학생 여러분 반갑습니다.

다른 친구들이 입장할 때까지
조금 기다려 주십시오.

곧 모바일 프로그래밍 수업을
시작합니다.

음소거( )가 되었는지 확인 바랍니다.

모바일 프로그래밍
화목(1,2교시)/ 화목(3,4교시)
정윤현 (AI/소프트웨어학부)

가천대학교
Gachon University

30:00

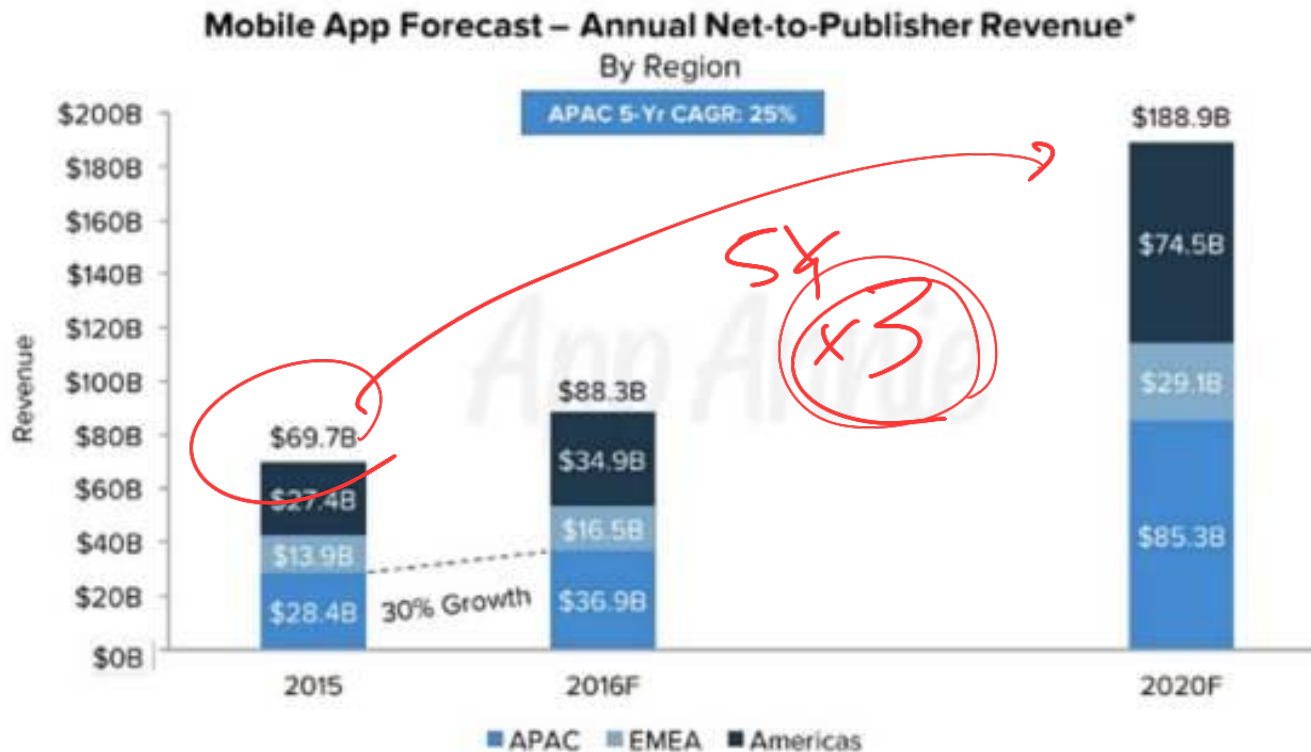# Mobile Programming

Android Programming

Chap1. Introduction

Prof. Younhyun Jung

Email) younhyun.jung@gachon.ac.kr

Why Mobile Programming?

- Emergence of Smartphones
  - From Feature phone to Smartphone : Mobile Phone Revolution

- Significant Increase of Mobile Application Market
  - Job market is hot
  - Chance to start your own business by making apps
    - If you have an idea for startup, you can easily conduct it by making apps on mobile platform.

Mobile app market to grow 270% to $189 billion by 2020, with games accounting for 55%

Mobile App Forecast – Annual Net-to-Publisher Revenue*
By Region

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Mobile Devices - Smartphones

