CIS280

IOS Development
Prof Konkol

Apple Devices Flow Into Corporate World - WSJ, January 9th, 2014

At multinational firms like network-equipment giant Cisco Systems Inc., CSCO -0.14% Apple is going mainstream. Cisco in 2009 adopted a "bring your own device" policy under which employees purchase their own phones and tablets, with Cisco paying the wireless bill in certain instances. Now, iPhones and iPads account for nearly three-fourths of the 70,000-plus mobile devices supported by Cisco's tech department.At multinational firms like network-equipment giant Cisco Systems Inc., CSCO -0.14% Apple is going mainstream. Cisco in 2009 adopted a "bring your own device" policy under which employees purchase their own phones and tablets, with Cisco paying the wireless bill in certain instances. Now, iPhones and iPads account for nearly three-fourths of the 70,000-plus mobile devices supported by Cisco's tech department.

Top Apps


Top Paid iPhone Apps
Paid
Free
Top Grossing
All Categories
1. Heads Up!
Games
$0.99
2. Minecraft – Pocket Edition
Games
$6.99
3. Slow Shutter Cam
Photo & Video
$0.99
4. Cut the Rope 2
Games
$0.99
5. Afterlight
Photo & Video
$0.99
6. 7 Minute Workout...
Health & Fitness
$1.99
7. Plague Inc.
Games
$0.99
8. Sleep Cycle alarm clock
Health & Fitness
$0.99
9. Survival Games - Mine Mini Ga...
Games
$0.99
10. Traffic Racer
Games
$0.99
Top Free iPhone Apps
Paid
Free
Top Grossing
All Categories
1. PAC-MAN
Games
Free
2. RoboCop™
Games
Free
3. Flappy Bird
Games
Free
4. Super Stickman Golf 2
Games
Free
5. Farm Heroes Saga
Games
Free
6. Clash of Clans
Games
Free
7. QuizUp: The Biggest Trivia...
Games
Free
8. Ted Ginn: Kick Return
Games
Free
9. Snapchat
Photo & Video
Download
10. Facebook Messenger
Social Networking
Download

RVC Student Apps

- Fall 2013 Apps
  - Nest Egg
  - Midwest Fishing Adventures *in app store
  - Wedding Sync
  - Bubble Baller

Intro to IOS

- What is IOS Development?
- How popular is it?
- What do you need to begin developing IOS apps?
- What dev Language skills do you need?

What is IOS Development?

- (iOS) (**I**Phone **OS**)
- The operating system in Apple's mobile devices

How popular is IOS?

