

Comp 388/422 - Software Development for Wireless and Mobile Devices

Fall Semester 2015 - Week 4

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Next goals

- add some style and fun
 - *jQuery mobile...*
- jQuery mobile
 - *more information*
 - *demos (web examples)*
- mobile design patterns
 - *start of series*

Cordova App - useful commands

A few initial useful CLI commands

command	example	description
cordova	cordova	general command - outputs overview with 5 categories of information and help
-v	cordova -v	check current installed version of cordova
create	cordova create basic com.example.basic 422Basic	creates new project with additional arguments for directory name, domain-style identifier, and the app's display title
platform add	cordova platform add android	specify target platforms, eg: Android, iOS... (NB: SDK support required on local machine)
platform ls	cordova platform ls	checks current platforms for cordova development on local machine and lists those available
platform remove (platform rm)	cordova platform rm android	remove an existing platform
build	cordova build	iteratively builds the project for the available platforms
build ios	cordova build ios	limit scope of build to a specific platform (useful for testing a single platform...)
prepare	cordova prepare ios	prepare a project, and then open and build etc with native IDE (eg: XCode, Android Studio...)

command	example	description
compile	cordova compile ios	compile ios specific version of app
emulate	cordova emulate android	rebuilds an app and then launches it in a specific platform's emulator
run	cordova run android	run an app on a native device connected to the local machine

- more commands will be added as we work with Cordova, NPM...

jQuery Mobile - intro - part I

- closer, more considered look at building our interfaces
- in particular using jQuery mobile
- jQuery mobile designed as an off-shoot of the popular jQuery JavaScript library
- specific focus upon mobile devices, specifications, and requirements
- simple goal to leverage HTML5 and CSS3
- simple, fast, responsive development of mobile centric user interfaces
- designed with touch in mind responds to user generated events as expected for touch-enabled devices
- supports cross-platform devices and operating systems
- latest version 1.4 browser support is excellent
- [jQuery Mobile 1.4 Browser Support](#)

jQuery Mobile - intro - part 2

- customise UI design, either manually or with **ThemeRoller** on the project's website
 - *jQuery ThemeRoller*
- customise JavaScript build to ensure we only download the required components for our given application
 - *jQuery Download Builder*
- anyone familiar with jQuery will be comfortable with jQuery Mobile
- based on jQuery with baked-in support for accessibility, universal access * jQuery claims that the project follows,

...*progressive enhancement and responsive web design (RWD) principles*

- API can be found at the following URL,
 - *jQuery Mobile API*

jQuery Mobile - guide - part I

- work our way through some of the basics of jQuery Mobile
 - *features, components*
 - *how they can be used with our cross-platform apps*
- further details about
 - *pages and the concept of dialogs*
 - *general navigation*
 - *working with content*
 - *theming*

jQuery Mobile - guide - part 2

- jQuery Mobile presents many different options for UI design and customisation
- use it as a component of responsive design
- add it as a baked-in component of a native mobile app
- often consider jQuery Mobile as a mixture of
 - *pages and dialogs*
 - *navigation*
 - *content*
 - *theming*
- use of pages is a fundamental concept for structuring, rendering, and using an application
- simple pages with just a basic page wrapper
- detailed and layered within many pages
 - *grouping content together within a single multi-page template*
- also consider pages as native dialogs

jQuery Mobile - guide - part 3

- further enhance and manipulate such rendering options
 - *using Ajax navigation and animated transitions*
- by default a simple, yet powerful, Ajax-based system of navigation
- works by intercepting a standard anchor or link request
 - *then processing it as an Ajax request*
- Ajax navigation supports the standard back button in browsers
 - *does not reset or break the application's navigation*
- supports a concept of pre-fetching pages into the DOM
- ability to cache pages within an application for quick, responsive rendering
 - *able to cache one, a few, all application pages*
- any perceptible delay in the returned Ajax navigation
 - *standard loader overlay will be shown*

jQuery Mobile - guide - part 4

- as requested page is loaded by Ajax navigation
 - *effectively looking for just the content in the page*
 - *content is then inserted into the DOM*
 - *widgets in the incoming page will be updated to match defined styles and behaviour*
 - *the remainder of the page is ignored*
- title of the page will be updated
 - *reflects loading and rendering of new page into active view*
- apply animations and transitions for this loading and view
- by default, jQuery Mobile sets this transition to **fade**
- modify this transition to another effect or simply remove
 - *transitions such as fade, pop, flip, turn, slide...*