iPhone 11

LG G8

Samsung Galaxy S20

Samsung foldable phone

Mobile Devices - Tablets

Samsung Galaxy Note Pro 12.2
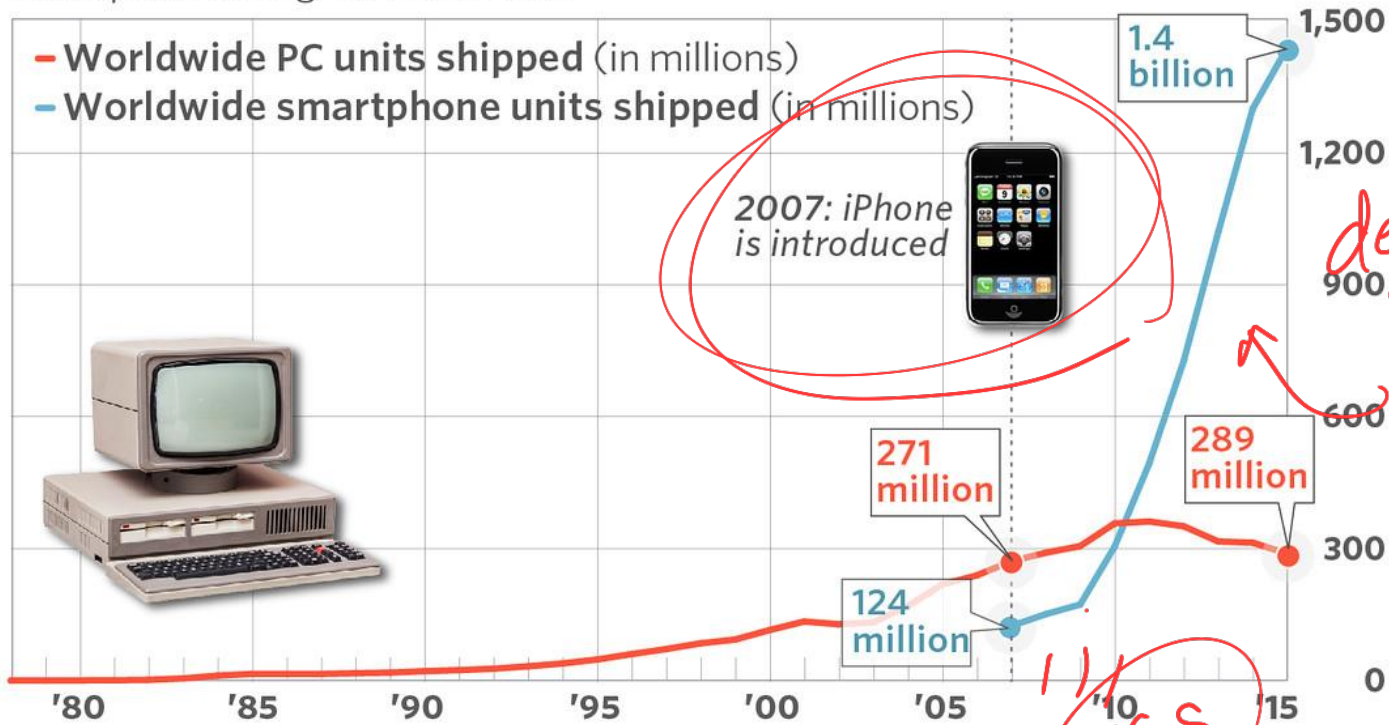

Microsoft Surface

Apple iPad

Smartphone vs. PC Sales

Share of Total Website Traffic

Mobile Now 30+ Percent Of Total Web Traffic

http://www.statista.com/statistics/241462/global-mobile-phone-website-traffic-share/

https://www.statista.com/statistics/241462/global-mobile-phone-website-traffic-share/

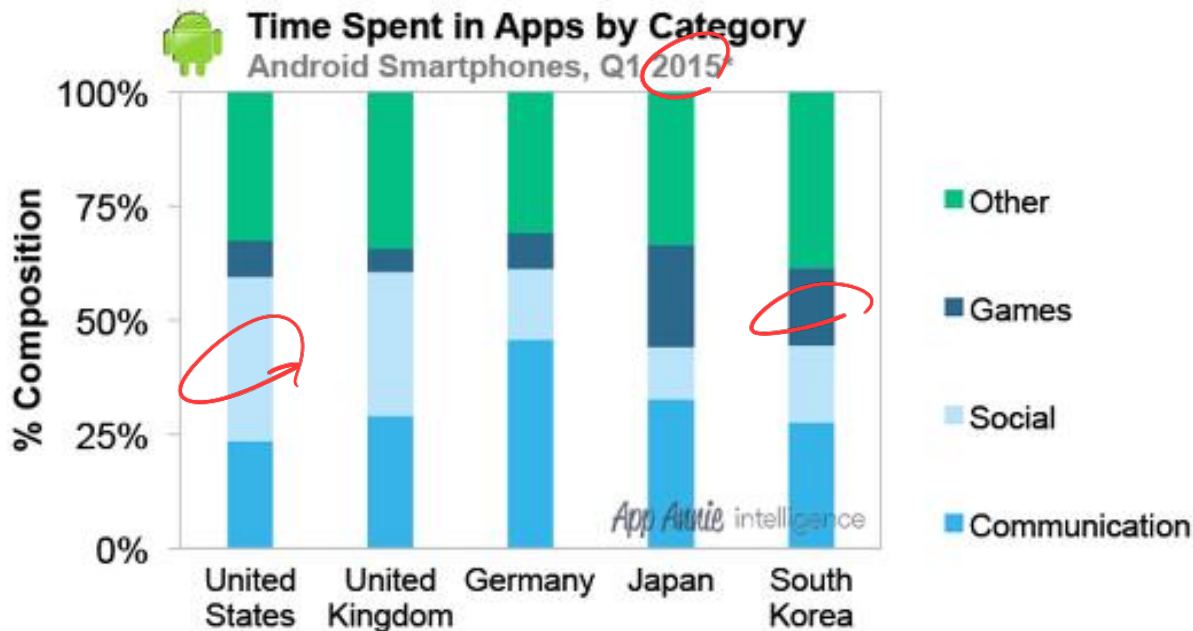가천대학교 소프트웨어학과
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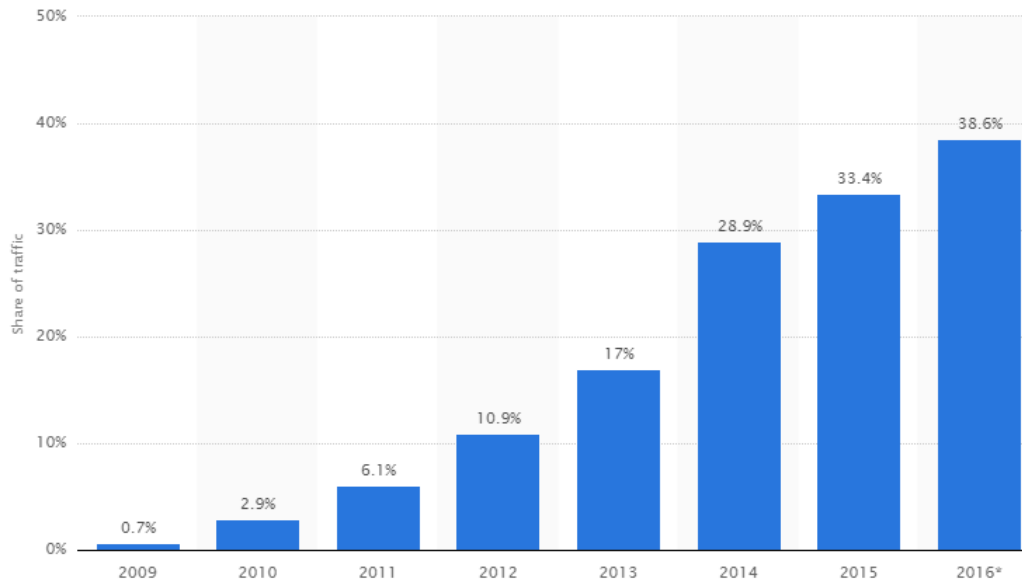
Internet *Usage* (Engagement) Growth Solid
+11% Y/Y = Mobile @ 3 Hours / Day per User vs. <1 Five Years Ago, USA

