ANDROID INTRODUCTION

History
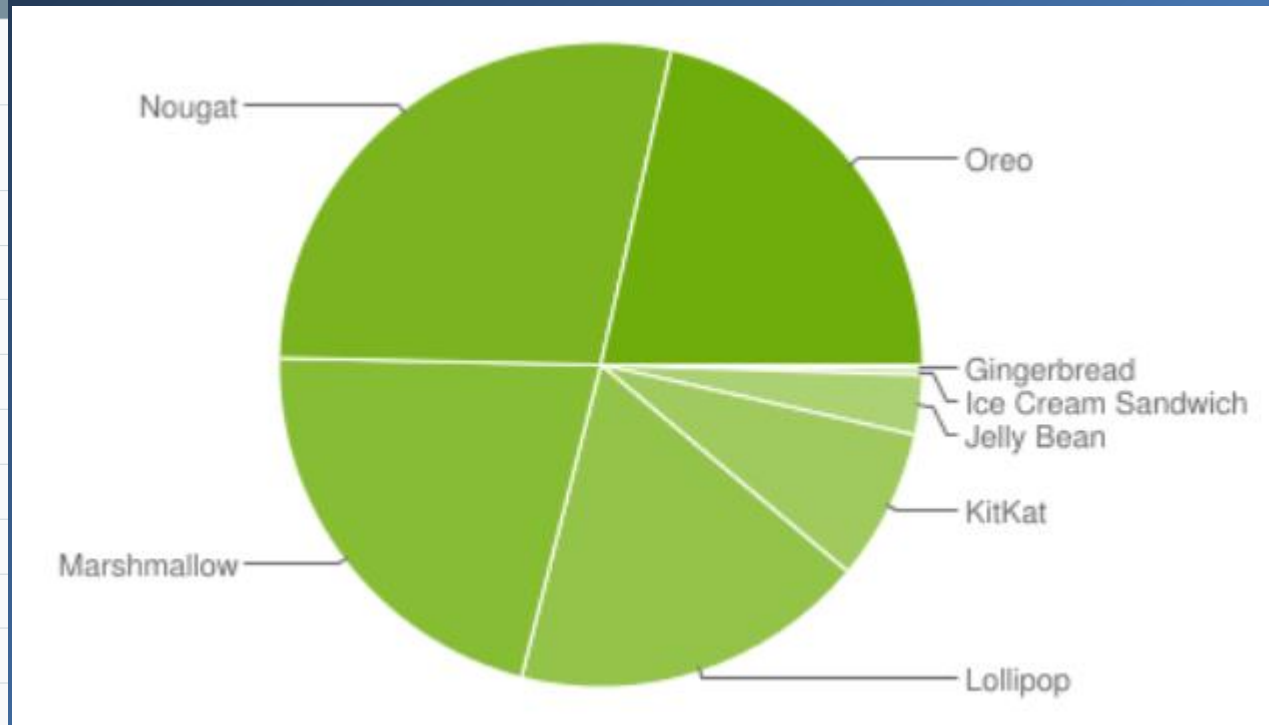
Year	SDK	Events and facts	Devices released
2003		Andy Rubin establishes Android Inc.	
2005		Google buys Android Inc.	
2007-01		Apple unveils the iPhone	
2007-11	1.0	Google starts the Open Handset Alliance	
2008	1.1	First Android device (HTC Dream)	1
2009 - 2010	1.5, 1.6, 2.0, 2.1	Google Nexus One, HTC Desire, Samsung Galaxy S.	> 20

History

Year	SDK	Events and facts	Devices released
2010	2.3, 3.x, 4.0	Samsung Galaxy S2, iPad, Android tablets.	> 60
2011-2013	4.1, 4.2, 4.3	-	
2014	4.4, 5.x	Android Wear, Android 5 Lollipop. Andy Rubin leaves Google.	> 9000 ?
2015	6.0	Android 6 Marshmallow, Wear, TV, Car…	
2016	7.0, 7.1	Android Nougat. Google Pixel phones.	
2017-2018	8.0, 8.1,9.0	Oreo, Pixels 2, Kotlin, Pie, Pixels 3	

