Social Media Apps Programming

Mobile Apps using HTML5/CSS3/JavaScript

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1021SMAP05
TLMXM1A (8687) (M2143) (Fall 2013)
(MIS MBA) (2 Credits, Elective) [Full English Course]
Thu 9,10 (16:10-18:00) V201

2013-10-31
# Course Schedule (1/3)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2013/09/19</td>
<td>Mid-Autumn Festival (Day off)</td>
</tr>
<tr>
<td>2</td>
<td>2013/09/26</td>
<td>Course Orientation and Introduction to Social Media and Mobile Apps Programming</td>
</tr>
<tr>
<td>3</td>
<td>2013/10/03</td>
<td>Introduction to Android / iOS Apps Programming</td>
</tr>
<tr>
<td>4</td>
<td>2013/10/10</td>
<td>Double Tenth Day (Day off)</td>
</tr>
<tr>
<td>5</td>
<td>2013/10/17</td>
<td>Developing Android Native Apps with Java (Eclipse) (MIT App Inventor)</td>
</tr>
<tr>
<td>6</td>
<td>2013/10/24</td>
<td>Developing iPhone / iPad Native Apps with Objective-C (Xcode)</td>
</tr>
</tbody>
</table>
## Course Schedule (2/3)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>2013/10/31</td>
<td>Mobile Apps using HTML5/CSS3/JavaScript</td>
</tr>
<tr>
<td>8</td>
<td>2013/11/07</td>
<td>jQuery Mobile</td>
</tr>
<tr>
<td>9</td>
<td>2013/11/14</td>
<td>Create Hybrid Apps with Phonegap</td>
</tr>
<tr>
<td>10</td>
<td>2013/11/21</td>
<td>Midterm Exam Week (Midterm Project Report)</td>
</tr>
<tr>
<td>11</td>
<td>2013/11/28</td>
<td>jQuery Mobile/Phonegap</td>
</tr>
<tr>
<td>12</td>
<td>2013/12/05</td>
<td>Google App Engine</td>
</tr>
</tbody>
</table>
## Course Schedule (3/3)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>2013/12/12</td>
<td>Google Map API</td>
</tr>
<tr>
<td>14</td>
<td>2013/12/19</td>
<td>Facebook API (Facebook JavaScript SDK) (Integrate Facebook with iOS/Android Apps)</td>
</tr>
<tr>
<td>15</td>
<td>2013/12/26</td>
<td>Twitter API</td>
</tr>
<tr>
<td>16</td>
<td>2014/01/02</td>
<td>Case Study on Social Media Apps Programming and Marketing in Google Play and App Store</td>
</tr>
<tr>
<td>17</td>
<td>2014/01/09</td>
<td>Final Project Presentation</td>
</tr>
<tr>
<td>18</td>
<td>2014/01/16</td>
<td>Final Exam Week (Final Project Report)</td>
</tr>
</tbody>
</table>
Outline

• Mobile Apps
• HTML5
  – Hyper Text Markup Language (version 5)(2012)
  – Content and Structure
• CSS3
  – Cascading Style Sheets (version 3)
  – Presentation, Layout and User Interface
• JavaScript
  – Behavior and Business Logic
Android /iOS Apps Programming

Native Apps  Hybrid Apps  Mobile Web Apps
## App Development Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>Native Apps</th>
<th>Hybrid Apps</th>
<th>Web Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Access</td>
<td>Full</td>
<td>Full</td>
<td>Partial</td>
</tr>
<tr>
<td>Speed</td>
<td>Very Fast</td>
<td>Native Speed as Necessary</td>
<td>Fast</td>
</tr>
<tr>
<td>Development Cost</td>
<td>Expensive</td>
<td>Reasonable</td>
<td>Reasonable</td>
</tr>
<tr>
<td>App Store</td>
<td>Available</td>
<td>Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Approval Process</td>
<td>Mandatory</td>
<td>Low Overhead</td>
<td>None</td>
</tr>
</tbody>
</table>

Building Android Apps with HTML, CSS, and JavaScript: Making Native Apps with Standards-Based Web Tools, Jonathan Stark & Brian Jepson, O’Reilly, 2012

Building iPhone Apps with HTML, CSS, and JavaScript: Making App Store Apps Without Objective-C or Cocoa, Jonathan Stark, O’Reilly, 2010

Source: http://www.amazon.com/Building-iPhone-Apps-HTML-JavaScript/dp/0596805780
Learn HTML5 and JavaScript for iOS

This site features a series of examples for every chapter. Look at the site on your desktop, iPad or iPhone as you read the book. Click “View Source” in your browser or go to the Apress download zip to see the source code for each example.