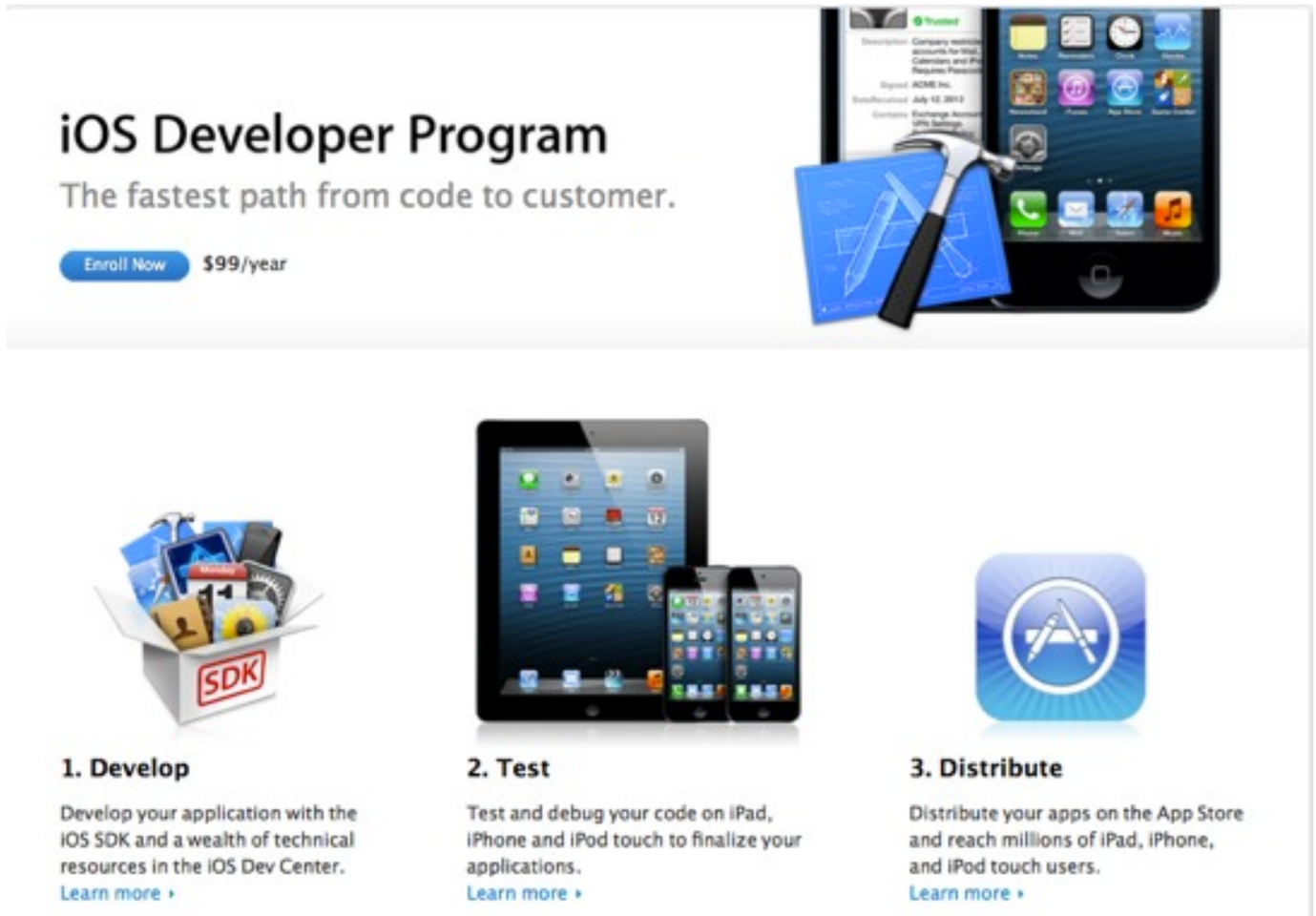
- 200 million devices running iOS 6 after just a month of availability
- There are 700,000 apps in the App Store, including 275,000 iPad apps
- Users have downloaded 35 billion apps in from the store
- $6,500,000,000 has been paid to developers

What you need to get started?

- OS - Mac OSX 10.9.1 (Mavericks)
- SDK - XCode 5.0.2 or higher

Developer License

- To test on iPhone/iPad and to Publish on Apple Store you must have a developers license.



Developer License

- Types of Developer Licenses:

Developer License

- University Developer License. Apple waives the $99 fee. Students and faculty can develop and share apps. Licenses last the duration of the course. You cannot sell apps on the app store with this license.
- Make sure and complete Week 1 Tasks

Developer License

Which Developer Program is for you?

iOS

iOS Developer Program
Individual
$99 / Year

For an individual developer who will be creating iOS apps for distribution on the App Store.

iOS Developer Program
Company
$99 / Year

For a company with a development team who will be creating iOS apps for distribution on the App Store.

Note: A D-U-N-S Number is required.

iOS Developer Enterprise Program
$299 / Year

For a company who will be creating proprietary, in-house iOS apps.

Note: A D-U-N-S Number is required.

iOS Developer University Program
Free

For higher education institutions looking to introduce iOS development into their curriculum.

Mac

Mac Developer Program
Individual
$99 / Year

For an individual developer who will be creating Mac apps for distribution on the Mac App Store.

Mac Developer Program
Company
$99 / Year

For a company with a development team who will be creating Mac apps for distribution on the Mac App Store.

Note: A D-U-N-S Number is required.

Hardware

- You can begin development without an IOS Device (iPad, iPhone).
- You cannot begin development without a Mac

Language

- Objective C is used to develop IOS Apps

The iOS Platform

From iOS reference Library

iPhone Human Interface Guidelines

http://developer.apple.com/library/ios/#documentation/UserExperience/Conceptual/MobileHIG/DevelopingSoftware/DevelopingSoftware.html

