Mobile Application Development

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Agenda

Where are we going today?

- History of Modern Mobile Apps
- Native Platforms
- Platform Specific Paradigms
- Hybrid Platforms
- How to choose platform?
- When to make an app and when to make a website?
- Q/A

Who am I?

PROJECT.SHIFT

Selective, rigorous, transparent Coding Academy in Durham, NC

Merging bootcamp curriculum with real-world skills and Computer Science content

projectshift.io

CrossComm

Top Rated Mobile App Developer in Southeast

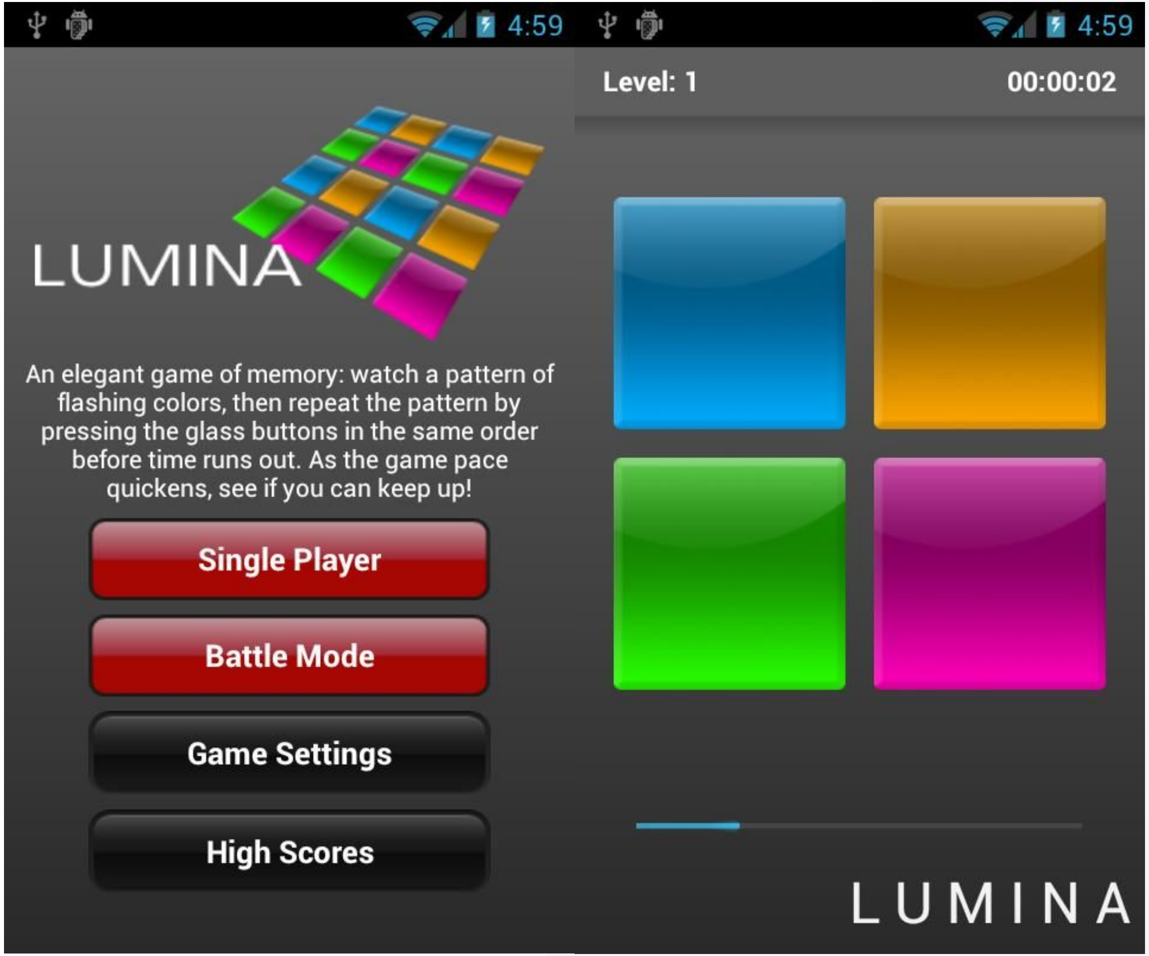
Built 1 of first 500 apps on day 1 of the iTunes App Store

Mobile Apps || Web Apps || AR/VR || SDK's || AI || Wearables/IoT Development

crosscomm.com

History

- 2006 - iPhone released
- 2007 - iOS SDK
- 2008 - Android Released
- 2008-2014 - Chaos



An elegant game of memory: watch a pattern of flashing colors, then repeat the pattern by pressing the glass buttons in the same order before time runs out. As the game pace quickens, see if you can keep up!

