

# WELCOME

# Mobile Applications Testing



# Devices : TETHERING

## TETHERING

connecting one device to another

In the context of mobile phones and tablet computers, tethering allows sharing the Internet connection of the phone or tablet with other devices such as laptops

Connection of the phone or tablet with other devices can be done over wireless LAN (Wi-Fi), over Bluetooth or by physical connection using a cable, for example through



# Mobile Ecosystem

Mobile World Statistics

Carriers/Service Providers

Network

Manufactures

Devices

**Platforms/OS**

Frameworks

API-Apps

Services

# Platforms / OS

**Mobile Application Development Platform (MADP)** is *a type of software that allows a business to rapidly build, test and perhaps deploy mobile apps for SmartPhone or Tablets*

**Mobile Operating System (or mobile OS)** is *an operating system for SmartPhones, tablets, PDAs, or other mobile devices*





# Platforms / OS Licensed

*Licensed platforms are sold to device makers for non-exclusive distribution on devices.*

*The major goal of Licensed Platforms was to create a common/standard platform of Application Programming Interfaces (APIs) development that work similarly across multiple devices with the minimum effort required to adapt the device differences.*

**Example:** Windows Mobile, JME - Sun Microsystems/Oracle; Brew MP – HTC Smart Phone or carrier's firmware, etc



# Platforms / OS Proprietary

*A proprietary operating system is one which a particular company conceptualizes, designs, develops and sells. Examples of proprietary operating systems are Windows and Mac OS X*

## Pros

- ✓ Simplified user experience making the overall user experience simpler and smoother.
- ✓ User multiplier effect based on increasing number of people already using it.

## Cons

- ✓ Limited Customizability
- ✓ Interoperability Operating systems are often designed to work with a fixed set of hardware specifications



# Platforms / OS Open Source

*Open source is a philosophy which suggests that the source code behind something should be freely available to the public.*

## Pros

- ✓ The main advantage is that it allows end users to directly interact with the source, potentially modifying it to suit their wishes.
- ✓ Encourages constant development and innovation, while also creating a community of shared information.

## Cons

- ✓ Vulnerable to malicious users
- ✓ Might not be as user-friendly as commercial versions
- ✓ Don't come with extensive support



# Platforms / OS : Open Source vs Proprietary

## Open-Source Software can replace proprietary software



for



Operating Systems



for



Office applications



for



Image editing



for



Internet browser



for



Video & audio playback



for



Ebooks

# Platforms / OS : What do I HAVE ?





# Platforms / OS :

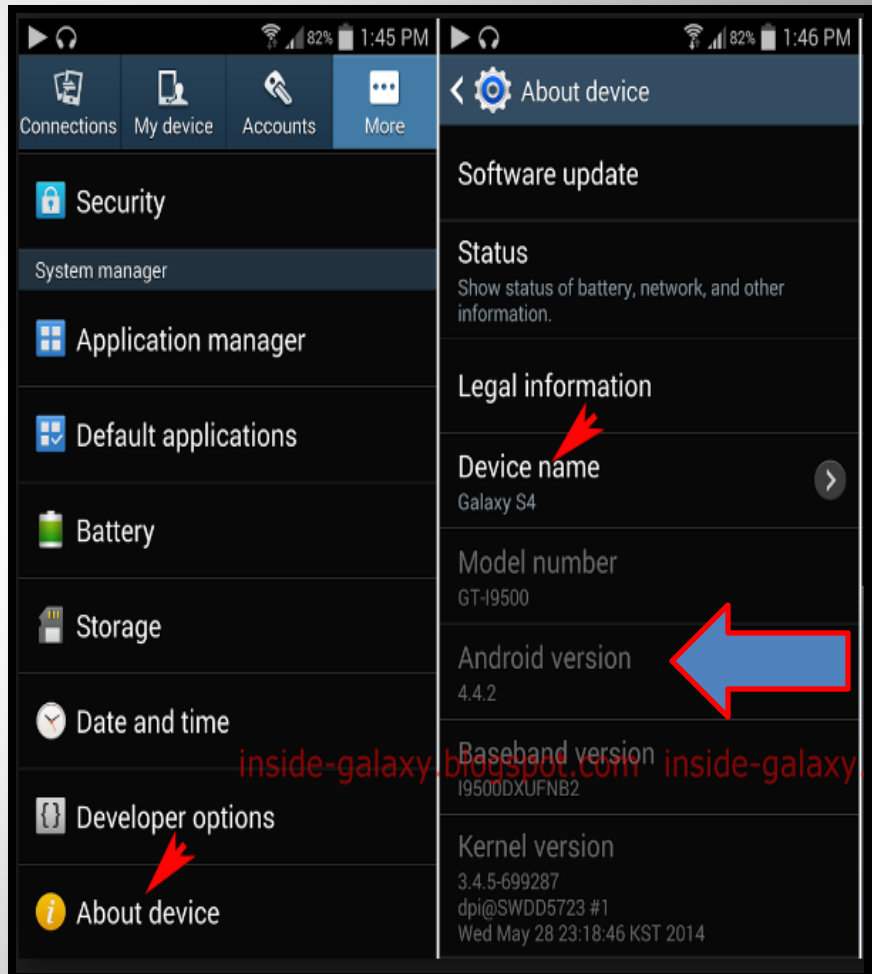
## How to find my Android OS Version ?



