ANDROID

Intro To Android App Creation

JESSE SCOTT

jscott@langara.bc.ca

HISTORY

2011

2010

2009

PAST

Android is a comprehensive open source platform designed for mobile devices.

It is championed by Google and owned by the Open Handset Alliance.

The goal of the alliance is to "accelerate innovation in mobile and offer consumers a richer, less expensive, and better mobile experience."

Android was publicly launched in 2007.

CURRENT

Android currently holds a 75% share of the international smartphone market, and 29% of the tablet market share worldwide.

It has arrived as the primary competitor to the iPhone and iPad.

Because of it's open source nature, several manufacturers create and sell Android devices, leading to criticisms of fragmentation unmanageable diversity.
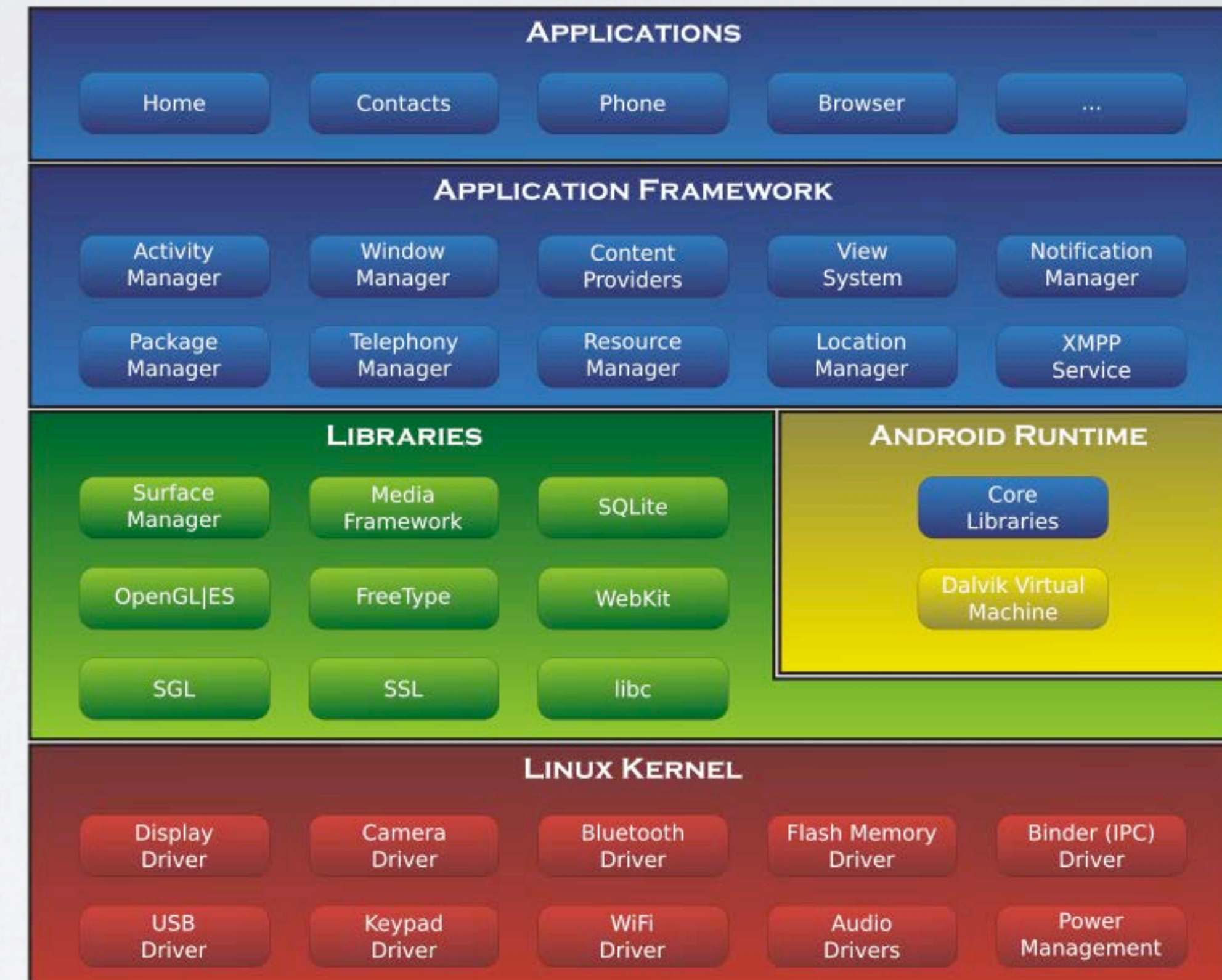
FUTURE

Android is poised to remain one of the top mobile OS's in the world for 2013 and beyond.

The developer and consumer markets are both growing consistently.

Even more, Android is flexible beyond handheld devices. We will see it ported to home entertainment systems, car navigation systems, and more in the coming year.

