Social Media Apps Programming

Introduction to Android / iOS Apps Programming

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2015-09-23
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject/Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2015/09/16</td>
<td>Course Orientation and Introduction to Social Media and Mobile Apps Programming</td>
</tr>
<tr>
<td>2</td>
<td>2015/09/23</td>
<td>Introduction to Android / iOS Apps Programming</td>
</tr>
<tr>
<td>3</td>
<td>2015/09/30</td>
<td>Developing Android Native Apps with Java (Eclipse) (MIT App Inventor)</td>
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<tr>
<td>4</td>
<td>2015/10/07</td>
<td>Developing iPhone / iPad Native Apps with Swift (XCode)</td>
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<td>5</td>
<td>2015/10/14</td>
<td>Mobile Apps using HTML5/CSS3/JavaScript</td>
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<td>6</td>
<td>2015/10/21</td>
<td>jQuery Mobile</td>
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<td>7</td>
<td>2015/10/28</td>
<td>Create Hybrid Apps with Phonegap</td>
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<td>8</td>
<td>2015/11/04</td>
<td>jQuery Mobile/Phonegap</td>
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<td>9</td>
<td>2015/11/11</td>
<td>jQuery Mobile/Phonegap</td>
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<td>10</td>
<td>2015/11/18</td>
<td>Midterm Exam Week (Midterm Project Report)</td>
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<td>11</td>
<td>2015/11/25</td>
<td>Case Study on Social Media Apps Programming and Marketing in Google Play and App Store</td>
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<td>2015/12/02</td>
<td>Google Cloud Platform</td>
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## Course Schedule (3/3)

<table>
<thead>
<tr>
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<tr>
<td>13</td>
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<td>2015/12/16</td>
<td>Google Map API</td>
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<td>Facebook API (Facebook JavaScript SDK) (Integrate Facebook with iOS/Android Apps)</td>
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<td>16</td>
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<td>Twitter API</td>
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<td>17</td>
<td>2016/01/06</td>
<td>Final Project Presentation</td>
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<tr>
<td>18</td>
<td>2016/01/13</td>
<td>Final Exam Week (Final Project Presentation)</td>
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Android /iOS Apps Programming

Native Apps

Hybrid Apps

Mobile Web Apps
Android / iOS Apps Programming

- Native Apps
- Mobile Apps (Web Apps)
- Hybrid Apps
App Development Comparison

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

Hybrid Apps
Mobile Apps, Native Apps

HTML5 vs. Hybrid vs. Native Apps

36% Mobile web apps
32% Hybrid apps
15% Native apps

39% SPEND TIME DEVELOPING THE SAME APP/FEATURE FOR MULTIPLE PLATFORMS

HTML5 is #1 CHOICE FOR BUILDING APPS FOR MULTIPLE MOBILE PLATFORMS

Source: http://techcrunch.com/2013/02/26/survey-most-developers-now-prefer-html5-for-cross-platform-development/
Native Apps vs. Hybrid Apps

Hybrid App Examples

Examples of Purely-Native Mobile Apps

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

Source: http://www.amazon.com/Learn-HTML5-JavaScript-iOS-Standards-based/dp/1430240385
Building iPhone Apps with HTML, CSS, and JavaScript: Making App Store Apps Without Objective-C or Cocoa, Jonathan Stark, O’reilly, 2010
Building Android Apps with HTML, CSS, and JavaScript: Making Native Apps with Standards-Based Web Tools, Jonathan Stark & Brian Jepson, O’reilly, 2012

Chris Adamson and Janie Clayton, iOS 8 SDK Development: Creating iPhone and iPad Apps with Swift, Pragmatic Bookshelf, 2nd Edition, 2015

Source: http://www.amazon.com/gp/product/1941222641
Responsive Design
HTML5/CSS3/JavaScript

Source: http://www.ihealthspot.com/ResponsiveWebsiteDesign.aspx
jQuery Mobil: http://jquerymobile.com/

A Touch-Optimized Web Framework

jQuery Mobile is a HTML5-based user interface system designed to make responsive web sites and apps that are accessible on all smartphone, tablet and desktop devices.

