

Mobile Application Programming: iOS

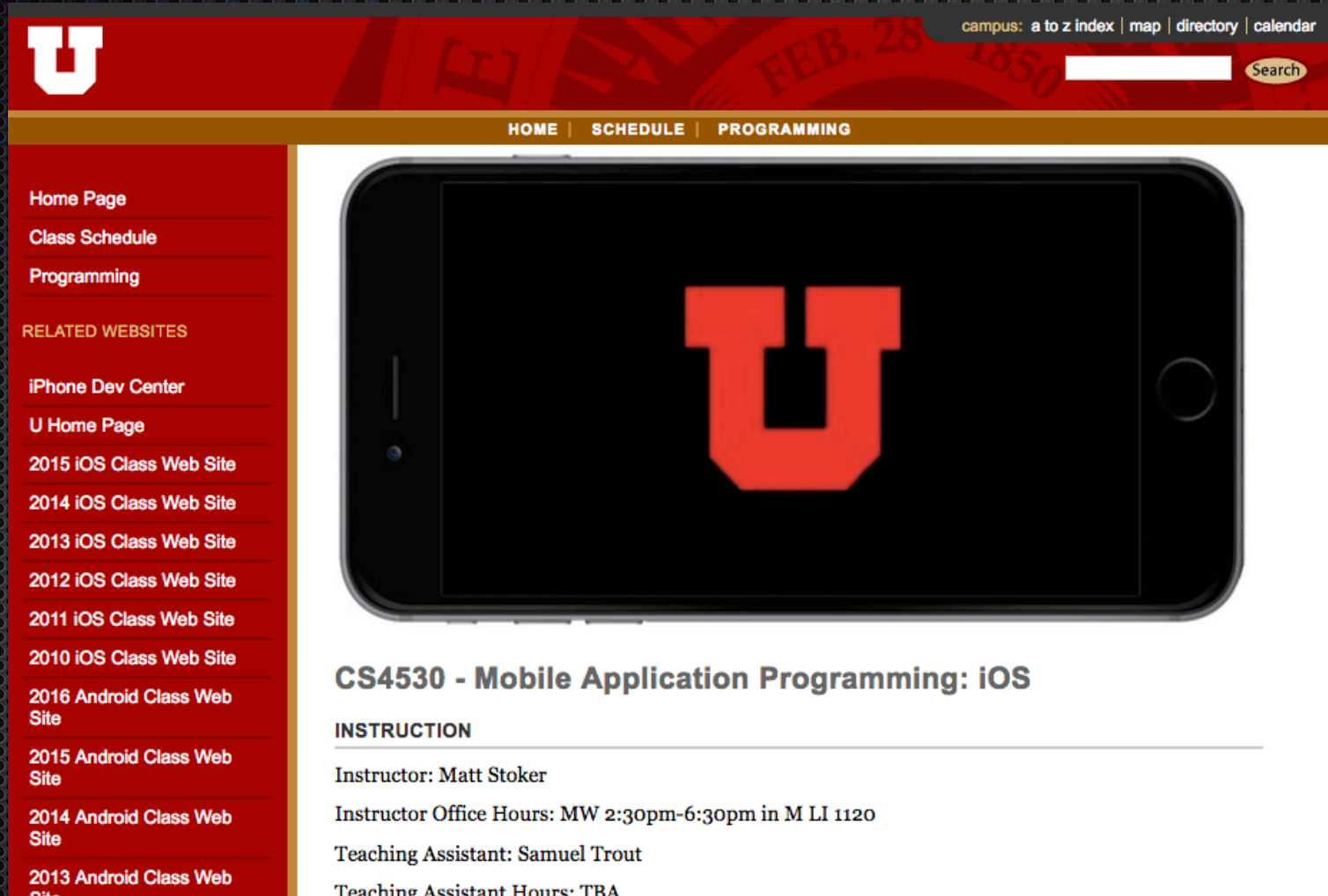
Introduction

My Interests

- ✦ Computer Graphics
- ✦ CTO Pixio Software
- ✦ Wrote MobileFinder for the iOS 1.4 jailbroken SDK
- ✦ Lived in Brazil and speak Brazilian Portuguese
- ✦ Send balloons to 100,000 feet and take pictures
- ✦ Read US revolutionary biographies, fantasy, and sci-fi
- ✦ Current obsessions: Space, Warhammer 40k, 3D Fab



Course Website



The screenshot shows the course website for CS4530. The header features the University of Utah logo and navigation links for campus, a to z index, map, directory, and calendar. A search bar is also present. The main navigation bar includes links for HOME, SCHEDULE, and PROGRAMMING. The left sidebar contains a list of links: Home Page, Class Schedule, Programming, and a section for RELATED WEBSITES with links to the iPhone Dev Center, U Home Page, and various iOS and Android class web sites from 2010 to 2016. The main content area displays a large image of a smartphone with the red 'U' logo on its screen. Below the image, the course title 'CS4530 - Mobile Application Programming: iOS' is shown, followed by the 'INSTRUCTION' section which lists the instructor (Matt Stoker), office hours (MW 2:30pm-6:30pm in M LI 1120), teaching assistant (Samuel Trout), and teaching assistant hours (TBA).