Time Spent per Adult User per Day with Digital Media, USA, 2008 – 2015YTD
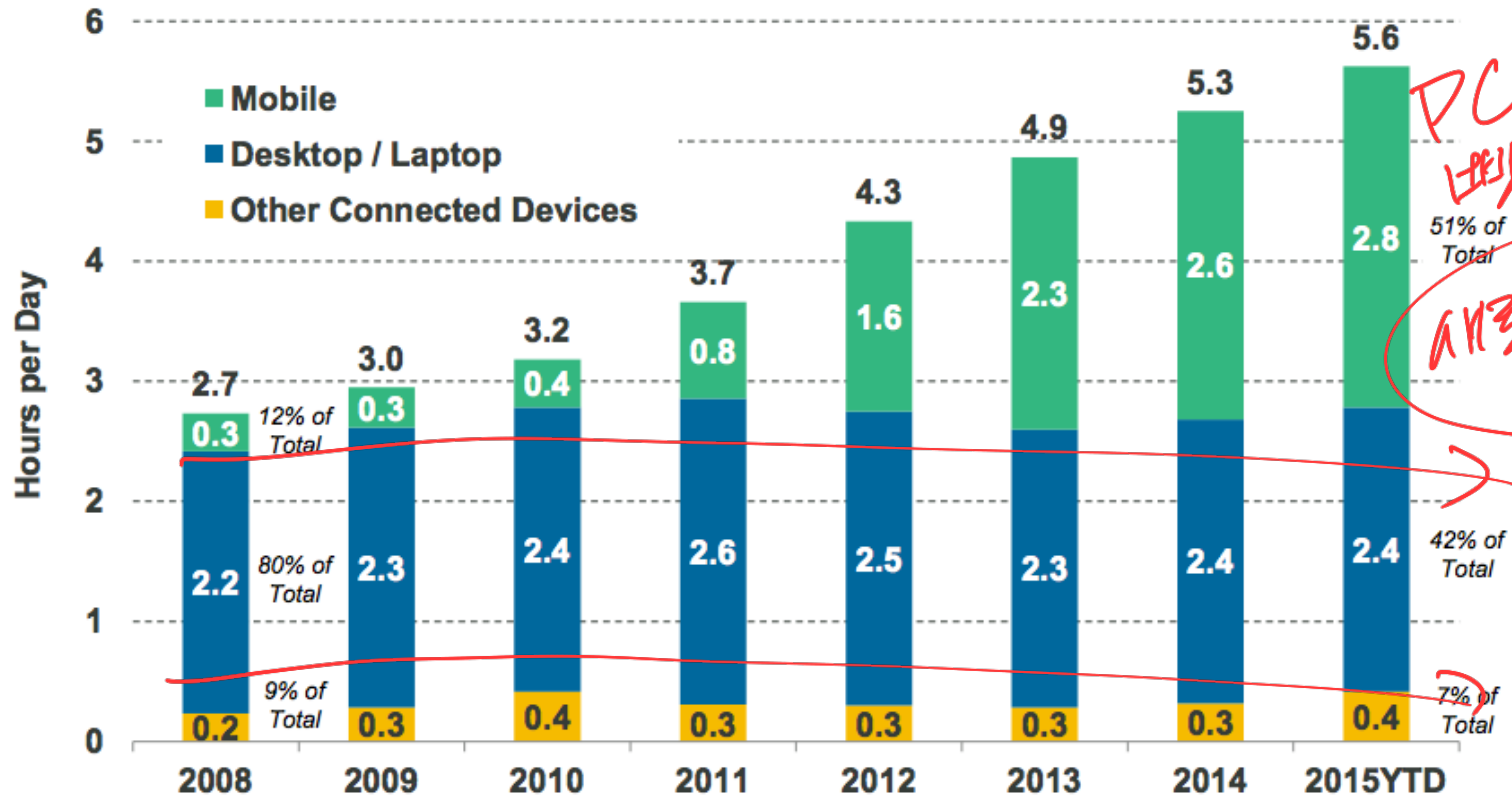
User Engagement on Smartphones Varies Greatly by Country

Time Spent in Apps by Category
Android Smartphones, Q1 2015

- The proportion of total time spent in games is vastly higher for Japan and South Korea than the US, Germany and the UK
- In all countries, however, most time is spent outside of games. Especially in Western countries, Social and Communication apps account for a large portion of users' time