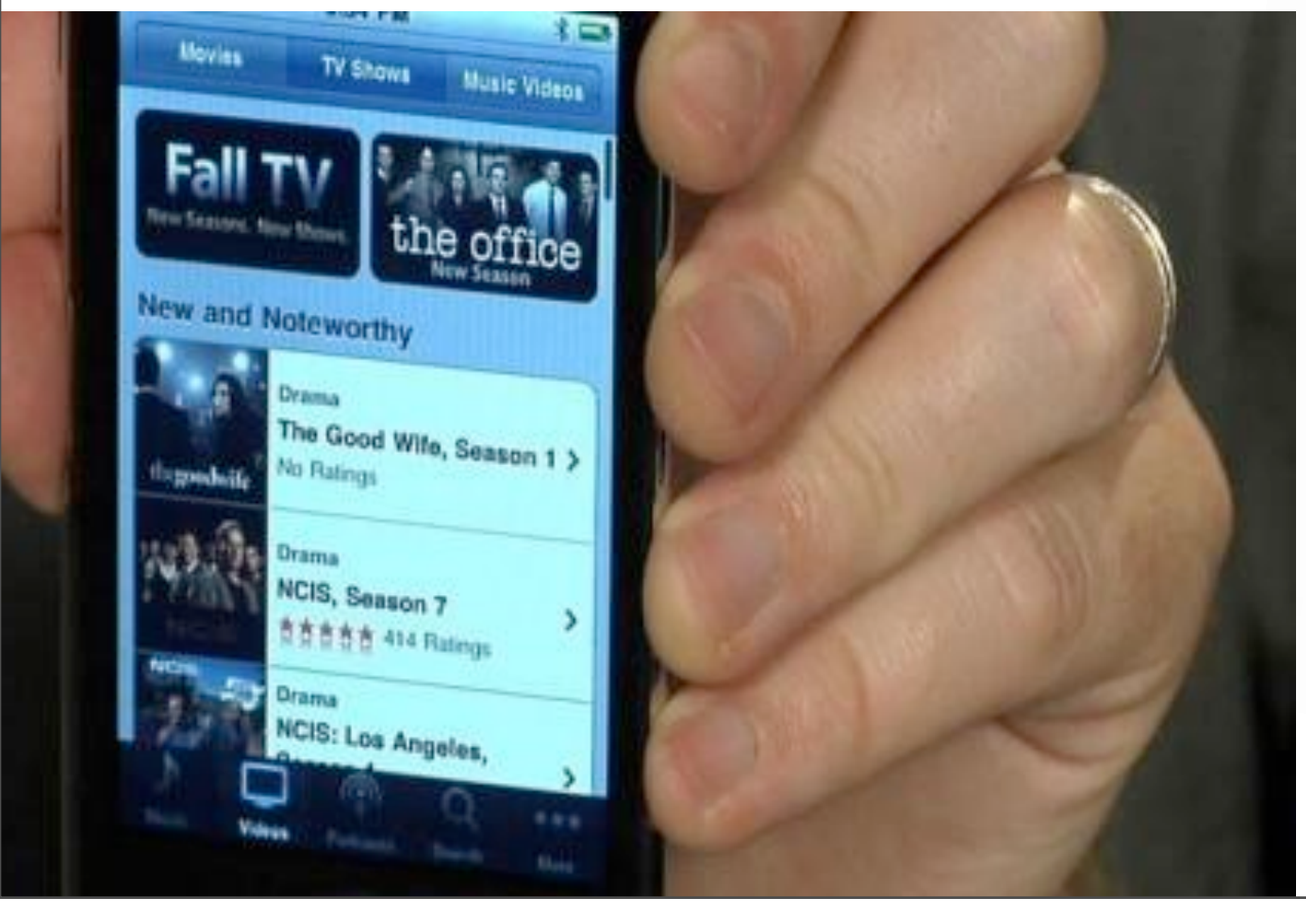
Device Characteristics

- An iOS-based device is not a desktop or laptop computer, and an iPhone application is not the same as a desktop application.

- Designing software for iOS-based devices requires a state of mind that may or may not be second nature to you.

- In particular, if the bulk of your experience lies in developing desktop applications, you should be aware of the significant differences between designing software for a mobile device and for a computer.

Devices Supported



Design Considerations

Screen Size is Compact

- Use the compact screen size as a motivation to focus the user interface on the essentials.
- You don’t have the room to include design elements that aren’t absolutely necessary, and crowding user interface elements makes your application unattractive and difficult to use.