jQuery Mobile - guide - part 5

- add standard HTML elements to our app's code within content container
 - *add headings, paragraphs, divs, links, images, and so on*
- use these elements to create our own custom layouts and designs
- style as required for our app's aesthetics
- add an additional stylesheet to the <head> element after the jQuery Mobile stylesheet
- jQuery Mobile includes existing touch-friendly widgets for use within our UI
- add many different UI features
 - *forms, collapsible elements and sets*
 - *various popups and dialogs*
 - *responsive table designs, list views, and so on*
- customise our JS code to load only required widgets and UI elements

jQuery Mobile - guide - part 6

- jQuery Mobile happily works with and supports responsive web design
- available widgets have been designed to work with variable widths
 - *ensure correct rendering on multiple devices*
- theme and customise the interface design
 - *pick and choose our preferred styles, colours, and overall themes*
- either customise a single widget or set the whole page container to a given theme
- we can customise relative to a given operating system and platform guidelines

jQuery Mobile - pages - part I

intro

- primary way to interact and define our apps with jQuery mobile
 - *through the concept of **pages***
- **pages** become the primary focus of interaction for the application
- one of the primary concepts in working and developing with jQuery mobile
- **pages** used to create logical groups of content
 - *include associated views*
- views can be animated in the view to show and hide content
- an application can start with a single page
 - *then use Ajax (Asynchronous JavaScript and XML) to navigate through content groupings*
 - *content loaded upon request into the DOM*
 - *in response to user interaction and navigation*
- alternative structure is content in more traditional pages
 - *transitioned within the framework upon request*
 - *negates need for content requests from the server*

jQuery Mobile - pages - part 2

basic page structure

- need to define our pages with the standard HTML5 doctype,

```
<!DOCTYPE html>
```

- allows us to exploit and manipulate new content categories available in HTML5
- semantic organisation of our content
 - *new header, main, and footer elements*

jQuery Mobile - pages - part 3

<head> element

- define the <head> element, and associated metadata
 - *define viewport for our devices, customising for mobile devices*
 - *add references to the jQuery Mobile libraries*
 - *standard CSS <link> and JS <script> elements*
- viewport tag sets default zoom level for page rendering and associated dimensions
- no viewport meta tag set
 - *most mobile web browsers will simply set a best guess*
 - *standardised width of approximately 900 pixels*

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

jQuery Mobile - example - basic page template

```
<!DOCTYPE html>
<html>
<head>
  <title>Basic App</title>
  <meta name="viewport" content="width=device-width, initial-scale=1" />
  <link rel="stylesheet" href="http://code.jquery.com/mobile/1.4.5/jquery.mobile-1.4.5.min.css" />
  <script src="http://code.jquery.com/jquery-1.11.1.min.js"></script>
  <script src="http://code.jquery.com/mobile/1.4.5/jquery.mobile-1.4.5.min.js"></script>
</head>

<body>
  ...app content...
</body>
</html>
```

- remember to update CSS and JS links for required version

jQuery Mobile - pages - part 4

initial page layout

- add some structure, and layout our initial page
- working within the page's body element
- identify a page within the <body> using an element such as a <div>
 - a suitable identifying attribute *data-role="page"*

```
<div data-role="page">  
...  
</div>
```

- within this page container we can add any valid HTML markup
- for jQuery Mobile a standard, defined pattern can be used for app's pages
 - *div elements with additional, defined data-role and role attributes*
 - *defines semantic division of content*

```
<div data-role="header">...</div>  
<div role="main" class="ui-content">...</div>  
<div data-role="footer"></div>
```

jQuery Mobile - page template - example

```
<!DOCTYPE html>
<html>
<head>
  <title>Basic App</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="http://code.jquery.com/mobile/
jquery.mobile-[version].min.css" />
  <script src="http://code.jquery.com/jquery-[version].min.js"></script>
  <script src="http://code.jquery.com/mobile/[version]/
jquery.mobile-[version].min.js"></script>
</head>
<body>

<div data-role="page">
  <div data-role="header">
    <h3>Welcome</h3>
  </div><!-- /header -->

  <div role="main" class="ui-content">
    <p>first basic app content...</p>
  </div><!-- /content -->

  <div data-role="footer">
    <h5>footer...</h5>
  </div><!-- /footer -->

</div><!-- /page -->
</body>
</html>
```

