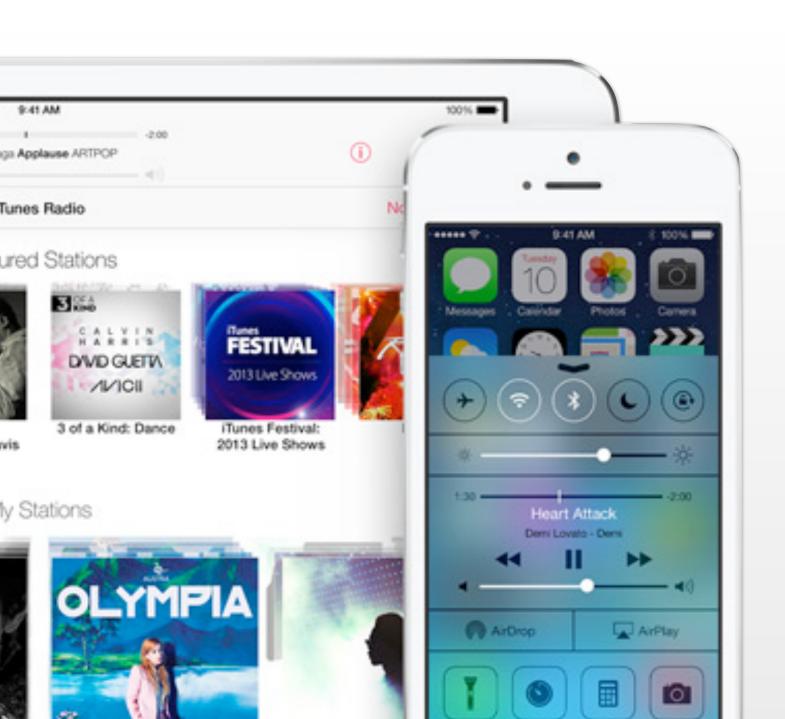# iPhone Application Programming
Lab 1: iOS Development Environment

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http://hci.rwth-aachen.de/iphone

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Announcements

- Labs are not video recorded. Please take notes!

- The assignment will be available on our main website at the end of this lab,

  - Due next Monday

  - Teams of two

  - Expect bugs, they will help you learn, but submit without error or warnings

  - Understand online code sources, do not copy!

- Information may appear redundant in the labs and lectures, but it's not!

What You Can Achieve

- At the end of the course you will be able to implement full iOS apps

- You will know Swift: syntax, concepts, and how to use it correctly

- The apps will look and feel according to Apple's Human Interface Guidelines

- The implementation will follow the recommended design strategies: MVC, Delegation, Target-Action

- You will be able to use the most important frameworks in Cocoa Touch and can easily learn more

- Your app will be interactive: animations, multimedia, graphics, sensors, etc

iOS Architecture

- Unix based (similar to OS X). Optimized for battery work and less powerful systems

- Core OS closest to hardware

- Core Services to access Core OS with OO. Not UI related

- Media support many multimedia formats

- Cocoa Touch is the UI and interactivity support

Development Tools

- Xcode is Apple's IDE: source code editor, interface builder, assets manager, compiler, debugger, simulator, …

  - Support your workflow through debugging, testing, optimization, until release App Store

- Already has the iOS SDK (APIs/libraries/frameworks) when you download it

- Xcode 7.X support iOS9, which is supported on iPhone 4S and above

- You need OS X 10.10 Yosemite

- You need a Mac (a PC with OS X installed, hmmm)

- To submit to the App Store you need to be enrolled in a paid program

  - Email me if you are interested to join the university's

- Check out our: How to Setup iOS Development Environment for Xcode download (avoid beta) and provisioning

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Development Languages

- Objective-C and Swift (both work separately and together)

  - Objective-C is an extensions of C

- Swift is young (2 years), modern, concise, and type safe!

  - Best of OO and procedural programming

  - Similar to C#, Python, Ruby, or JavaScript

- Bridging between the two languages allows you to use Swift to call Frameworks written originally in Objective-C

- The languages have different syntax but learning Swift helps understand Objective-C

Frameworks

- UIKit provide the user interface, controllers, gesture recognizers and Autolayout (anything that starts with UI)

- Foundation is Core Services

- Core Motion for sensors

- Core Data for managing data with OO structures

- Map Kit

- …..

Clock Demo

Clock App

✓ How to create a project in Xcode 7

✓ Build UI with Autolayout

✓ The iOS simulator

✓ Some Swift syntax

   ✓ print, var, let, func, Optional?,

   - classes, methods and computed properties, object instantiation

   ✓ String interpolation, NSDate and NSDateFormatter (from Foundation framework)

✓ Connecting UI elements to code

✓ Access iOS documentation

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