Video Formats

- **iPad/iPhone/iPod Supported Video Formats**
- H.264 video up to 720p, 30 frames per second, Main Profile level 3.1 with AAC-LC audio up to 160 Kbps, 48kHz, stereo audio in .m4v, .mp4, and .mov file formats;
- MPEG-4 video, up to 2.5 Mbps, 640 by 480 pixels, 30 frames per second, Simple Profile with AAC-LC audio up to 160 Kbps, 48kHz, stereo audio in .m4v, .mp4, and .mov file formats;
- Motion JPEG (M-JPEG) up to 35 Mbps, 1280 by 720 pixels, 30 frames per second, audio in ulaw, PCM stereo audio in .avi file format

- http://www.aneesoft.com/tutorials/ipad-supported-video-format.html
- http://www.ilounge.com/index.php/articles/comments/the-complete-guide-to-ipod-video-formats-and-display-resolutions/

TV Formats

- **iPad Supported TV Formats**
  - Support for 1024 by 768 pixels with Dock Connector to VGA Adapter;
  - 576p and 480p with Apple Component AV Cable;
  - 576i and 480i with Apple Composite AV Cable

Audio Formats

- **iPad Supported Audio Formats**
- Frequency response: 20Hz to 20,000Hz
- Audio formats supported: HE-AAC (V1), AAC (16 to 320 Kbps), Protected AAC (from iTunes Store), MP3 (16 to 320 Kbps), MP3 VBR, Audible (formats 2, 3, and 4), Apple Lossless, AIFF, and WAV
- User-configurable maximum volume limit

Design Considerations

- **Memory is Limited**
- Memory is a critical resource in iOS.
- iOS virtual memory model does not include disk swap space, you must take care to avoid allocating more memory than is available on the device
- When low-memory conditions occur, iOS warns the running application and may terminate the application if the problem persists.
- Be sure your application is responsive to memory usage warnings and cleans up memory in a timely manner.
- As you design your application, strive to reduce the application's memory.

Design Considerations

- **People See One Screen at a Time**
- One of the biggest differences between the iOS environment and the computer environment is the window paradigm. With the exceptions of some modal views, users see a single application screen at a time on an iOS-based device. iPhone applications can contain as many different screens as necessary, but users access and see them sequentially, not simultaneously.
- If the desktop version of your application requires users to see several windows simultaneously, you need to decide if there's a different way users can accomplish the same task in a single screen or a sequence of screens. If not, you should focus your iPhone application on a single subtask of your computer application, instead of trying to replicate a wider feature set.

People Interact with 1 Application at a Time

- **Only one application is visible in the foreground at a time**.
- When people switch from one application to another, the previous application quits and its user interface goes away.
- Prior to iOS 4.0, this meant that the quitting application was immediately removed from memory.
- In iOS 4.0 and later, the quitting application transitions to the background, where it may or may not continue running.
- This feature, called **multitasking**, allows applications to remain in the background until they are launched again or until they are terminated.

Onscreen User Help is Minimal

- **Mobile users don’t have the time to read through a lot of help content** before they can use your application. What’s more, you don’t want to give up valuable space to display or store it. A hallmark of the design of iOS-based devices is ease of use, so it’s crucial that you meet users’ expectations and make the use of your application immediately obvious. There are a few things you can do to achieve this:
  - **Use standard controls correctly.** Users are familiar with the standard controls they see in the built-in applications, so they already know how to use them in your application.
  - **Be sure the path through the information you present is logical and easy for users to predict**. In addition, be sure to provide markers, such as back buttons, that users can use to find out where they are and how to retrace their steps.

What Are Your Options?

- You can create:
  - An **iPhone/iPad application**, which is an application you develop using the iOS SDK to run natively on iOS-based devices.
  - **Web-only content**, including web applications, which are websites that behave like built-in iPhone applications.
  - A **hybrid application**, which is an iPhone application that provides access to web content primarily through a web-content viewing area, but includes some iOS user interface elements.
- iOS is also the development platform for the iPad and iPod Touch

iPhone Applications

- **iPhone applications** resemble the built-in applications on iOS-based devices in that they reside on the device itself and take advantage of features of the iOS environment.
  - Users install iPhone applications on their devices and use them just as they use built-in applications, such as Stocks, Maps, Calculator, and Mail.
- An iPhone application is quick to launch and easy to use.
  - Whether the application enables a task like sending email or provides entertainment to users, it is characterized by responsiveness, simplicity, and a beautiful, streamlined user interface.

Web-only Content

- You have a few different options when it comes to providing **web-only content** to iOS users:

Web applications

- Webpages that provide a focused solution to a task and conform to certain display guidelines are known as web applications, because they behave similarly to the built-in iOS applications.

- A web application, like all web-only content, runs in Safari on iOS; users do not install it on their devices, instead they go to the web application's URL.