**Open your  
device  
SETTINGS**

**Scroll to  
ABOUT  
PHONE**

**Look for line  
which says  
"Android  
Version"**



# Platforms / OS :

## How to find my Apple iOS Version ?

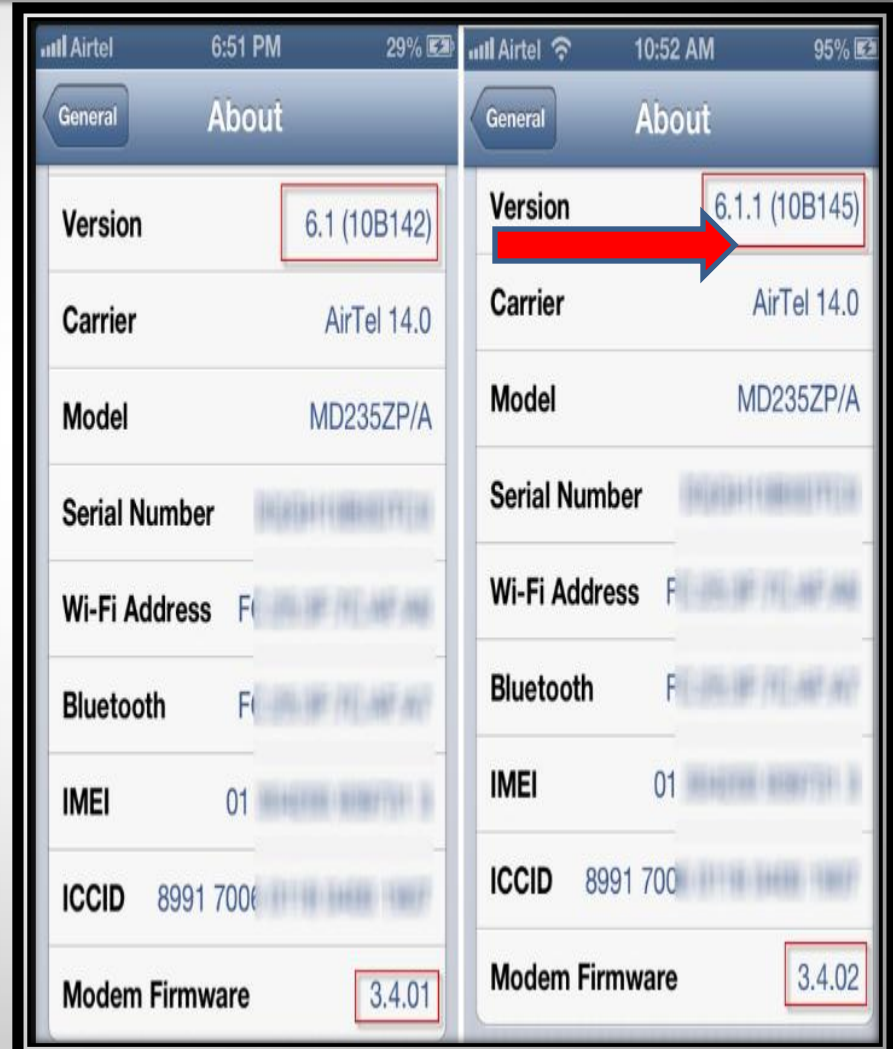


Open the  
Settings

Tap 'General'

Tap 'About'

Scroll down  
for 'Version'