Seriously cross-platform with HTML5

jQuery Mobile framework takes the "write less, do more" mantra to the next level: instead of writing unique applications for each mobile device or OS, the jQuery mobile framework allows you to design a single highly-branded responsive web site or application that will work on all popular smartphone, tablet, and desktop platforms.

Browser Support

Developer Links

- Source Code (GitHub)
- jQuery Mobile Git (WIP Build)
  - JavaScript
  - CSS
- Report an issue
- Browser Support
- Changelogs
PhoneGap: [http://phonegap.com/](http://phonegap.com/)

Easily create apps using the web technologies you know and love: HTML, CSS, and JavaScript

PhoneGap is a free and open source framework that allows you to create mobile apps using standardized web APIs for the platforms you care about.
Prepare your apps for the App Store.

The next release of watchOS, iOS, and OS X will soon be in the hands of hundreds of millions of customers around the world. Download the GM seeds, test your apps, and submit them to the App Store for review.
Swift. A modern programming language that is safe, fast, and interactive.

Swift is a powerful and intuitive programming language for iOS, OS X, and watchOS. Writing Swift code is interactive and fun, the syntax is concise yet expressive, and apps run lightning-fast. Swift is ready for your next project — or addition into your current app — because Swift code works side-by-side with Objective-C.
Android 6.0 Marshmallow

The official Android 6.0 SDK is now available! Update to Developer Preview 3 and get your apps ready for Android Marshmallow!

› Get started
› Update to Developer Preview 3 (final SDK)
Integrate Facebook with your native iOS apps

https://developers.facebook.com/
Facebook SDK for iOS

Helps you build engaging social apps and get more installs.

Download the SDK

Includes Bolts, Audience Network, and Facebook frameworks. Requires iOS 7.

v4.6.0. See Change Log or Upgrade Guide.

Read our iOS 9 guide
Get Started on iOS
Basics for iOS

In iOS SDK

Share
People on your app can share, send a message, or like content in your app. They can also share

Login
People can sign in to your app with their Facebook Login.

https://developers.facebook.com/docs/ios/
Integrate Facebook with your native Android apps.

https://developers.facebook.com/
Facebook SDK for Android

Helps you build engaging social apps and get more installs.

Download the SDK

Includes Audience Network, and Facebook packages. Requires Android API 15.

v4.5.0. See Change Log or Upgrade Guide.

Get Started
Basic guide for Android

SDK Reference Docs
Reference Docs and sample code

In Android SDK

Login
People can easily sign in to your app with their

Share
People using your app can share or send a
Twitter Developers

https://dev.twitter.com/

INTRODUCING

fabric

The easiest way to build the best apps.

Download More >

flight Twitter's Developer Conference is back! Click here for all the details.
Tools for modern applications

Google Cloud Platform enables developers to build, test and deploy applications on Google's highly-scalable and reliable infrastructure. Choose from computing, storage and application services for your web, mobile and backend solutions.

Get Started

Google Compute Engine now generally available

Google Compute Engine is now generally available with a 99.95% monthly SLA and 24x7 support. We've eliminated maintenance windows with live migration, cut prices by 10%, added support for Red Hat, SUSE, FreeBSD, or any Linux variant you want, and introduced new 16-core instances.

Learn More

https://cloud.google.com/
Google App Engine

Run your applications on a fully-managed platform with built-in services that make you more productive. Just download the SDK and start building immediately.

Features

Popular languages and frameworks
Write applications in some of the most popular programming languages: Python, Java, PHP and Go. Use existing frameworks such as Django, Flask, Spring and webapp2. Develop locally with language-specific SDKs. Pair your applications with Compute Engine to integrate other familiar technologies such as Node.js, C++, Scala, Hadoop, MongoDB, Redis.

