CS2049

- Make sure to have:
  - Xcode 8.2 on your Mac
  - iOS 10 and a device with you
  - USB cable to connect to device
  - AppleID setup so that you can run code on device

Lecture 1

CS2049: Intermediate iPhone Development

Instructor: Craig Frey

Instructor

- Craig Frey (craig.frey@cornell.edu)
- Teach:
  - CS 2024 - C++ Programming
  - CS 1133 - Transition to Python
  - CS 1130 - Transition to Object Oriented Programming (Java)
- Developer in facilities group

Course Description

- Format: every class build an App, with the instructor, from scratch
- Focus is on rapid prototyping, not fundamentals
  - Learn on the fly

Course Description

- 1 credit, pass/fail
- 3 hour lectures every other week
- 4 sessions total
    - 2/4/2017
    - 2/25/2017
    - 3/11/2017
    - 3/25/2017

Course Description

www.cs.cornell.edu/courses/cs2049/2017sp/

- Announcements & Schedule: webpage
- Questions? Piazza
- Handing in HW and Grades: CMS

Course Description

- Homework after each class
  - Extend app built in class
  - 2 weeks to finish, grade is pass/fail
- Final project
  - Your choice (with some requirements)
  - Optional: present to the rest of the class at the end of the semester

Course Description

- Tools: Swift 3, Xcode 8.2, iOS 10
    - Students should have access to a Mac and an iOS device at class and for homework
- Requirements:
    - CS2048

      OR

    - Basic understanding of Xcode + ObjC or Swift

Swift

Why Swift?

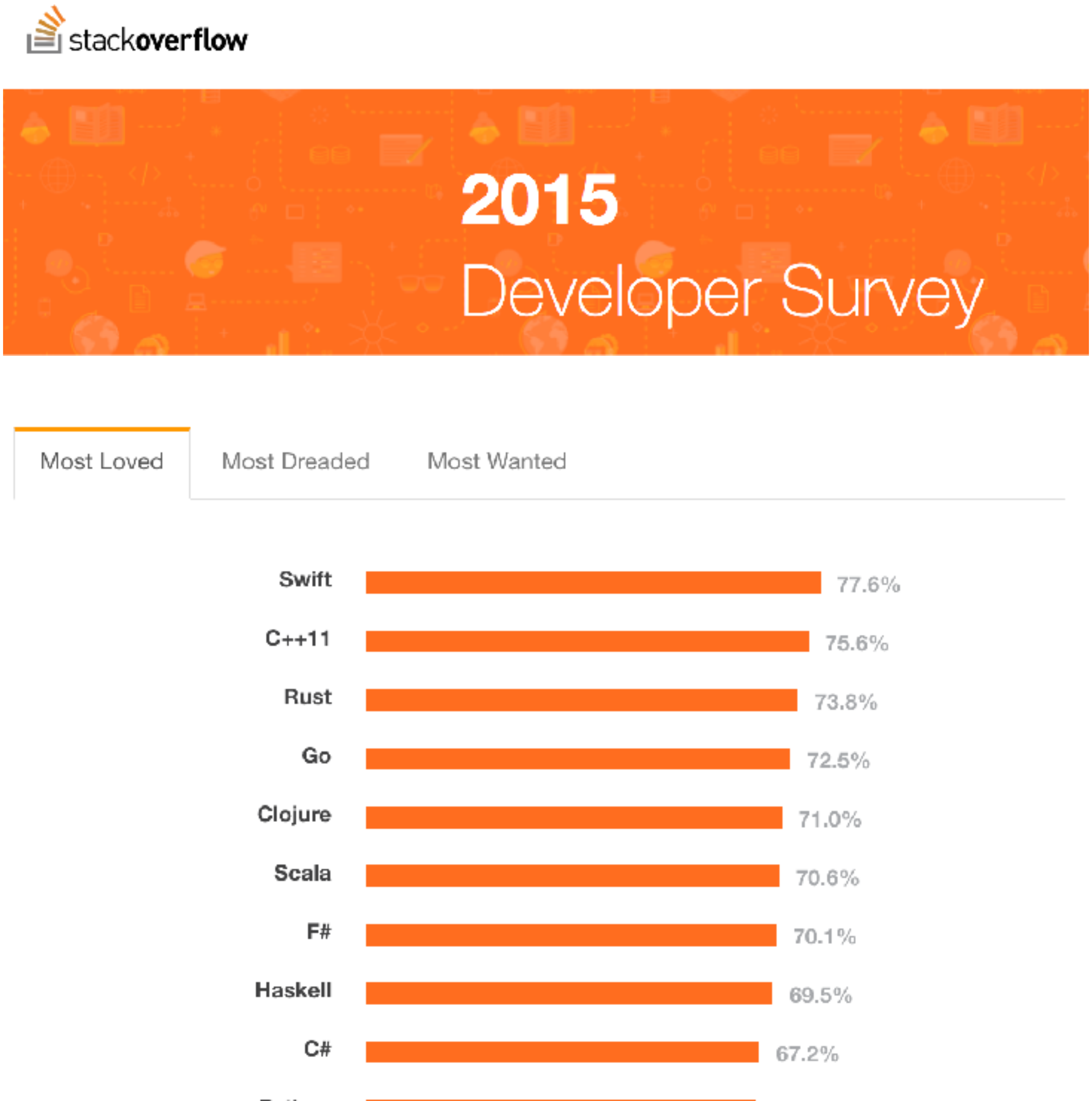
- It’s the future
- Cleaner than ObjC
  - Goodbye @ and [] madness
  - No more header files
  - Proper namespaces (DCHMyClass -> DCH.MyClass)
- Many of the high level concepts from ObjC map nicely to Swift: MVC, delegates, extensions, protocols, etc.
- Fast
- Type safe