# Platforms / OS :

## How to find my WinPhone OS version ?



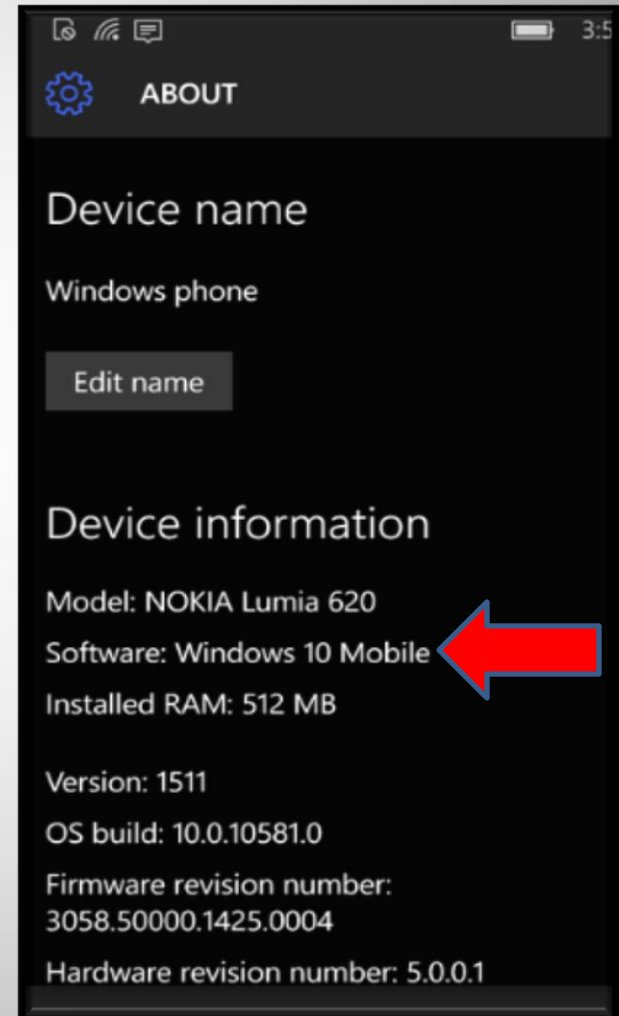
Windows Phone home screen

Swipe left to reveal more icons

Scroll down and tap 'SETTINGS'

Scroll down and tap 'ABOUT'

'About' screen, tap MORE INFO



# Platforms / OS :

## BLACKBERRY current ver : 10.3.2

BlackBerry (RIM) is a proprietary operating system

It is tailor-made for business, with functionality taking a seat over personality or appearance

Its main focus is on messaging, email and other communication features.





# Platforms / OS :

## Windows Phone current ver : 10.0

- Windows Phone (WP) is a family of mobile operating systems developed by Microsoft for SmartPhones

Replacement successor to Windows Mobile and Zune  
WP features a new UI derived from Metro design language.





# Platforms / OS :

## ANDROID

### ANDROID

*is a mobile **operating system** developed by GoogleBased on the Linux Kernel and designed primarily for touch screen Mobile Devices such as : SmartPhones and Tablets.*

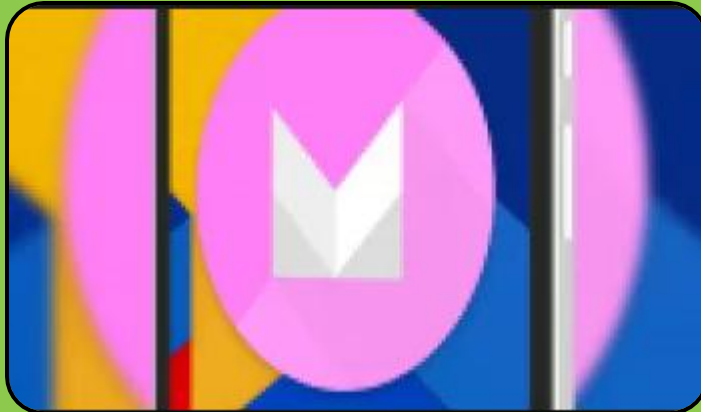


# Platforms / OS :

ANDROID version 6.0-6.0.1

API level 23

“MARSHMALLOW”



Officially released in  
October 2015



# Platforms / OS :

**ANDROID version 7.0-7.1.2**  
**API level 24-25**

## **Android 7.0-7.1.2** **"Nougat"**

*Officially released on August 22, 2016 and 7.1.2 released April 7<sup>th</sup>, 2017*

Nexus 5X

Nexus 6P

Nexus 6

Nexus 9

Nexus Player

Pixel C

Android One General Mobile 4G



# Platforms/OS

**ANDROID version 8.0-8.1**  
**API level 26-27 ( info as of 1/23/18)**

## **Android 8.0 "OREO"**

*Officially released on  
**August 21, 2017***

**Nexus 5X**

**Nexus 6P**

**Google Pixel**

**Google Pixel XL**

**Pixel C**

**Nexus Player**



**More devices would be covered in coming months**



# Platforms/OS

## ANDROID version 9.0

### API level 28 ( Public Beta available )

#### **Android 9.0 "P"**

*Beta for selected devices*  
**May 8th, 2018**

**Pixel**

**Pixel XL**

**Pixel 2**

**Pixel 2 XL**

**Nokia 7 Plus**

**Essential Phone**

**Oppo R15 Pro**

**Sony Xperia XZ2**

**Vivo X21UD**

**Vivo X21**

**Xiaomi Mi Mix 2S**

What will Android 9.0 be called?