App Annie

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Mobile Devices: Advantages

- Always with the user

   (because it's a cellphone!)
- Typically have Internet access anywhere and anytime (= ubiquitous Internet access)
- Easy to Use – touchscreen, simple GUI
- Typically GPS enabled
- Typically have several sensors, including accelerometer & compass & magnetometer
- Typically have cameras & microphones
- Apps are free or low-cost

Mobile Devices: Disadvantages

- Limited screen size (but, resolution is not a problem)
- Limited battery life
- Limited processor speed (this is not a case today)
- (Limited and sometimes slow network access)
- Limited storage (smartphone memory is too expensive)
- Limited or awkward input: soft keyboard, phone keypad, touch screen, or stylus
- Limited web browser functionality
  (no Flash, no ActiveX)
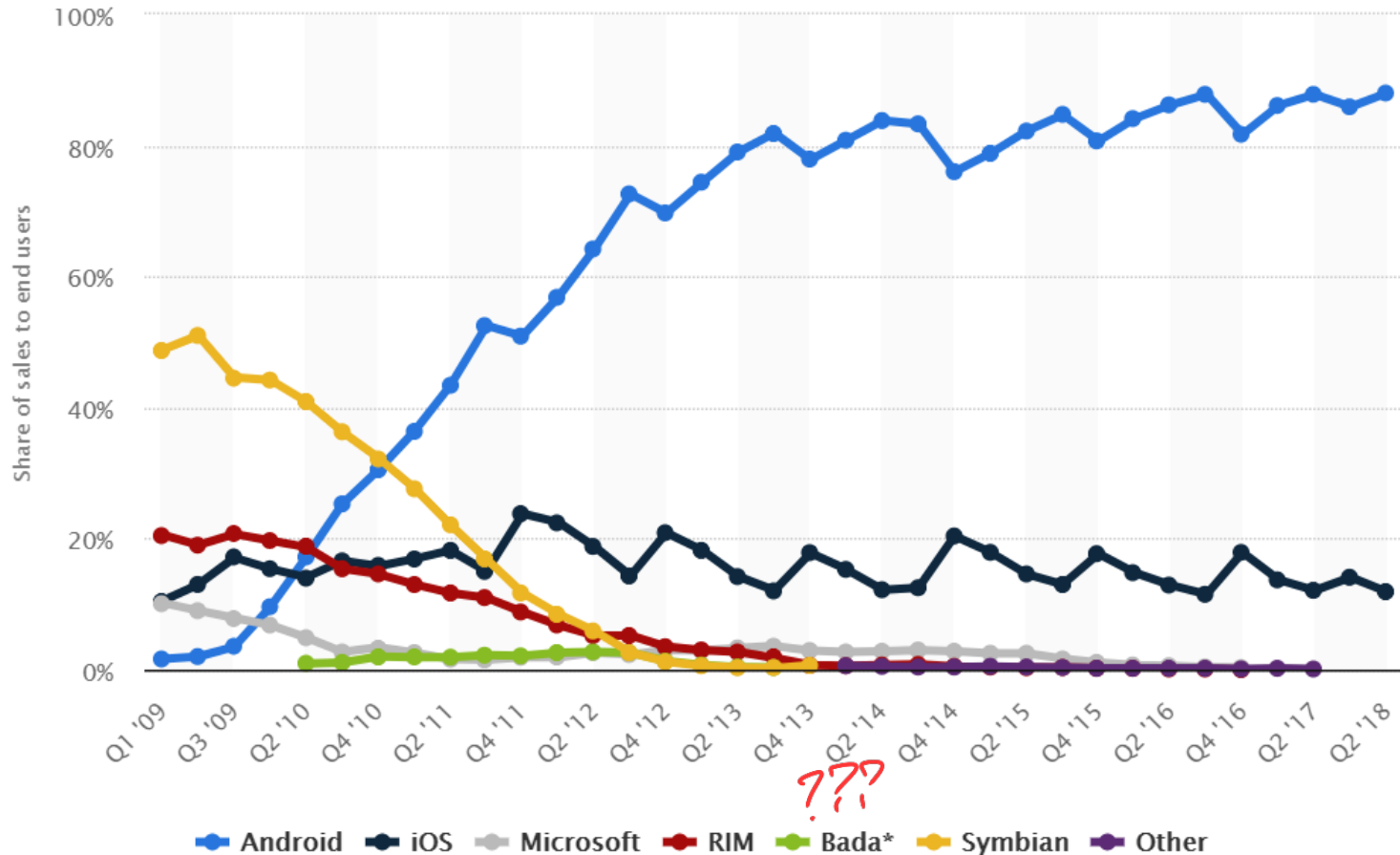- Range of platforms & configurations across devices

Mobile Devices Are Connected to Cloud

- Mobile devices become more powerful

AI.처리

이미지

결과.

Why Android?