Optimized WebPages

- Webpages that are optimized for Safari on iOS display and operate as designed
- Flash Player is not supported in this environment.
  - Recent announcements lead to an expectation for future support
  - But for now any elements that rely on unsupported technologies, such as plug-ins, Flash, and Java) are excepted.
- In addition, an optimized webpage correctly scales content for the device screen and is often designed to detect when it is being viewed on iOS-based devices, so that it can adjust the content it provides accordingly.

Compatible WebPages

- Webpages that are compatible with Safari on iOS display and operate as designed (with the exception of any elements that rely on unsupported technologies, such as plug-ins, Flash, and Java).
  - A compatible webpage does not tend to take extra steps to optimize the viewing experience on iOS-based devices, but the device usually displays the page successfully.
- If you have an existing website or web application, first ensure that it works well on iOS-based devices.
  - Also, you should consider creating a custom icon users can put on their Home screens using the Web Clip feature.
  - In effect, this allows users to keep on their Home Screens a bookmark to your website that looks like a native application icon.

Hybrid Applications

- With iOS, you can create an application that combines features of native applications and webpages.
- A **hybrid application** is a native iPhone application that provides most of its structure and functionality through a web viewing area, but also tends to contain standard iOS user interface elements.
  - A hybrid application gives users access to web content with an element called a web view (described in “Web Views”).
  - Precisely how you use a web view in your application is up to you, but it’s important to avoid giving users the impression that your application is merely a mini web browser.
  - A hybrid application should behave and appear like a native iPhone application; it should not draw attention to the fact that it depends upon web sources.

Three Application Styles

- **Productivity**
- **Utility**
- **Immersive**

Productivity Applications

- A **productivity application** enables tasks that are based on the organization and manipulation of detailed information.
- People use productivity applications to accomplish important tasks.
- Mail App is a good example of a productivity application.
- Productivity applications often organize user data hierarchically. In this way, people can find information by making progressively more specific choices until they arrive at the desired level of detail. iOS provides table elements that make this process extremely efficient on iOS devices (see “Table Views” for more information about these user interface elements). Figure 1-1 shows an example of this type of data organization.
- Productivity applications tend to use multiple views, usually displaying one level of the hierarchy per view.

Utility Applications

- A **utility application** performs a simple task that requires a minimum of user input.
  - People open a utility application to see a quick summary of information or to perform a simple task on a limited number of objects.
  - The Weather application is a good example of a utility application because it displays a narrowly focused amount of information in an easy-to-scan summary.
- A utility application tends to organize information into a flattened list of items; users do not usually need to drill down through a hierarchy of information.

