

MOBILE PROGRAMMING: ANDROID

INTRODUCTION TO MOBILE PROGRAMMING

OUTLINE

- Mobile devices
- Mobile platforms
- Android platforms
- Developer workflow basics
- Mobile app development challenges

- Getting started with Android Studio
- App: Hello Android

ESSENCE OF A MOBILE DEVICE

- (Potentially) available to serve everywhere, any time.
- Interwoven into daily life – live, work, play, study
- Represents and intimately “knows” the user
 - Much more than just a small computer, it represents the user
- Brings in outside world: sensing, location, communication
- Now the dominant end-user device
 - See: <http://www.nytimes.com/2013/01/08/business/mobile-apps-drive-rapid-changes-in-search-technology.html?ref=technology>
 - 81% of Americans own a smartphone (Feb. 2019): <https://www.pewinternet.org/fact-sheet/mobile/>

VARIED SHAPES, SIZES, CAPABILITIES



Sources: Apple, Google, Nintendo, Amazon

MOBILE PLATFORMS





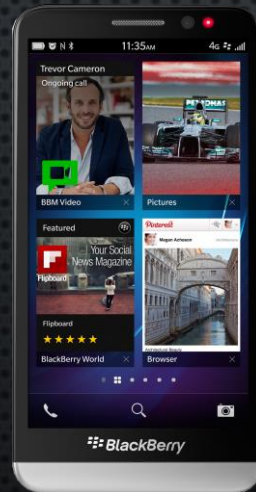
Nokia N8



Palm Pre 2



iPhone 6



Blackberry Z30



Nexus 6P



Lumia 950



Symbian^3



WebOS



iOS 9



Blackberry 10



Android 6



Windows 10



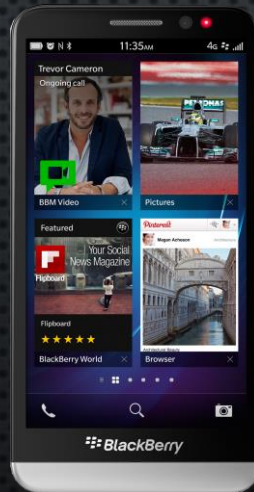
C++/Java/WRT



HTML5/JavaScript/CSS



Swift



Java



Java



.NET (C#)



Symbian^3 SDK



Mojo SDK



iOS SDK



Blackberry JDE



Android SDK



.NET Framework

ANDROID PLATFORMS



PLATFORM

Wear OS



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PLATFORM

TV



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PLATFORM

Cars



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PLATFORM

Chrome OS



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PLATFORM

Things



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TOOLS

Android NDK



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WHY ANDROID FOR THIS COURSE?

- **Java** – you are familiar with
- Open source
- Not require specialized devices or softwares
- Dominant in number of devices
- Easier installation
- Easier entry to market
- Compatible with more devices



WHY NOT ANDROID?

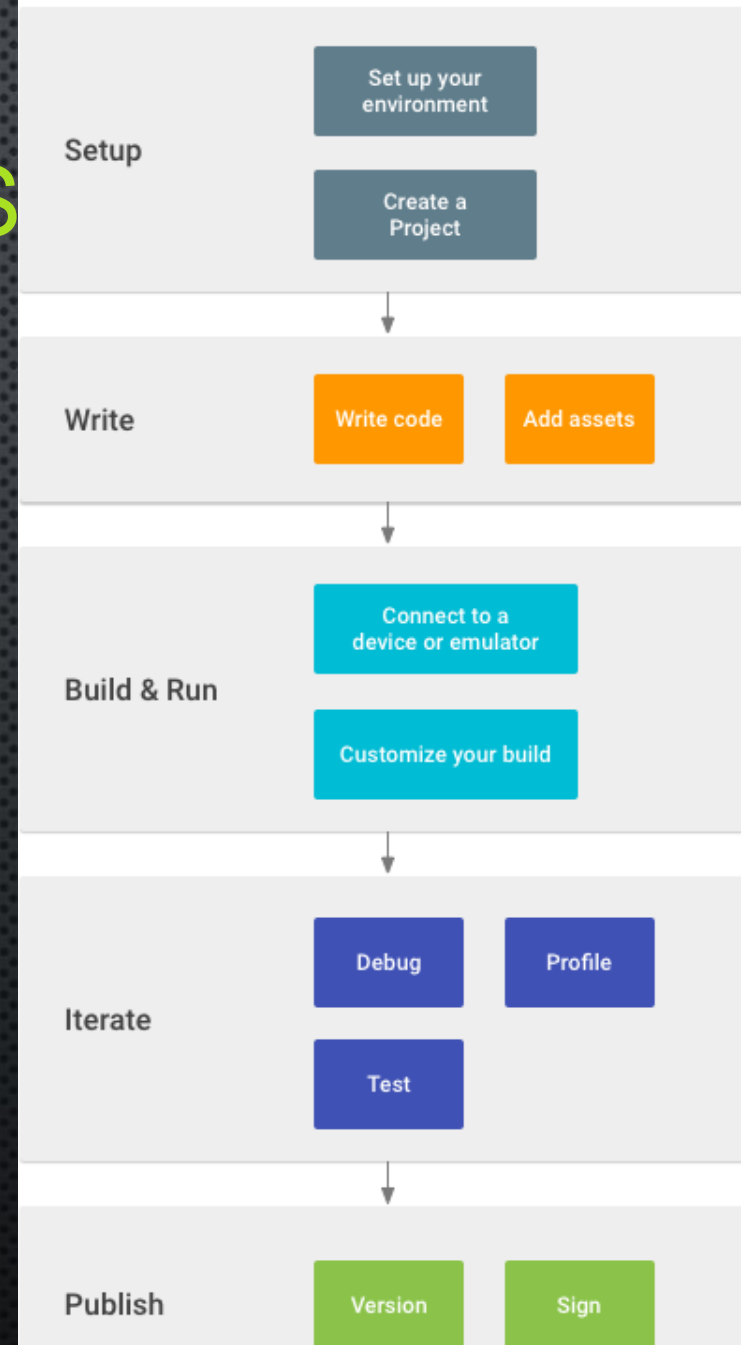
- Small percentage of Android device owners actually purchase software from the various markets
- **Fragmentation** in the hardware and software make development for many devices more difficult than iOS
- Companies overwhelmingly prefer to **target iOS platforms before** they target Android
- Hardware running Android **arguably inferior** to that of other companies, mostly due to **price of units**