4 Different Platforms

Crazyness

- iOS
- Android
- Windows Mobile
- Blackberry

J/K, Windows and Blackberry sucked

CAN'T USE MEME GENERATOR APP, BECAUSE OF WINDOWS PHONE BUT MOBILE SITE IS AWESOME.
SUCKS ON WINDOWS PHONE.
memegenerator.net

iOS

Don't ever forget Apple is tremendously good at making money

- Apple will always make money
- Closed environment, closed source
- Limited device permutations
- Incentivised to limit old versions (because they sell phones)
- The best tools, the worst developer support
- https://developer.apple.com/ios/human-interface-guidelines/overview/themes/

Android

... and Google makes all their money off of ads.

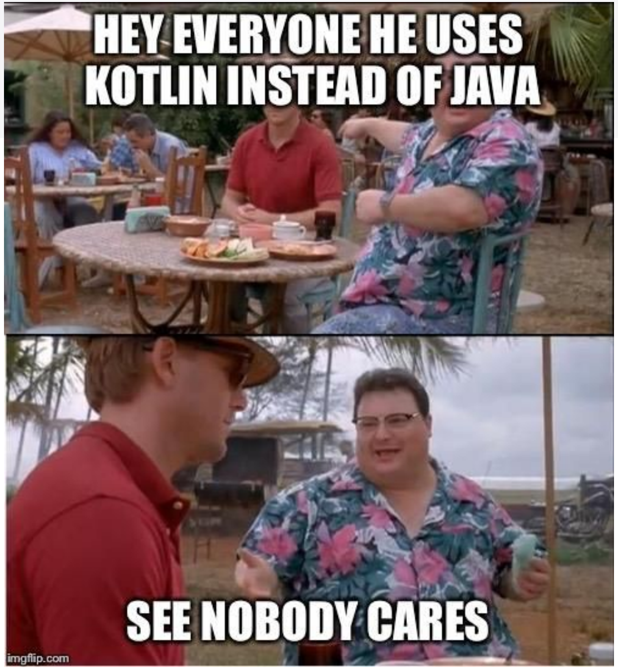
- Google cares about ads and people using phones, not about selling them.
- Anyone can build, Open source software
- Untold number of device permutations (don’t try to support everything)
- They love old versions… until they don’t.
- The worst tools, the best developer support.
- https://developer.android.com/design/material/index.html

Languages

How do you speak mobile app?

- iOS: Objective-C, Swift
- Android: Java, Kotlin
- Moving from static typed languages to less rigid
- The language isn’t as important as speaking the SDK