What you see in the book might only be part of the code needed to demonstrate an idea or concept, but this site has everything you need, like additional JS, or CSS, or rendered HTML.

The Real World Example Site

www.grandviewave.com/m

The Grandview Avenue site was written in 2010 and continues to evolve. It's a real site designed to give local businesses an app and mobile site presence.

Each chapter in the book ends with a section called "Putting It All Together", in which I show you how I apply the concepts in the chapter to this real world application.

Hopefully you can see how this site works and either build one like it yourself, or do something completely different.

http://www.learnhtml5book.com/
Mobile Apps

• Mobile Website
  – Classic Website

• Mobile Apps
  – Web Apps

• Responsive Web Design (RWD)

Source: Scott Preston, Learn HTML5 and JavaScript for iOS: Web Standards-based Apps for iPhone, iPad, and iPod touch, Apress, 2012
Mobile Website
Classic Website

http://grandviewave.com/
Mobile Apps (Web Apps)

http://grandviewave.com/
Responsive Web Design (RWD)

http://grandviewave.com/m/
Mobile Web App

HTML

CSS

JavaScript

Templates

Mobile frameworks and Libraries

Phone Data

External Data

Source: Scott Preston, Learn HTML5 and JavaScript for iOS: Web Standards-based Apps for iPhone, iPad, and iPod touch, Apress, 2012
Mobile Web App
Organizing files in directories

• Classic Website
  – / - for all HTML files
  – /css - for all CSS
  – /js - for all JavaScript
  – /images - for all images

• Mobile Web App
  – /m -for all HTML files
  – /m/css - for all CSS
  – /m/js - for all JavaScript
  – /m/images - for all images.

Source: Scott Preston, Learn HTML5 and JavaScript for iOS: Web Standards-based Apps for iPhone, iPad, and iPod touch, Apress, 2012
HTML5 Game

http://www.cuttherope.ie/
Objective-C to JavaScript

http://www.cuttherope.ie/dev/
Cut the Rope
By Chillingo Ltd
Open iTunes to buy and download apps.

Description
Cut the rope to feed candy to little monster Om Nom®! 400 million downloads around the world of this phenomenal puzzle game. 375 levels and more to come!

Chillingo Ltd Web Site › Cut the Rope Support › Application License Agreement › ...More

What's New in Version 2.3.1
It's time to update! To ensure all in-app purchases and data are saved, please update Cut the Rope now.

iPhone Screenshots

Source: https://itunes.apple.com/app/cut-the-rope/id380293530?mt=8
## HTML Versions

<table>
<thead>
<tr>
<th>Version</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML</td>
<td>1991</td>
</tr>
<tr>
<td>HTML+</td>
<td>1993</td>
</tr>
<tr>
<td>HTML 2.0</td>
<td>1995</td>
</tr>
<tr>
<td>HTML 3.2</td>
<td>1997</td>
</tr>
<tr>
<td>HTML 4.01</td>
<td>1999</td>
</tr>
<tr>
<td>XHTML 1.0</td>
<td>2000</td>
</tr>
<tr>
<td>HTML5</td>
<td>2012</td>
</tr>
</tbody>
</table>

The <!DOCTYPE> Declaration

**HTML5**

```html
<!DOCTYPE html>
```

**HTML 4.01**

```html
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
```

**XHTML 1.0**

```html
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```
What is HTML?

• HTML is a language for describing web pages.
  – HTML stands for Hyper Text Markup Language
  – HTML is a markup language
  – A markup language is a set of markup tags
  – The tags describe document content
  – HTML documents contain HTML tags and plain text
  – HTML documents are also called web pages

