

Mobile Computing with iOS

Andrew Johnson

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Agenda

- Developing for Apple Platforms
- Swift
- Xcode
- App Development & Distribution
- Kits & Frameworks
- Other Resources
- WWDC & Scholarships

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Developing for Apple Platforms

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macOS
watchOS
iOS
tvOS

5

What do you need ?

6



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What do you need ?

Learn Swift Build Apps for yourself, share source Deploy Apps to others via App Store Deploy Apps internal to an Enterprise

Option 1	Mac Apple ID Xcode	Mac Apple ID Xcode Target device(s)	Mac Apple ID Xcode Test device(s) Developer Program USD \$99	Mac Apple ID Xcode Test device(s) Developer Program USD \$299
Option 2	iPad iOS 10 Swift Playground App			

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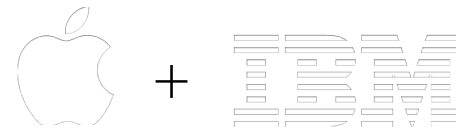
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App Store Apps for Everyone

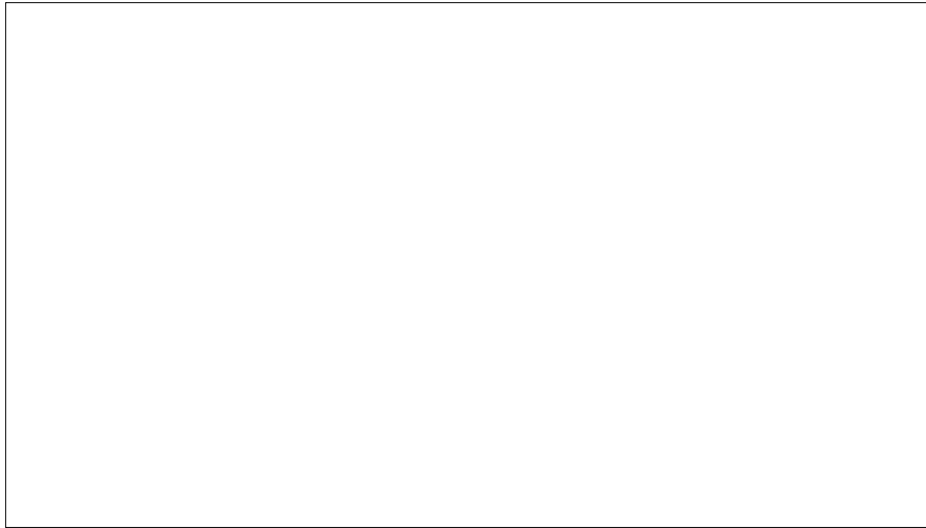


For any user with an AppleID
Free, Paid, IAP, Subscription
B2B for restricted sale to companies only
You own the code
Reviewed by Apple
Distribution managed by Apple

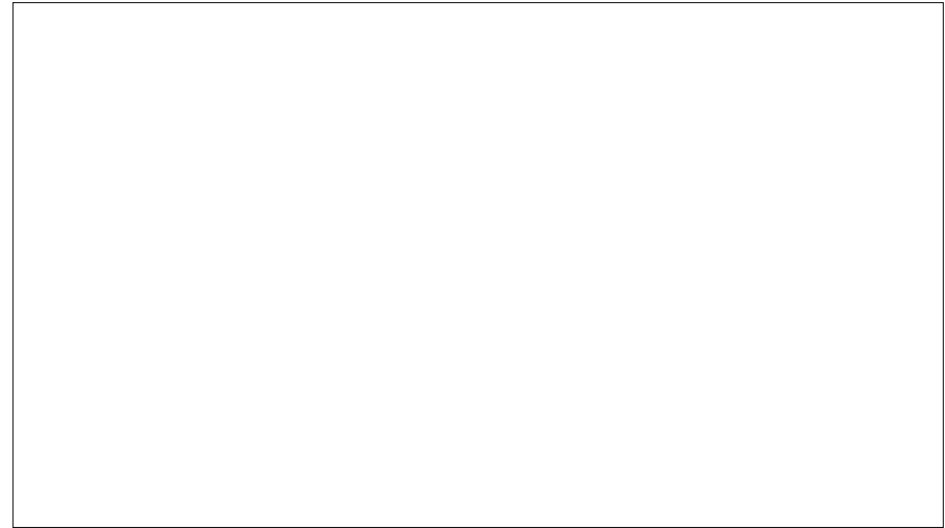
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In-House Apps for Enterprises



Build native apps unique to your business
For employees and contractors
You own the code
Not reviewed by Apple
Distribution managed by the organisation

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AppleID based deployment



Xcode can deploy App to any device with:
Same AppleID
Paired with Mac
Limited certificate lifetime
No Developer Program required

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Xcode and AppleID

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Demo

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Developer Programs

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Demo

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What do you need to know ?