Android Popsicle

Android Pancake

Android Pie

Android Polo

Android Picnic

Android Peanut Butter

Android Praline

Android Pop Tart

Peppermint

Other



# Platforms / OS :

## ANDROID HISTORY 2009-2017

04-2009



Android 1.5 Cupcake

09-2009



Android 1.6 Donut

11-2009



Android 2.0 Eclair

05-2010



Android 2.2 Froyo

12-2010



Android 2.3 Gingerbread

08-2017



Android 8.0 Oreo

08-2016



Android 7.0 Nougat

10-2015



Android 6.0 Marshmallow

02-2011



Android 3.0 Honeycomb

11-2011



Android 4.0  
Ice Cream Sandwich

07-2012



Android 4.1 Jelly Bean

10-2013



Android 4.4 KitKat

11-2014



Android 5.0 Lollipop

# Platforms / OS : ANDROID OS HISTORY

Latest : **OREO 8.0** Aug21, 2017 API level 26

Code name	Version number	Initial release date	API level
N/A	1.0	September 23, 2008	1
	1.1	February 9, 2009	2
Cupcake	1.5	April 27, 2009	3
Donut	1.6	September 15, 2009	4
Eclair	2.0 – 2.1	October 26, 2009	5 – 7
Froyo	2.2 – 2.2.3	May 20, 2010	8
Gingerbread	2.3 – 2.3.7	December 6, 2010	9 – 10
Honeycomb <sup>[a]</sup>	3.0 – 3.2.6	February 22, 2011	11 – 13
Ice Cream Sandwich	4.0 – 4.0.4	October 18, 2011	14 – 15
Jelly Bean	4.1 – 4.3.1	July 9, 2012	16 – 18
KitKat	4.4 – 4.4.4	October 31, 2013	19 – 20
Lollipop	5.0 – 5.1.1	November 12, 2014	21 – 22
<b>Marshmallow</b>	6.0 – 6.0.1	October 5, 2015	23
<i>Nougat</i>	7.0 - 7.1.2	October 14, 2016	24 - 25
Oreo	8.0 -8.1	August 21, 2017	26-27

# Platforms / OS :

## ANDROID FILE FORMAT .APK

Android Package Kit (APK for short) is the package file format used by the Android operating system for distribution and installation of mobile apps.

### What is an APK File?

Just like Windows (PC) systems use an **.exe** file for installing software, Android does the same. An **APK** file is the file format used for installing software on the Android operating system.

# Platforms / OS :

## iOS

- *iOS (originally iPhone OS) is a mobile operating system created and developed by Apple Inc. and distributed exclusively for Apple hardware*
- It is the operating system that presently powers many of the company's mobile devices, including the iPhone, iPad, and iPod touch.





# Platforms / OS :

**iOS latest version 11.4 ( May 29th, 2018)**

- **Original Version 11 released on September 19, 2017**
- **Version 11.4.1 Public Beta released May30th, 2018**

iOS 11.4 includes AirPlay 2 multi-room audio, support for HomePod stereo pairs, and Messages in iCloud.

This update also includes bug fixes and improvements.





# Platforms / OS :

## iOS latest version 11.4 ( May 29th, 2018)

### AirPlay 2

- Control your home audio system and AirPlay 2-enabled speakers throughout your house
- Play music at the same time on multiple AirPlay 2-enabled speakers in your house, all in sync
- Control AirPlay 2-enabled speakers from Control Center, the Lock screen, or AirPlay controls within apps on your iPhone or iPad
- Use your voice to control AirPlay 2-enabled speakers with Siri from your iPhone or iPad, HomePod, or Apple TV
- Take a call or play a game on your iPhone or iPad without interrupting playback on your AirPlay 2-enabled speakers

### HomePod stereo pair

- This update supports setting up your HomePod stereo pair using your iPhone or iPad
- HomePod pair automatically senses its location in the room and balances the sound based on the speakers' locations
- Advanced beamforming provides wider soundstage than traditional stereo pair
- HomePod will automatically update to support stereo pairs, unless auto updates are disabled in the Home app

### Messages in iCloud

- Store your messages, photos, and other attachments in iCloud and free up space on your devices
- All your messages appear when you sign into a new device with the same iMessage account
- When you delete messages and conversations they are instantly removed from all your devices
- To turn on Messages in iCloud, enable Messages in iCloud settings (Settings > [your name] > iCloud)
- Your conversations continue to be end-to-end encrypted

### Other improvements and fixes

- Enables teachers to assign their students reading activities in iBooks using the Schoolwork app
- Fixes an issue where certain character sequences could cause Messages to crash
- Addresses a Messages issue that could cause some messages to appear out of order
- Addresses an issue that could prevent logging in or accessing files on Google Drive, Google Docs and Gmail in Safari
- Fixes an issue that could prevent data syncing in Health
- Fixes an issue that could prevent users from changing what apps can access Health data
- Resolves an issue that could cause an app to appear in an incorrect location on the Home screen
- Fixes an issue where CarPlay audio could become distorted
- Fixes an issue where selecting music from your iPhone could fail when playing music over Bluetooth or when connected to USB on some vehicles

