

# OVERVIEW OF ANDROID

## Lecture 5b

COMPSCI 702  
Security for Smart-Devices

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March 10, 2021



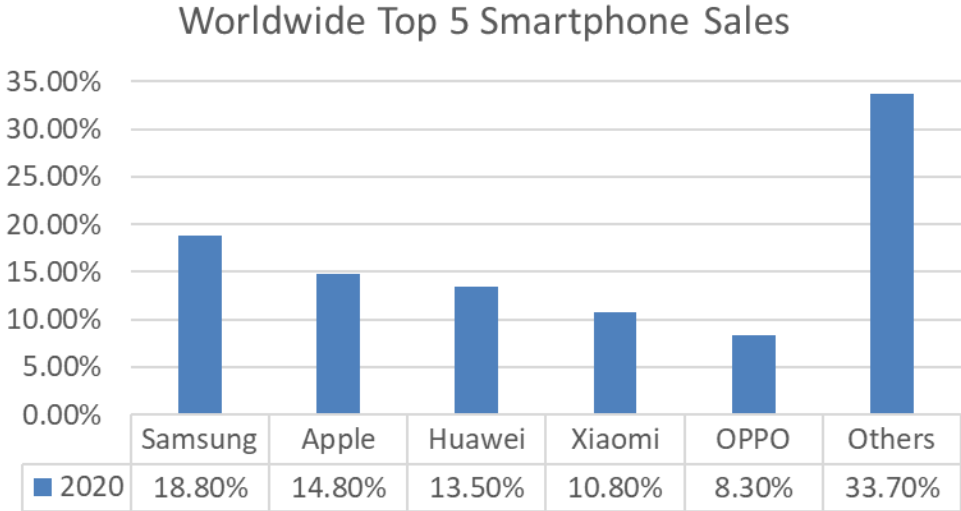
THE UNIVERSITY OF  
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# WHAT IS ANDROID?



- Android is an Operating System (OS) for smartphones
- Initially developed by Android Inc.
  - Which Google acquired in 2005
- Later developed by Google
- Open-source
- Based on the Linux kernel
- SDK was released in November 2007
  - For Java
- NDK was released in June 2009
  - For C and C++

# KEY PLAYERS IN THE MARKET



Source: [Gartner February 2021](#)

- Android is used in most of smartphones

# ANDROID HISTORY



- The Open Handset Alliance (OHA) is for developing open standards for mobile devices
- OHA is a consortium of 84 firms
  - Google, HTC, Sony, Dell, Motorola, Qualcomm, Samsung, LG, T-Mobile, Nvidia, and many others
  - Link: [http://www.openhandsetalliance.com/oha\\_faq.html](http://www.openhandsetalliance.com/oha_faq.html)
- Announced on November 5, 2007
- The first Android device was sold in 2008