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What do you need to know ?

More or less...



Swift (preferred) or Objective C or C or C++

Swift or Objective C for UI

Object Oriented design paradigms

Model - View - Controller patterns

WWDC 2014 Session 224

Stanford CS139P

Agile Manifesto

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What do you need to produce ?

May be more than one...



Playground

App

iOS

WatchOS

Extension

Framework

iMessage Apps & Stickers

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watchOS Apps



WatchKit Apps



Notifications



Complications

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iOS Apps



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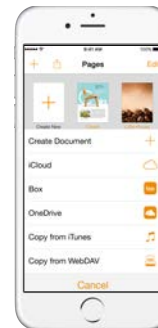
Extensions



- Extends app functionality to other apps
- Enables secure access to other app features
- Preserves memory space
- Enabled by third-party apps

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Extensions



- Document provider
- Action
- Custom keyboard
- Today / Widget
- Share
- Photo editing
- Notification
- Network - VPN and Content Filtering
- Safari - Content Blocking and Shared Links
- Search - Index Maintenance
- Audio - Effects and Editing

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How Extensions Work



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Box

Leverages Extensions so
apps like Pages can import
documents directly



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Swift

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Swift



Swift Playgrounds

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Swift

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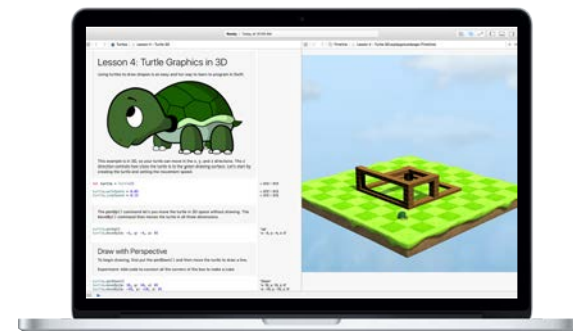


Easy to use
Interactive
Powerful
Open-source

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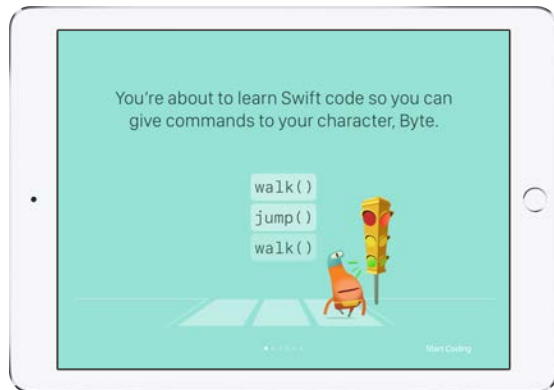
Interactive

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Playgrounds

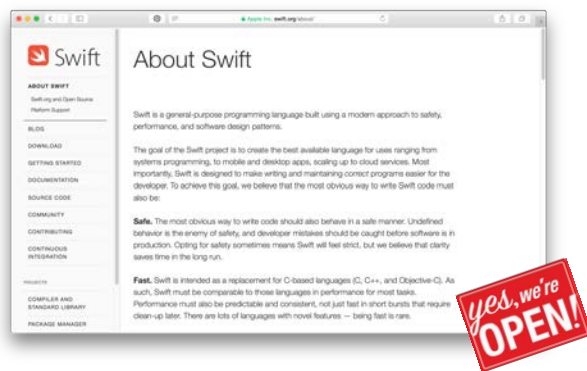
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Open-Source

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Linux



FreeBSD



Raspberry Pi



Android



Windows

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Swift



Swift Playgrounds

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New ways to learn

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Swift Playgrounds
App Development with Swift

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Swift Playgrounds

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Free in the App Store this spring

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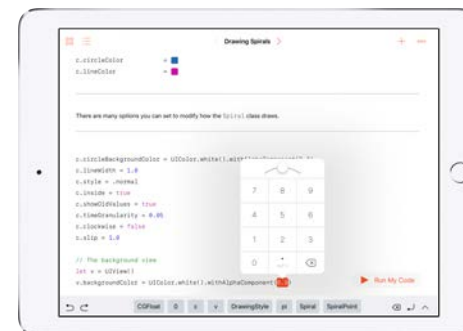
Playgrounds on iPad
Coding lessons built in
Real coding in Swift
Built for touch

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Keyboard built for coding

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Create your own playgrounds

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Junior high school and above
45 hours of lessons
Enhanced activities
Review and reflection activities
Grading rubric
Keynote presentations

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App Development with Swift

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Senior high school and above
Playgrounds on Mac teach programming basics
Book walks through building apps with Xcode
Review and reflection questions

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90 hours of lessons
Extension activities
Discussion questions
App journal activities

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Xcode
And iOS Simulator...