# Platforms / OS : iOS 12

## COMING UP IN Fall of 2018

- **Apple** announced [iOS 12](#) on June 4, 2018, at its annual Apple Worldwide Developers Conference (WWDC) event.
- **Apple** will continue support for all devices supported by **iOS 11**, and will add performance enhancements across all devices served by **iOS 11**.
- Features announced to release [iOS 12](#) include, but aren't limited to: **Siri Shortcuts**, **Group FaceTime** calls with up to 32 people, **Memoji**, and a more organized **Lock Screen** that hides multiple messages from the same person or a group of people in conversations.
- The beta build for [iOS 12](#) was released for developers only shortly after the announcement ended, with the **public beta expecting to release later in June**.
- [iOS 12](#) will be released to the public in the fall of 2018.

# Platforms / OS :

iOS latest version 11.X

<http://www.mobiloitte.com/blog/evolution-iphone-os-1-ios-10-journey-ios>

## IPHONE: 1 TO X

A look at the evolution of the Apple gadget across key specs

**WEIGHT** (in gm)



@network18 creative

# Platforms / OS :Version Name HISTORY → iOS



1.0:Alpine (1.0.0 - 1.0.2: Heavenly)	8.0: Okemo
1.1: Little Bear	8.1: OkemoTaos
1.1.1: Snowbird, 1.1.2: Oktoberfest	8.2: OkemoZurs
2.0: Big Bear	8.3: Stowe
2.1: Sugarbowl	8.4: Copper
2.2: Timberline	9.0: Monarch
3.0: Kirkwood	9.1: Boulder
3.1: Northstar	9.2: Castlerock
3.2: Wildcat (iPad only)	9.3: Eagle
4.0: Apex	10.0: Whitetail
4.1: Baker	10.1: Butler
4.2: Jasper (4.2.5 - 4.2.10: Phoenix)	10.2: Corry
4.3: Durango	10.3: Erie
5.0: Telluride	11.0: Tigris
5.1: Hoodoo	11.1 Bursa
6.0: Sundance	11.2 Cinar
6.1: Brighton	11.2.5 Dalaman
7.0: Innsbruck	11.3 Emet
7.1: Sochi	11.4 Fatsa



# Platforms / OS :

## iOS (iPhone) Architecture (simplified)

### Cocoa Touch Layer

It is a top layer of the iPhone OS stack and it contains the frameworks that are most commonly used by iPhone application developers.

### Media Layer

It is the second layer from the top of the stack. It provides the iPhone OS with audio, video, animation and graphics capabilities.

### Core Services Layer

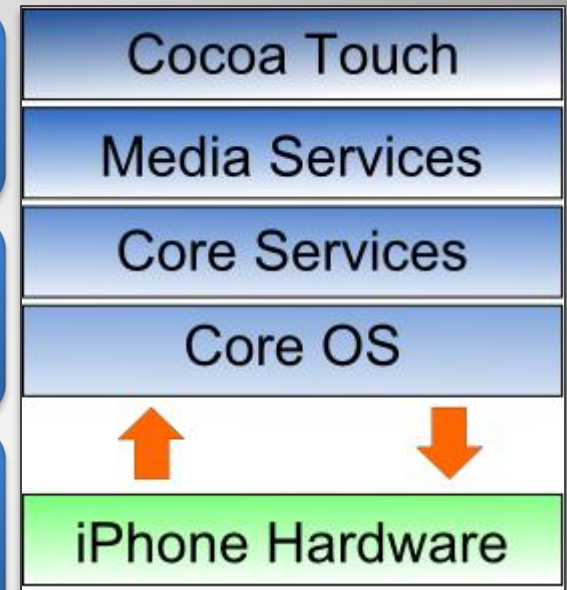
It is the third layer from the top of the stack. The iPhone Core Services layer provides much of the foundation on which the above layers are built.

### Core OS Layer

The Core OS Layer is the bottom layer of the iPhone OS stack and sits directly on top of the device hardware. This layer provides a variety of services

### iPhone Hardware

Hardware devices are managed by iPhone OS and provides the technologies needed for implementing native applications on the phone.




