



Certificate Course in Android App Development

1 **Android Architecture** – sdk, jdk, class files, .dex, installation, sdk manager, avd manager, avd configurations, emulator, Android Framework Versions, SDK Versions, min version and target version for apps, USB Debugging

2. **Android Activities and Views** – Layout files, Activities & Life Cycle, Views, View Groups, Preparing UI

3. **Project Structure** – Folder Structure, Run Configurations, Run As, Debug Configurations, Debug

3. **Resources Overview** – Types of Resources, Drawables, Layouts, Menus, Strings, Colors etc. R.java

5. **Linear Layout** – layout params, **attributes like:** width, height, dp, sp, id, @+ ,@, text, inputType, strings.xml, nesting of layouts, gravity, layout_gravity, weight, weightSum

6. **Relative Layout understanding** – Complicated attributes and positioning understanding

7. **Manifest file and its Tags** – Sample Structure, application, permissions, activity, service, receiver etc.

8. **Intents in Anroid** – Simple Intents for navigation, Intra Application Intents, Inter Application Intents with Action and Data. Intents with extra information, startActivity(i), Toast

9. **Advance Intents** – Common Intents, Intent to trigger standard functionality, Broadcasting Intents, startService(i) startActivityForResult(), onActivityResult(), requestCode and resultCode, Understanding of Activity BackStack, finish()

10. **ListView and Adapters** – Working of ListView, Static ListView, Dynamic ListViews, ArrayAdapters and SimpleAdapters, Inbuilt Layout files for ListView UI – simple_list_item_1, simple_list_item_2. Customizing the layout for ListView, Mapping String[] to int[], notifyDataSetChanged()

11. **AutoCompleteTextView, Spinners, MultiAutoCompleteTextView** – Using Adapters to configure the data. Setting up the thresholdLevel

12. **File System Access** – Environment.getDataDirectory(), java.io package, java.io.File class, listFiles(), isDirectory()

13. **SharedPreferences** - Permanent Storage space for key – value pairs.

14. **Dialog Theme for Activities – Manifest File Changes**

15. **XML Images**, Drawable Folder, <shape> with corners and gradient and solid Fills, Using XML images in Layout files as Background Images for Views.

16. **XML Animations**: Alpha, Rotation, Translation and Scaling, Combining Animations, Loading animations in java file and startAnimation on event. Specific Animations like Rotate, Zoom In, Zoom out, Transfer, Swipe In, Swipe Out, 3-D type Effects, Event based Animations, Animation Chains.

16. **Database in Android: SQLite**, DDL-DML-DQL, Cursor and working. Applications with Database Security.

17. **Graphs in Android**: Different Graph Libraries, Preparing PieGraph and BarGraph. Integrating Graph Library in Android App. Live Graphs.

18. **Grid Layout and Frame Layout**

19. **Async Task – Multi – Threading**, background task, understanding 3 generic Types involved, Scenarios where Async Task can be used, **doInBackground()** and **onPostExecute()**. **publishProgress()** and **onProgressUpdate()**

21 **Web Connectivity from Android**: Communication between Web Application and Android Application, Architecture: Emulator – **10.0.2.2**, Live- domain name, Utility Method: **getResponseFromWeb()**, Connect to Google, Connect to your own ASP.net/JSP/PHP Website, Manager Permissions and response, **Sending GET and POST Requests**, Encoding Parameters using UTF-8 and custom encoding, Using Async Task to Connect to Web, Understanding Concepts of Public Key and Private Key Encryption and 1 way Hash Algo (MD-5,HASH), Authenticating Android Login by Web Server, Get Comma Separated Response from Web Server and display on ListView in Android

22. **Loading Android contacts**: ContactsContract, Understanding ContentProvider and ContentResolver.Static Constants for Table name, column names. Obtaining Cursor using ContentResolver. Extra parameters like projection, selection, selection args etc. DisplayName and PhoneNumbe, Permissions.

23. **Fragments**: Fragment Based UI Development,

24. **Tabs and Swipe:** Using Tabs and Swipe, Fragments and ViewPager, FragmentPagerAdapter. Understanding and customizing

25. **GPS:** Location Services, LocationManager, getLastKnownLocation, LocationListener, onLocationChanged, Location Object, getLatitude(), getLongitude(), Accuracy and Availability of different Providers, GPS_PROVIDER and NETWORK_PROVIDER. Using best Criteria. Google Android Device Manager, Forward *and* Reverse GeoCoding Concept.

26. **Common Intents:** Use of Common Intents for ▪ Alarm Clock ▪ Calendar ▪ Camera ▪ Contacts/People App ▪ Email ▪ File Storage ▪ Maps ▪ Music or Video ▪ Phone ▪ Settings ▪ Text Messaging ▪ Web Browser

27. **Camera:** Intent to capture a image, Get back captured image and display on image View.

28. **Background Services:** Service and Intent Service, onHandleIntent() life cycle method, startService(intent), Communication from Service to Activity (by Broadcasting Intent), Configuring service in Manifest

28. **Broadcast Receivers:** Receivers, sendBroadcast(), Intent-filter to for receiver, Start Activity from Receiver, Start Service from Receiver, Receiving Custom events, Receiving System Events like Incoming Phone Call, Boot Complete, etc.

29. **Standard System Services:** Alarm Service understanding - **AlarmManager, Vibrator** understanding, **NotificationBuilder** and Notifications, Concept of Pending Intent, GPS Service etc.

30. **Sensors:** Different Types of Sensors, SensorEventListener => OnSensorChanged() method, MotionSensors, Environment Sensors, Position Sensors, SensorManager, Determining if Sensor is available in device, using Proximity Sensor for Detecting nearby objects, Using Temperature Sensors, Using ACCELEROMETER, Fine Grained Configuration for X, Y, Z values. Detecting Shake event.

31. **Invoking Web Services from Android:** Web Service Creation in ASP.net, Invoking it from Android,WSDL Structure, Generating XML Data and Json Data. Parsing JSON in Android App. JSONObject and JSONArray classes.

32. **Home Screen Widgets:** Architecture, Custom Layout File, AppWidget Provider XML Configuration,Custom receiver with onUpdate method, Configuring meta-data for Receiver in Manifest File.Handling Click Events using RemoteViews concept and Pending Intent. Unique ID management for every instance of Widget. Sample Widget Example.

34. **Volley Library For NetWork Operations:** Webservice Call GET,POST with StringRequest,JSONObject Request,JSON Array Request.

35. **Google Maps:** Google Map V2, Multiple Markers on Map, Get Directions,routes,distance,, Navigation in Google Map.

36. **GCM – FCM (Google Cloud Messaging):** GCM Client App, Server App with messaging Service.

37. **Social Network Integration:** Social Network Login like Facebook, LinkedIn,Twitter,Google+.