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Demo

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App Design

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Get Started

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Understand the Workflow

Spend time in the field

Work alongside users

Give users a voice

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Prioritise Needs

What do users do most often?

What do they need when they're mobile?

How could they communicate better?

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Identify Opportunities

Target quick wins

Think about simplicity and ease of use

Avoid complex system integration

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Design for Users

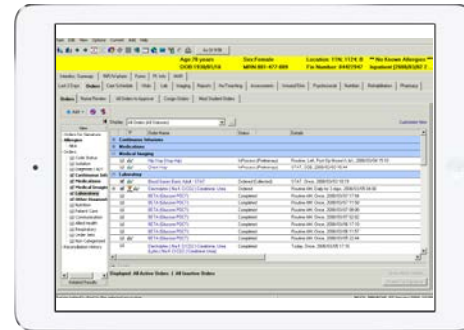
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Design for Users



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Design for Users



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Design for Users



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Benefits of Good Design



- Improved productivity
- Greater adoption
- Reduced training and support
- Easier access to data
- Higher user satisfaction

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Kits & Frameworks

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Why Native



- Fully leverage platform features
- Superior functionality
- High performance
- Deliver the best user experience

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CloudKit

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CloudKit

CKContainer, CKSharedContainer...



Share & sync

Key-value pairs

CoreData objects

Between database containers across devices:

Private (same AppleID)

Shared (list of invited AppleIDs)

Public (ie any AppleID with the App)

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ResearchKit

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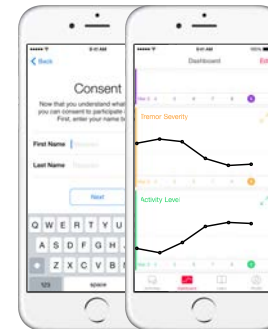
Medical Research



Limited participation
Subjective and infrequent data
One way communication

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ResearchKit



Gives researchers a wider reach
Data streams continuously
Allows for self-discovery through apps, using surveys and tasks

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ResearchKit

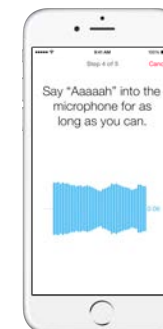


An open source framework made specifically for medical research
Lets researchers easily create apps
Turns iPhone and HealthKit into powerful tools for medical research

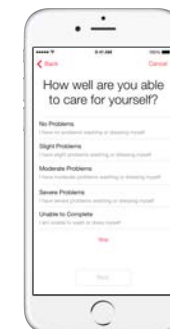
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Informed Consent



Active Tasks



Surveys

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Develop and Distribute

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Build the Dev Team



- Minimise team size
- Include IT and business stakeholders
- Retain ownership in-house
- Outsource as needed

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Develop Fast and Iterate



- Quick releases (1–3 months)
- Small, effective feature set
- Demonstrate value
- Incorporate changes from users

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Plan Your Distribution



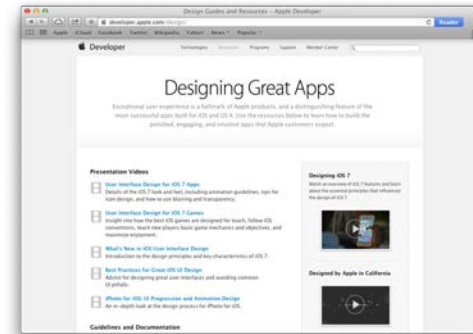
- App Store
- Internal Beta on Developer Devices
- External Beta using TestFlight
- B2B Store
- Enterprise Apps via MDM or Web Portal
- Provide a means for input and feedback

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Other Resources

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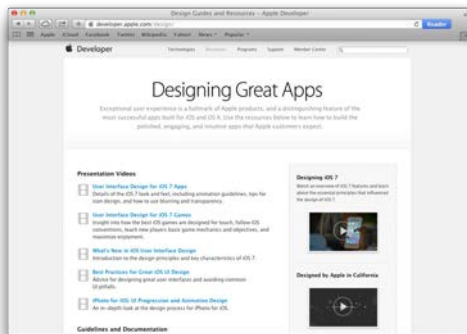
Explore Swift



