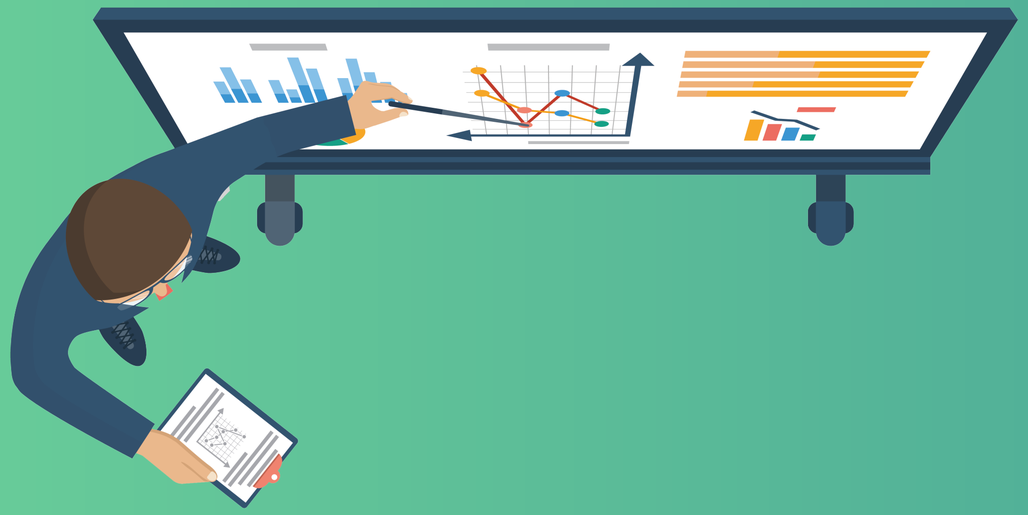

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iOS Basics with Swift

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Introduction

➜ Name

➜ Experience

➜ Expectation

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Schedule

	Day 1	Day 2	Day 3
9:00 - 10:30	Introduction + Setup	Storyboards	Networking
10:45 - 12:15	Swift I	Navigation	Dependencies + Wishlist
13:15 - 14:45	Swift II	Lists	Testing + Platform
15:00 - 16:30	Apps + Xcode	The Game	Distribution + Feedback

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GitHub Repository:

github.com/ernesto-elsaesser/ios-training

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Let’s start!

Please interrupt me if ...

- ... you have a question
- ... you want me to repeat something
- ... you need a break

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iOS

What’s different?

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Limitations

- Screen
- Energy
- Mobile Data
- Memory
- Input

Expectations

- Stability
- Performance
- Design
- Responsiveness
- Usability (HIG)

https://developer.apple.com/design/human-interface-guidelines/ios/overview/themes/

Swift

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A New Language

*After Apple unveiled the Swift programming language, it quickly became one of the **fastest growing** languages in history. Swift makes it easy to write software that is incredibly **fast and safe** by design. Now that Swift is **open source**, you can help make the best general purpose programming language available everywhere.*

*For students, learning Swift has been a great introduction to modern programming concepts and best practices. And because it is now open, their Swift skills will be able to be applied to an even broader range of platforms, from **mobile** devices to the **desktop** to the **cloud**.*

