


# *Prerequisites for android app development*

- *Java Programming language or any Object Oriented Language background (in Eclipse OR Netbeans, IDE)*
- *And Your  Interest in developing mobile app.*

# *Android Basic*

- ◆ An Operating System is a software program that enables communication and utilization of the hardware resources by the software programs
- ◆ Each OS can be broadly divided into:
  - Application Layer
  - Kernel Layer
  - Hardware and device driver layers
- ◆ Kernel translates requests from one layer to another
- ◆ Android is a Mobile Operating System
- ◆ Mobile market is dominated by Android and iOS
- ◆ Applications are OS specific



Linux™



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Linux



# Android Versions



Cupcake  
1.5



Donut  
1.6



Eclair  
2.0/2.1



Froyo  
2.2



Gingerbread  
2.3

- Android 1.5, Cupcake: April 27, 2009
- Android 1.6, Donut: September 15, 2009
- Android 2.0-2.1, Eclair: October 26, 2009 (initial release)
- Android 2.2-2.2.3, Froyo: May 20, 2010 (initial release)
- Android 2.3-2.3.7, Gingerbread: December 6, 2010 (initial release)
- Android 3.0-3.2.6, Honeycomb: February 22, 2011 (initial release)
- Android 4.0-4.0.4, Ice Cream Sandwich: October 18, 2011 (initial release)
- Android 4.1-4.3.1, Jelly Bean: July 9, 2012 (initial release)
- Android 4.4-4.4.4, KitKat: October 31, 2013 (initial release)
- Android 5.0-5.1.1, Lollipop: November 12, 2014 (initial release)
- Android 6.0-6.0.1, Marshmallow: October 5, 2015 (initial release)
- Android 7.0-7.1.2, Nougat: August 22, 2016 (initial release)
- Android 8.0-8.1, Oreo: August 21, 2017 (initial release)
- Android 9.0, Pie: August 6, 2018
- Android 10.0: September 3, 2019



Honeycomb  
3.0/3.1



Ice Cream Sandwich  
4.0



Jelly Bean  
4.1/4.2/4.3



KitKat  
4.4



Lollipop  
5.0



Marshmallow  
6.0



Nougat  
7.0



Oreo  
8.0



Pie  
9.0



# *Android*

## ◆ Features of Android

- Ease of Programming
- 2D and 3D Graphics and Animation
- Multiple Languages
- Web Browsers
- Multi Touch
- Connectivity
- Media Processing
- Sensor Support
- Storage Capabilities
- Large Market Share
- Abstraction of Hardware Differences
- Open Source
- Free to Use
- Ease of Use
- Google Now





# Android

## ◆ Device types running Android

- Smartphones
- Tablets
- Televisions
- Cars and In Vehicle Entertainment
- Android Wear Devices
- Google Glass



# Android

## ◆ Challenges to Developing for Android

- Hardware Fragmentation
- Software Fragmentation
- Lack of Hardware Software Integration Standards
- Lack of Quality Control on Android devices

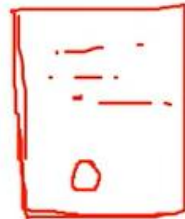
## ◆ Android and Open Source platform

- Android is developed privately by Google
- Later, source code is made available to everyone
- Anyone can make changes
- Huge community of mod'ers and developers
- Custom ROMs available to most devices

In computer storage, **fragmentation** is a phenomenon in which storage space is used inefficiently, reducing capacity or performance and often both. ... In many cases, **fragmentation** leads to storage space being "wasted", and in that case the term also refers to the wasted space itself.