Focus on your code
Let Google worry about database administration, server configuration, sharding and load balancing. With Traffic Splitting, you can A/B test different live versions of your app. Multitenancy support lets you compartmentalize your application data.

Multiple storage options
Choose the storage option you need: a traditional MySQL database using Cloud SQL, a schemaless NoSQL datastore, or object storage using Cloud Storage.

https://cloud.google.com/products/app-engine/
Google Cloud Datastore

Use a managed, NoSQL, schemaless database for storing non-relational data. Cloud Datastore automatically scales as you need it and supports transactions as well as robust, SQL-like queries.

Features

Schemaless access, with SQL-like querying
No need to worry about data models and migration. Cloud Datastore is a schemaless storage service that allows you to be agile by removing the need to think about the underlying structure of the data. Cloud Datastore provides a robust query engine that allows you to search for data across multiple properties and sort as needed.

Managed database
Cloud Datastore is fully managed. Google automatically handles sharding and replication in order to provide you with a highly available and consistent database.

Autoscale with your users
Cloud Datastore automatically scales depending on your needs. This allows you to focus on building your application and not on worrying about provisioning and load anticipation.

https://cloud.google.com/products/cloud-datastore/
Google Cloud Endpoints

https://developers.google.com/appengine/docs/java/endpoints/
The Open Graph Viz Platform

Gephi is an interactive visualization and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs.

Runs on Windows, Linux and Mac OS X. Gephi is open-source and free.

Learn More on Gephi Platform »

Applications

- Exploratory Data Analysis: intuition-oriented analysis by networks manipulations in real time.
- Link Analysis: revealing the underlying structures of associations between objects, in particular in scale-free networks.

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Papers

“Like Photoshop™ for graphs.” — the Community

Latest News

© Gephi Summer Code 2013

Gephi, Social Network Analysis and Visualization: https://gephi.org/
Characteristics of a Purely-Native Mobile App

• A binary “executable image”, that is explicitly downloaded and stored on the file system of the mobile device

• Distributed through the popular app store or marketplace of the device, or via an enterprise distribution mechanism

• Executed directly by the operating system
  – Launched from the home screen
  – Does not require another “container app” to run it

• Makes explicit use of operating-system APIs

Native App Development

iOS - Native App Development
Swift is a new object-oriented programming language for iOS and OS X development.

Swift is modern, powerful, expressive, and easy to use.

Source: https://developer.apple.com/swift/
Swift Language

• Unified
  A complete replacement for both the C and Objective-C languages.
  – Swift provides full object-oriented features, and includes low-level language primitives such as types, flow control, and operators.

• Fast
• Complete platform
• Safe by design
• Modern
• Interactive

Source: https://developer.apple.com/swift/
Android - Native App Development

Native App – Interaction with Mobile Device

Web App – Interaction with Mobile Device

Hybrid App — Interaction with Mobile Device

Hybrid App Development

Hybrid App Examples

Native App – High-level APIs and Built-in Apps

GUI Toolkit Provides App With “Native” Look

Downloaded Apps

Built-in Apps

API Calls

GUI Toolkit

Apps

APIs

Mobile Web Apps and Mobile Browsing

Mobile Browsing and Mobile Web Apps

Mobile Browsing vs. Mobile Web Apps

Pure Mobile Web Sites
- Visited by browsing
- Static, navigational UI
- Generic look & feel
- Server-side rendering
- Require connectivity

Pure Mobile Web Apps
- Installed and launched
- Interactive UI
- Touch optimized
- Client-side rendering
- Available offline

Characteristics of Mobile Web Apps

• Entirely written using web technologies
  – HTML, CSS and JavaScript
• Code is executed by the browser, not by the OS
• Various launch mechanisms
  – Typing URL, clicking hyperlink, scanning QR Code or clicking home-screen shortcut
• Installation is optional
• Combine cross-platform HTML5 and device-specific features optimize apps
  – Touch-optimized look & feel
  – No address bar
  – Suggestion to pin to home screen
  – Offline availability

HTML5 and related technologies

• Main HTML5/CSS3 features on mobile
  – Bitmapped and vector graphics, including animations
  – Offline support and data URLs
  – Geolocation
  – Video and Audio
  – Continuous communications with the server
  – More...