- **The Swift Team** - https://docs.swift.org

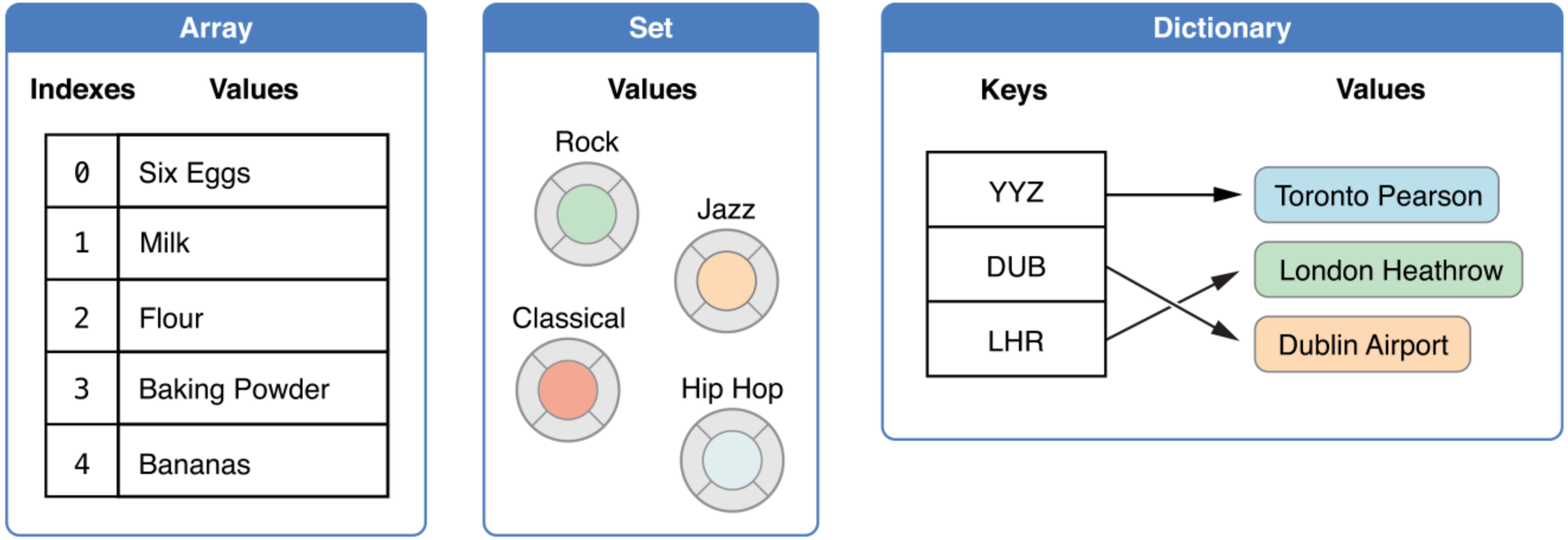
A Safe Language

Swift defines away large classes of common programming errors by adopting modern programming patterns:

- *Variables are always initialized before use*
- *Array indices are checked for out-of-bounds errors**
- *Integers are checked for overflow*
- *Optionals ensure that null values are handled explicitly*
- *Memory is managed automatically*
- *Error handling allows controlled recovery from unexpected failures*

- **The Swift Programming Language (Swift 5)** - https://docs.swift.org/swift-book/

Collection Types



The Swift Programming Language (Swift 4.2) https://docs.swift.org/swift-book/LanguageGuide/CollectionTypes.html

