Mobile Application Development – IT2010

# Lecture 2 - Mobile Platforms and Application Development fundamentals

Lecture Plan

- Mobile Mindset
- Mobile Platforms and Application Development fundamentals
- Introduction to Android Operating System
- Main Components of Android Application
- Android Interface Design Concepts
- Sensors and Media Handling in Android Applications
- Data Handling in Android Applications
- Android Web Services
- Kotlin Language to develop Android Mobile Apps
- Android Application Testing and security aspects

Learning outcomes of the lecture

At the end of this Lecture students will be able to:

- Comprehend native mobile operating systems.

- Describe cross-platform mobile development.

- Describe Hybrid mobile development.

- Understand the fundamentals of mobile Application Development

Mobile Application Development
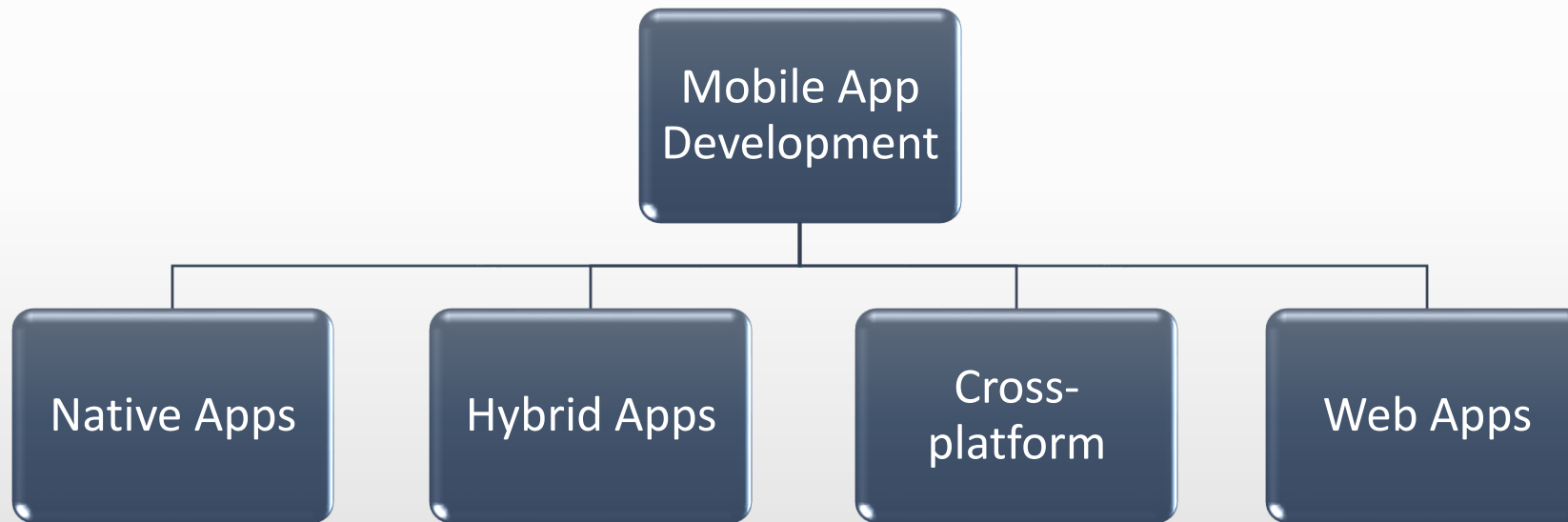
Native Mobile Application

- A native mobile app is an application developed using platform-specific development tools.

- These apps are developed individually for each of the three popular mobile operating systems.


Artsy   Pinterest   iOS calculator

Android

- Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software. It is primarily designed for touchscreen mobile devices such as smartphones and tablets.

- Android is the most popular mobile operating system at present.

- Founders of android were Rich Miner, Nick Sears, Chris White, and Andy Rubin.