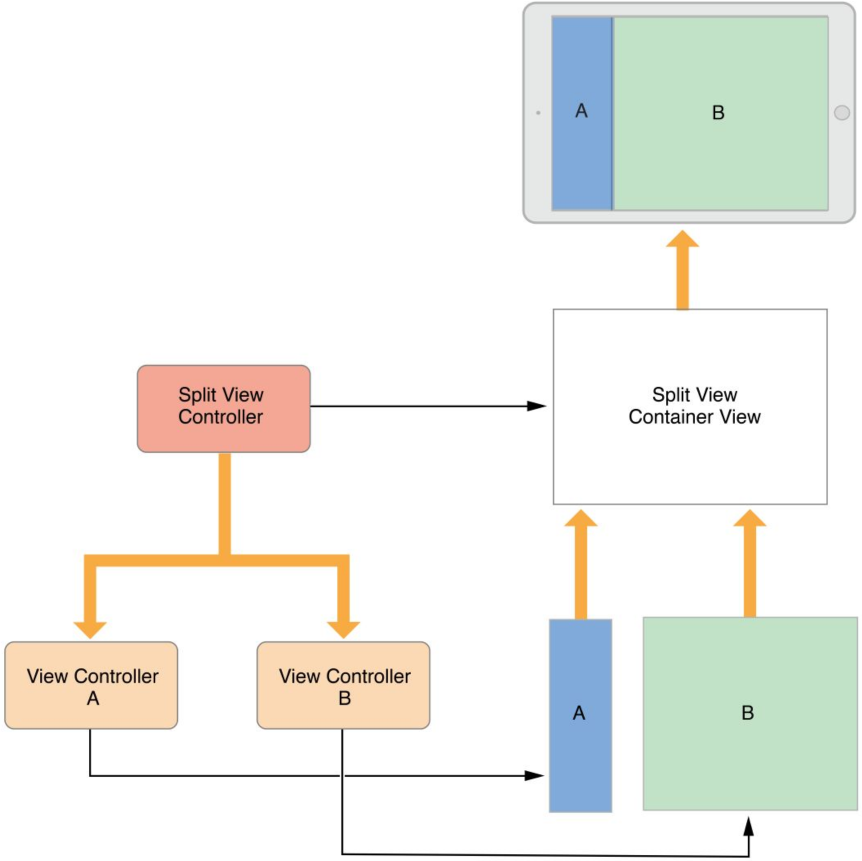
But Swift and Kotlin are awesome



Paradigms

What are the big picture items of the system

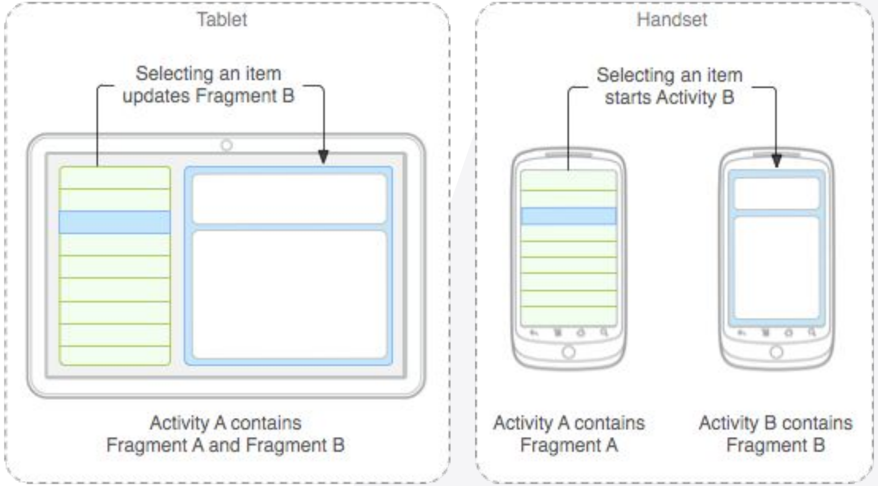
- iOS: View Controllers and Managers
- View Controllers can be in View Controllers