U

campus: [a to z index](#) | [map](#) | [directory](#) | [calendar](#)

Search

[HOME](#) | [SCHEDULE](#) | [PROGRAMMING](#)

Home Page

Class Schedule

Programming

RELATED WEBSITES

[iPhone Dev Center](#)

[U Home Page](#)

[2015 iOS Class Web Site](#)

[2014 iOS Class Web Site](#)

[2013 iOS Class Web Site](#)

[2012 iOS Class Web Site](#)

[2011 iOS Class Web Site](#)

[2010 iOS Class Web Site](#)

[2016 Android Class Web Site](#)

[2015 Android Class Web Site](#)

[2014 Android Class Web Site](#)

[2013 Android Class Web Site](#)

CS4530 - Mobile Application Programming: iOS

INSTRUCTION

Instructor: Matt Stoker

Instructor Office Hours: MW 2:30pm-6:30pm in M LI 1120

Teaching Assistant: Samuel Trout

Teaching Assistant Hours: TBA

<http://www.eng.utah.edu/~cs4530>

Cheating Policy

Cheating in the context of this course is generally, but not limited to, **sharing** and **copying of code** from other students or the Internet. Any code making up your solution should be **written and understood by you**. Small quantities of template code will at times be provided by the instructor. You can use this code in submissions but **should** still be able to fully explain the function of all template code you use. Refer to but **do not copy** code from the **examples** given in class.

LATE POLICY

Each student receives 5 days of late time to distribute across all of the assignments in the semester, in 1 day increments, to handle unforeseen difficulties. Please alert the teaching staff in the case of extreme difficulties such as injury.

TEXT

We will be drawing primarily from the Android documentation provided by Google. Lectures will be recorded and slides provided for out of class review. Students desiring additional resources should inquire about outside texts.

ACADEMIC HONESTY

Cooperation among students to better understand course material is highly encouraged, as it is an effective learning tool and essential to real-world development team success. High-level discussion of programming techniques and problem solutions is the best way to help or be helped by your fellow students.

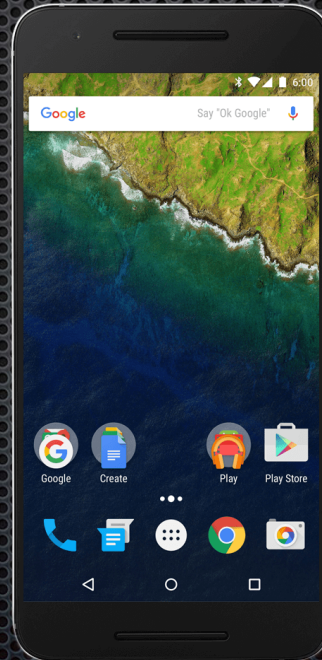
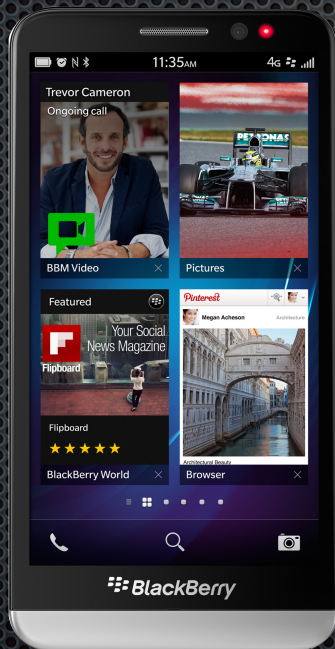
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The University of Utah is extremely strict in its cheating policies. We will be cross checking your code submissions. Any student caught cheating will automatically be given an F in the course and reported to the University Student Behavior Committee.

STUDENTS WITH DISABILITIES

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. Accommodations will gladly be provided for the known disabilities of students in the class. If you will need accommodations during this course, reasonable prior notice needs to be given to the Center for Disability Services, 400 Ogden Center Building, 4th-floor Voice and TDD. CSC will work with you and the instructor to make arrangements for accommodations.

All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.