Why Swift?

- Avoids common errors in ObjC
  - Stricter about pointers
- Open source
- Plays well with ObjC
  - Call ObjC from Swift
  - Call Swift from ObjC

Why Swift?

- Playgrounds
- Generics

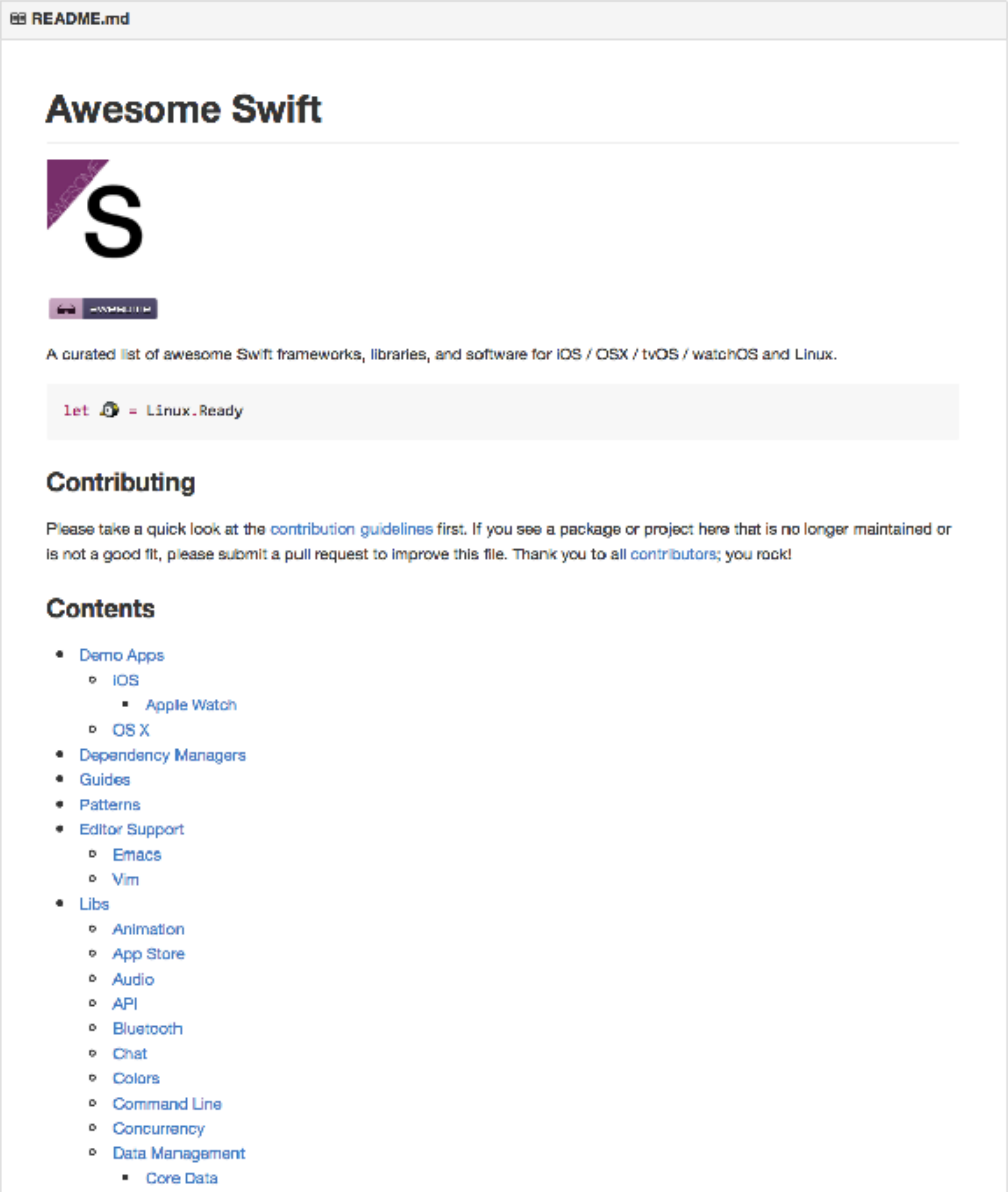


stackoverflow

2015 Developer Survey

Most Loved | Most Dreaded | Most Wanted

github.com/matteocrippa/awesome-swift



Awesome Swift

A curated list of awesome Swift frameworks, libraries, and software for iOS / OSX / tvOS / watchOS and Linux.