<http://www.apple.com/swift/playgrounds/>

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Explore the Developer Web Site



developer.apple.com/design

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Starter Guide



developer.apple.com/library/ios

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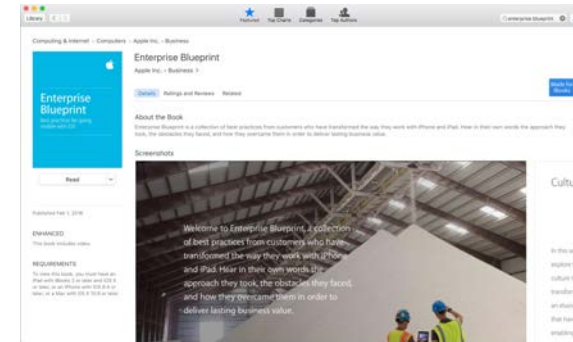
Human Interface Guidelines



<https://developer.apple.com/ios/human-interface-guidelines/overview/whats-new/>

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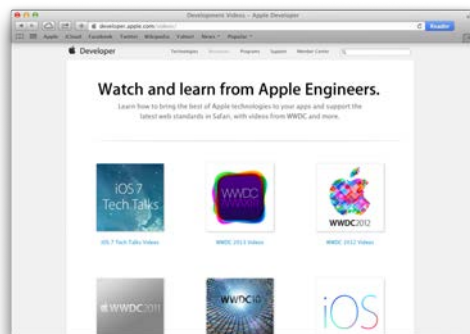
Enterprise Blueprint



<https://itunes.apple.com/au/book/enterprise-blueprint/id1080432997?mt=11>

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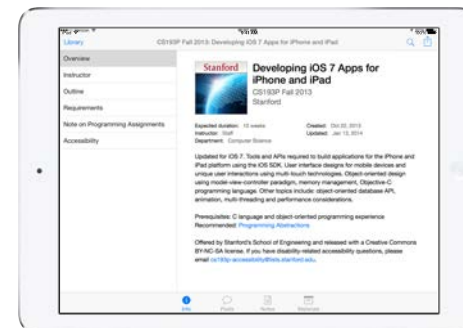
Video Resources



developer.apple.com/videos

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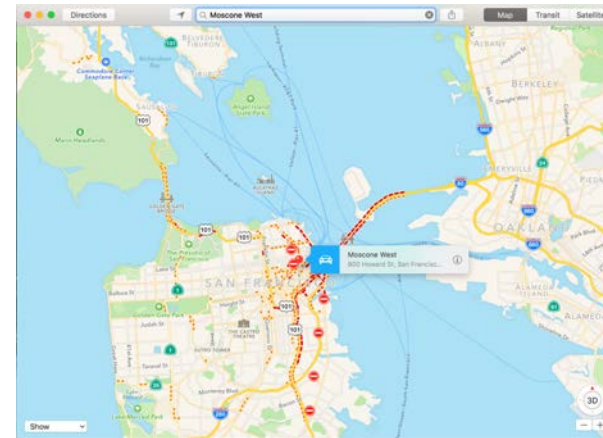
Stanford iTunes U Courses



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2016 Session to watch
<https://developer.apple.com/videos/wwdc2016/>

WWDC16 Apple

- 101 Keynote
- 102 Platforms State of the Union
- 402 Whats new in Swift
- 805 Iterative UI Design
- 202 Whats new in Accessibility
- 709 Engineering Privacy
- 204 & 224 iMessage Apps & Stickers
- 421 & 433 Making Apps Adaptive

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Student Scholarships

<https://developer.apple.com/wwdc/scholarships/>

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WWDC Scholarships

<https://developer.apple.com/wwdc/scholarships/>

Free WWDC Ticket

Travel assistance MAY be available

Application:

Proof of student status

Submit an App you've built

Creative use of technology

Runs on Apple platform

Student project/Personal Project/App Store

Essay question



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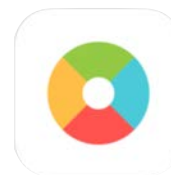
Apple Design Awards

<https://developer.apple.com/design/awards/>

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Linium

<https://itunes.apple.com/us/app/linum-free-puzzle-game/id998141697?mt=8>



Puzzle game

Simple, clean, touch interface

System features used :

UIAnimation

CoreData

StoreKit

ReplayKit

GameCentre

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Dividr

<https://itunes.apple.com/us/app/dividr/id1109361588?mt=8#>



2D arcade game

Swift implementation

AppleTV, iPhone, iPad

System features used :

3D Touch

Apple Pencil

GameCentre

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Other ways to WWDC

For 2017...



Win the lottery

Tickets are sold by lottery

USD \$1599*

Watch remotely

Web.developer.apple.com/wwdc

WWDC App (iOS, tvOS)

Session videos usually available within 24hrs

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