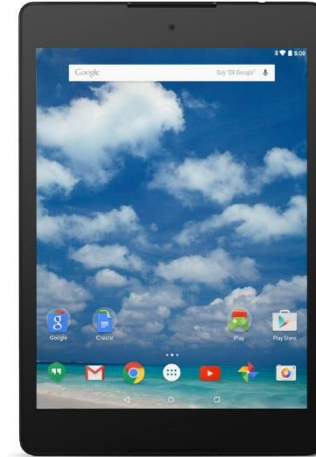
# ANDROID DEVICES



Phone



Wear



Tablet

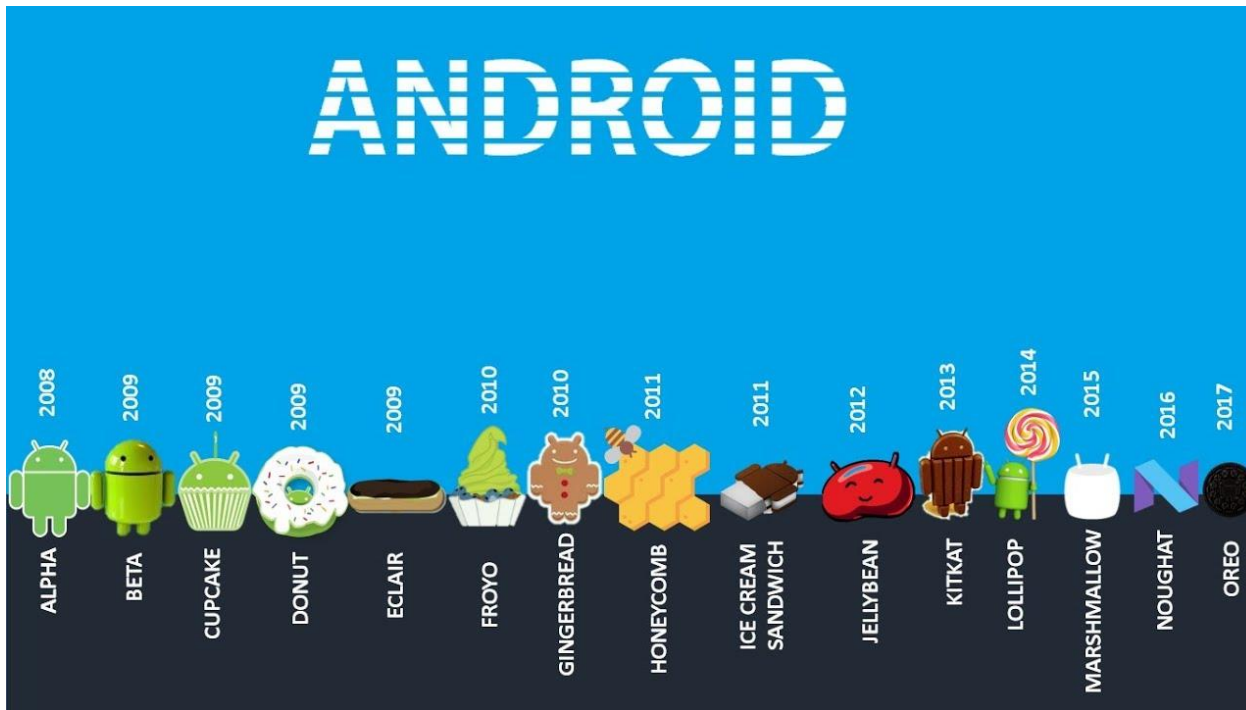


TV

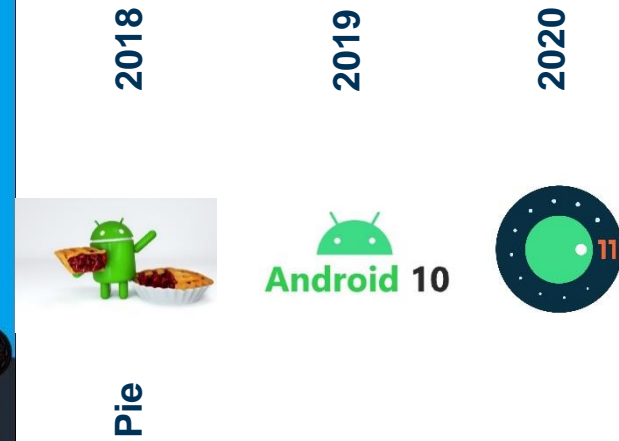


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# ANDROID VERSIONS

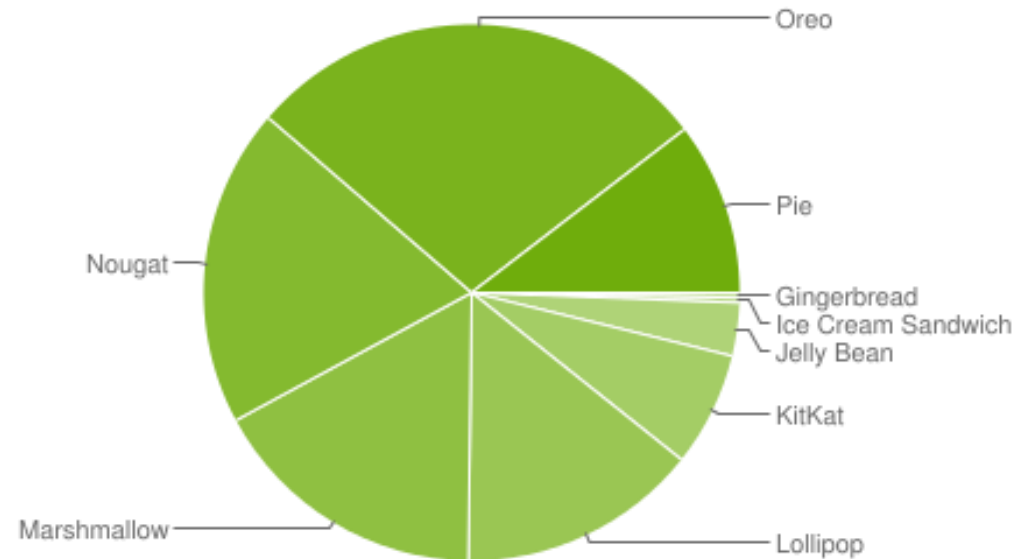


Source: [Daily Stock](#)



# ANDROID DISTRIBUTION

Version	Codename	API	Distribution
<a href="#">2.3.3 - 2.3.7</a>	Gingerbread	10	0.3%
<a href="#">4.0.3 - 4.0.4</a>	Ice Cream Sandwich	15	0.3%
<a href="#">4.1.x</a>	Jelly Bean	16	1.2%
<a href="#">4.2.x</a>		17	1.5%
<a href="#">4.3</a>		18	0.5%
<a href="#">4.4</a>	KitKat	19	6.9%
<a href="#">5.0</a>	Lollipop	21	3.0%
<a href="#">5.1</a>		22	11.5%
<a href="#">6.0</a>	Marshmallow	23	16.9%
<a href="#">7.0</a>	Nougat	24	11.4%
<a href="#">7.1</a>		25	7.8%
<a href="#">8.0</a>	Oreo	26	12.9%
<a href="#">8.1</a>		27	15.4%
<a href="#">9</a>	Pie	28	10.4%



Source: [android.com](http://android.com)  
 (Data collected on May 7, 2019)

Any versions with less than 0.1% distribution are not shown

# ANDROID APPS



- The Android development kits are available for **FREE**
  - SDK
  - NDK
- One can develop and distribute apps
- App markets
  - [As of March 9, 2021](#), the Google Play store has reached over **3 million apps**
  - [108.5 billion downloads](#) in 2020
  - Support for regional and third party markets



# ANDROID IS FOR FREE



- Vendors can download Android for FREE from Google
- Download link: <http://source.android.com>
- Vendors range from large enterprises (e.g., Samsung) to small ones (e.g., small Chinese/Russian firms)

# ANDROID FRAGMENTATION



- Vendors customise the OS for their devices
  - Typically, vendors include their apps
  - Some of apps could compromise security/privacy
  - E.g., the Samsung app compromises on privileges
  - Link: <http://randomthoughts.greghats.it/2013/03/owning-samsung-phones-for-fun-but-with.html>
  
- However, a vendor does not push updates frequently
  - Some devices could be some versions behind
  - Some vendors stop supporting their devices afterwards
  - Link: <http://theunderstatement.com/post/11982112928/android-orphans-visualizing-a-sad-history-of-support>

# TO BE CONTINUED



- See the next lecture



**Questions?**

**Thanks for your attention!**