```html
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>My Title</title>
  </head>
  <body>
    Hello World
  </body>
</html>
```

HTML Tag, Element, Attribute

<title>My Title</title>

<p>This is a paragraph.</p>

<tagname>content</tagname>
HTML Tag, Element, Attribute

<

<title>My Title</title>

>
HTML Tag, Element, Attribute

```html
<meta charset="UTF-8" />
```

- **Tag**: `meta`
- **Element**: `<meta>`
- **Attribute**: `charset="UTF-8"`
What is HTML5

• HTML5 is The New HTML Standard
  – What HTML5 is Not
• The new HTML5 structural elements and attributes
• The new HTML5 form input types and attributes
What HTML5 is Not

• It’s Not XHTML
  – <div id=container> This is a div<br/></div>
  – <div id="container"> This is another div<br/></div>

• It’s Not HTML4+1

• HTML5 is Not Just Markup
  – Not just tags
  – It’s also a set of JavaScript APIs
    • Provide a richer user experience

Source: Scott Preston, Learn HTML5 and JavaScript for iOS: Web Standards-based Apps for iPhone, iPad, and iPod touch, Apress, 2012
HTML5 is The New HTML Standard

Imagination, meet implementation. HTML5 is the cornerstone of the W3C's open web platform; a framework designed to support innovation and foster the full potential the web has to offer. Heralding this revolutionary collection of tools and standards, the HTML5 identity system provides the visual vocabulary to clearly classify and communicate our collective efforts.

Giving meaning to structure, semantics are front and center with HTML5. A richer set of tags, along with RDFa, microdata, and microformats, are enabling a more useful, data driven web for both programs and your users.

Source: [http://www.w3.org/html/logo/](http://www.w3.org/html/logo/)
HTML5 is The New HTML Standard

- New Elements
- New Attributes
- Full CSS3 Support
- Video and Audio
- 2D/3D Graphics
- Local Storage
- Local SQL Database
- Web Applications

Source: http://www.w3schools.com/html/html5_intro.asp
HTML5 is The New HTML Standard

- New Elements
- New Attributes
- Full CSS3 Support
- Video and Audio
- 2D/3D Graphics
- Local Storage
- Local SQL Database
- Web Applications

Source: http://www.w3schools.com/html/html5_intro.asp
With HTML5, playing video and audio is easier than ever.

- HTML5 `<video>`
- HTML5 `<audio>`

```html
<!DOCTYPE HTML>
<html>
<body>

<video width="320" height="240" controls>
<source src="movie.mp4" type="video/mp4">
<source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>

</body>
</html>
```

HTML5 Graphics

With HTML5, drawing graphics is easier than ever:

• Using the `<canvas>` element
• Using inline SVG
• Using CSS3 2D/3D

HTML5 Applications

With HTML5, web application development is easier than ever.

• Local data storage
• Local file access
• Local SQL database
• Application cache
• Javascript workers
• XHTMLHttpRequest 2

Source: http://www.w3schools.com/html/html5_intro.asp
Semantic Elements

HTML5 Forms

• Semantic Elements
  – New elements for headers, footers, menus, sections, and articles.

• HTML5 Forms
  – New form elements,
  – new attributes,
  – new input types,
  – automatic validation.

Source: http://www.w3schools.com/html/html5_intro.asp
HTML5 uses CSS3

• New Selectors
• New Properties
• Animations
• 2D/3D Transformations
• Rounded Corners
• Shadow Effects
• Downloadable Fonts

<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>My Title</title>
  </head>
  <body>
    Hello World
  </body>
</html>
CSS3
Cascading Style Sheets (CSS)

• a simple mechanism for adding style (e.g., fonts, colors, spacing) to Web documents.

```html
<style>
  body {background-color: yellow;}
  h1 {color: green}
  p {color: red;}
  div {color: blue; font-size: 18px;}
</style>
```
• CSS3 is the latest standard for CSS.
• CSS3 is completely backwards-compatible with earlier versions of CSS.

Source: [http://www.w3schools.com/css/css3_intro.asp](http://www.w3schools.com/css/css3_intro.asp)
CSS

Selector: h1

{color: blue; font-size: 12px;}

Property: color
Value: blue

Property: font-size
Value: 12px

http://www.w3schools.com/css/css_syntax.asp
<link rel="stylesheet" type="text/css" href="mystyle1.css"/>
<style>
  body {background-color: yellow;}
  h1 {color: green}
  p {color: red;}
  div {color: blue; font-size: 18px;}
</style>
JavaScript
JavaScript

- JavaScript is a **Scripting Language**
  - A scripting language is a **lightweight** programming language.
  - JavaScript is **programming code** that can be inserted into **HTML pages**.
  - JavaScript code can be executed by all **modern web browsers**.
  - JavaScript is easy to learn.

