

Building Mobile Applications

Computer Science S-76



```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
    "http://www.wapforum.org/DTD/wml_1.1.xml" >
<wml>
    <card id="main" title="First Card">
        <p mode="wrap">This is a sample WML page.</p>
    </card>
</wml>
```

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>hello, world</title>
  </head>
  <body>
    hello, world
  </body>
</html>
```



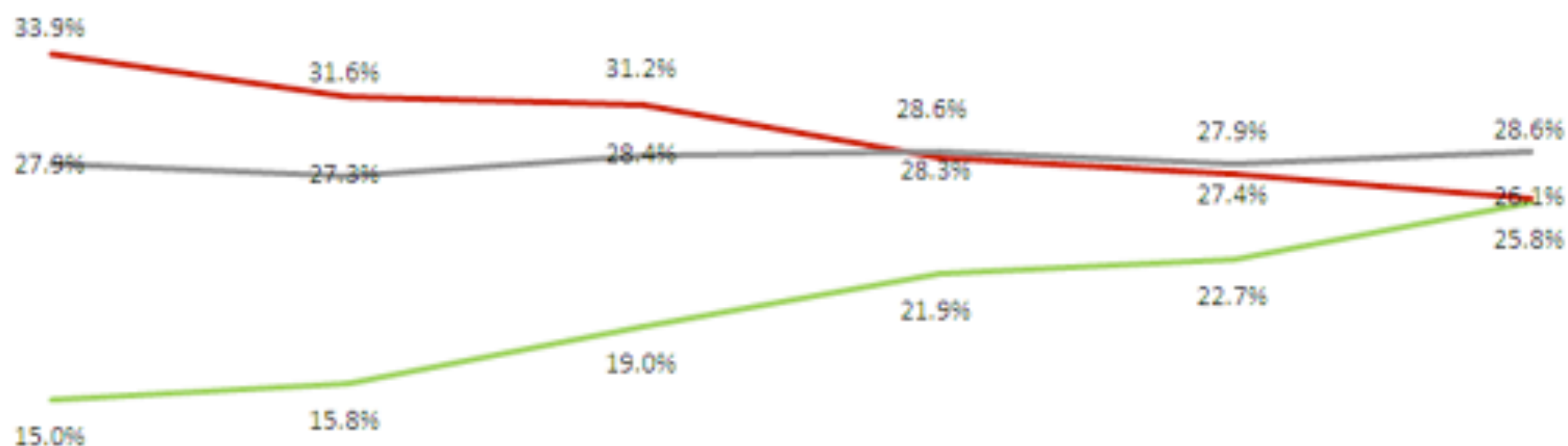




U.S. Smartphone Operating System Share

Adult Smartphone Consumers, Jun - Nov 2010

Android RIM BlackBerry OS Apple iOS



June 2010 (n=4185)

July 2010 (n=3942)

Aug 2010 (n=4547)

Sep 2010 (n=4754)

Oct 2010 (n=4889)

Nov 2010 (n=4371)

web apps v. native apps

frameworks

jQTouch

PhoneGap

Sencha Touch

...

This is CS50.

OpenCourseWare

<http://cs50.tv/>

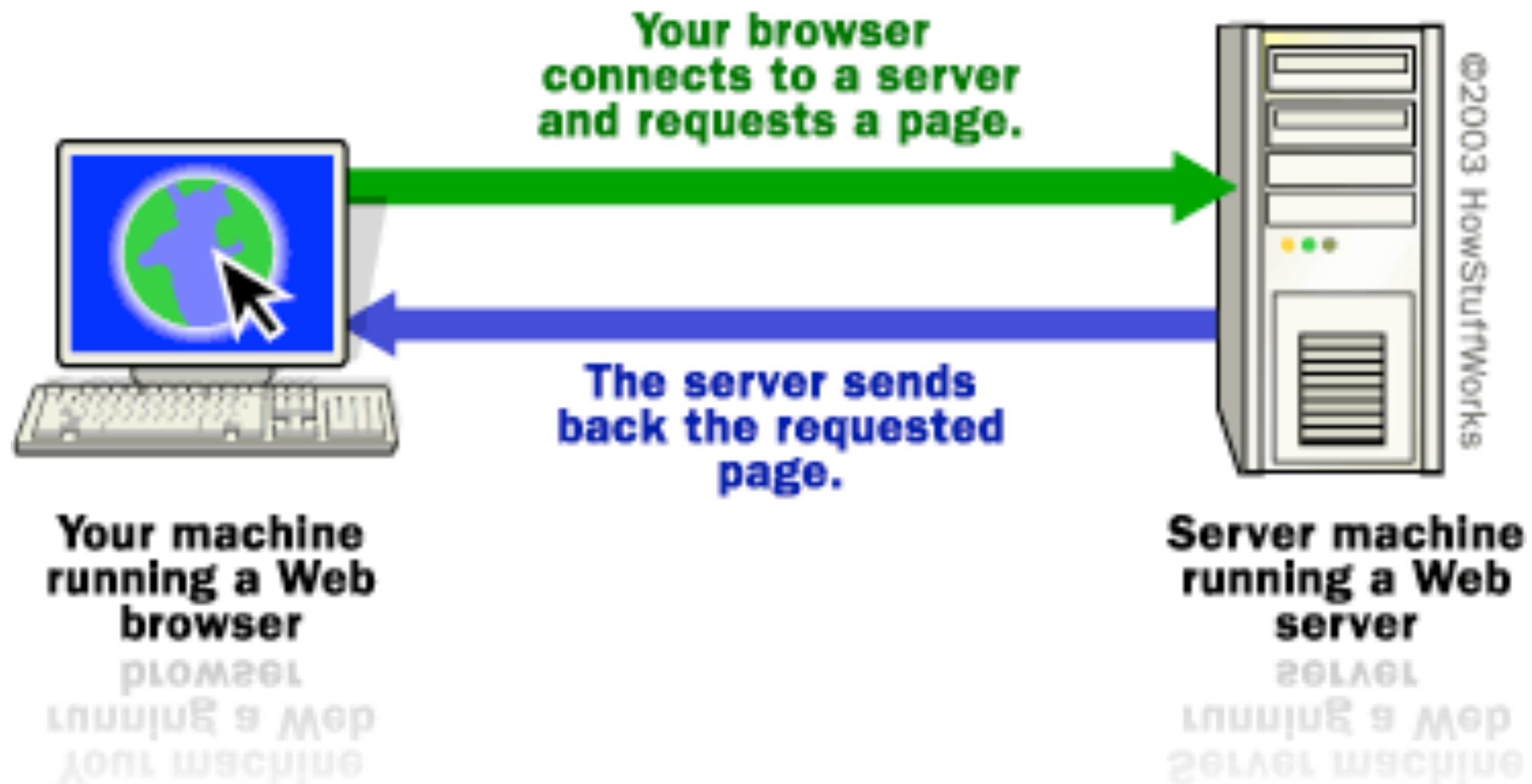