TECH

OPEN SOURCE

Android is an open source platform, from its Linux core, to the native libraries it uses, all the way to the application framework that manages the operating system.

As a developer, this means that you have access to the entire platform source code, allowing you to see how the guts of the Android operating system work.

There's no need to license Android. You can start using it and modifying it today, and there are no strings attached. As a developer, it is also free to create applications for the platform.

JAVA

Android's operating system is a <u>custom Java Virtual Machine</u>, or JVM.

All native applications designed for Android are written in Java, a friendly, powerful, and expansive programming language with ample resources and a large, distributed knowledge base.

Google also provides an extensive <u>Software Development Kit</u>, or SDK, that provides easy access to various sensors, events, location services, and more.

PROCESSING

One of the most popular and intuitive ways to program in Java is the Processing framework.

This open-source project is a large set of libraries designed for artists, designers, and educators, that simplifies the development, methodology, and overhead needed for creating applications.

Processing can be used to create desktop applications (Mac, Windows, Linux), dynamic webpages, or full Android projects.

WHERE YOU ARE GOING

This course explores the cutting-edge hardware and software features that are built into Android phones and tablets.

You'll create sophisticated graphics, user interfaces, and develop a range of projects that build on the hardware sensors, recording devices, and networking capabilities of your Android phone.

We'll consider the current and future capabilities of Android phones as creative platforms, and aim to create projects that go beyond the typical app.

NEXT SIX SESSIONS

1 - Intro | Roadmap | Installation | Processing API | Hello World | Emulator + Device

2 - Eclipse IDE | Graphics | Touch Events | User Interface

3 - Accelerometer | Camera | Microphone

4 - Networking | Reading + Writing Files | Geolocation

5 - Debugging | Compiling | Releasing | Android Market

6 - Self Directed Projects

ONCE YOU GET THERE

By the summation of this course, you will have made dozens of working Android applications that you can use as launching pads to extend into larger projects.

You will have learned how to utilize several sensors, navigate the file system, record and playback media, and create elegant user interfaces.

You will have a first hand understanding of exploring, debugging, and releasing a project for public consumption.

DESIGN

CREATIVE VISION

Enchant Me

Simplify My Life

Make Me Amazing

DESIGN PRINCIPLES

Enchant Me

   surprising ways | real objects | make it mine | get to know me

Simplify My Life

   brief | pictures are faster | decide for me | show it when I need it | know where I am | dont lose my stuff | look same, act same | is it important ?

Make Me Amazing

   give me tricks | encouragement | heavy lifting | important = fast

UI OVERVIEW

Home | All Apps | Recents

System Bars

Notifications

Common App UI

STYLE

STYLE

Devices & Displays:

  - Be Flexible

  - Optimize Layouts

  - Assets For All

STYLE

Themes

Touch Feedback

Metrics & Grids

Typography

STYLE

Colour

Iconography

Writing Style

PATTERNS

PATTERNS

Gestures

App Structure

Navigation

Action Bar

Multi-Pane Layouts

PATTERNS

Swipe Views

Selection

Confirming & Acknowledging

Notifications

Widgets

PATTERNS

Settings

Help

Compatibility

Accessibility

BUILDING BLOCKS

BUILDING BLOCKS

Tabs

Lists

Grid Lists

Scrolling

Spinners

Buttons

BUILDING BLOCKS

Text Fields

Seek Bars

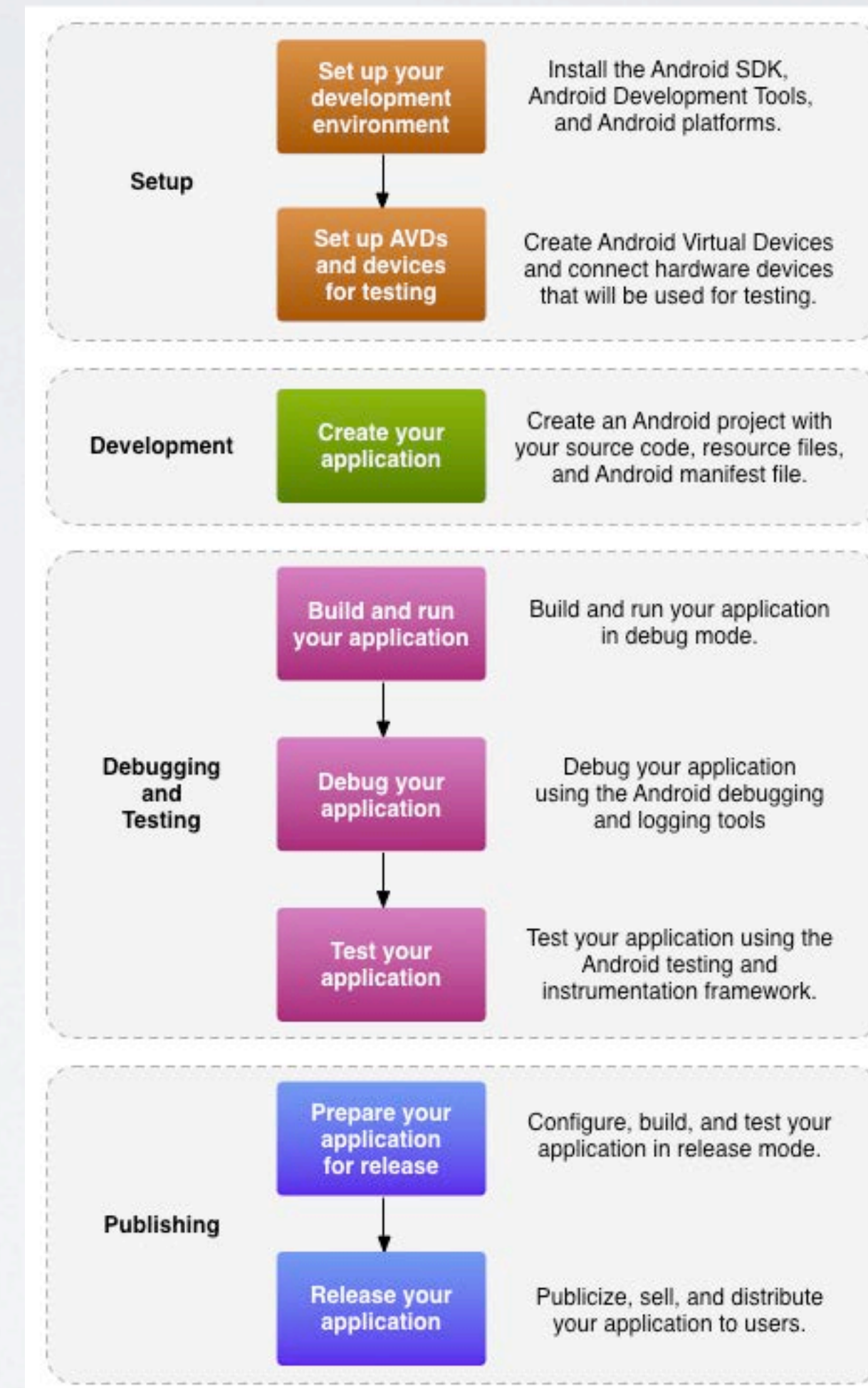Progress & Activity

Switches

Dialogs

Pickers

DEVELOP

TRAINING

Test Apps for
  Hello World
  Multimedia
  Graphics & Animation
  Connectivity & the Cloud
  User Info & Location
  UX & UI
  User Input
  Performance
  Security & Privacy
  Distribution & Monetization

API GUIDES

Guides / Source / Best Practices for

App Components

User Interface

App Resources

Animation & Graphics

Computation

Media & Camera

Location & Sensors

Connectivity

Data Storage

et cetera

SDK REFERENCE

Reference for
  Android API
  Dalvik Virtual Machine
  Java Classes
  JUnit Processes
  Apache Server
  JSON
  XML

TOOLS

Reference for
   Download Links
   Workflow Guides
   SDK Tools
   Sample Code

SERVICES

Reference for Google Services, such as

    Google Maps

    Google+

    Google Cloud Messaging

    Google Play In-App Billing

    Google Wallet

    Google Analytics

    Google AdMob Ads

DOWNLOADS

SDK

Android SDK can be found at http://developer.android.com/sdk/index.html

    - most recent version

    - auto-detects your computer's OS

Once you have installed this, you need to launch the SDK Manager and update it
    - go to (SDK Location)/tools/android and launch the program there
    - update EVERYTHING
    - this can take a while !

ECLIPSE

Eclipse IDE can be found at http://eclipse.org/mobile/

- most recent version

- auto-detects your computer's OS

ECLIPSE ADT PLUGIN

Eclipse needs the Android Developer Tools plugin.

It can be found at

http://developer.android.com/tools/sdk/eclipse-adt.html

Instructions for Installing it are at

http://developer.android.com/sdk/installing/installing-adt.html

JDK

Java Development Kit can be found at
http://www.oracle.com/technetwork/java/javase/downloads/index.html

   - most recent version is Java SE 7 Update 15

   - only Java SE 6 Update 41 is needed

   - make sure you grab the JDK and not the JRE

   - (you should probably have the JRE on your computer already, and can test

     by typing "java -version" from a Command Line program)

USB DRIVERS

If you are on Windows or Linux, you will need a separate USB Driver.

It can be found at http://developer.android.com/tools/extras/oem-usb.html

PROCESSING

I would suggest grabbing Processing, which is a high level framework for Android.
It is a good quick environment with which to prototype applications.
It can be found at http://processing.org/download/

   - make sure to grab the latest 2.0 beta version
   - also read the Wiki at http://wiki.processing.org/w/Android