Android Architecture
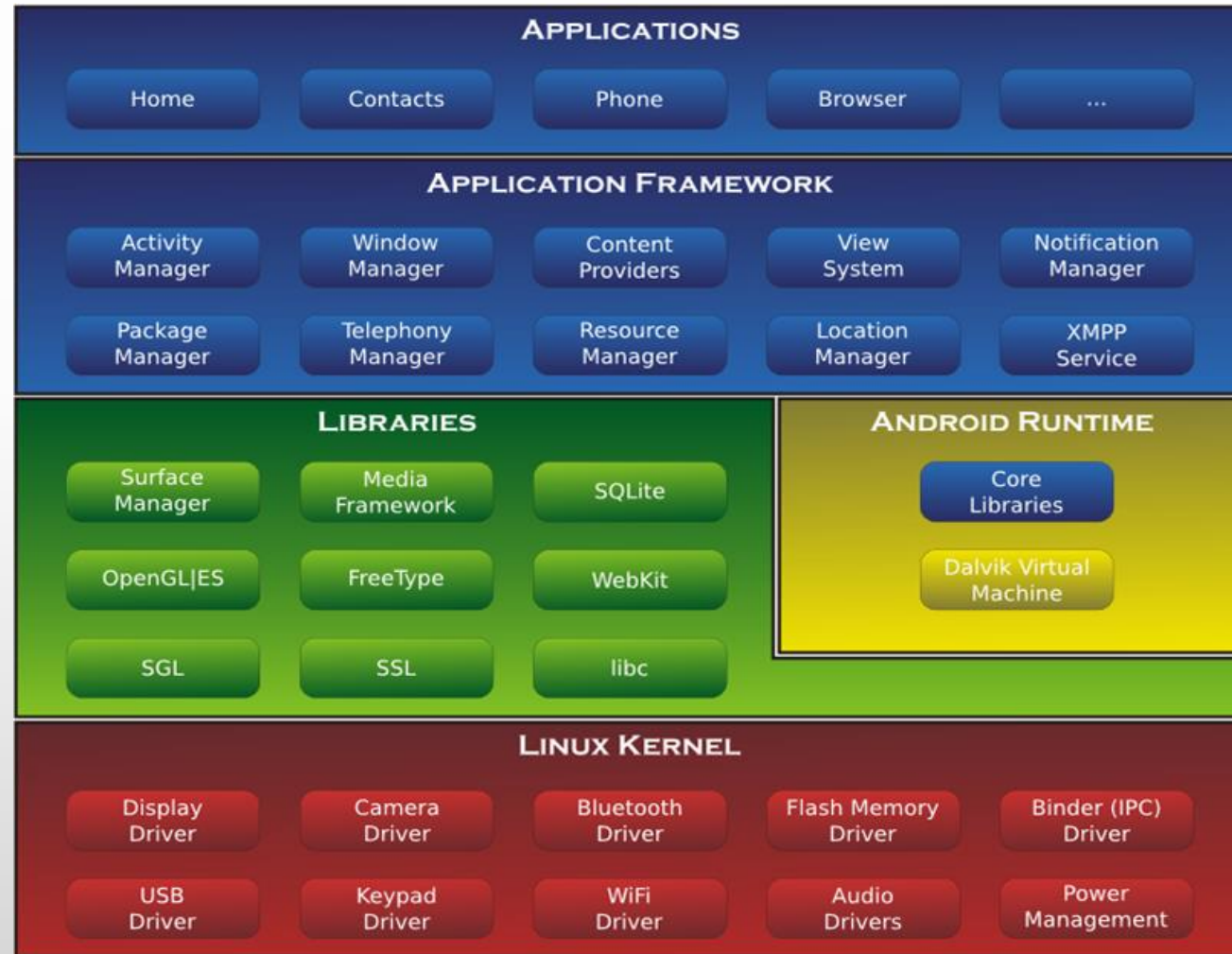
Android Versions

Android Devices

Devices using android operating system

Smartphones

- Samsung
- Sony
- HTC
- Google
- LG
- Lenovo
- Oppo
- Huawei

Android Devices

Tablets

- Samsung Galaxy Tab
- Asus ZenPad
- Huawei MediaPad
- Lenovo Yoga Tab
- Amazon Fire HD
- Sony Xperia Z4 Tablet
- Nvidia Shield Tablet K1