Apps

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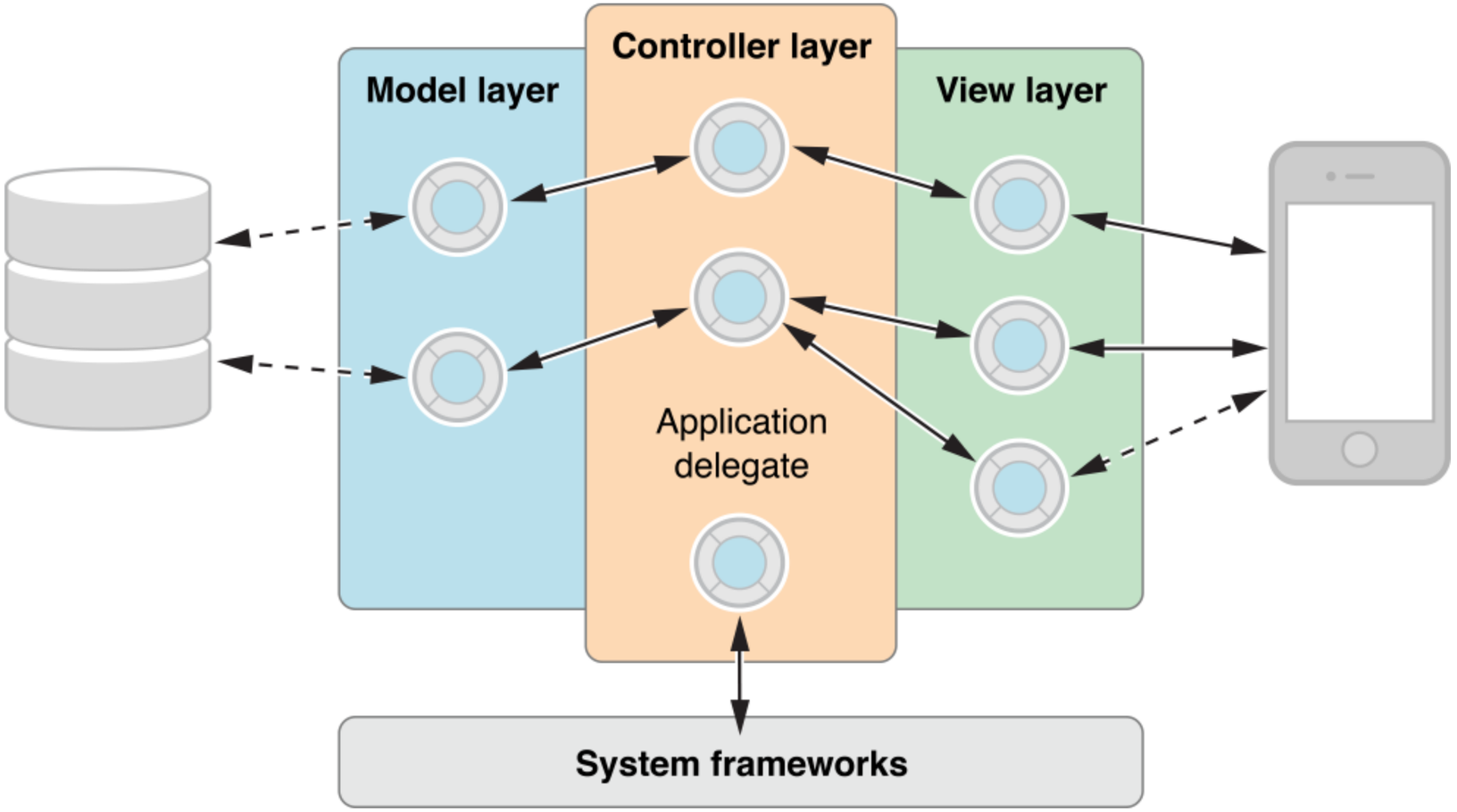