```
<script language="javascript">
  function sayHello()
  {
    var strNameInput  = document.getElementById('txtNameInput').value;
    var strOutput     = "Hello, my friend, " + strNameInput;
    document.getElementById('divOutput').innerHTML = strOutput;
  }
</script>
```

Source: [http://www.w3schools.com/js/js_intro.asp](http://www.w3schools.com/js/js_intro.asp)
JavaScript: Writing Into HTML Output

document.write("<h1>This is a heading</h1>");
document.write("<p>This is a paragraph</p>");
JavaScript: Reacting to Events

<button type="button" onclick="alert('Welcome!')">Click Me!</button>
JavaScript: Changing HTML Content

```javascript
x=document.getElementById("demo");
x.innerHTML="Hello JavaScript";
```
MVC Framework of Mobile Apps (HTML5, CSS3, JavaScript)

Source: http://sc5.io/blog/2012/02/anatomy-of-a-html5-app/
HTML5 Editors
Maqetta: Online HTML5 WYSIWYG Editor

http://maqetta.org/
Aloha Editor: HTML5 WYSIWYG editor

Aloha Editor - HTML5 WYSIWYG Editor

The world's most advanced browser HTML5 based WYSIWYG editor lets you experience a whole new way of editing. It's faster than existing technologies and offers unprecedented WYSIWYG functionalities.

Aloha Editor is available for:

- CONTENT.NODE
- WORDPRESS
- Drupal
- TYPO3
- ektron
- Create
- Meteor JS
- Rad

http://www.aloha-editor.org/
BlueGriffon: WYSIWYG content editor

BlueGriffon™
The next-generation Web Editor based on the rendering engine of Firefox

BlueGriffon 1.7.2 released 19-Jun-2013

BlueGriffon is a new WYSIWYG content editor for the World Wide Web. Powered by Gecko, the rendering engine of Firefox, it’s a modern and robust solution to edit Web pages in conformance to the latest Web Standards.

It’s free to download (current stable version is 1.7.2) and is available on Windows, Mac OS X and Linux.

BlueGriffon is available in English, Dutch, Finnish, French, Czech, German, Hebrew, Hungarian, Italian, Japanese, Korean, Polish, Simplified Chinese, Serbian, Slovenian, Spanish, Swedish and Traditional Chinese.

BlueGriffon is an intuitive application that provides Web authors (beginners or more advanced) with a simple User Interface allowing to create attractive Web sites without requiring extensive technical knowledge about Web Standards.

http://www.bluegriffon.org/
Online Editor: http://jsbin.com
Notepad++ is a free (as in "free speech" and also as in "free beer") source code editor and Notepad replacement that supports several languages. Running in the MS Windows environment, its use is governed by GPL License.

Based on the powerful editing component Scintilla, Notepad++ is written in C++ and uses pure Win32 API and STL which ensures a higher execution speed and smaller program size. By optimizing as many routines as possible without losing user friendliness, Notepad++ is trying to reduce the world carbon dioxide emissions. When using less CPU power, the PC can throttle down and reduce power consumption, resulting in a greener environment.

You're encouraged to translate Notepad++ into your native language if there's not already a
Sublime Text

Sublime Text is a sophisticated text editor for code, markup and prose. You'll love the slick user interface, extraordinary features and amazing performance.

http://www.sublimetext.com/
HTML5 Mobile Apps Simulators
Ripple Emulator (Beta)

A browser based HTML5 mobile application development and testing tool.

Welcome to Ripple, The Mobile Environment Emulator!

Ripple is a multi-platform mobile environment emulator that is custom-tailored to mobile HTML5 application development and testing. Ripple aims to reduce the challenges being faced by mobile developers caused by today's platform fragmentation in the marketplace.

Ripple is targeted towards WeWorks, PhoneGap, and mobile web development and testing.

Ripple offers the ability to look under the hood of your mobile application, giving you full visibility into what it is doing. It also allows for the use of existing tools to perform JavaScript debugging, HTML DOM inspection, automated testing, as well as multiple device and screen resolution testing.

https://chrome.google.com/webstore/detail/ripple-emulator-beta/geelfhphabnejhjdalkjhgpohgdpnoc?hl=en
Online browser simulator: ipadpeek.com

http://ipadpeek.com/
Opera Mobile Emulator

Opera Mobile Classic Emulator

Do your mobile development straight from your desktop, and pair it with Opera Dragonfly for advanced debugging.

Opera Mobile Classic Emulator 12.1 for Windows
Opera Mobile Classic Emulator 12.1 for Mac

http://www.opera.com/developer/mobile-emulator
Learn HTML5 and JavaScript for iOS

http://iphone5simulator.com/
Xcode iPhone Simulator

Learn HTML5 and JavaScript for iOS
http://grandviewave.com
Demo

Building Mobile Apps with HTML5, CSS3, and JavaScript

http://jsbin.com
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<meta name="viewport" content="width=device-width, initial-scale=1" />
<title>Hello World HTML5 by Myday</title>
<style>
body { background-color:yellow;}
h1 {color:green}
p {color:red;}
div {color:blue; font-size:18px;}
</style>
<script language="javascript">
function sayHello() {
    var strNameInput = document.getElementById('txtNameInput').value;
    var strOutput = "Hello, my friend, " + strNameInput;
    document.getElementById('divOutput').innerHTML = strOutput;
}
</script>
</head>
<body>
<h1>Hello, World!</h1>
<p>What's your name?</p>
<input id="txtNameInput" type="text"><br>
<button type="button" id="btnClick1" onclick="sayHello()">Press Me!</button><br>
<div id="divOutput">Hi</div>
</body>
</html>

http://jsbin.com/oWOsUcI/1
Online Editor: http://jsbin.com