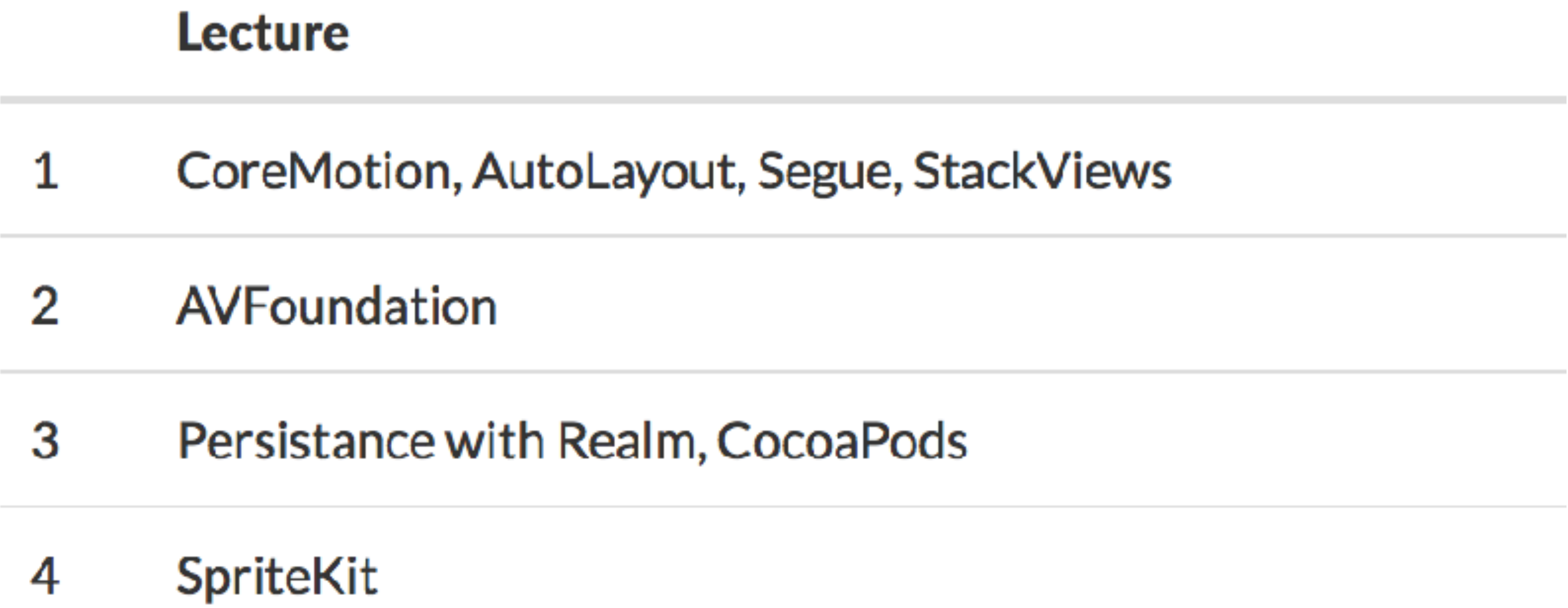
```
let 🐧 = Linux.Ready
```

Contributing

Please take a quick look at the contribution guidelines first. If you see a package or project here that is no longer maintained or is not a good fit, please submit a pull request to improve this file. Thank you to all contributors; you rock!

Contents

Topics



	Lecture
1	CoreMotion, AutoLayout, Segue, StackViews
2	AVFoundation
3	Persistance with Realm, CocoaPods
4	SpriteKit

Today’s Class

Drawing with the Accelerometer

CoreMotion

AutoLayout

StackViews

Core Motion

- Gives you access to device sensors:
  - Accelerometer
  - Gyroscope
  - Magnetometer
  - Altimeter (pressure, relative altitude)
  - ~~GPS~~ → CoreLocation