» Hello this is CS50 my name is David Malan and I will be your instructor this semester; and some of you are here because you saw someone tear a phone book in half at something called Harvard Thinks Big last year; and some of you may be here because you've been using a little tool called HarvardCourses and we just so happened to put CS50 on your shopping list. But whatever your reason for being here this is in fact our introduction to Computer Science; and contrary to what you might have heard or seen or perceived in high school, odds are computer science is not quite what you imagined it to be. First and foremost it is not ultimately about programming even though this is unfortunately the message that's conveyed, but in light of a lot of high school curricula rather, programming is just a tool that computer scientists and engineers and increasingly humanists and folks from all sorts of fields use to actually solve problems of interest to them. The programming aspect is just a means to an end; and so this phone book in my hand is just representative to a problem one person might solve, completely non-digital this one, but very much real world whereby there is some person or something in a large chunk of data here; thousand or more pages of text and I want to find someone like Mike Smith. Now at Harvard Thinks Big I happened to tear into this thing myself and it would seem a little pointless to re-hash that same demo so instead I thought I'd solicit an ideally sufficiently strong volunteer to come on up. You have to be comfy on camera but this is your first chance to say hello to mom and dad on camera. One volunteer, yes come on up what's your name?

» Sumit.

» Sumit, all right come on up and if you could awkwardly hold this up front here for a moment.

Applause

» David Malan: So if you want to just hang here for just a moment let's walk through the problem at hand. I'm looking for Mike Smith. There are some thousand pages in this book, and I the