```html
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<title>JS Bin</title>
</head>
<body>
</body>
</html>
```
CompileOnline: Try jQueryMobile Online

http://www.compileonline.com/try_jquerymobile_online.php
<!DOCTYPE html>
<html>
<head>
  <meta charset="utf-8"/>
  <meta name="viewport" content="width=device-width, initial-scale=1"/>
  <title>Hello World HTML5 by Myday</title>
  
  <style>
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    p {color:red;}
    div {color:blue; font-size:18px;}
  </style>
  
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</html>
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  <input id="txtNameInput" type="text"/>
  <br/>
  <button type="button" id="btnClick1" onClick="sayHello()">Press Me!</button>
  <br/>
  <div id="divOutput">Hi</div>
</body>
<style>
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Mobile App with HTML5, CSS3, and JavaScript

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{
  var strNameInput = document.getElementById('txtNameInput').value;
  var strOutput = "Hello, my friend, " + strNameInput;
  document.getElementById('divOutput').innerHTML = strOutput;
}
</script>
</head>
<body>
<h1>Hello, World!</h1>
<p>What's your name?</p>
<input id="txtNameInput" type="text"><br>
<button type="button" id="btnClick1" onclick="sayHello()">Press Me!</button><br>
<div id="divOutput" onClick="sayHello()">Hi</div>
</body>
</html>
Summary

• Mobile Apps
• HTML5
  – Hyper Text Markup Language (version 5)(2012)
  – Content and Structure
• CSS3
  – Cascading Style Sheets (version 3)
  – Presentation, Layout and User Interface
• JavaScript
  – Behavior and Business Logic
References

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• What is HTML5?
  – https://www.youtube.com/watch?v=4oX9DXH4fiA
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• What is JavaScript?
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  – https://www.youtube.com/watch?v=9gTw2EDkaDQ
• CSS Tutorial for Beginners
  – https://www.youtube.com/watch?v=Wz2kIMXDqF4
• JavaScript & jQuery Tutorial for Beginners
  – https://www.youtube.com/watch?v=VRnQOcVcIS8