© Statista 2019

Android vs. iPhone

iPhone (iOS)

- OS is proprietary

- OS runs on iPhone or iPod Touches only

- Apps written in Objective-C

- Dev tools Mac-only

- Some apps are more important than others (Safari is your browser)

Android

- OS is open source

- OS can be licensed for any mobile device

- Apps written in Java

- Dev tools for many OS's

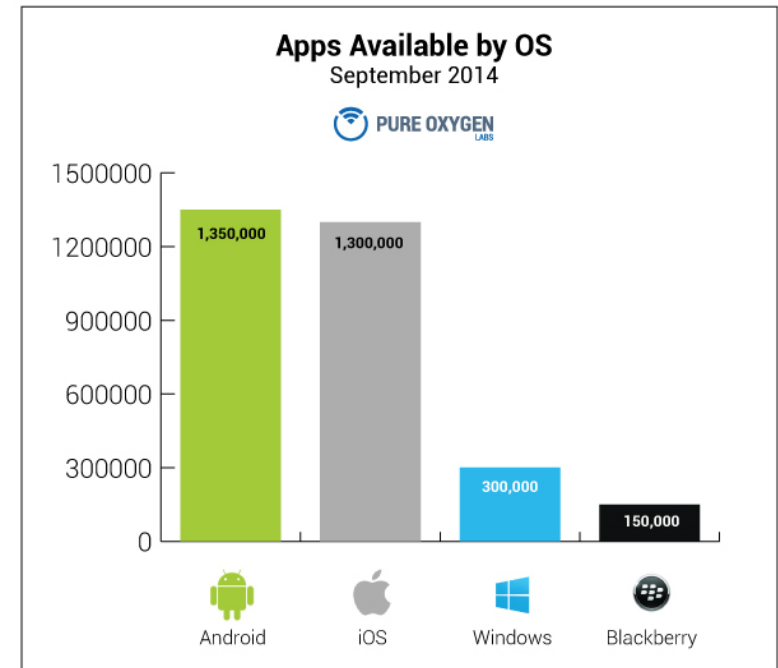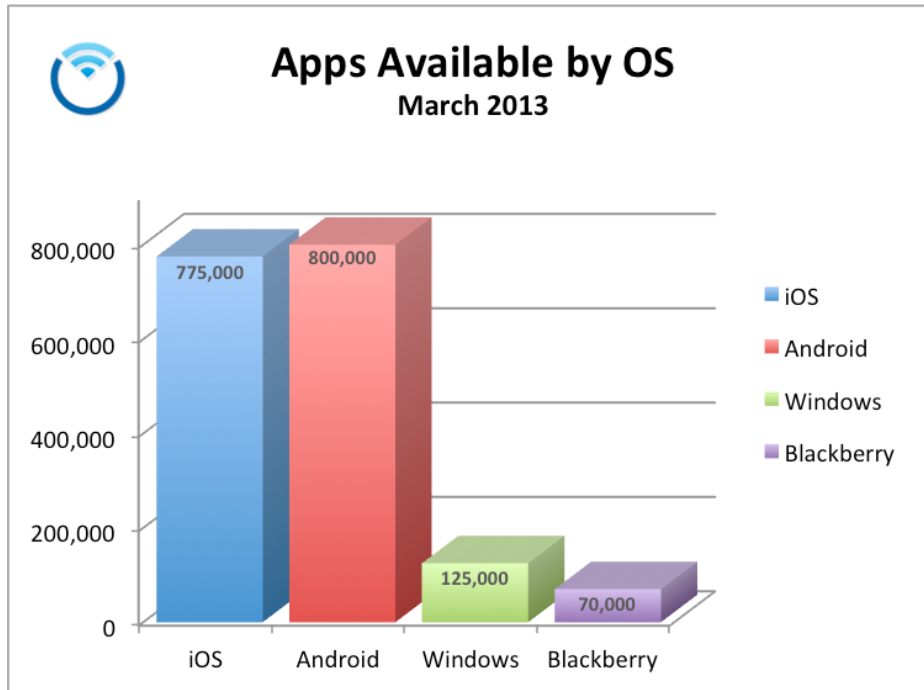- All apps considered equal (choose your browser)

Where Can I Get Apps?

- iOS
  - Apple's App Store
  - Stringent vetting (strict release) process

- Android
  - Google Play
  - Also available at several stores
    - Amazon Appstore for Android, Samsung Store, T-Store, ...
  - On the Web

How Many Apps Are in Each App Store?

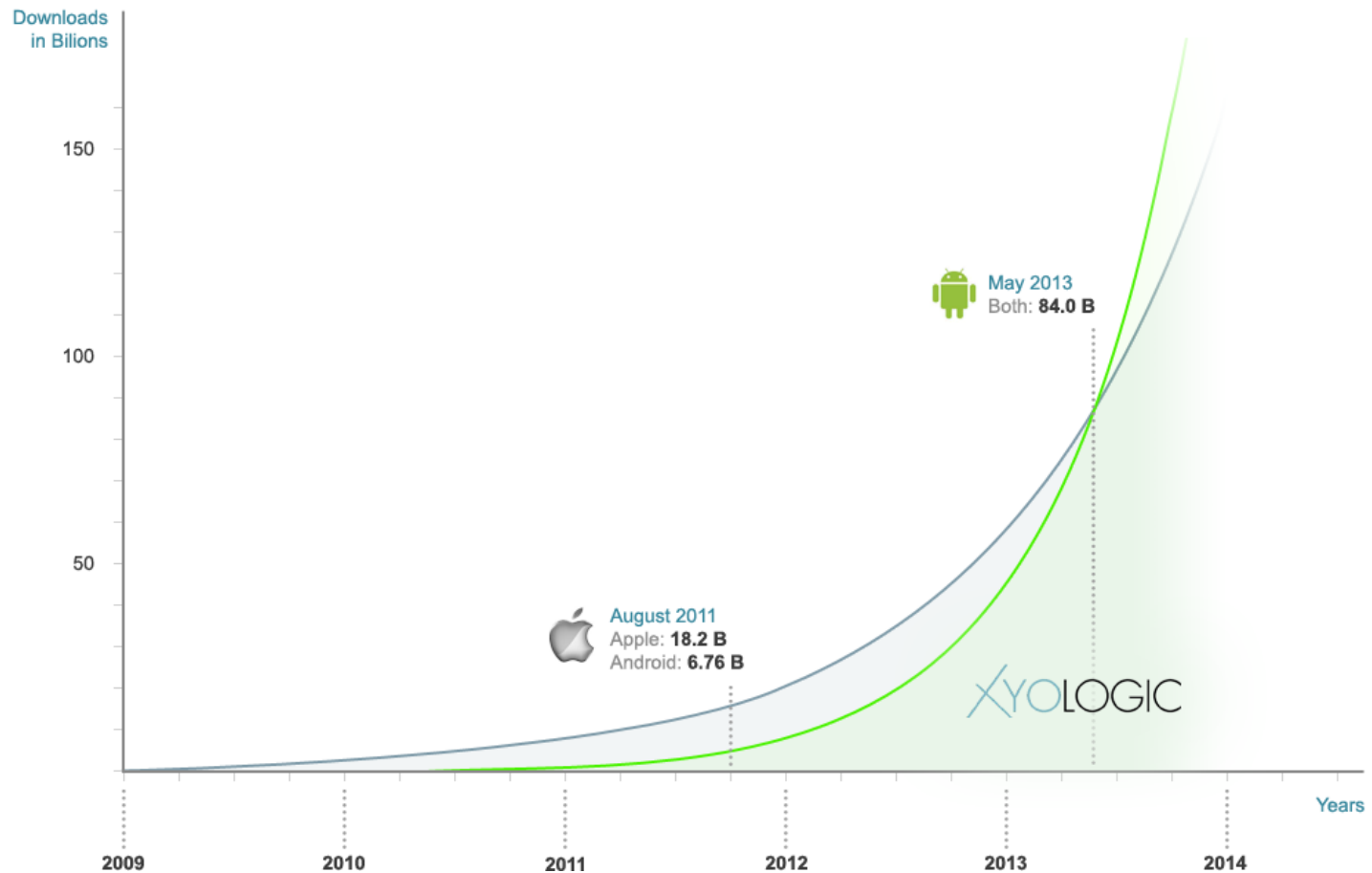Apps Available by OS — March 2013: iOS 775,000; Android 800,000; Windows 125,000; Blackberry 70,000

