Introduction to Android Development

HITESH
KUMAR
SHARMA

Technical Instructor & Consultant

ABOUT ME

- Industry Experience: **15 Years (5 Years in Mobile App development, 10 Years in DevOps and Data Science)**
- Worked as **IBM Instructor**
- Worked as **Microsoft Instructor**
- Core Technical Domains: **Android/iOS App Development**, **UiPath RPA, DevOps, Data Analytics**
- Academic Qualifications**: Ph.D. (CSE), M.Tech (CSE)**
- Certifications:
  - **UiPath RPA Certified Associate**
  - **Docker Certified Associate**
  - **Neo4J Certified Associate**
  - **Maven Certified Professional**
- 4 Books Published
- 30 Patents Published
- 02 Copyright Published

Agenda

- ❏ Android Overview
- ❏ Android SDK
- ❏ Android Studio
- ❏ Android Development Toolkit (ADT)
- ❏ Android User Interface
- ❏ Styling Widgets
- ❏ Layout
- ❏ Advanced Widgets
- ❏ Storing and Retrieving Data
- ❏ Content Providers
- ❏ Asynchronous Tasks
- ❏ Location Services and Maps
- ❏ Application Fundamentals
- ❏ WebView
- ❏ Best Practices

Pre-Requisites

- ❏ Basic Knowledge of XML
- ❏ Basic Knowledge of Java
- ❏ Basic Knowledge of using APIs
- ❏ Basic Knowledge of UI/UX design concepts
- ❏ Basic Knowledge of Databases and SQL
- ❏ Basic Knowledge of HTML

System Requirements

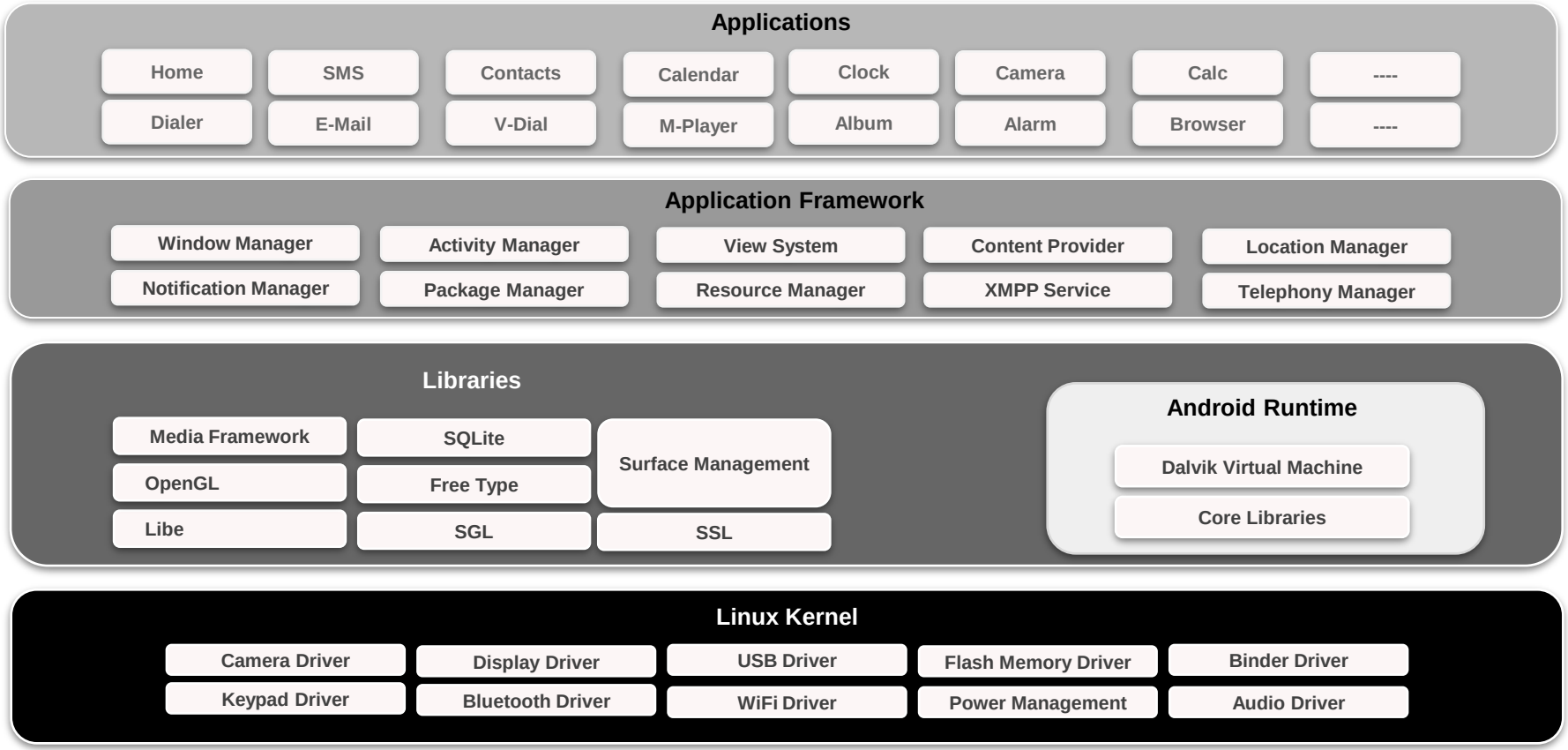
WINDOWS	MAC	LINUX
• 64-bit Microsoft® Windows® 8/10 • x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor • 8 GB RAM or more • 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator) • 1280 x 800 minimum screen resolution	• MacOS® 10.14 (Mojave) or higher • ARM-based chips, or 2nd generation Intel Core or newer with support for Hypervisor • 8 GB RAM or more • 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator) • 1280 x 800 minimum screen resolution	• Any 64-bit Linux distribution that supports Gnome, KDE, or Unity DE; GNU C Library (glibc) 2.31 or later • x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD processor with support for AMD Virtualization (AMD-V) and SSSE3 • 8 GB RAM or more • 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator) • 1280 x 800 minimum screen resolution