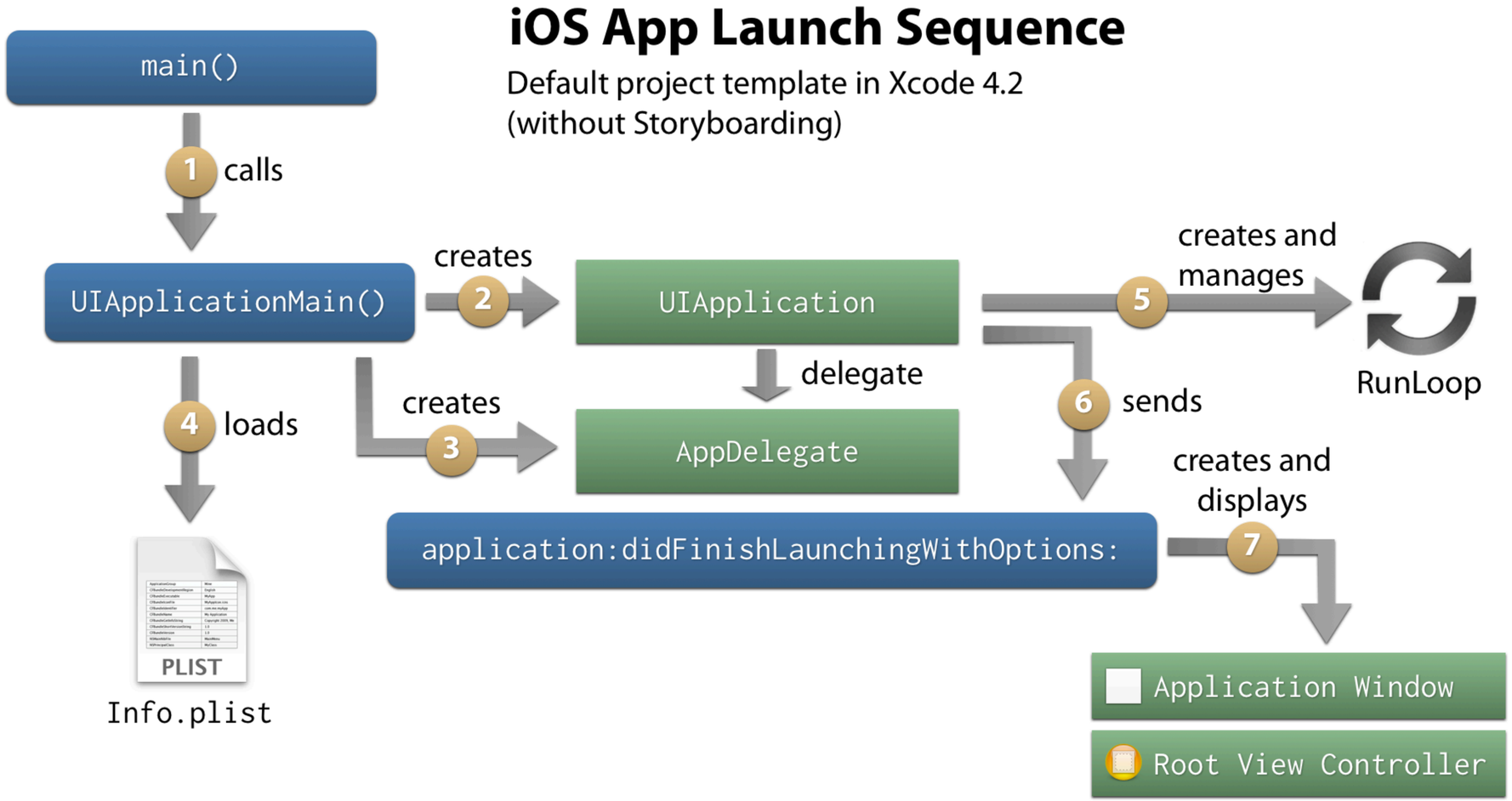
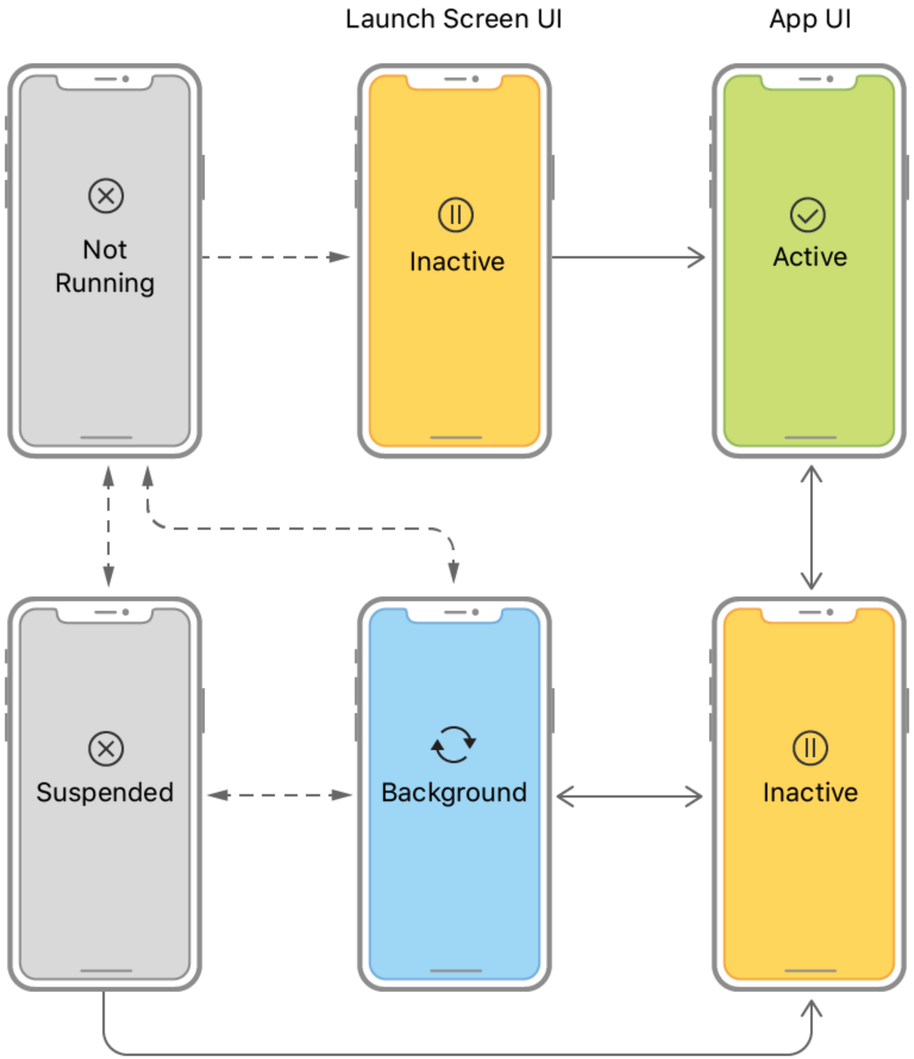
Model View Controller



