Best practices
 - Lab: adding native code to android application