What is Android?

- Android is an open source and Linux-based Operating System for mobile devices such as smartphones and tablet computers
- Android was developed by the Open Handset Alliance, led by Google, and other companies
- The first beta version of the Android Software Development Kit (SDK) was released by Google in 2007

History of Android?

Android Architecture



Java or Kotlin

Java or Kotlin

Feature	Kotlin	Java
Code Length	Short	Lengthy
Implicit Type Conversion	Not Supported	Supported
Null Variable	Not Used	Used for both variables & Objects
Object-oriented and Functional programming	Supports Both	Only object-oriented programming.
Static Variable	Not Supported	Supported
Line Termination	Semicolon Not Required	Semicolon Required
Ternary Operator	Not Supported	Supported
Inline Functions	Supported	Not Supported
Checked Exceptions	Not Supported	Supported

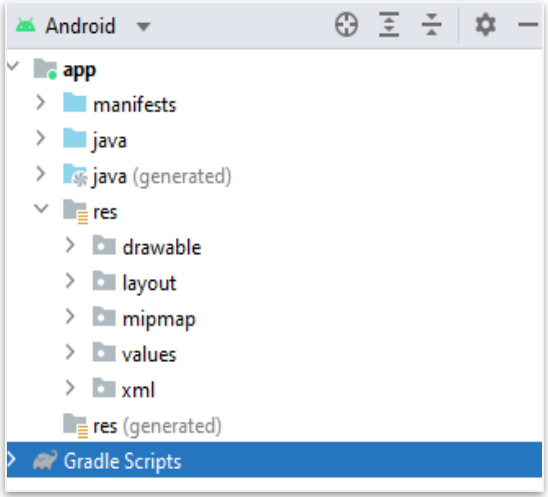
Emulator for Android

The **Android emulator** is an **Android Virtual Device (AVD)** can be used to emulate a specific Android device. It can be used as a target device to execute and test our Android apps on our PC. The Android emulator provides almost all the functionalities of a real device, for e.g.:

- We can receive incoming calls and text messages.
- It also gives the location of the device and can simulate different network speeds.
- The emulator can also simulate rotation and other hardware sensors.
- It accesses the Google Play store, and much more

SDK Tools 26.1.1 or higher
64-bit processor
Windows: CPU with UG (unrestricted guest) support
HAXM 6.2.1 or later (recommended HAXM 7.2.0 or later)

Hello World Application in Android



Hello World Application in Android

- **Java:** Used to write business logic in Java
- **res/layout :** Used to specify the Orientation and it also specify the design of App
- **res/values:** Used to configure dynamic values in XML format
- **AndroidManifest.xml:** Used to define the various components available on app screens
- **Build.gradle:** This is an auto generated file at run time

Questions