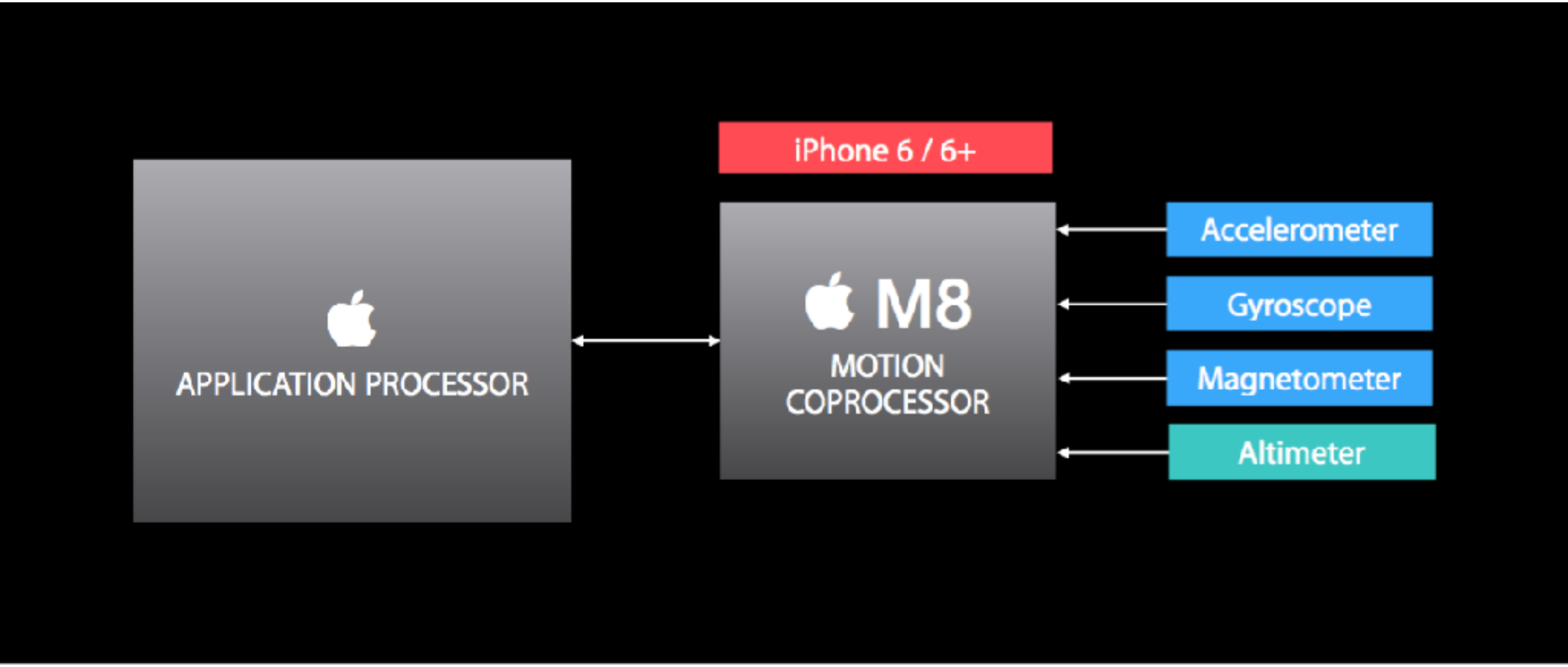
Core Motion

- Pre-processed data:
  - Acceleration - gravity
- Virtual instruments:
  - Pedometer (# of steps, distance, floors ascended and descended, pace, cadence): Uses a combination of accelerometer and GPS data