Apps Available by OS — September 2014: Android 1,350,000; iOS 1,300,000; Windows 300,000; Blackberry 150,000

http://pureoxygenlabs.com/how-many-apps-in-each-app-store/

Apple vs. Android: **Total App Downloads**
2009 - 2014

Downloads
in Bilions

150

100

50

May 2013
Both: **84.0 B**

August 2011
Apple: **18.2 B**
Android: **6.76 B**

Years

2009   2010   2011   2012   2013   2014
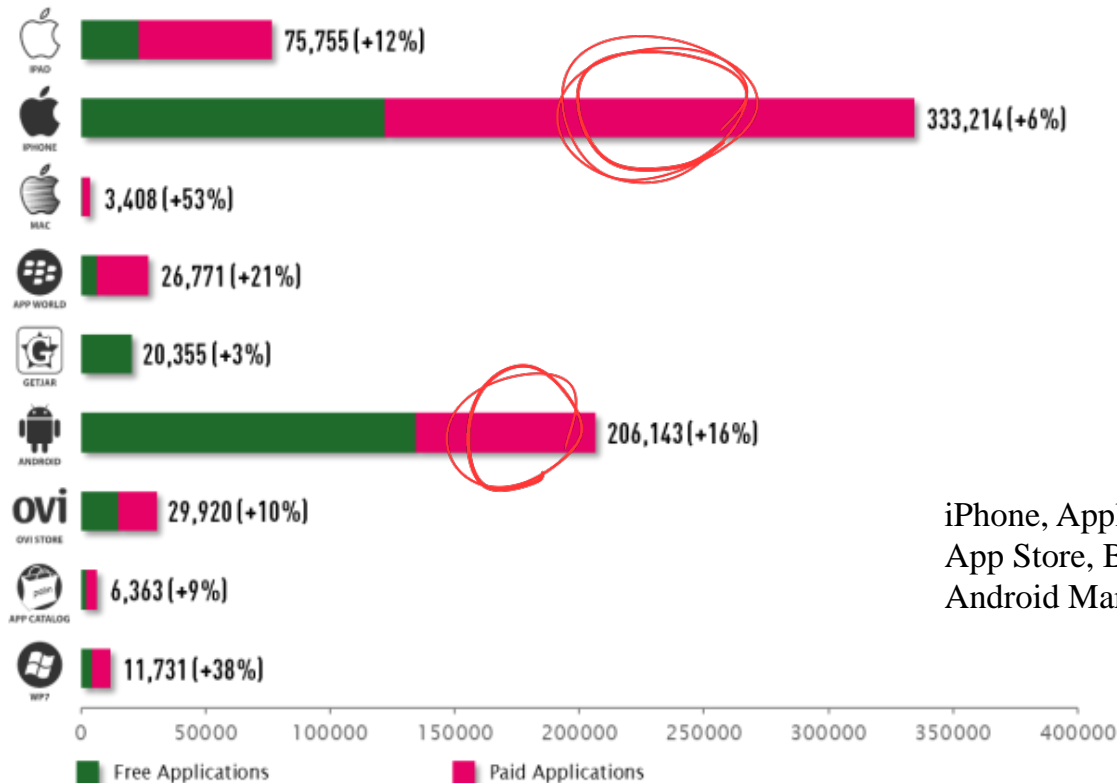
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Free vs. Paid apps. In 2011