SDK distribution

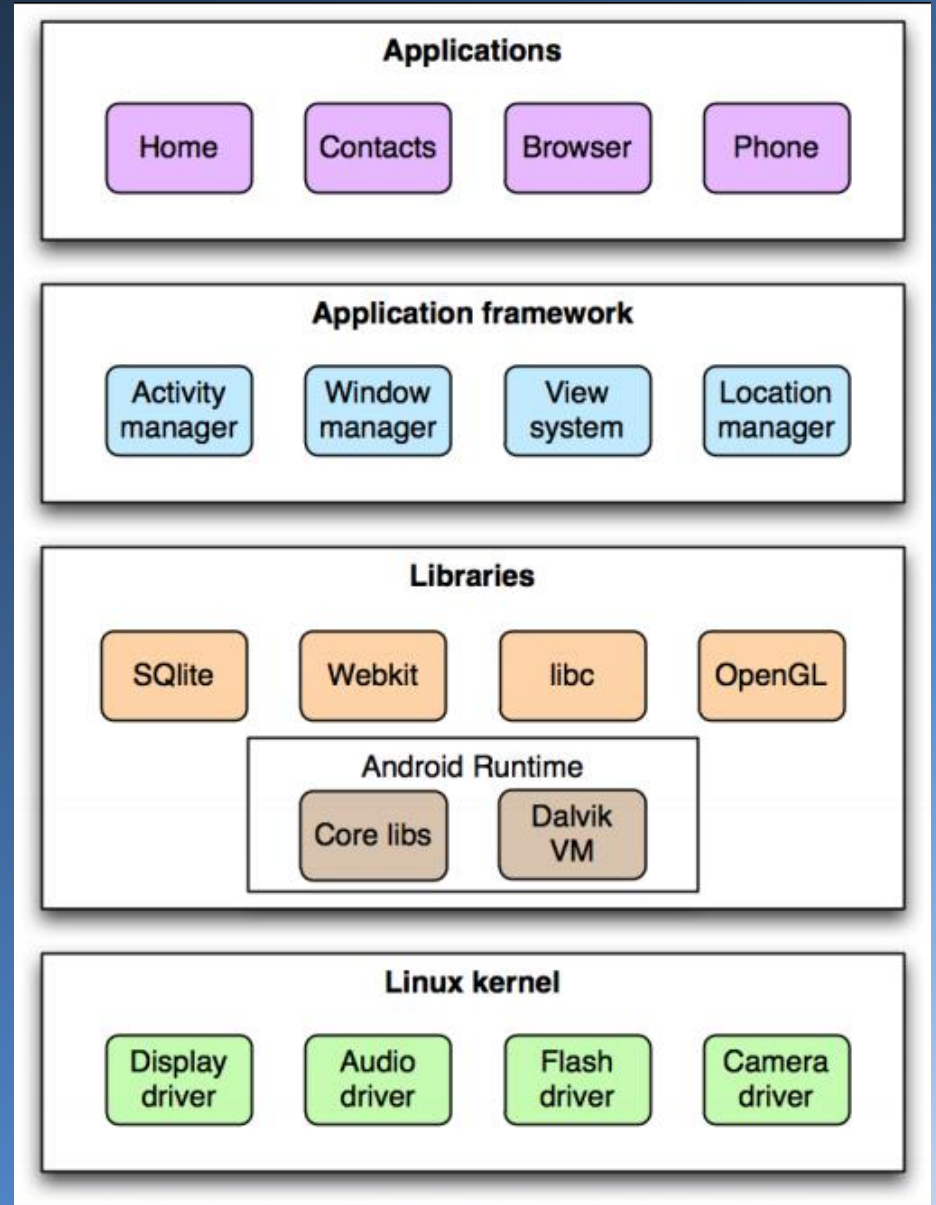| Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	0.2%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	0.3%
4.1.x	Jelly Bean	16	1.1%
4.2.x		17	1.5%
4.3		18	0.4%
4.4	KitKat	19	7.6%
5.0	Lollipop	21	3.5%
5.1		22	14.4%
6.0	Marshmallow	23	21.3%
7.0	Nougat	24	18.1%
7.1		25	10.1%
8.0	Oreo	26	14.0%
8.1		27	7.5%