Launch Sequence



App Lifecycle



UIKit Documentation https://developer.apple.com/documentation/uikit/app_and_scenes/managing_your_app_s_life_cycle

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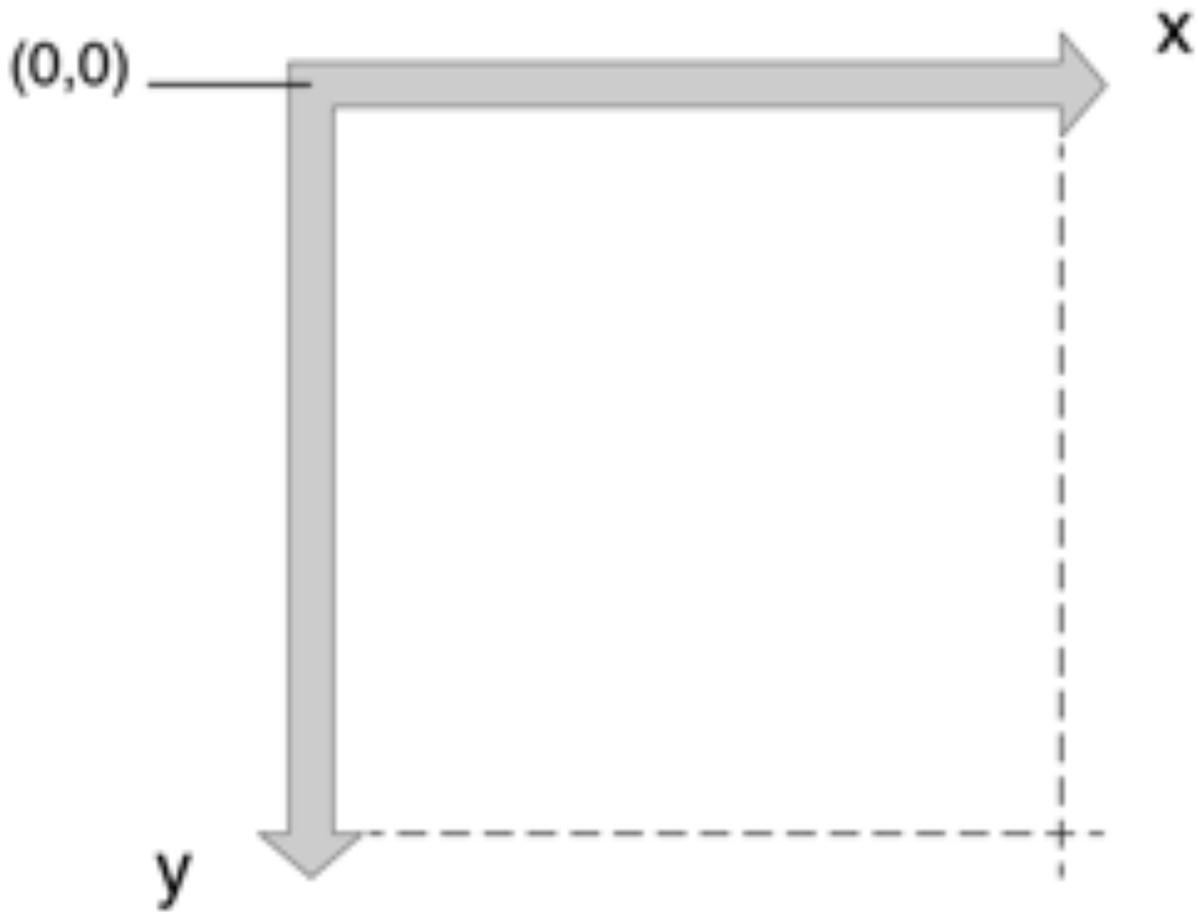
The UI Coordinate System



