ANDROID APP DEVELOPMENT SYLLABUS

Pre-Requisite

Android programming is based on Java programming language so a basic understanding on Java programming would be helpful in learning Android application development.

Eligibility - B.TECH. (CS/IT/EC) or MCA/M.Sc. (IT/CS/ Electronics), BCA/PGDCA, Diploma in Computer/Electronics Stream, B.Sc. etc. Knowledge of JAVA programming is required.

Duration – 7 to 8 Weeks (120 Hours)

COURSE OUTLINE

Chapter 1: JAVA Concepts

- OOPs Concepts
- Inheritance in detail
- Exception handling
- Packages & interfaces
- JVM & .jar file extension
- Multi-threading (Thread class & Runnable Interface)

Chapter 2: SQL

- DML & DDL Queries in brief

Chapter 3: Introduction to Android

- What is Android?
- Setting up the development environment
- Dalvik Virtual Machine & .apk file extension
- Fundamentals:

  - Basic Building blocks - Activities, Services, Broadcast Receivers & Content providers
  - UI Components - Views & notifications
  - Components for communication -Intents & Intent Filters o Android API levels (versions & version names)
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  - Android API levels (versions & version names)

Chapter 4: Application Structure (in detail)

- AndroidManifest.xml

- uses-permission & uses-sdk
- Resources & R.java o Assets
- Layouts & Drawable Resources
- Activities and Activity lifecycle
- First sample Application

Chapter 5: Emulator-Android Virtual Device

- Launching emulator
- Editing emulator settings
- Emulator shortcuts
- Logcat usage
- Introduction to DDMS
- Hello World App
- Creating your first project
    - The manifest file
    - Layout resource
    - Running your app on Emulator
- Second App: - (switching between activities) - Develop an app for demonstrating the communication between Intents

Chapter 6: Basic UI design

- Form widgets
- Text Fields
- Layouts
- [dip, dp, sip, sp] versus px
- Examples

Chapter 7: Preferences

- Shared Preferences
- Preferences from XML
- Examples

Chapter 8: Menu

- Option menu
- Context menu
- Sub menu
- menu from XML
- menu via code
- Examples

Chapter 9: Intents (in detail)

- Explicit Intents
- Implicit intents
- Examples

Chapter 10: UI design

- Time and Date
- Images and media
- Composite
- Alert Dialogs & Toast
- Popup
- Examples

Chapter 11: Tabs and Tab Activity

- Examples

Chapter 12: Styles & Themes

- styles.xml
- drawable resources for shapes, gradients (selectors)
- style attribute in the layout file
- Applying themes via code and manifest file
- Examples

Chapter 13: Content Providers

- SQLite Programming
- SQLiteOpenHelper
- SQLiteDatabse
- Cursor
- Reading and updating Contacts
- Reading bookmarks

Chapter 14: Android Debug Bridge (adb) tool

Chapter 15: Linkify

- Web URLs, Email address, text, map address, phone numbers
- MatchFilter & TransformFilter

Chapter 16: Adapters and Widgtes

- Adapters
  a. ArrayAdapters
  b. BaseAdapters
  c. ListView and ListActivity
  d. Custom listview
  e. GridView using adapters
  f. Gallery using adapters

Chapter 17: Notifications

- Broadcast Receivers
- Services and notifications

- Toast
- Alarms

Chapter 18: Custom components

- Custom Tabs
- Custom animated popup panels
- Other components

Chapter 19: Threads

- Threads running on UI thread (runOnUiThread)
- Worker thread
- Handlers & Runnable
- AsynTask (in detail)

Chapter 20: Advanced

- Live Folders
- Using sdcards
- XML Parsing
- JSON Parsing
- Maps, GPS, Location-based Services
- Accessing Phone services (Call, SMS, MMS)
- Network connectivity services
- Sensors

Chapter 21: Services

- Overview of services in Android
- Implementing a Service
- Service lifecycle
- Inter-Process Communication (AIDL Services)

Chapter 22: Multimedia in Android

- Multimedia Supported audio formats
- Simple media playback
- Supported video formats
- Simple video playback

Chapter 23: Location-Based Services and Google Maps

- Using Location-Based Services
- Finding the current location and listening for changes in location
- Proximity alerts
- Working with Google Maps
- Showing google map in an Activity
- Map Overlays

- Itemized overlays
- Geocoder
- Displaying route on map Chapter

24: Sensors

- How Sensors work
- Using Orientation and Accelerometer sensors
- Best practices for performance

Chapter 25: Wi-Fi

- Monitoring and managing Internet connectivity
- Managing active connections
- Managing Wi-Fi networks

Chapter 26: Telephony Services

- Making calls
- Monitoring data connectivity and activity
- Accessing phone properties and status
- Controlling the phone
- Sending messages

Chapter 27: Camera

- Taking pictures
- Media Recorder
- Rendering previews

Chapter 28: Bluetooth

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

Chapter 29: Testing and Debugging Android Application

- Role and use of Dalvik Debug Monitor Server (DDMS), How to debug the android application
- Use of Step Filters, Breakpoints, Suspend and Resume

Chapter 30: Android Application Deployment

- Android Application Deployment on device with Linux and Windows Android Application Deployment on Android Market

Chapter 31: Basics of Android Secure Coding

- Security Tips
- Storing Data
- Using Networking
- Android Permissions
- Intents
- Broadcast Receiver
- Activities
- Content Providers
- Files