Mobile Application Development in iOS

School of EECS
Washington State University
Instructor: Larry Holder
Course Overview

- Mobile application development
- Overview of iOS
- Language: Swift
- Development environment: Xcode
- Lifecycle: Design, implement, test, deploy
- Model-View-Controller (MVC) paradigm
Course Topics

- Swift
- Storyboarding and UI design
- Navigation and segues
- Tables
- Settings
- Alerts and notifications
- Gestures
Course Topics (cont.)

• Sensors
• Communications
• Data storage
• Graphics and animation
• Multimedia
• Apple Watch
Course Outcomes

• Proficient with iOS development environment
• Design, implement, test and deploy iOS app
• Able to use various iOS frameworks and kits
Course Details

• Course website
  – [www.eecs.wsu.edu/~holder/courses/MAD/](www.eecs.wsu.edu/~holder/courses/MAD/)

• Prerequisites
  – Advanced Data Structures
  – Object-oriented design

• Grading (curved)
  – 12 homeworks (80%)
  – 1 final project (20%)
  – Submissions via Blackboard Learn ([learn.wsu.edu](learn.wsu.edu))
Mobile App Market Trends

**Worldwide App Downloads**
- 5 YEAR CAGR: 7.7%

<table>
<thead>
<tr>
<th>Year</th>
<th>Downloads (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>178.1</td>
</tr>
<tr>
<td>2018F</td>
<td>205.4</td>
</tr>
<tr>
<td>2022F</td>
<td>258.2</td>
</tr>
</tbody>
</table>

**Worldwide Consumer Spend**
- 5 YEAR CAGR: 13.9%

<table>
<thead>
<tr>
<th>Year</th>
<th>USD (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>$81.7</td>
</tr>
<tr>
<td>2018F</td>
<td>$106.4</td>
</tr>
<tr>
<td>2022F</td>
<td>$156.5</td>
</tr>
</tbody>
</table>
Mobile App Market Trends

**Worldwide Downloads Mix: Games and Apps**

- 2017: 36.1% Apps, 63.9% Games
- 2018F: 35.0% Apps, 65.0% Games
- 2022F: 33.9% Apps, 66.1% Games

**Worldwide Consumer Spend Mix: Games and Apps**

- 2017: 78.8% Apps, 21.2% Games
- 2018F: 76.7% Apps, 23.3% Games
- 2022F: 72.5% Apps, 27.5% Games
Mobile App Market Trends

App Store Consumer Spend in 2022

- **AMER**: $34.1B
  - iOS App Store $21.2B
  - Google Play $12.9B
- **APAC**: $101.4B
  - Google Play $18.8B
  - Rest of APAC Google Play $16.8B
- **EMEA**: $21.0B
  - iOS App Store $10.6B
  - Google Play $10.2B
- **China Android**: $38.7B
- **China iOS App Store**: $23.7B
- **Rest of EMEA**: $10.2B
- **Rest of APAC iOS App Store**: $20.2B
- **Apps**: $4.9B
  - iOS App Store $2.4B
  - Google Play $10.4B
- **Games**: $28.2B
  - iOS App Store $8.0B
  - Google Play $8.0B

Mobile Application Development in iOS
Mobile App Development: Hiring Trends

• CNN Money Best Jobs in America 2017*
  – Mobile App Developer ranked #1
  – Median Pay: $97,100
  – Top Pay: $133,000
  – 10-year job growth: 19%

Mobile App Development: Platforms

• iOS (Xcode with Swift)
• Android (Eclipse with Java)
• Windows (Visual Studio with C#)
  – Xamarin (C# → iOS/Android/Windows)
iOS Devices

iPad

iPhone

Apple Watch
Overview of iOS: Layers

iOS Layers

- **Cocoa Touch Layer**: Frameworks that define appearance of app (e.g., GameKit, MapKit, UIKit)
- **Media Layer**: Graphics, Audio and Video technologies (e.g., CoreAudioKit, GLKit, SpriteKit, SceneKit)
- **Core Services Layer**: Services and basic types (e.g., Network, CoreData, CoreLocation, CoreMotion, CloudKit, HealthKit, HomeKit, StoreKit, WebKit)
- **Core OS Layer**: Low-level services (e.g., file I/O, networking, security)
Overview of iOS: Frameworks

- ARKit
- CloudKit
- HealthKit
- HomeKit
- GameKit
- MapKit
- SceneKit
- MusicKit
- WebKit
- UIKit
- CoreData
- CoreLocation
- CoreMotion
- CoreML
- WatchOS/WatchKit
- Over 50 more...
Development Environment: Xcode
Resources

• developer.apple.com
• swift.org
• www.raywenderlich.com
• stackoverflow.com