Paradigms

What are the big picture items of the system

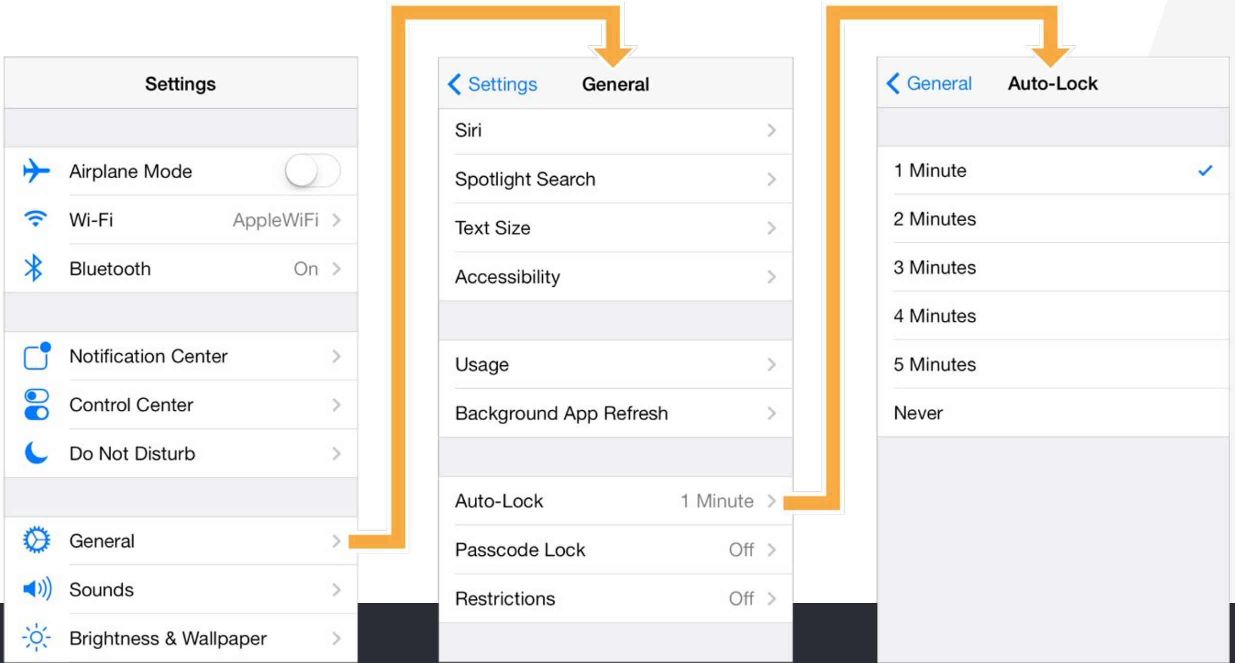
- Android: Activities, Fragments and Services
- Fragments are only in Activities and Activities can't be in Activities


Tablet
Selecting an item updates Fragment B
Activity A contains Fragment A and Fragment B
Handset
Selecting an item starts Activity B
Activity A contains Fragment A
Activity B contains Fragment B

How to handle history

If you don't know where you've been, how will you know where you're going?

- iOS: Navigation Controller



Settings

Airplane Mode

Wi-Fi AppleWiFi

Bluetooth On

Notification Center

Control Center

Do Not Disturb

General

Sounds

Brightness & Wallpaper

Settings General

Siri

Spotlight Search

Text Size

Accessibility

Usage

Background App Refresh

Auto-Lock 1 Minute

Passcode Lock Off

Restrictions Off

General Auto-Lock

1 Minute ✓

2 Minutes

3 Minutes

4 Minutes

5 Minutes

Never

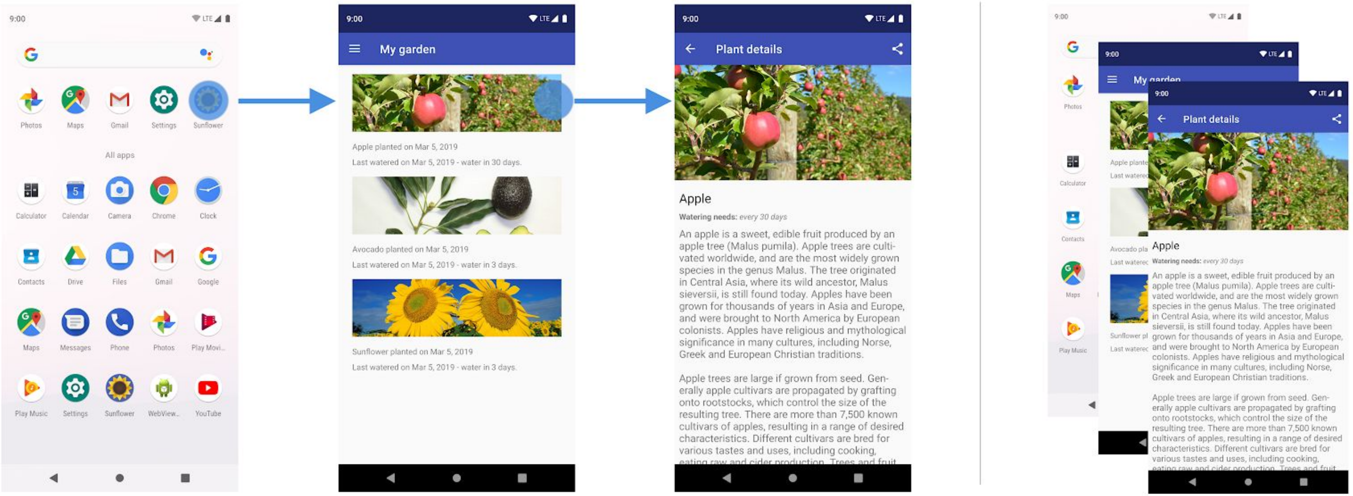
How to handle history

If you don’t know where you’ve been, how will you know where you’re going?