ANDROID STUDIO

- Integrated Development Environment
 - Based on IntelliJ
 - Editor with advanced features
 - Debugger
 - Compiler
 - Build Automation using Gradle
 - Graphical Interface Builder based on XML
 - Android Emulator with performance enhancements

DEVELOPER WORKFLOW BASICS

- Set up your workspace
- Write your app
- Build and run
- Debug, profile, and test
- Publish

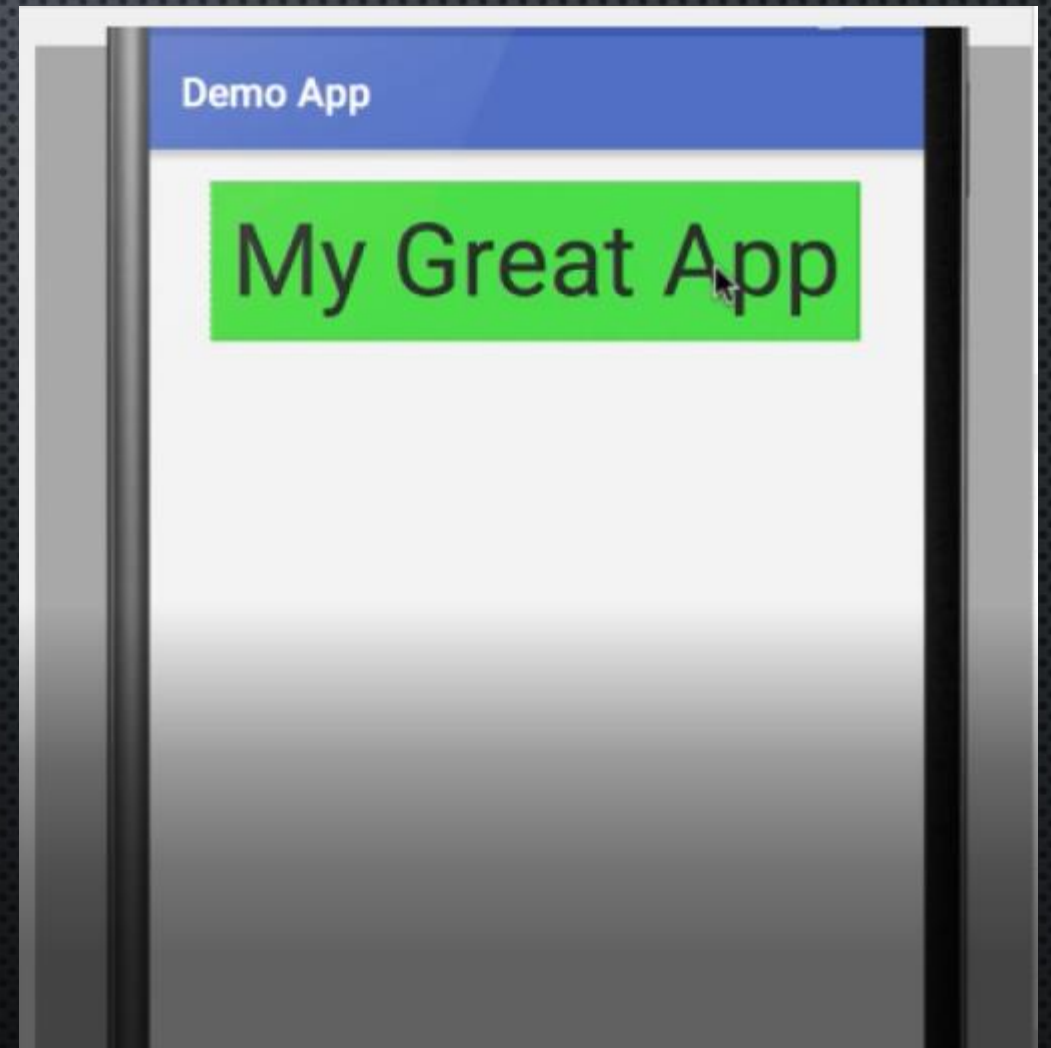


Mobile App. Development Challenges

- Competitive, fluid vendor landscape (Apple, Android consortium incl. Amazon, RIM, HP) means apps need to be multi-platform for wide adoption
- No “standard” device (iOS, Windows Phone devices?)
- Low bandwidth input (in most cases; what about tablets?)
- Limited screen size (tablets?)
- Unreliability in connectivity and device (network access, power, ambient light, noise, at least for now)
- Integration tradeoffs with cloud and enterprise services

PRACTICE

- My Greate App



THANK YOU!

ANY QUESTIONS OR COMMENTS?