Android Devices

TV

- Sony Bravia Smart TV
- Sharp Smart TV
- Philips Smart TV

Smartwatch

- Ticwatch
- LG Watch Style
- Misfit Vapor
- Asus ZenWatch
- Fossil Q Venture

Android Devices

Development Environments

- Android Studio

- Eclipse

- Apache Cordova

- App Inventor for Android

- C++ Builder
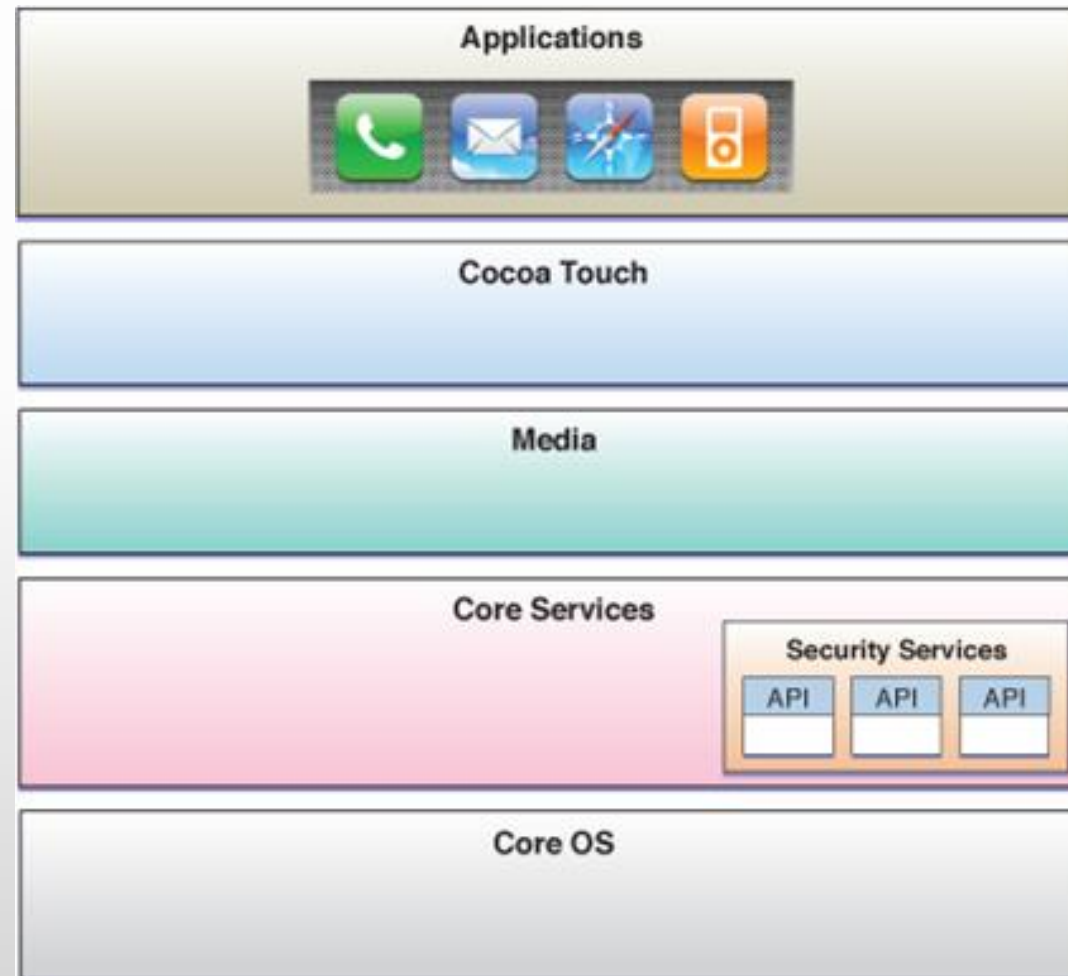
- Blue J

- FlashDevelop

- Titanium

iOS

- iOS is a mobile operating system created and developed by Apple Inc.
- It is exclusively designed for Apple hardware.
- It is the second most popular mobile operating system globally after Android.
- Founders of iOS/Apple were Steve Jobs, Steve Wozniak, and Ronald Wayne