Drawing and Printing Guide for iOS https://developer.apple.com/library/archive/documentation/2DDrawing/Conceptual/DrawingPrintingiOS

Let’s code!

a very simple game

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Exercise 1

- UIViewController with button and label
- Tapping the button appends a “!” to the label text

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Exercise 2

- UIViewController with 3 **game buttons** and a start button
- Start button marks a random **game button** (by changing its text)
- Tapping a **game button** unmarks that button

Hint: Int.random(...)

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Exercise 3

- UITableViewController with 5+ **game cells**
- Tapping a **game cell** marks it (by changing its text)
- Tapping it again unmarks it

Exercise 4

- Use a custom subclass of UITableViewCell for the **game cells**

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Exercise 5

- Tapping can't mark **game cells**, only unmark them
- Repeatedly mark random **game cells**

Hint: Timer.scheduledTimer(...)

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Exercise 6

- Add a start button
- Accelerate random marking with every tap
- When all **game cells** are marked, present a UIAlertController

Hint: shorten interval by 5-10% per tap

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Bonus Exercise

- Add an image to **game cells** that changes when marked
- Add (re)start button
- Adjust Launch Screen and App Icon
- Save Highscores

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Dispatch Queues

Queues to which your application can submit executable blocks

- **Main queue**: highest priority, handles UI updates and events
- **Global queues**: universal queues shared by the whole system
  - 4 priority levels: high, default, low, and background

Concurrency Programming Guide https://developer.apple.com/library/archive/documentation/General/Conceptual/ConcurrencyProgrammingGuide/Introduction/Introduction.html

Dispatch Queues

Blocks can be scheduled in two ways:

- **Synchronously:** blocks the current thread until the block was executed
- **Asynchronously:** continues on the current thread and "forgets" about the block

Synchronously executing a block on the same queue creates a **deadlock**!

Synchronous scheduling from the main queue will **freeze the UI**!

Concurrency Programming Guide https://developer.apple.com/library/archive/documentation/General/Conceptual/ConcurrencyProgrammingGuide/Introduction/Introduction.html

Package Management

CocoaPods	Carthage	Swift Package Manager
old stable default option deeply integrated complex configuration	newer lightweight more manual steps not always supported repository = package	newest official well integrated **doesn't support iOS yet**

List of selected libraries: https://github.com/matteocrippa/awesome-swift

CocoaPods

- install CocoaPods (if not done yet)
- **`pod init`** (in project directory)
- list dependencies in the *Podfile* (pod '...')
- **`pod install`** (in project directory)
- always open the Workspace (.xcworkspace)

The iOS Platform

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Hardware

Connectivity	Sensors	Other
• GSM/HSPA/LTE • WLAN • Bluetooth (BLE) • GPS • NFC*	• Face ID / Touch ID • Barometer • Three-axis gyro • Accelerometer • Proximity sensor • Ambient light sensor	• Camera • Speakers • 3D Touch