## Platforms / OS :

### iOS .IPA

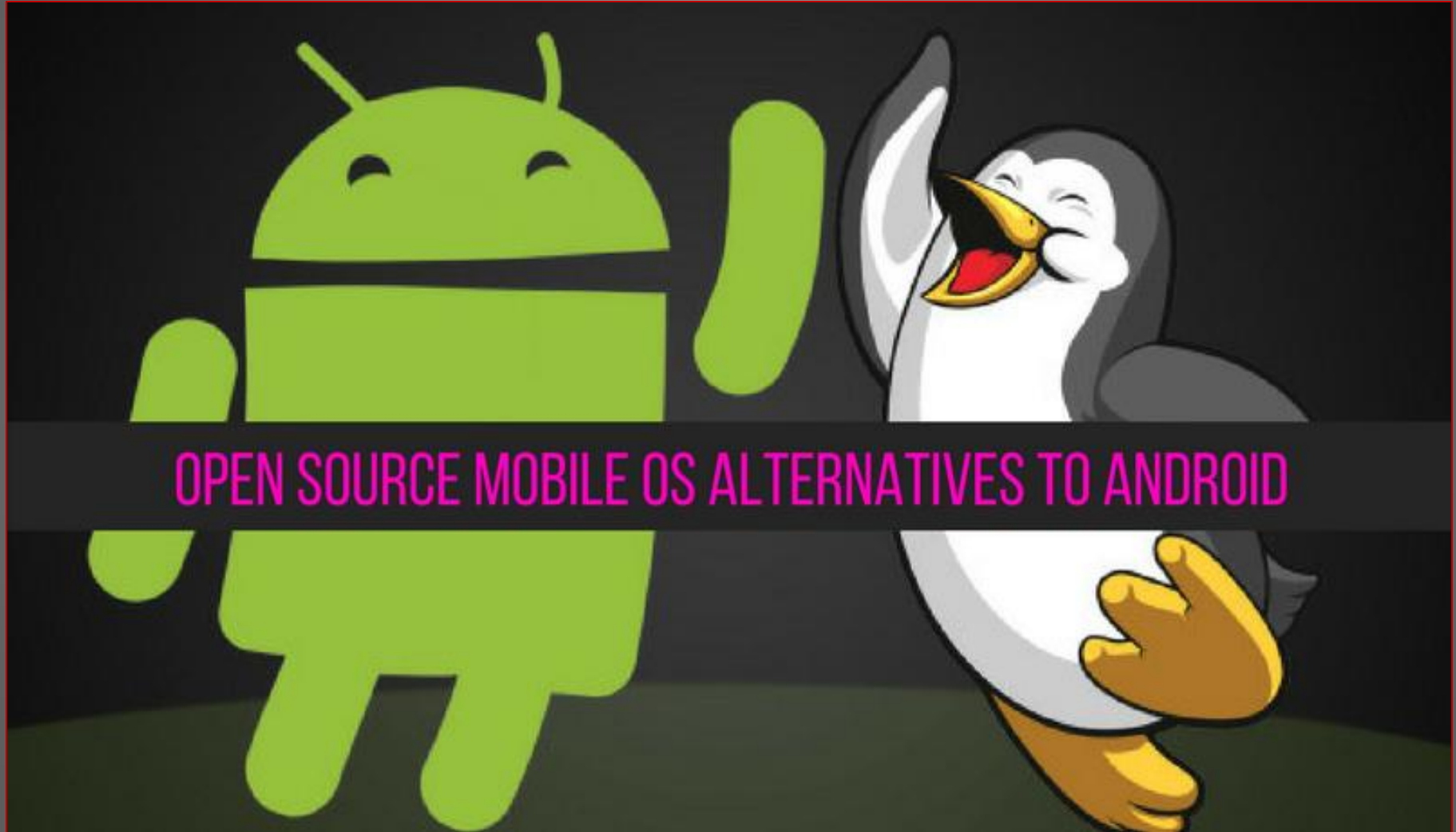
- An **.ipa** file is an iOS application archive file which stores an iOS app.
- Each **.ipa** file includes a binary for the ARM architecture and can only be installed on an iOS device.
- Files with the **.ipa** extension can be uncompressed by changing the extension to **.zip** and unzipping.

# Platforms / OS :

## ANDROID vs IOS : SUMMARY

Category	Google Android	Apple iOS
License - Source	Open Source	Close - Proprietary
Company	Open Handset Alliance/Google	Apple
OS Platform	Linux	OS X – Unix (Darwin)
Programming Language	Java and Kotlin 	Objective-C and Swift-4
Virtual Machine	Dalvik VM	None
Package Manager	APK – Google Play/Play Store	IPA – APP Store
Carriers	AT&T, Verizon, T-Mobile, Sprint, MetroPCS, Virgin, 96% out of 369 US carriers	Apple Store, AT&T, Verizon, Sprint, Virgin Mobile, Cricket + 10 regional carriers
Life Battery	Moderate	Advance high
Browser Engine	WebKit: Web, Opera Mini, Dolphin, <b>Chrome</b>	WebKit: Safari, Opera Mini, <b>Chrome</b>

# Don't like GOOGLE OS? 2018 List



OPEN SOURCE MOBILE OS ALTERNATIVES TO ANDROID



# Alternative Open Source OS: TIZEN

**TIZEN** is an open source, Linux based mobile operating system which is often dubbed as official Linux mobile OS for the reason that the project is supported by the [Linux Foundation](#).