- Android: Backstack (Discrete units of work)

Organic Navigation through Sunflower (Browsing to apple details)

Resulting Sunflower Task Back Stack



Apple planted on Mar 5, 2019

Last watered on Mar 5, 2019 - water in 30 days.

Avocado planted on Mar 5, 2019

Last watered on Mar 5, 2019 - water in 3 days.

Sunflower planted on Mar 5, 2019

Last watered on Mar 5, 2019 - water in 3 days.

Apple

Watering needs: *every 30 days*

An apple is a sweet, edible fruit produced by an apple tree (Malus pumila). Apple trees are cultivated worldwide, and are the most widely grown species in the genus Malus. The tree originated in Central Asia, where its wild ancestor, Malus sieversii, is still found today. Apples have been grown for thousands of years in Asia and Europe, and were brought to North America by European colonists. Apples have religious and mythological significance in many cultures, including Norse, Greek and European Christian traditions.

Apple trees are large if grown from seed. Generally apple cultivars are propagated by grafting onto rootstocks, which control the size of the resulting tree. There are more than 7,500 known cultivars of apples, resulting in a range of desired characteristics. Different cultivars are bred for various tastes and uses, including cooking, eating raw and cider production. Trees and fruit

Launch Screen

List Screen

Detail Screen

Deployment

How do you get an app on a phone

- iOS:
- Sign up for Developer Account
- Get a certificate
- Register Devices
- Create provisioning profile
- Build app
- Post with manifest
- Add in development profile… and Done!

Deployment

How do you get an app on a phone

- Android:
- Build an APK and email, text, post it somewhere
- … and done

Android Fragmentation

Why Android development can suck a lot.

- Each OEM manufacturer and carrier can change the OS
- Slow to update
- New releases don’t hit mass market for a while
- Device sizes aren’t standard (so UI is a nightmare)
- Removal of OS portions (Notifications)
- Supporting everything is $$$$ (and impossible)
- Representative Devices

Hybrid App Development

Write once deploy everywhere?

- Promise of write once, deploy everywhere
- Apple incentivized to make this fail
- Buoyed by “golden hammer” anti-pattern
- By nature behind with OS updates
- Still need to know OS specifics
- Tutorial bias is huge
- Pixel Copiers - Flutter, Ionic, PhoneGap, Titanium, NativeScript, Cordova, Xamarin, Onsen UI

React Native

The only real option for hybrid development

- Rather than Pixel Representation, Native Translation
- React Components -> Native Components
- Live Reload Dev Environment
- Still need Mac OS for iPhone dev
- Can customize native projects
- Backed by Facebook

React Native Issues

When everything isn’t all it claims

- Big Jump in Complexity after the Tutorial
- Reliance on Huge # of JS Libraries - Security Warnings
- Still Need to Learn Native for Complicated Features
- Super Fast Release Schedule
- Hard to Pick Up App after a while
- Lack of Community Contributions

How to Choose Platform

To Hybrid or not to Hybrid, that is the question...

- Are you using OS specific features? - Probably Native
    - ARKit/ARCore, BLE Communication, etc.
- Is there a lot of core business logic not on the server? - Hybrid (but all that logic should be on the server)
- What is your release cycle? - Short Hybrid, Long Native
- Are your developers open to change? - Native
- Are you considering a Native Hybrid solution? - DON'T!

Should I Build Native at All?

Webapps aren't the end of the world

- Is offline a necessary feature of your app?
- Are Notifications or other OS features central?
- Large Hardware Needs? (AR, Low-level camera, BLE, etc.)
- Is your app something where users long form create?
- Is your user base tied to specific mobile hardware?
- Large amounts of animations or graphical presentations?
- If none of these, then you're probably best with a web app

Questions?

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