Source: https://developer.android.com (2018 october)
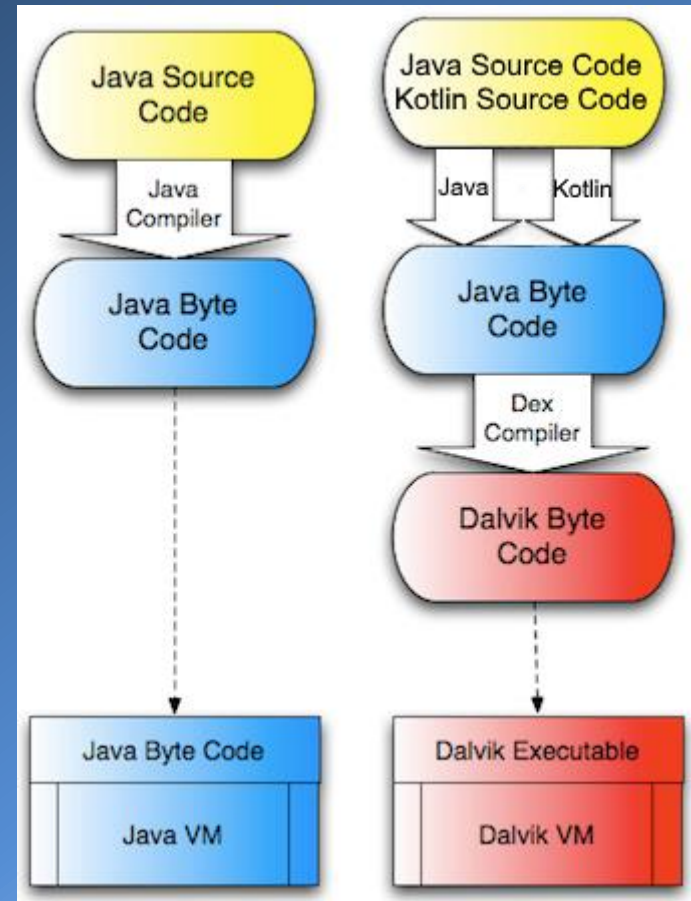
Background infos

- Open source platform :
  access to the entire source code.
- Apache/MIT licence :
  business friendly.
  Use it, modify it, distribute it

Android stack

Applications

- Languages :
  - Java Standard Edition with original UI libraries (AWT/Swing) replaced
  - Kotlin (since 2017)
- Android phones run byte code in Dalvik or ART VMs (v >= 5.0 Lollipop)

Project composition

Composition of a regular HelloWorld project

Element	Location
Manifest	AndroidManifest.xml
XML resources	res/layout/main.xml, res/values/strings.xml
Drawable resources	res/drawable
R file	gen/fr/epita/R.java
Source	src/fr.epita/HelloWorldActivity.java

Project composition

- <u>Manifest:</u> the activity list, the settings and the permissions it requires
- <u>Layout XML:</u> interface to display
- <u>Strings:</u> the text that your app uses
- <u>R file:</u> the bridge between the resources and the Java code; auto-generated file
- <u>Source code:</u> the application logic

Applications

- APK
  - Dalvik byte code
  - Resources
  - Native libraries
- App signing
- Android Application Sandbox

User interface

- Declarative User Interface
  - XML
  - WYSIWYG helper
- Programmatic User Interface

Activities

- Main building blocks
- Any app that displays something has at least one activity
- Bound at runtime
- Independent lifecycle

Simplified Activitiy Life Cycle

Intents

- Messages sent between activities and across applications
- Contain a description of an operation to be performed
- Activated at runtime
- Can start applications and services
  - Explicit intent: run a specified activity.
  - Implicit intent: invokes the correct activity based on a specified action

Services

- Perform long running operations
- No user interface
- Lifecycle independent of the program that launched it

Dev guide

http://developer.android.com/guide/index.html