human could certainly find Mike Smith every easily, very correctly by starting, if you'll simulate from the front of the phone book on page 1, looking for Mike Smith. I see no Mike Smiths because I'm on page 1 where the A's simply are so I turn to the B's and the C's and the D's and so forth and finally I get to the S's but in the worst case I've looked through 1,000 or so pages. Now you the smart human with just gut instincts probably would not be so naive as to start from the left and work your way

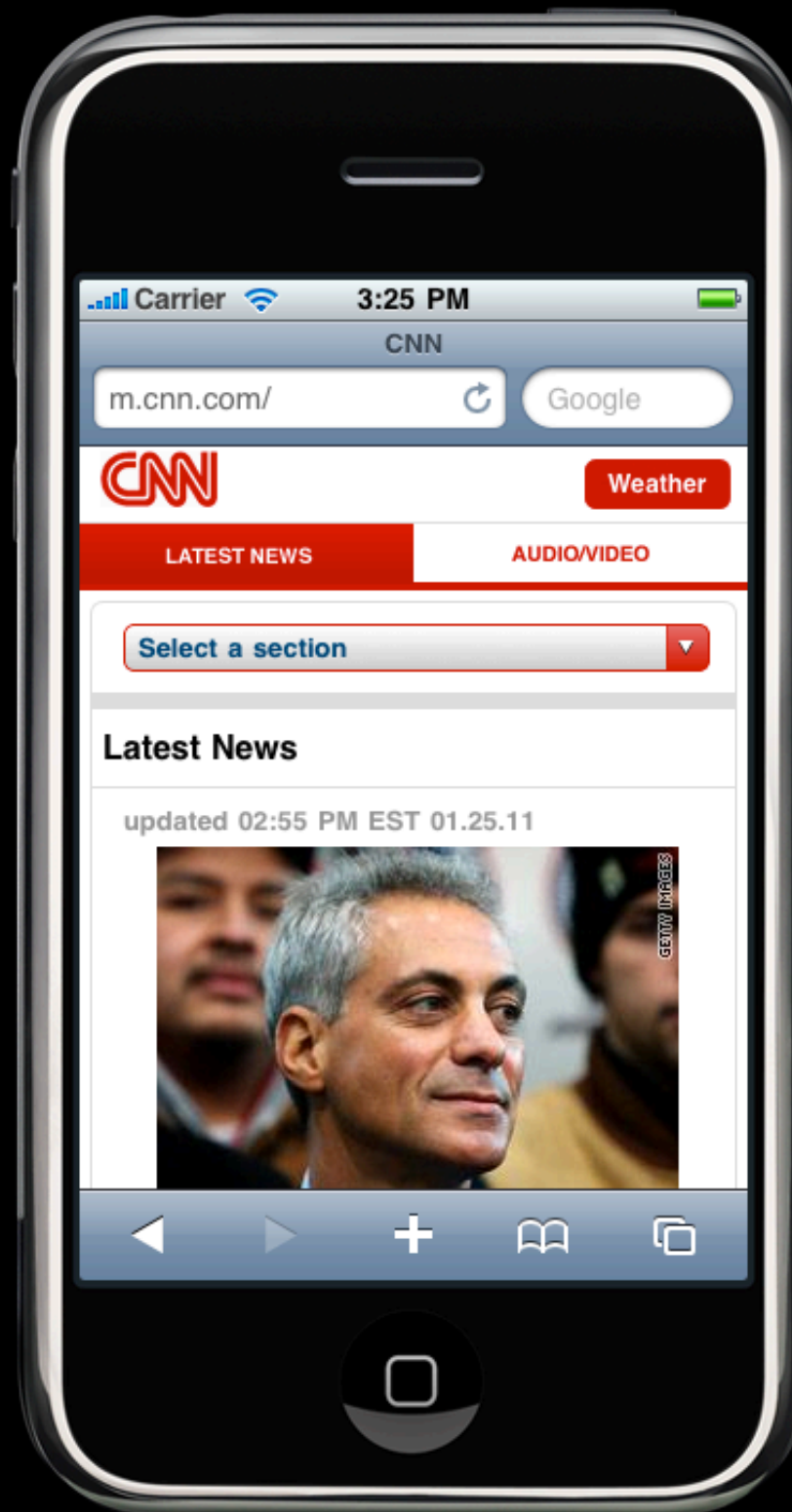


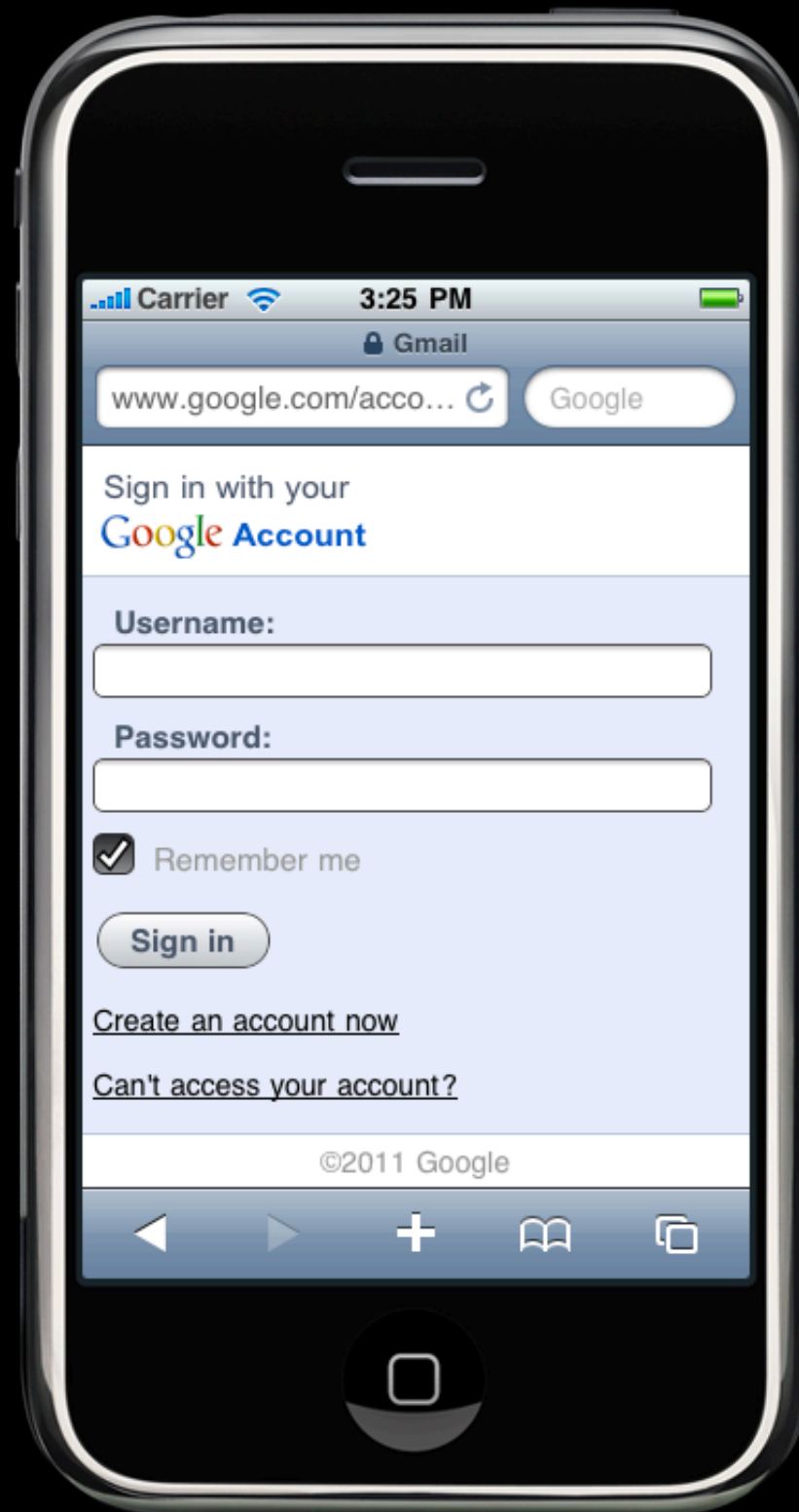
```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>hello, world</title>
  </head>
  <body>
    hello, world
  </body>
</html>
```

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="styles.css">
    <meta charset="utf-8">
    <script src="scripts.js"></script>
    <title>hello, world</title>
  </head>
  <body>
    hello, world
  </body>
</html>
```