Characteristics of Hybrid Apps

• A Hybrid App is a native app with embedded HTML
• It has all the benefits of native apps: full access to APIs, app-store presence, etc.
• Selected portions of the app are written using web technologies
• The web portions of the app can either be downloaded from the web or packaged within the app

Native Apps vs. Hybrid HTML5 Apps

Source: Porting your Apple iOS and Android Apps to HTML5, https://www.youtube.com/watch?v=-k43St4LCe0
HTML5, JavaScript, CSS3
jQuery Mobile: [http://jquerymobile.com/](http://jquerymobile.com/)
PhoneGap: [http://phonegap.com/](http://phonegap.com/)

Easily create apps using the web technologies you know and love: HTML, CSS, and JavaScript

PhoneGap is a free and open source framework that allows you to create mobile apps using standardized web APIs for the platforms you care about.

- Install PhoneGap
- Getting Started Guides

Wrap your app with PhoneGap

Deploy to mobile platforms!
Adobe PhoneGap Build: Package mobile apps in the cloud

https://build.phonegap.com/

Take the pain out of developing mobile apps.

Simply upload your HTML5, CSS, and JavaScript assets to the Adobe® PhoneGap™ Build cloud service and we do the work of compiling for you.
Demo
CompileOnline: Try jQueryMobile Online

http://www.compileonline.com/try_jquerymobile_online.php
CompileOnline: Try jQueryMobile Online

How it works?

Just follow the following simple steps to compile and execute any of your favorites programming languages online using your favorite browser and without having any setup on your local machine.

Step - 1 Select your favorite language which you want to execute.

Step - 2 Type your source using available text editor.

Step - 3 Finally click ① button [Ctrl+E on Windows & Command+E on Mac ] to see the result.

NOTE: If you do not get result, then kindly try clicking ① button once again.

Advanced Functionality

- If you are willing to provide input to your program then use input.txt to give input to your program. Internally you will need to read this input.
- If you know how to use multiple files to implement packages, modules etc. in your favorite language then you can enable multi-file support using available checkbox.
- If you are willing to provide command line arguments to your program then use below mentioned input box to specify your command line arguments.

Tutorials

http://www.compileonline.com/try_jquerymobile_online.php
<html>
  <head>
    <title>Page Title</title>
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
    <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel="stylesheet"/>
    <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>
  </head>
  <body data-role="page" id="first" data-theme="a">
    <div data-role="header">
      <h1>Page Title1</h1>
    </div>
    <div data-role="content">
      Page content goes here.
    </div>
    <div data-role="footer">
      Page Footer1
    </div>
  </body>
</html>