NUMBER OF AVAILABLE APPLICATIONS   **DISTIMO**

MARCH 2011 – UNITED STATES

Free vs. Paid Apps
(Apr. 2011)
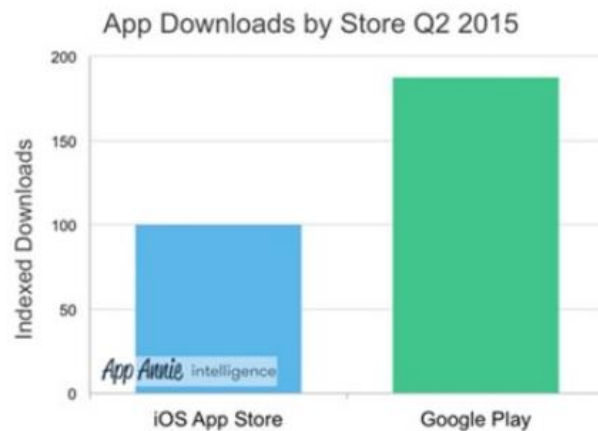
iPhone, Apple App Store for iPad, Apple Mac App Store, BlackBerry App World, GetJar, Google Android Market, Nokia Ovi Store
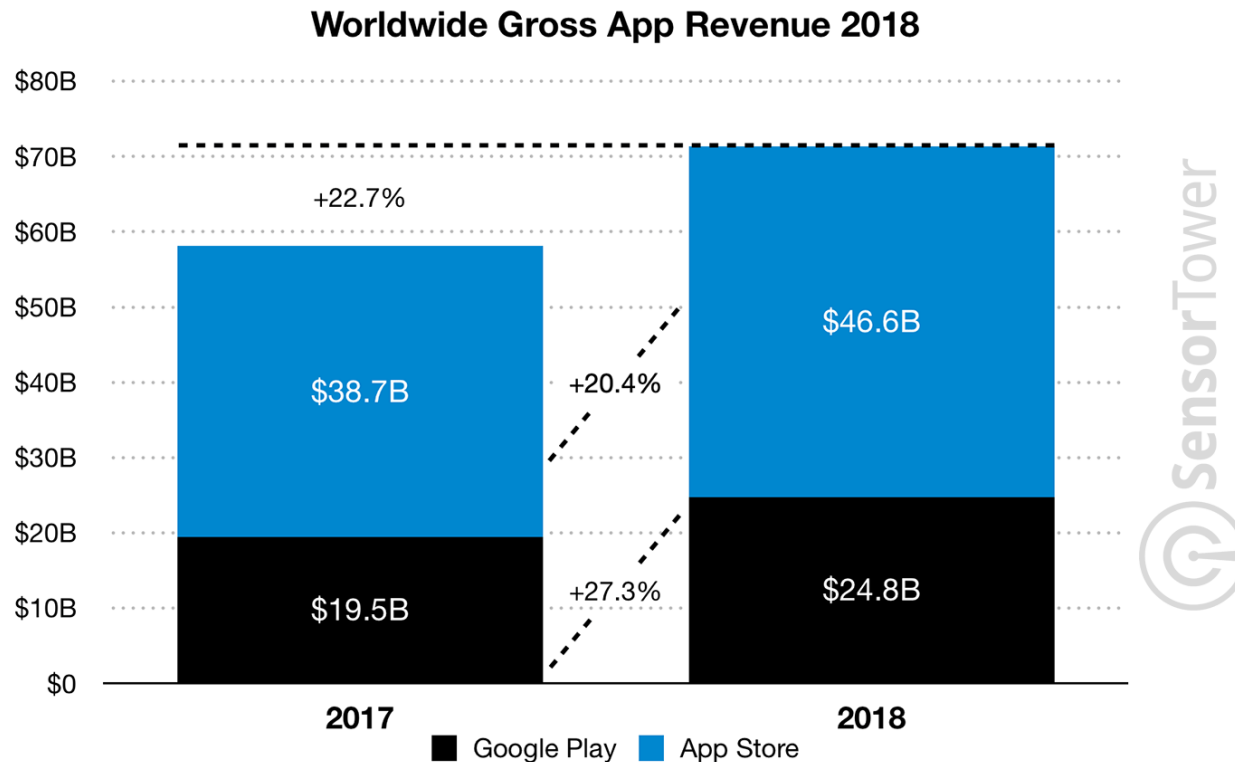
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Google vs. Apple

- Google still leads in downloads, but iOS still leads in revenue

http://www.androidauthority.com/google-play-performance-q2-2015-google-and-apple-gain-big-from-new-emerging-markets-626622/

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Global App Revenue Grew 23% in 2018 to More Than $71 Billion on iOS and Google Play

Worldwide Gross App Revenue 2018

- 2017: Google Play $19.5B, App Store $38.7B (+22.7%)
- 2018: Google Play $24.8B (+27.3%), App Store $46.6B (+20.4%)

Legend: ■ Google Play ■ App Store

SensorTower — Data That Drives App Growth — sensortower.com

https://sensortower.com/blog/app-revenue-and-downloads-2018

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2013

Total Revenue Per Country
July 2013

Legend:
- Google Play
- Apple App Store – iPhone
- Apple App Store – iPad

Countries: United States, Japan, Korea, United Kingdom, Australia, Germany, Canada, France, Russia, Italy