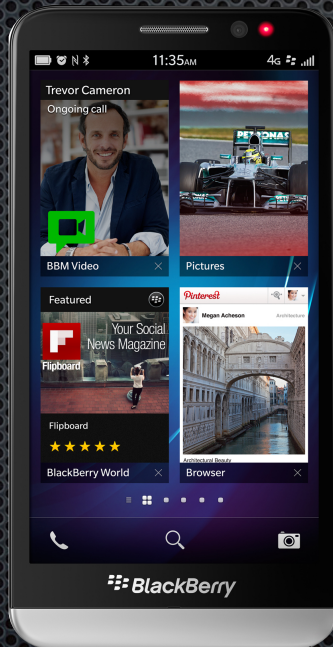
Nokia N8



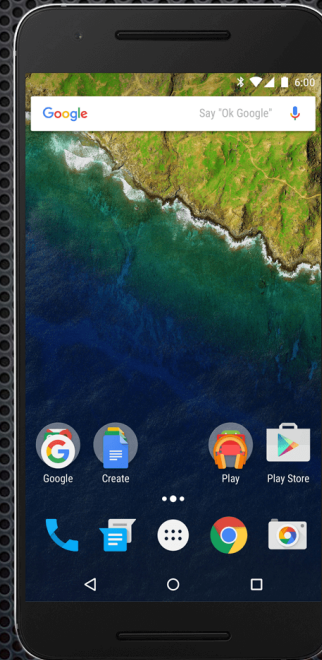
Palm Pre 2



iPhone 6



Blackberry Z30



Nexus 6P



Lumia 950



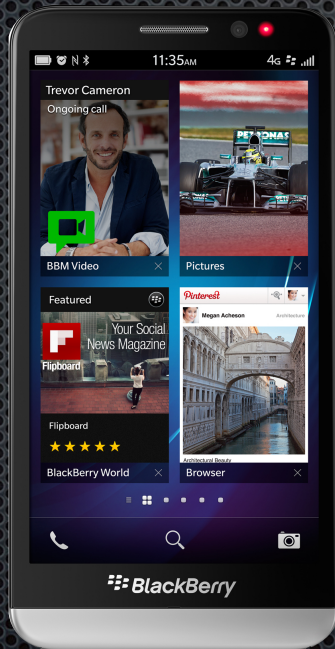
Symbian^3



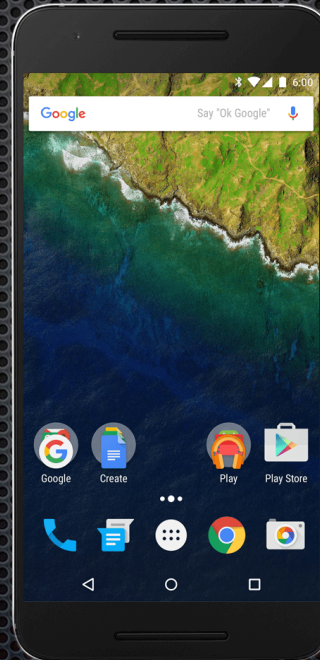
WebOS



iOS 10



Blackberry 10



Android 6-8



Windows 10



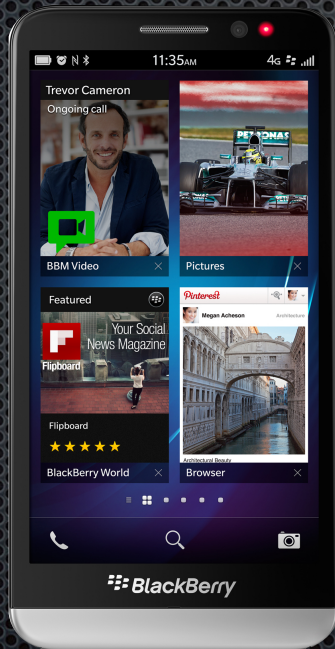
C++/Java/WRT



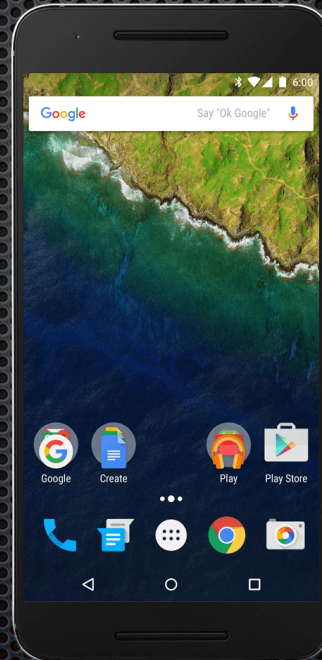
HTML5/JavaScript/CSS



Swift



Java



Java



.NET (C#)