http://www.compileonline.com/try_jquerymobile_online.php
```html
1. `<!DOCTYPE html>`
2. `<html>`
3. `    <head>`
4. `        <title>Page Title</title>`
5. `        <meta name="viewport" content="width=device-width, initial-scale=1" />`
6. `        <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>`
7. `        <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel="stylesheet" />`
8. `        <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>`
9. `    </head>`
10. `<body>`
11. `    <div data-role="page" id="first" data-theme="a">`
12. `        <div data-role="header">`
13. `            <h1>Page Title1</h1>`
14. `        </div>`
15. `    </div>`
16. `    <div data-role="content">`
17. `        <p>Page content goes here. Hello World Myday</p>`
18. `    </div>`
19. `    <a href="#second">Go to second page</a>`
20. `</body>`
21. `<div data-role="Footer">`
22. `    <h4>Page Footer1</h4>`
23. `</div>`
24. `</div>`
25. `<div data-role="page" id="second" data-odd-back-btn="true" data-theme="b">`
26. `        <div data-role="header">`
27. `            <h1>Page Title2</h1>`
28. `        </div>`
29. `    </div>`
30. `    <div data-role="content">`
31. `        <p>Page content goes here.</p>`
32. `    </div>`
33. `    <div data-role="Footer">`
34. `        <h4>Page Footer2</h4>`
35. `</div>`
36. `</div>`
37. `</body>`
</html>
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<!DOCTYPE html>
<html>
<head>
    <title>Page Title</title>
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <script src="http://code.jquery.com/jquery-1.9.1.min.js"></script>
    <link type="text/css" rel="stylesheet" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css">
    <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>
</head>

<body data-role="page" id="first" data-theme="a">
    <div data-role="header">
        <h1>Page Title1</h1>
    </div>
    <div data-role="content">
        Page content goes here. Hello World Myday
    </div>
    <a href="#second">Go to second page</a>
</body>

</html>
<!DOCTYPE html>
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</head>

<body>
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        <div data-role="header">
            <h1>Page Title1</h1>
        </div>
        <div data-role="content">
            <p>Page content goes here. Hello World Myday</p>
            <a href="#second">Go to second page</a>
        </div>
        <div data-role="footer">
            <h4>Page Footer1</h4>
        </div>
    </div>

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        </div>
        <div data-role="content">
            <p>Page content goes here.</p>
        </div>
        <div data-role="footer">
            <h4>Page Footer2</h4>
        </div>
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</html>
<body>
    <div data-role="page" id="first" data-theme="a">
        <div data-role="header">
            <h1>Page Title1</h1>
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            <a href="#second">Go to second page</a>
        </div>
        <div data-role="footer">
            <h4>Page Footer1</h4>
        </div>
    </div>
</body>
<div data-role="page" id="second" data-add-back-btn="true" data-theme="b">
  <div data-role="header">
    <h1>Page Title2</h1>
  </div>
  <div data-role="content">
    <p>Page content goes here.</p>
  </div>
  <div data-role="footer">
    <h4>Page Footer2</h4>
  </div>
</div>
<html>
  <head>
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    <link type="text/css" href="http://code.jquery.com/mobile/latest/jquery.mobile.min.css" rel="stylesheet" />
    <script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>
  </head>
  <body>
    <div data-role="page" id="first" data-theme="a">
      <div data-role="header">
        <h1>Page Title1</h1>
      </div><!-- /header -->
      <div data-role="content">
        Page content goes here. Hello World Myday
      </div><!-- /content -->
      <div data-role="footer">Page Footer1</div>
    </div><!-- /page -->
    <script>
      /* jQuery Mobile script */
    </script>
  </body>
</html>
<script type="text/javascript" src="http://code.jquery.com/mobile/latest/jquery.mobile.min.js"></script>

<div data-role="page" id="first" data-theme="a">
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        <h1>Page Title1</h1>
    </div><!-- /header -->

    <div data-role="content">
        Page content goes here. Hello World Myday
    </div><!-- /content -->

    <div data-role="footer">
        Page Footer1
    </div><!-- /footer -->
</div><!-- /page -->

<div data-role="page" id="second" data-odd-back-btn="true" data-theme="b">
    <div data-role="header">
        <h1>Page Title2</h1>
    </div><!-- /header -->

    <div data-role="content">
        Page content goes here.
    </div><!-- /content -->

    <div data-role="footer">
        Page Footer2
    </div><!-- /footer -->
</div><!-- /page -->

<html>
<DOCTYPE html>
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      <div data-role="footer">
        <h4>Page Footer2</h4>
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    </div>
  </body>
</html>

http://www.compileonline.com/try_jquerymobile_online.php
Online Editor: http://jsbin.com

http://jsbin.com/
Accelerate Mobile Innovation in the Enterprise

The only cloud-based platform with visual development tools and integrated backend services

Try Our Free Plan

http://appy.io/
Summary

• Native Apps
• Mobile Apps (Web Apps)
• Hybrid Apps
References

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