Apart from Linux Foundation, **TIZEN** project is supported by tech giants Samsung and Intel. Initially slotted for late 2013 release, it was only in January'15 that the first Tizen phone, [Samsung Z was released](#) in South Asian market.

Despite being based on Linux, **TIZEN** [has been marred with security issues](#).



# Alternative Open Source OS: PLASMA MOBILE

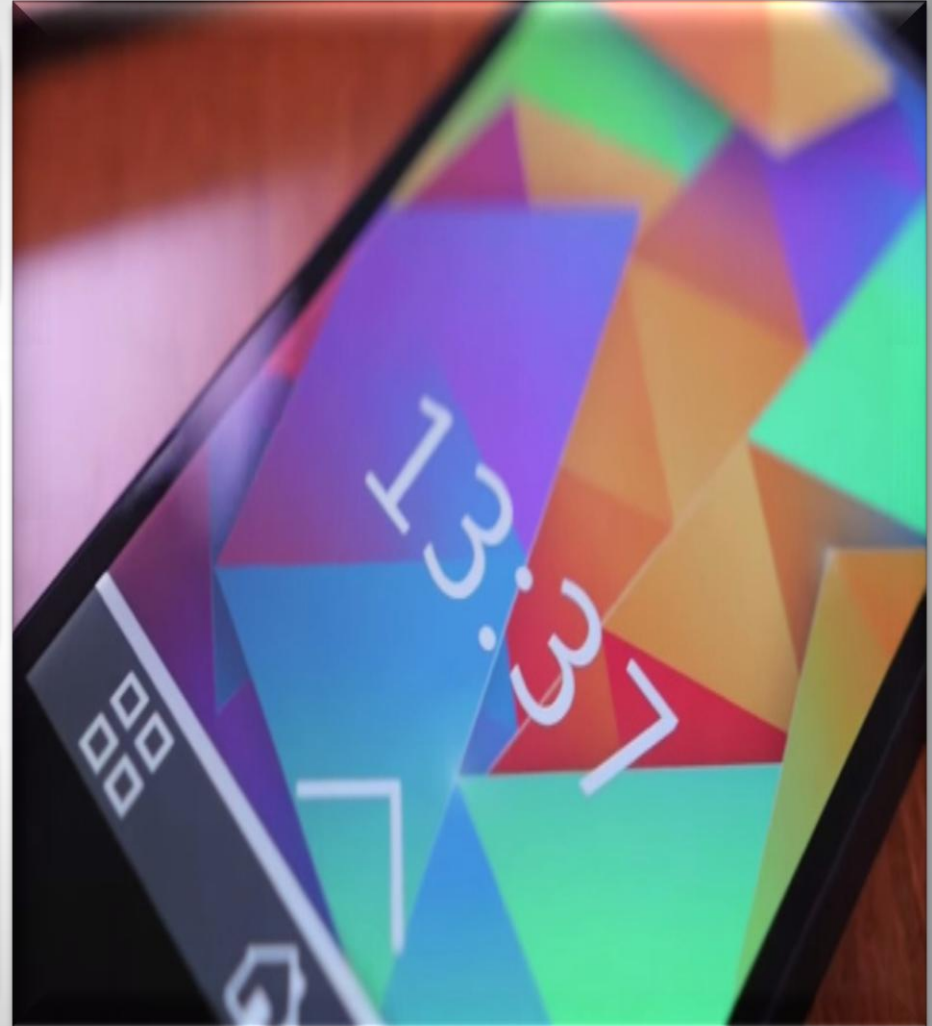
In April , 2018 KDE announced its own open source mobile OS:

## **PLASMA MOBILE**

**KDE** is an international community that develops Free and Open Source based software.

Based on Kubuntu, Plasma Mobile is the mobile version of desktop Plasma user interface that aims to provide convergence to KDE users.

OS is in the experimental phase and can be tested on Lg Nexus 5 devices.

