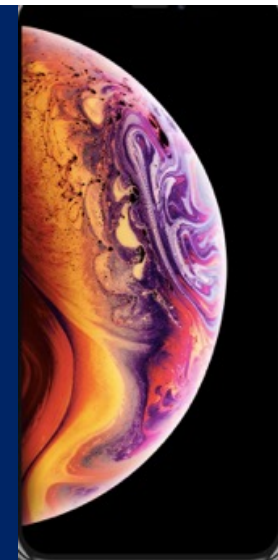




Laboratorio di Applicazioni Mobili (LAM 2023) (the iOS side of the Moon...→)



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**Dipartimento di Informatica – Scienza e Ingegneria
Alma Mater Studiorum - Università di Bologna**



General course considerations

- ❖ Preliminary considerations: YES, slides In ENGLISH!
 - Dynamic course, with problems due to ongoing adaptation process
 - People, support, devices and **labs**, material, numbers...
 - This is the 8th year edition... 100% new material with respect to 6th edition.
 - Motivations for the course (...you know why you are here, but...)
 - Enabling expression of potential for students towards apps world and projects
 - Activating bindings with research themes: IoT, M2M, pervasive apps, etc....
 - Both Android AND iOS! Highly required both in the market (75% vs 25% share)
 - The classes distribution will be **75% ANDROID** and **25% iOS** to cope with projects potential.
 - Need your help to make it evolve into something better year by year
 - Be patient, be constructive, be ambitious



Programming in Swift with iOS (16)

Module Overview (2023)



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- ❖ Introducing the iOS architecture
- ❖ Implementing simple iOS applications
- ❖ Get familiar with Xcode (14.2) and Swift (5.7)
(with reminiscence of Objective C and previous Swift versions > 5.0)
- ❖ Golden rules' approach
 - Model View Controller (our recommended approach)
 - Variables are always initialized before use.
 - Array indices are checked for out-of-bounds errors.
 - Integers are checked for overflow.
 - Optionals ensure that nil values are handled explicitly.
 - Memory is managed automatically.
 - Error handling allows controlled recovery from unexpected failures

SWIFT
approach

Storyboard approach
(non SwiftUI)



considerations

❖ Preliminary considerations:

- iOS programming requires a MAC
- lab facilities NO more available (*)
 - Reference is > iOS16 (*) (some remarks on differences with previous iOSs)
 - Xcode 14.2 SDK (free download) needed. No need to join a “program”.(*)
 - No HW required (but OK to have it): emulation possible for our apps. For running on device or app store you must join a program (not for free. University programs possible. We will discuss this).
 - how many of you feel the iOS interest?
 - How many have a MAC or iOS device?
 - How many played with iOS (>12.0), Xcode >11, or older Interface Builder and SWIFT/ objective-C?
- (*) issue with the lab: to support Xcode <10 and iOS <12.0



iOS considerations

- ❖ Prerequisites: Object-Oriented Programming
- ❖ ...you should be (how many of you are?) familiar with:
 - Object-Oriented concept, programming and terminology
 - Class (description/template for an object)
 - Object Instance (manifestation of a class)
 - Message/Method (sent to objects to make them run some code)
 - Instance Variable (object-specific storage) called Property in iOS
 - Inheritance (code-sharing mechanism)
 - Superclass/Subclass (Inheritance relationships)
 - Protocol (non-class-specific method declaration)
 - Bonus: Model-View-Controller (MVC) design



iOS considerations

- ❖ ...logistic of lessons is complicated:
 - Frequent absence due to other classes, projects and missions
 - Interleaving of classes between iOS and Android (exceptions possible)
 - **Monday:** iOS, **Tuesday:** Android, **Thursday:** Android
 - Important to have a mailing list for urgent communications
 - We will exploit Presente and Virtuale. Please check your presence on presente.
 - Email for communications: luciano.bononi@unibo.it
 - Important to always check for last minute problems with lessons on the same day (morning check recommended)
 - Course website and mailbox. No newsgroup needed.
 - Check on Virtuale.unibo.it for material and links



iOS considerations

- Typical Lessons calendar:
 - See schedule (despite issues with late start)
- Today: just a welcome and course introduction.



iOS considerations

- However: for people having difficulties to attend lessons there is a great option (only for iOS part):
 - Our lessons are mainly based on Stanford Winter 2019 classes available online @iTunes (a subset is illustrated for time reasons)
 - 2018 and 2019 material (iOS 11.0 and 12.0)
 - **DO NOT CONTACT STANFORD PEOPLE TO ASK QUESTIONS! They are not our online reference manual. Contact me in case of questions or problems.**
 - If you want to see the excellent illustration of Stanford's course contents you can access iTunes U and remotely download material and attend classes (in english):
 - Previous years available, starting from 2010.
 - You are free to go further our lessons on iTunesU (if you are interested) covering the full course potential.
 - Excellent covering of advanced iOS topics not covered in classes for time reasons



iOS considerations

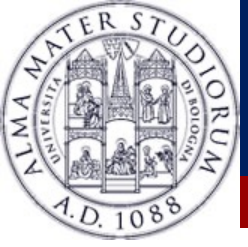
- Course exam and projects:
- Exam:
 - discussion of the project with presentation and questions (oral)
 - When? There will be multiple project submission deadlines!
- Course Project:
 - Individual project
 - List will be supplied... but we are open to your initiative and interests... sky's limit.
 - Natural binding with thesis work (if interested), specifically IoT apps, vehicular, AR/VR, etc.
 - Best projects selected for department initiatives (best project award and show up)
 - Credentials for jobs... disclaimer: this course is not a certification! (too short) It is an introduction to the context of iOS and Android mobile apps development.



iOS considerations

■ References (iOS)

- Apple on-line documentation
 - <http://developer.apple.com>
- «Virtuale» LAM pages will contain all lessons' material:
 - <https://virtuale.unibo.it/course/view.php?id=18950>
- <https://swift.org/documentation/>
- <https://docs.swift.org/swift-book/>
- The Swift Programming Language, Swift Programming Series, Apple Inc. (available for free on iTunes)



iOS considerations

Questions?