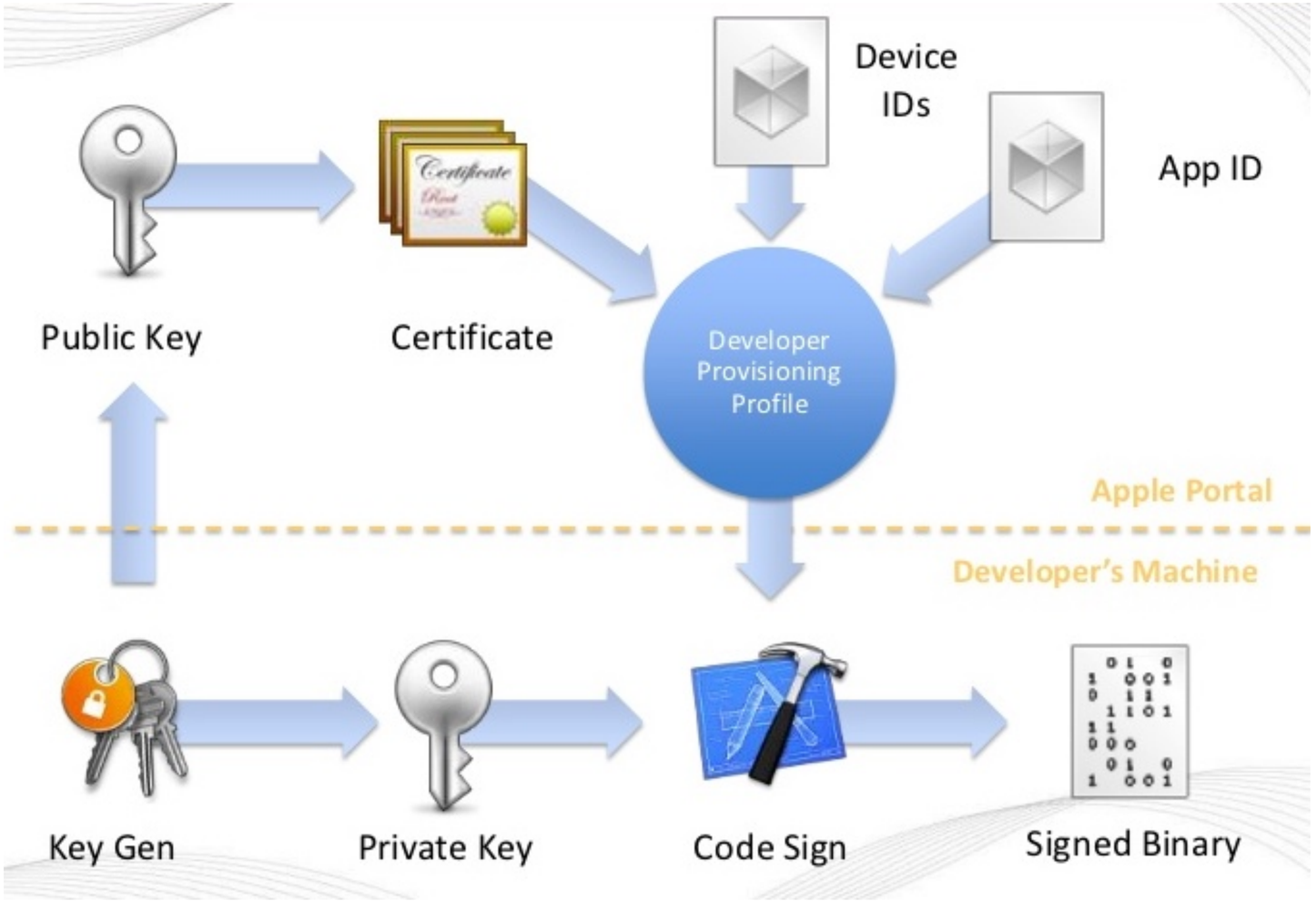
Software

Content	Graphics	Data
• WebKit • MapKit • ARKit • iAd	• Metal • OpenGL • SceneKit • SpriteKit	• CloudKit • EventKit • HealthKit • Core Data
Devices	**Other**	
• CoreBluetooth • iBeacon • WatchKit • HomeKit	• SiriKit • PassKit • Game Center • Core ML	• Core Motion • UserNotifications • AirPlay • StoreKit

Apple Developer Documentation https://developer.apple.com/documentation/

Distribution

Code Signing



Xcode Help: What is app signing? https://help.apple.com/xcode/mac/current/#/dev3a05256b8

Developer Account Help https://help.apple.com/developer-account/

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Distribution Process

- Enroll into Apple Developer Program
- Create App Store listing (Bundle ID, Texts, Images, ...)
- Submit release build
- Review by Apple (automated + manual, up to 5 days)
- Approval, rejection or request for changes
- Publishing (up to 1 day until visible everywhere)

Pricing

Apple Developer Program (prices per year)

Apple ID (0€) / Individual (99€) / Organization (99€) / Enterprise (299€)

https://developer.apple.com/support/compare-memberships/

Business Models (fees per transaction)

Free / Freemium (30%) / Paid (30%) / Subscription (15-30%)

https://developer.apple.com/app-store/business-models/

Feedback

➜ Theory

➜ Practice

➜ Support Material

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