DISTIMO

http://www.macrumors.com/2013/08/12/apples-app-store-still-number-one-in-revenue-despite-google-play-growth/
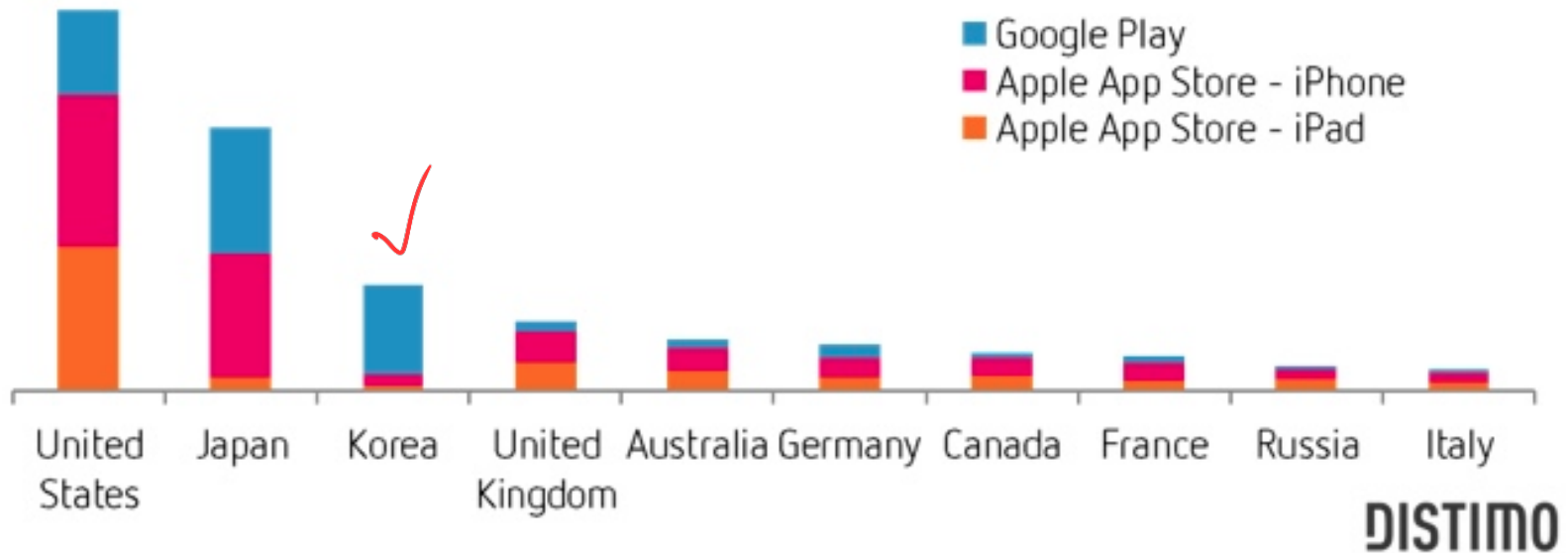
Top Apps Worldwide for June 2019 by Downloads (Non-Game)

SensorTower

Overall Downloads

1. Messenger
2. WhatsApp
3. TikTok
4. Facebook
5. Instagram
6. SHAREit
7. Snapchat
8. Likee
9. YouTube
10. HAGO

App Store Downloads

1. YouTube
2. TikTok
3. Instagram
4. Google Maps
5. Facebook
6. Snapchat
7. WhatsApp
8. Messenger
9. Pinduoduo
10. Netflix

Google Play Downloads

1. Messenger
2. WhatsApp
3. TikTok
4. Facebook
5. SHAREit
6. Instagram
7. Likee
8. Snapchat
9. HAGO
10. Hotstar

Note: Does not include downloads from third-party Android stores in China or other regions.

https://sensortower.com/blog/top-apps-worldwide-june-2019-downloads

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TODO

- Setup your development environment for this class
- https://developer.android.com/studio
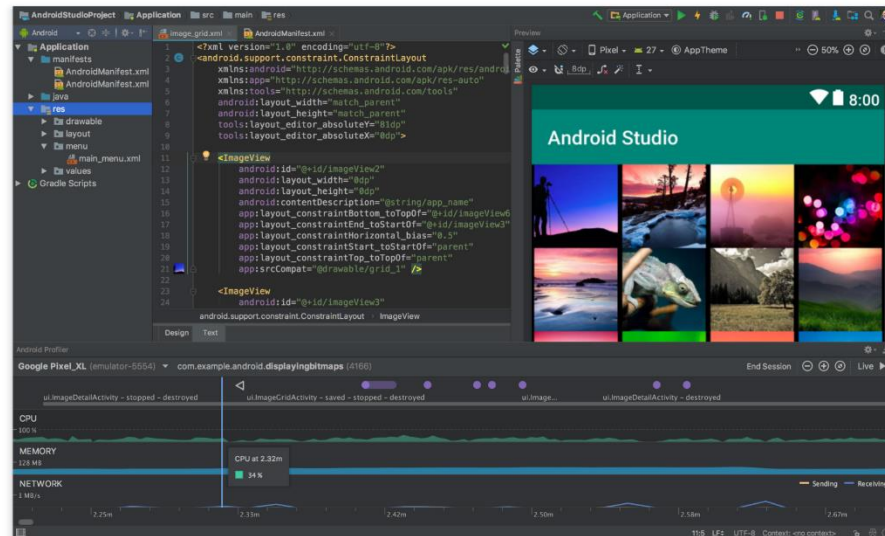
Remember:

- Finishing setting up Android development environment on your laptop before next class !!

Assignment #1

- Make 5min individual presentation
  - 5min 안드로이드 마켓에서 흥미로운 앱 1개 소개

    (다음 수업 시간 전까지 cyber campus를 통한 과제 제출)

  - Select one app to introduce :
  - May include :
    - Key Idea
    - Technical point
    - Discussion point
    - Business strategy
    - Etc..

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Remember:

- There are lots of useful information, stay long at

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

References

- Textbook : Beginning Android Application 4 Development

- Android Introduction by Marko Gargenta, http://www.lecturemaker.com/2009/10/android-software-platform/

- Android Dev Guide http://developer.android.com/guide/topics/fundamentals.html

- http://developer.android.com/tools

- http://developer.android.com/tools/devices/index.html

- *Pro Android* by Hashimi & Komatineni (2009)