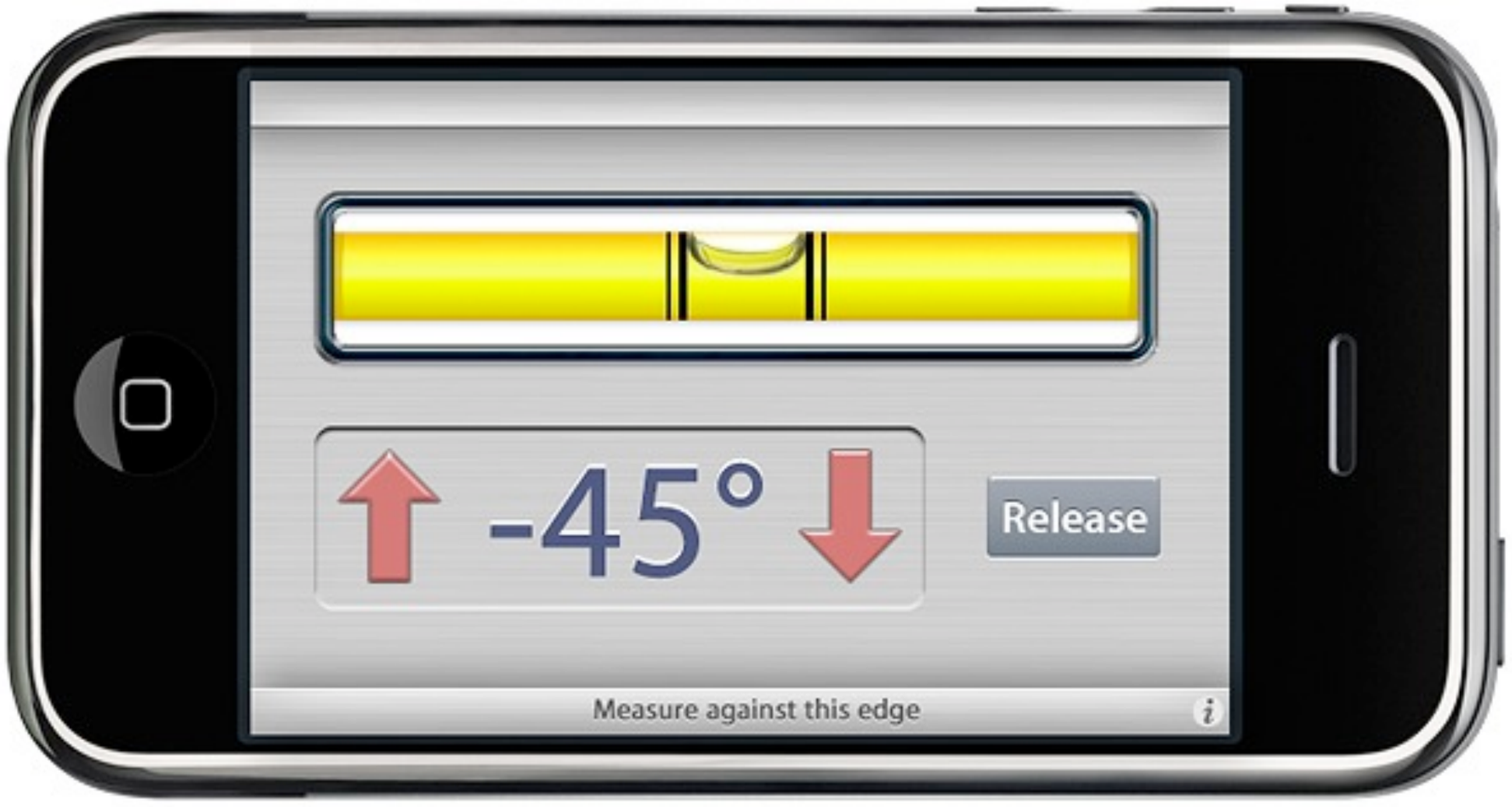
Weather App


Carrier
10:55 AM
Cupertino
H: 70° L: 42°
56°
MONDAY 70° 42°
TUESDAY 67° 42°
WEDNESDAY 63° 39°
THURSDAY 65° 41°
FRIDAY 67° 42°
SATURDAY 68° 43°
Updated 2/11/08 11:03 AM

Immersive Applications

- An **immersive application** offers a full-screen, visually rich environment that's focused on the content and the user's experience with that content.
- People often use immersive applications to have fun, whether playing a game, viewing media-rich content, or performing a simple task.
- Alternatively, an application that replicates the experience of using a bubble level works well in a graphics-rich, full-screen environment, even though it doesn't fit the definition of a game.
  - In such an application, as in a game, the user's focus is on the visual content and the experience, not on the data behind the experience. Figure 1-5 shows an example of an immersive application that replicates an actual experience and enables a simple task.

Bubble Level App



Choosing an Application and a Style

- Think of an App you might like to develop.
  - For free & for fun -> any topic
  - For sale –
    - check the App Store first to see if there are other similar apps.
    - Study them to see if you can do better.
    - Try again for a new idea
- After hearing about productivity, utility, and immersive application styles, think about the type of information your application displays and the task it enables.
  - In theory, the type of application you should create is obvious to you and you're ready to get started; in practice, it's not always that simple

When You Have an Existing Computer Application

- Don’t just port it to iOS.
- User want to open your application, use it briefly, and move on to something else. If your application relies on the user’s undivided attention for long stretches of time, you need to rethink its structure and goals if you want to bring it to iOS.
- Reporting vs Editing
- Apply the 80-20 rule to the design of your application.
- Focus your iPhone application on the features that meet the needs of the greatest number of people.

80/20 Rule

What Exactly Is The 80/20 Rule?

- 80 percent of your outcomes come from 20 percent of your inputs.
- 20% of code manages 80% of business in a business application
- 20% of total productivity of a software developer produces 80% of results
- 20% of bugs fixed make 80% of software bug-free

- Focus your applications on the features that meet the needs of the greatest number of people.

Due by Next Monday

- Create Apple ID
- Accept Developer Invitation (RVC Email)
- Complete “About Me”
- Submit UDID
- Submit Hello Application (In-Class)

Next Monday

- No Class, Campus Closed
- Watch Podcast for week 2 (Will be posted by this Saturday in Week 2 Module)