- latest stable versions can be checked at [jQuery CDN](#)

jQuery Mobile - page template - demo

Welcome
first basic app content...
footer...
<u>jQuery Mobile - basic page template</u>

- demo of basic page template

jQuery Mobile - multi-page concept - part 1

- jQuery mobile defines pages as single page and multi-page templates
- a better definition might be
 - *single page with single semantic content group*
 - *single page with multi semantic content groups*
- using a single page template to either
 - *store a page worth of content with links to additional pages in separate files*
 - *store multiple page's worth of content with internal links to identifiers*
- multi-page uses page template plus
 - *additional **pages** with `div` elements and attribute `data-role="page"`*
 - *stores multiples pages within a single page template*

jQuery Mobile - multi-page concept - part 2

- to help identify each internal **page**
 - use *id* attribute with a unique value
 - use *id* to create internal references for links etc...
- a page block might be as follows,

```
<div data-role="page" id="page1">  
...  
</div>
```

- then link internally to that page as follows,

```
<a href="#page1">page 1</a>
```

jQuery Mobile - multi-page template - example

```
<body>
  <!-- page1 -->
  <div data-role="page" id="page1">
    <div data-role="header">
      <h3>Welcome - page 1</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p>View internal page - <a href="#page2">page2</a></p>
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 1</h5>
    </div><!-- /footer -->
  </div><!-- /page1 -->

  <!-- page2 -->
  <div data-role="page" id="page2">
    <div data-role="header">
      <h3>page 2</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p><a href="#page1">Return to page1</a></p>
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 2</h5>
    </div><!-- /footer -->
  </div><!-- /page2 -->
</body>
```

jQuery Mobile - multi-page template - demo

Welcome - page 1
View internal page link - page2
footer - page 1
<u>jQuery Mobile - basic multi page template - page 1</u>

page 2
Return to page1
footer - page 2
<u>jQuery Mobile - basic multi page template - page 2</u>

- demo of basic multi page template

jQuery Mobile - basic optimisation - part 1

pre-fetching pages - with links

- option to pre-fetch pages for use within our applications
- work with multiple single page files
 - *pre-fetch a page to improve performance and rendering*
- jQuery Mobile adds the requested pages to the DOM
- add data-prefetch attribute to the required page link
 - *set value for this attribute to a boolean value*

View internal page - `page 2`

jQuery Mobile - basic optimisation - part 2

pre-fetching pages - with JS

- also use pre-fetch concept within our JS code

```
$( ":mobile-pagecontainer" ).pagecontainer( "load", pageUrl,
```

- using the **Pagecontainer** widget's method, `load`, to fetch an external page
- then insert it into the DOM
- add some extra options to fetched content, change how its output, and so on
- eg: set required `data-role` relative to the element's selector
- helps define how the fetched page will be rendered

```
$( ":mobile-pagecontainer" ).pagecontainer( "load", "page2.h
```

- selector is the default
`:mobile-pagecontainer`
 - equates to the default `<body>` element in HTML
 - parent element for pages, both internal and external examples
- [API documentation - Pagecontainer widget](#)

jQuery Mobile - caching the DOM - part I

- underlying issues with maintaining the DOM
 - *continually adding more and more pages*
 - *may quickly fill a browser's memory*
- jQuery Mobile has a simple way to handle this potential issue
 - *maintains a record of Ajax page loads*
 - *flags for removal from the DOM as user leaves page*
 - *clearing of the DOM cache forms part of the page events*
 - *triggered as the given page is hidden*
- it doesn't clear the home page for the app
 - *single page with multiple page containers unaffected*
- if a user then tries to return to a cleared page
 - *browser will try its cache for an existing copy of the page*
 - *if not, will simply re-fetch the file from the server*

jQuery Mobile - caching the DOM - part 2

- counterproductive for many apps that carefully manage data and resources
- auto-clearing of the cache may not be necessary for smaller, focused apps
- jQuery Mobile provides the option to programmatically cache pages
- become instantly available if a user decides to return to a given page
- also set an attribute on a single page to cache ready for use.

```
data-dom-cache="true"
```