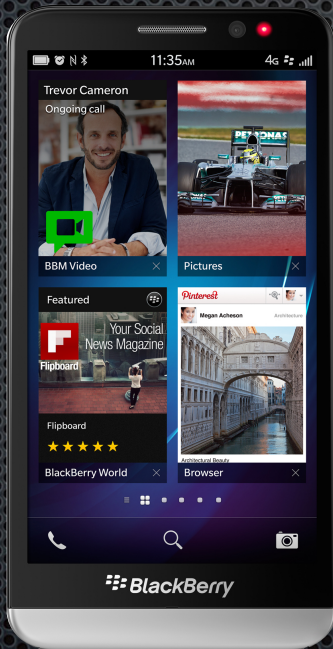
Symbian^3 SDK



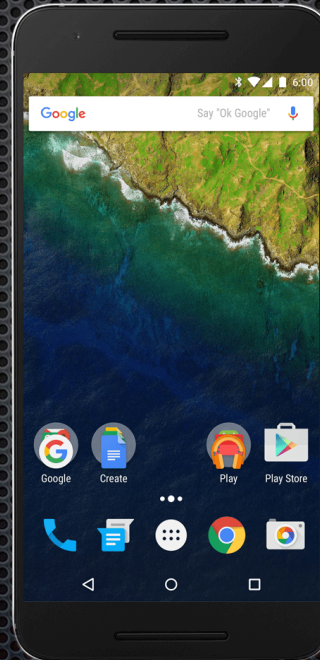
Mojo SDK



iOS SDK



Blackberry JDE



Android JDE



.NET Framework

Why Not Android?



- Small percentage of Android device owners actually purchase software from the various markets
- Fragmentation in the hardware and software make development for many devices more difficult than iOS
- Startup companies tend to prefer to target iOS platforms before they target Android
- Hardware running Android arguably inferior to that of other companies, mostly due to price of units

Xcode

- ✦ Integrated Development Environment
 - ✦ Editor with advanced features
 - ✦ Documentation (Option-click)
 - ✦ Debugger
 - ✦ Compiler (llvm)
 - ✦ Profiler (Instruments)
 - ✦ Graphical Interface Builder (Interface Builder)



iPhone Project Anatomy

The screenshot displays the Xcode IDE with an iPhone 7 Plus project. The Project Navigator on the left shows the project structure, including the 'Test' target and its associated files. The Source Editor in the center shows the code for 'AppDelegate.swift'. The Properties Inspector on the right provides details about the selected file, including its identity, type, location, and target membership.

Project Navigator (Left):

- Test
- Test
 - AppDelegate.swift
 - ViewController.swift
 - Main.storyboard
 - Assets.xcassets
 - LaunchScreen.storyboard
 - Info.plist
- Products

Source Editor (Center):

```
1 //
2 // AppDelegate.swift
3 // Test
4 //
5 // Created by Matt Stoker on 1/9/17.
6 // Copyright © 2017 Matt Stoker. All rights reserved.
7 //
8
9 import UIKit
10
11 @UIApplicationMain
12 class AppDelegate: UIResponder, UIApplicationDelegate {
13
14     var window: UIWindow?
15
16
17     func application(_ application: UIApplication, didFinishLaunchingWithOptions launchOptions:
18         [UIApplicationLaunchOptionsKey: Any]?) -> Bool {
19         // Override point for customization after application launch.
20         return true
21     }
22
23     func applicationWillResignActive(_ application: UIApplication) {
24         // Sent when the application is about to move from active to inactive state. This can occur for
25         // certain types of temporary interruptions (such as an incoming phone call or SMS message) or
26         // when the user quits the application and it begins the transition to the background state.
27         // Use this method to pause ongoing tasks, disable timers, and invalidate graphics rendering
28         // callbacks. Games should use this method to pause the game.
29     }
30
31     func applicationDidEnterBackground(_ application: UIApplication) {
32         // Use this method to release shared resources, save user data, invalidate timers, and store
33         // enough application state information to restore your application to its current state in case
34         // it is terminated later.
35         // If your application supports background execution, this method is called instead of
36         // applicationWillTerminate: when the user quits.
37     }
38
39     func applicationWillEnterForeground(_ application: UIApplication) {
40         // Called as part of the transition from the background to the active state; here you can undo
41         // many of the changes made on entering the background.
42     }
43
44     func applicationDidBecomeActive(_ application: UIApplication) {
45         // Restart any tasks that were paused (or not yet started) while the application was inactive. If
46         // the application was previously in the background, optionally refresh the user interface.
47     }
48 }
```

Properties Inspector (Right):

- Identity and Type**
 - Name: AppDelegate.swift
 - Type: Default - Swift Source
 - Location: Relative to Group
 - Full Path: /Users/Matt/Desktop/Test/Test/AppDelegate.swift
- On Demand Resource Tags**
 - Only resources are taggable
- Target Membership**
 - ☒ Test
- Text Settings**
 - Text Encoding: Default - Unicode (UTF-8)
 - Line Endings: Default - macOS / Unix (LF)
- Class Library Search Paths**
 - Cocoa Touch Class - A Cocoa Touch class
 - UI Test Case Class - A class implementing a unit test
 - Unit Test Case Class - A class implementing a unit test