STEVE JOBS   STEVE WOZNIAK   RONALD WAYNE

iOS Architecture

iOS Devices

Devices using iOS operating system

- iPhone

- iPod Touch

- iPad

- iPad Mini

- iPad Pro

- Apple TV

- Apple Watch

iOS

Development Environments

- Xcode

- AppCode

- Apache Cordova

Windows Mobile

- Windows Mobile is a discontinued family of mobile operating systems developed by Microsoft.

- Its origin dated back to Windows CE in 1996, though Windows Mobile itself first appeared in 2000 as PocketPC 2000.

- It was renamed "Windows Mobile" in 2003, at which point it came in several versions and was aimed at business and enterprise consumers

Windows Mobile

Devices using windows mobile operating system

- Dopod 515
- Krome Intellekt iQ200
- Mitac Mio 8390 and 8860
- Motorola MPx200
- O2 Xphone
- Orange SPV E200 and e100
- QTEK 7070 and 8080
- Sagem myS-7

Windows Mobile

Development Environments

- Visual Studio

- Apache Cordova

Hybrid App Development

- Less time for development.

- Allows for code sharing.

- Blend web elements with mobile ones.

- Create codebase using standard web technologies (HTML, CSS, JavaScript)

Tools:

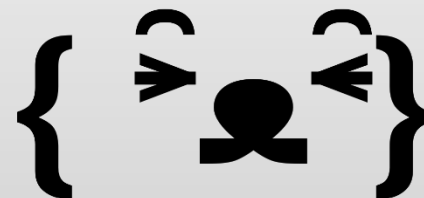Examples:

Cross-platform mobile application development

Cross-platform mobile application development refers to the development of mobile apps that can be used on multiple mobile platforms.

Cross-platform mobile application development

Development Environments

- Apache Cordova

- PhoneGap

- Xamarine

- Ionic

- Framework 7

- React Native

- Jasonette

Cross-platform mobile application development

Advantages

- Codes can be reused

- Controls Cost

- Quicker development time

- Easier Implementation

- Sameness and Uniformity

Cross-platform mobile application development

Disadvantages

- Loss of Flexibility

- Problems in platform Integration

- Diversity in user Interaction

- Poor user experience

- Difficulty in satisfying all users

App Type	Native	Hybrid	Cross-platform
Tools	• XCode • AppCode • Android Studio	• Ionic • Apache Cordova • Visual Studio	• React Native • Xamarin • Flutter
Rendering Engine	Native	Browser	Native
Libraries	Not much dependency on open-source libraries and platforms	Highly dependent on different libraries and frameworks	Highly dependent on different libraries and frameworks
Debugging	Native debugging tools	Native + web development debugging tools	Depends on the framework
Codebase	Separate codebase – one per platform	Single codebase with potential platform-specific abilities	Single codebase with potential platform-specific abilities

App Type	Native	Hybrid	Cross-platform
Pros	• Full access to device's/ OS's features • Powerful performance • Native UI (updating along with the OS) • Efficient App Running • High-quality functionality and UX • Access to all native APIs and the platform-specific functionality	• Lower development cost • Different OS support • Code reuse • Cost effective development • Big customization capabilities	• Different OS support • UI performance is almost as fast as native • Code reuse • Cost-effective development
Cons	• No multi-platform support • High dev cost if different OS support is needed • No code reuse	• Slower performance • Limited access to OS features • No interaction with other native apps	• *Slower performance • Limited access to OS features • Poor interaction with other native apps

Choose a Development Approach for your Mobile App