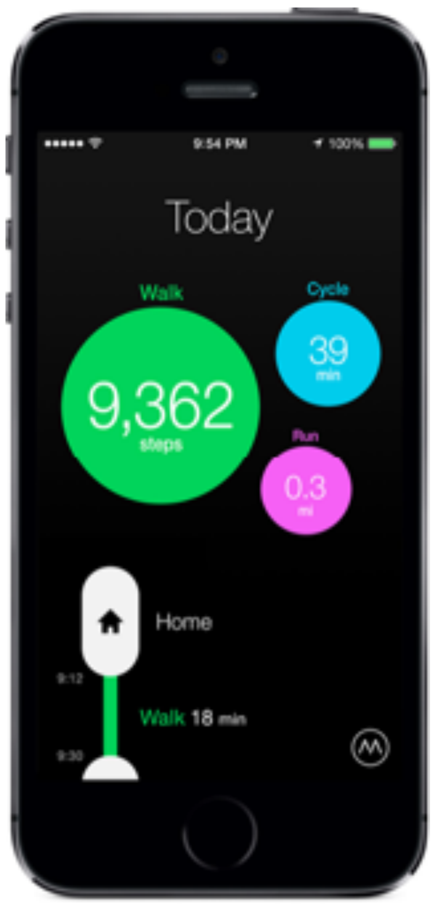
CoreMotion

- Allows for live updates
- Or queries to past data

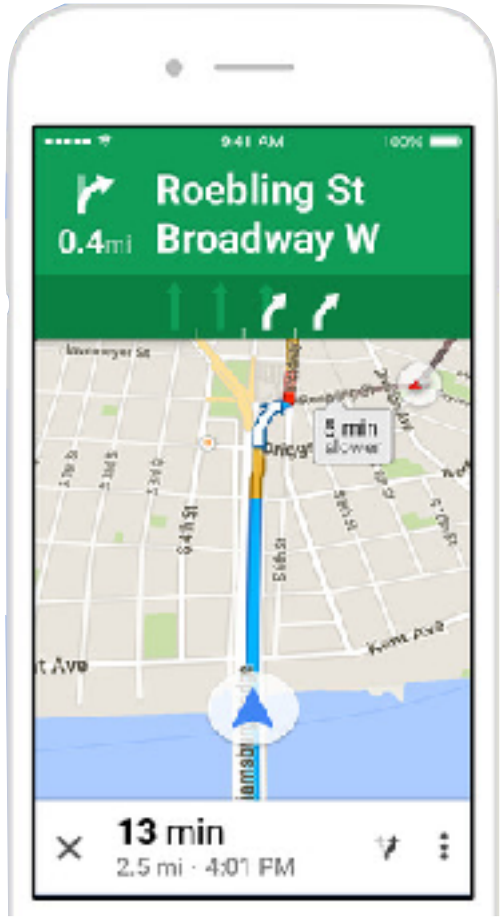
CoreMotion


iPhone 6 / 6+
APPLICATION PROCESSOR
M8
MOTION COPROCESSOR
Accelerometer
Gyroscope
Magnetometer
Altimeter