# Android Architecture

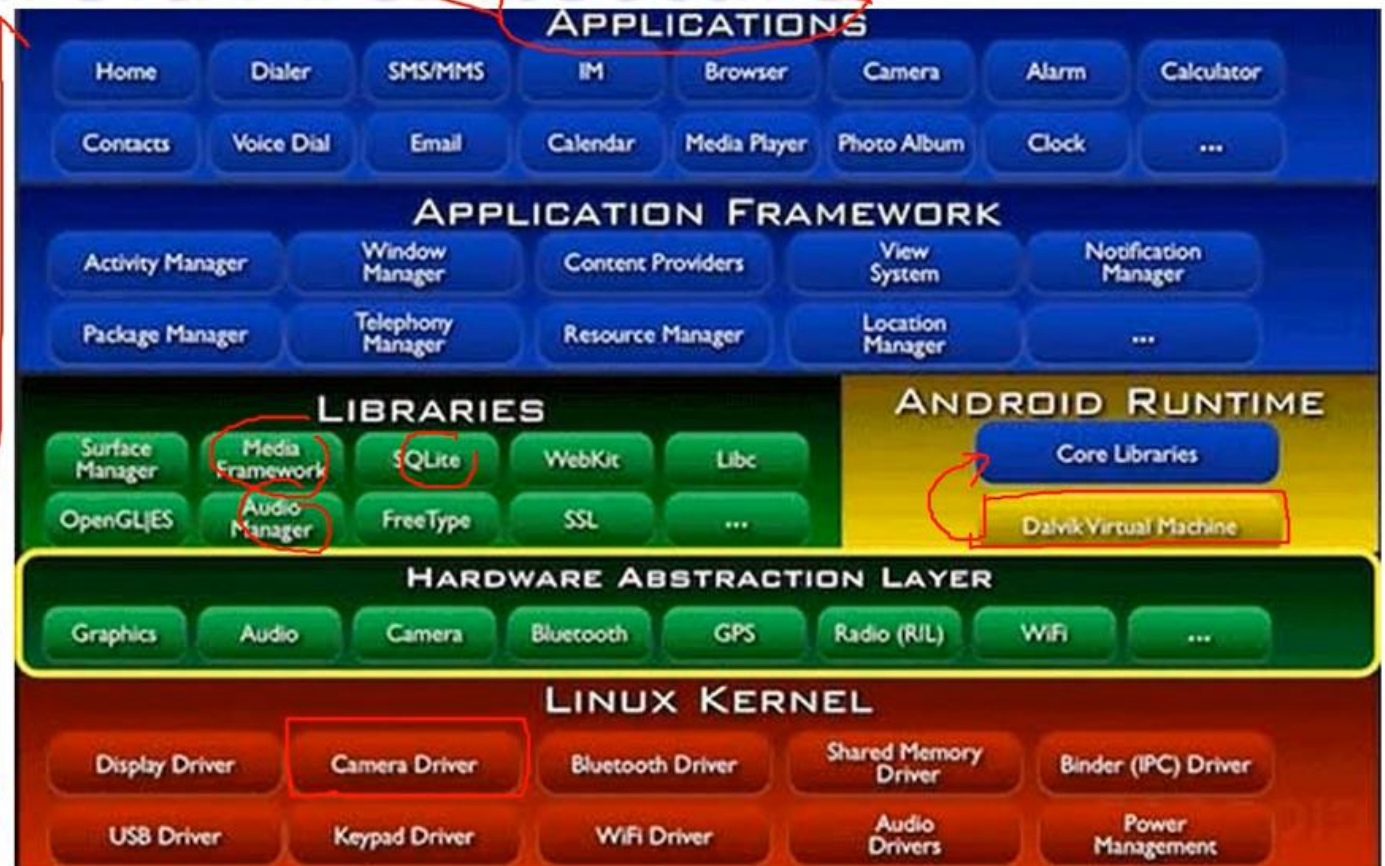


④  
API

③

②

①





# Emulators vs Simulators

## Emulators

v/s

## Simulators

An emulator is an application that emulates real mobile device software, hardware and operating systems, allowing us to test and debug our applications.

Emulator is usually provided by device manufacturer.

Emulators are written in machine-level assembly languages.

Emulators are more suitable for debugging.

Often an emulator comes as a complete re-implementation of the original software.

e.g. - Android (SDK) Emulator



A simulator is a less complex application that simulates internal behavior of a device, but does not emulate hardware and does not work over the real operating system.

A simulator may be created by the device manufacturer or by some other company.

Simulators are written in high level languages.

Simulators can be difficult for debugging purpose.

Simulator is just a partial re-implementation of the original software.

e.g. - iOS Simulator