XMLHttpRequest







expectations

attend lectures and sections

submit all projects

prerequisites

prior programming experience in any object-oriented language

familiarity with HTML

* access to an Intel-based Mac running 10.6.6+

projects

HTML5 App

Mobile Local

Android Apps

Hello World, *n*-Puzzle

iOS Apps

Hello World, Evil Hangman

grades

3 x correctness

2 x design

2 x scope

1 x style

lectures

2 on HTML5

5 on Android

5 on iOS

sections, office hours

mondays, after lecture

wednesdays, after lecture

an interface to some of the tools
provided by the MBTA.com website

app to allow mobile users to have access to
his or her Twitter account via Twitter API

a beer journal application to track the
beers that one drinks while leveraging the
enhanced data entry abilities of the iPhone

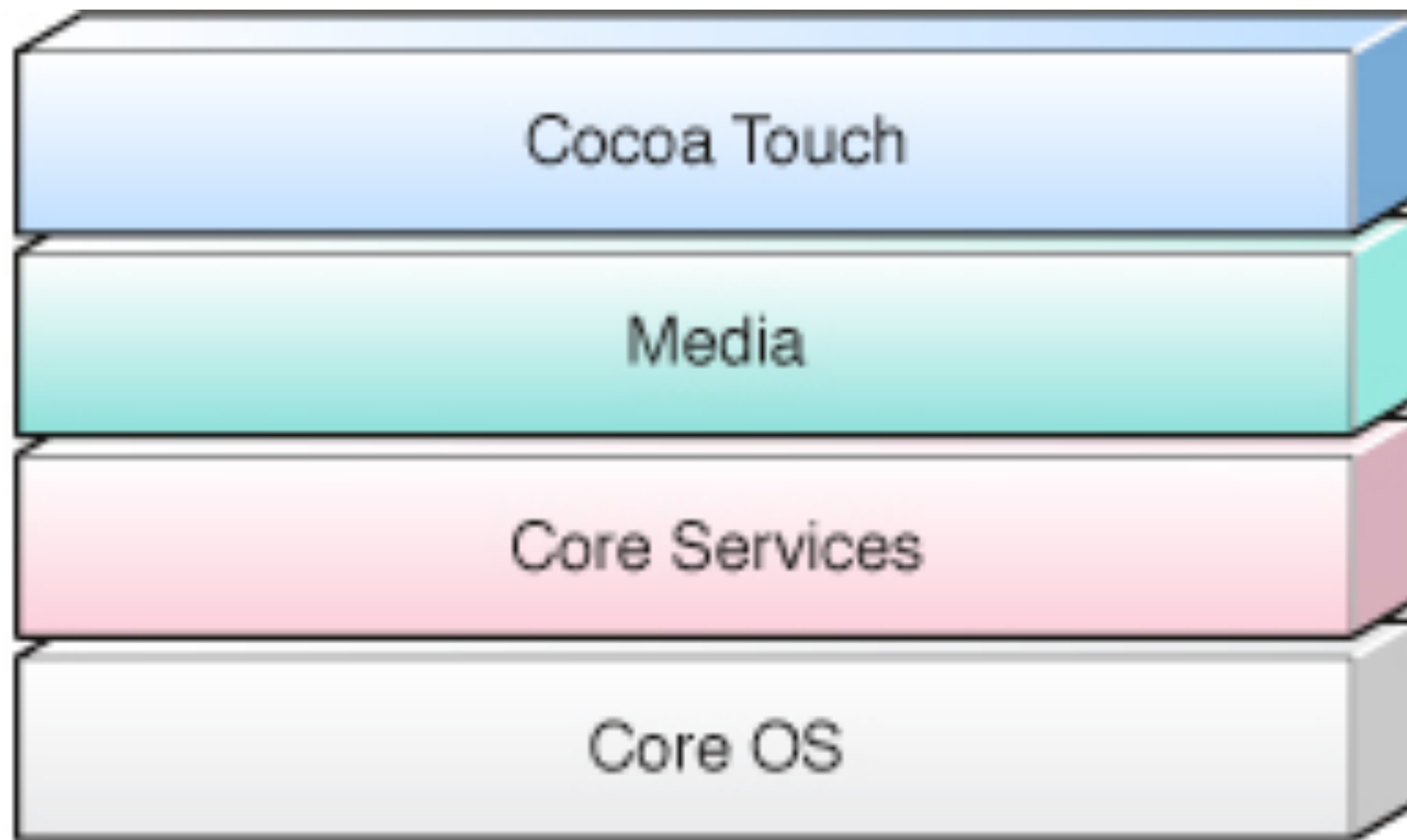
website

www.cs76.net

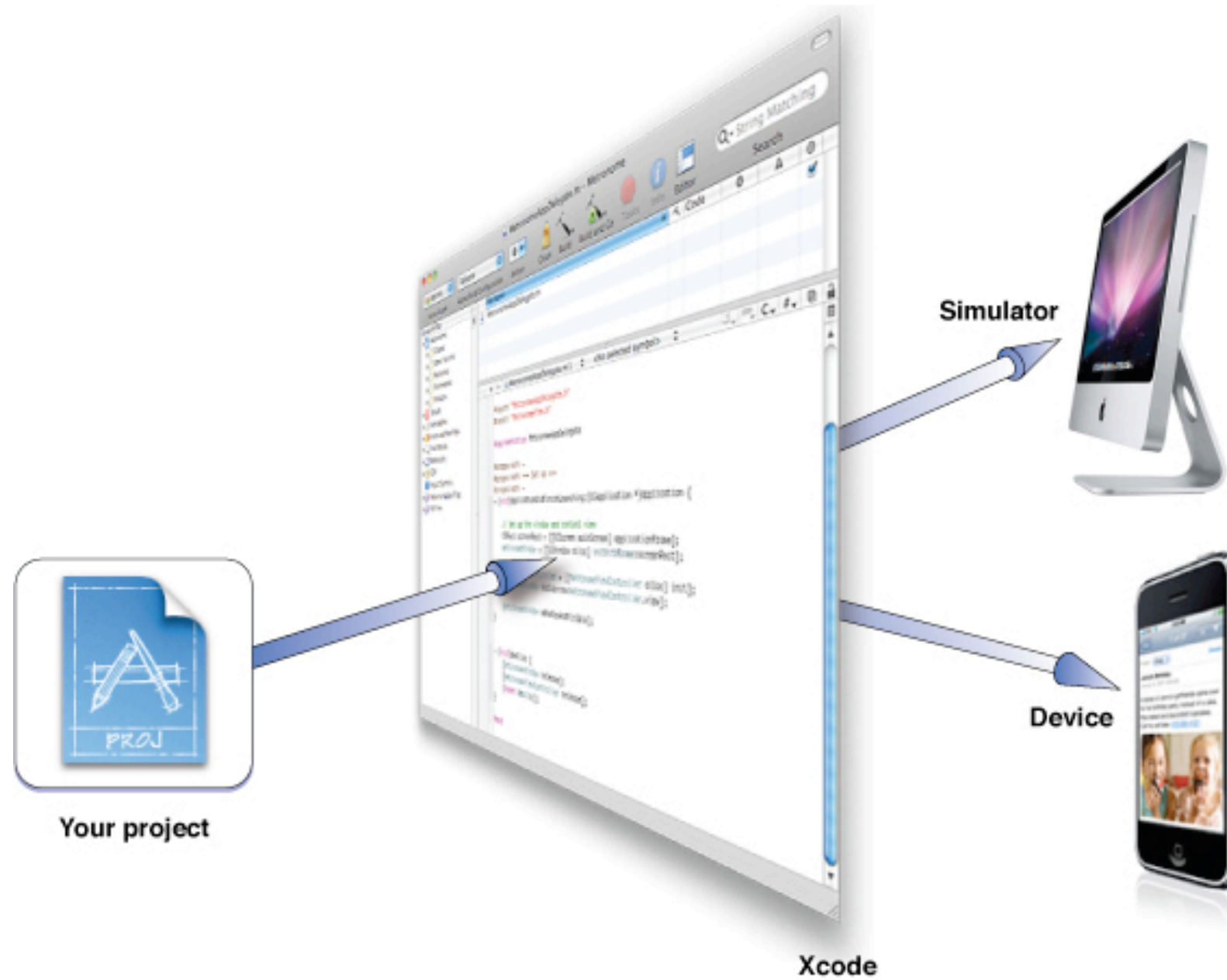
help

help.cs76.net

iOS layers



Xcode



iOS SDK

Xcode Tools

- Xcode
- Interface Builder
- Instruments

iPhone Simulator

iOS Reference Library

iOS frameworks

Address Book UI Framework

Event Kit UI Framework

Game Kit Framework

iAd Framework

Map Kit Framework

Message UI Framework

UIKit Framework

...



hello, demo!

Objective-C

```
foo.bar();
```

[foo bar];

break!