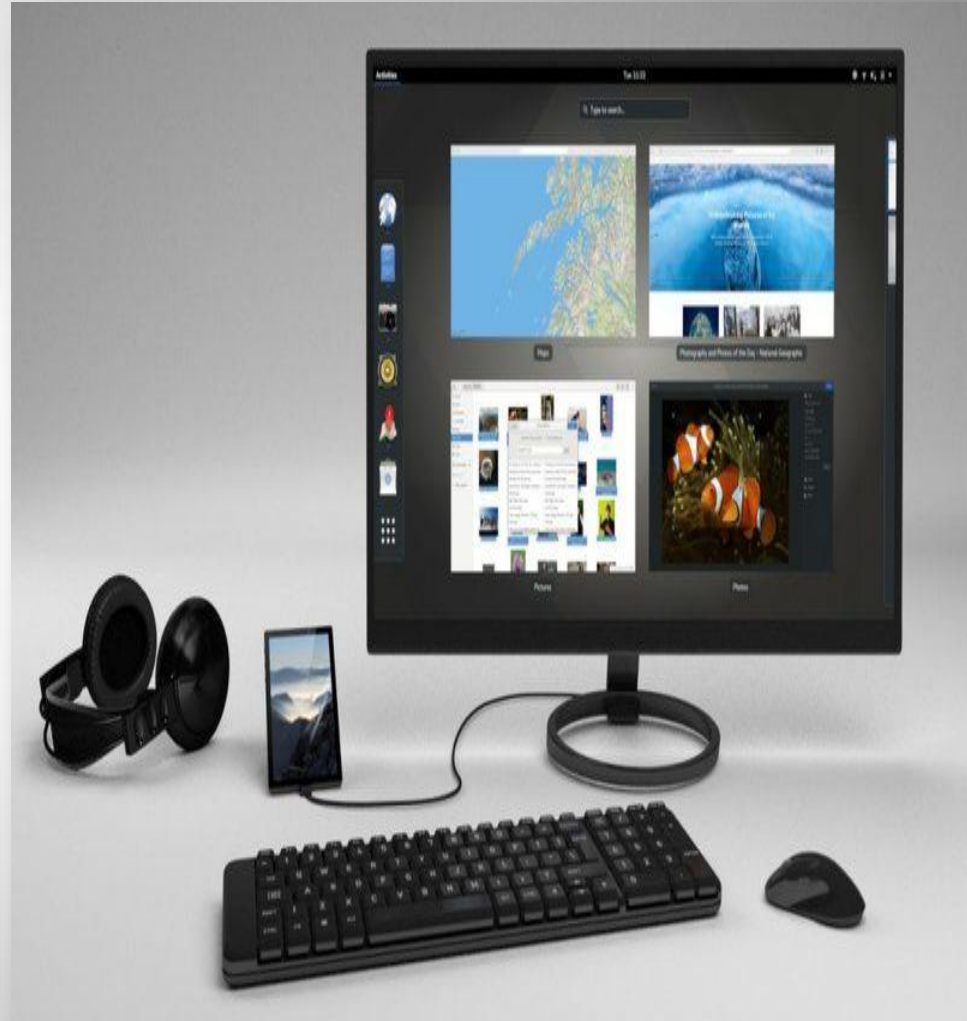


# Alternative Open Source OS: LIBREM

Not an open source mobile OS  
but an **Open Source  
Mobile Phone.**

Security and Privacy focused Linux  
distribution [PureOS](#) has plans to  
launch a secure and encrypted  
SmartPhone.

Librem will be running a touch  
optimized version of PureOS, Debian,  
Ubuntu, SUSE, Fedora and even Arch  
Linux.



# Alternative Open Source OS: PostmarketOS

**pmOS** is a touch-optimized, pre-configured [Alpine Linux](#) with own packages, that can be installed on SmartPhones.

The idea is to provide 10-year life cycle to smartphones.

**pmOS** is in very early phases of development and it is most likely that you won't be able to use it on your SmartPhone just yet.





# Alternative Open Source OS: LineageOS

LineageOS is an Android distribution.  
In other words, you can call it a  
custom ROM

It was created after the much more  
successful Android  
distribution [CyanogenMod](#) was  
discontinued

LineageOS is a fork of CyanogenMod

Started in December 2016, LineageOS  
now supports 178 SmartPhone models  
and claims to have over 1.7 million  
installs



LineageOS

# Alternative Open Source OS: eelo

eelo is an upcoming Android distribution based on LineageOS

It is being created by the developer of Mandrake Linux

The idea is to have an open source mobile operating system free from Google.

eelo promises to have its own cloud and email services to give you an Android free experience

eelo is in very early phases of development



# Alternative Open Source OS: Sailfish OS

Developed by Finnish startup Jolla, Sailfish OS is a Linux-based mobile operating system that utilizes Mer, the successor to Nokia's short-lived MeeGo operating system.

The user interface is gesture based, with the a focus on multitasking.

One distinct advantage that Sailfish OS boasts over the competition is a huge catalog of apps and software, as it is compatible with software made for Android, Linux, Mer/MeeGo and anything written in HTML5.

## Not an Open Source



# Alternative Open Source OS: UBUNTU TOUCH

Spanish manufacturer BQ became the first device running **Ubuntu Touch** in February'15.

It was soon followed by Chinese manufacturer Meizu.

It is too soon to gauge the success or failure of **Ubuntu** phones because these first few devices aim at developers.



# Alternative Open Source OS: MEUI

MIUI (pronounced “Me-You-I”) is a heavily modified version of the Android OS, made and maintained by Xiaomi Tech, a Chinese electronics company

MIUI offers a higher level of customization than stock Android, allowing users to apply custom themes, lock screens, fonts and more

MIUI has built-in network monitoring, spam and virus protection, a data backup app and other useful and unique features

The UI is somewhat similar to that of the iPhone, with its glossy icons and smooth screen transitions