Applications



Passive Activity Trackers



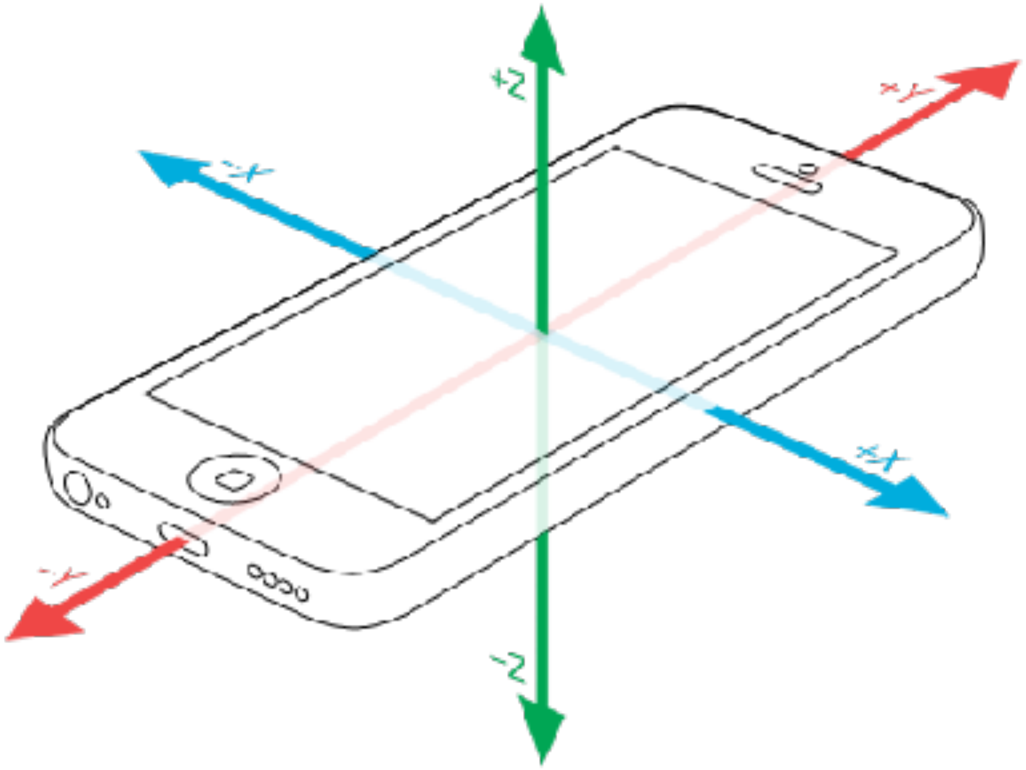
Maps app

Tools

VR & Games

Coordinate Systems

Accelerometer



Drawing

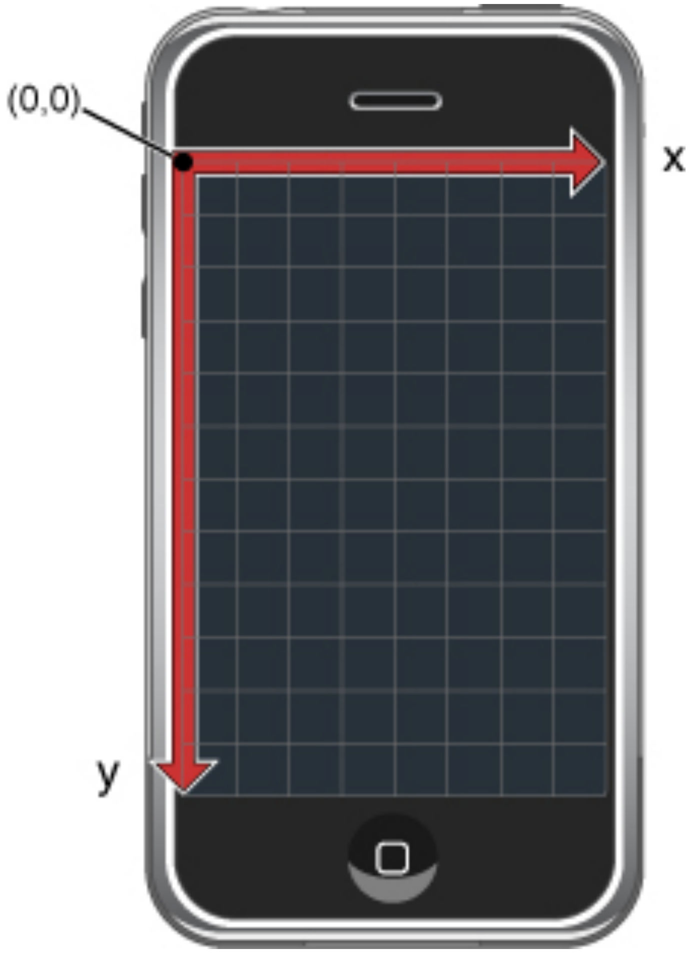
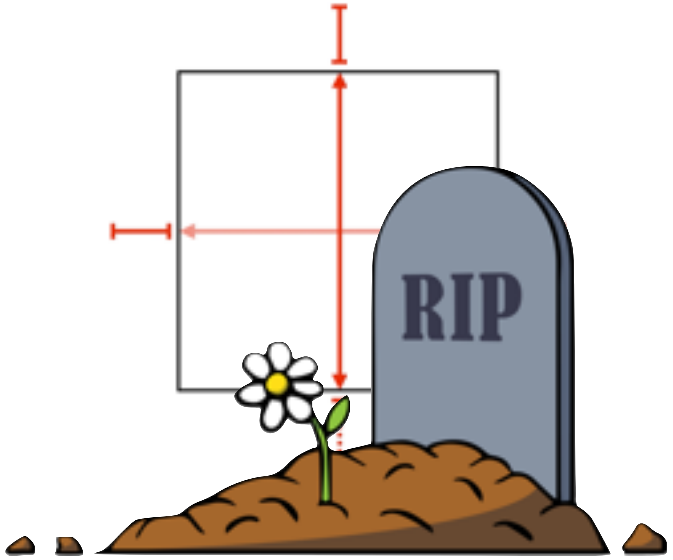


image credit: http://nshipster.com/cmdevicemotion/

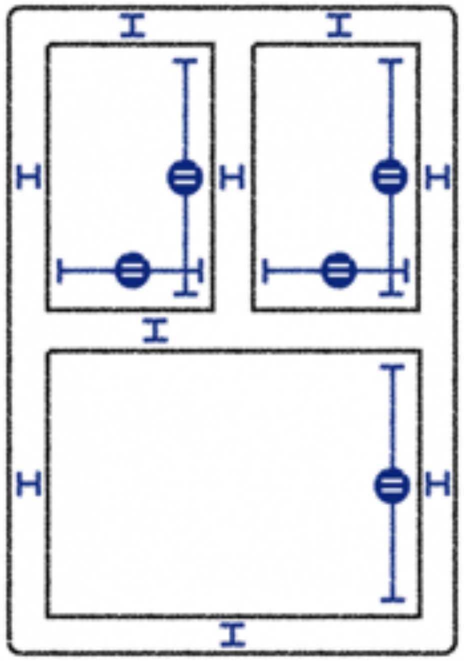
Layout in iOS

Auto Resizing Masks



Auto layout

(iOS6, 2012)



Describe relationship between objects using constraints.

Visual format language. Describe your layouts in ASCII.

Auto resized labels for different languages.

Size Classes

(iOS8, 2014)

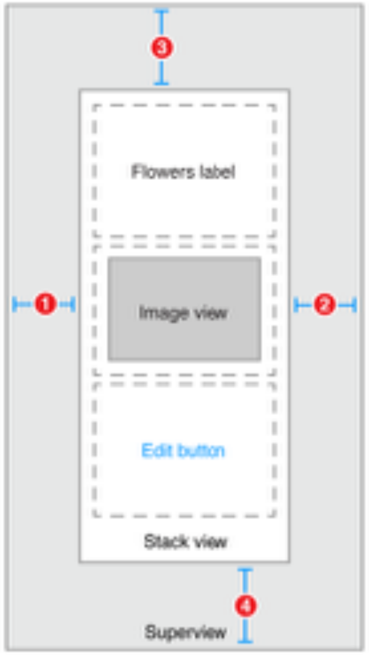
Not covered in this course

Clusters screen sizes into size classes.

Allows for tweaks that are specific to each size class.

Stack Views

(iOS9, 2015)



Easier way to group widgets into vertical and horizontal bundles.

Works together with Auto-Layout.