- final override to the auto-flushing of the DOM's cache
- jQuery Mobile can cache all visited pages within the application

jQuery Mobile - working with dialogs - part I

intro

- any page grouping or container can be formatted and rendered as a modal **dialog**
- set to appear as a formal overlay to the current rendered page
- set this rendering style by adding an attribute to a given link's element

```
<a href="#page2" data-transition="pop">page2</a>
```

- any page can be used to create these modal dialogs by adding an attribute for dialog,

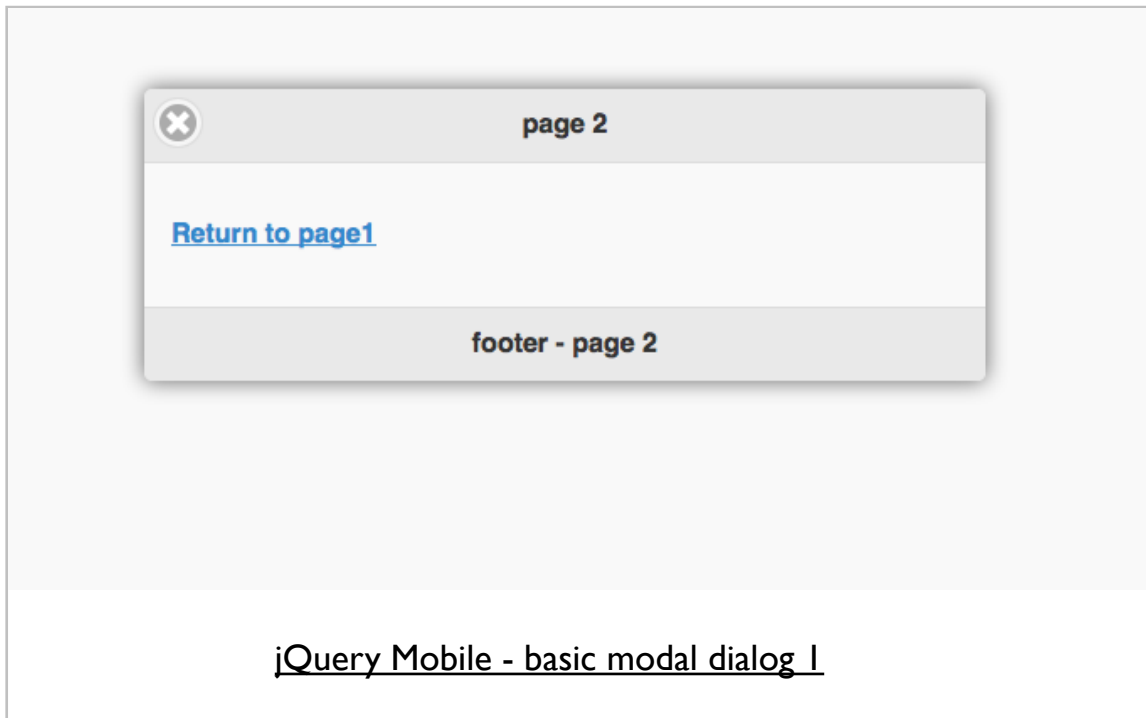
```
<div data-role="page" data-dialog="true" id="page2">
```

jQuery Mobile - working with dialogs - template 1

```
<body>
<!-- page1 -->
<div data-role="page" id="page1">
  <div data-role="header">
    <h3>Welcome - page 1</h3>
  </div><!-- /header -->
  <div role="main" class="ui-content">
    <p>View internal page - <a href="#page2">page2</a></p>
  </div><!-- /content -->
  <div data-role="footer">
    <h5>footer - page 1</h5>
  </div><!-- /footer -->
</div><!-- /page1 -->

<!-- page2 -->
<div data-role="page" data-dialog="true" id="page2">
  <div data-role="header">
    <h3>page 2</h3>
  </div><!-- /header -->
  <div role="main" class="ui-content">
    <p><a href="#page1">Return to page1</a></p>
  </div><!-- /content -->
  <div data-role="footer">
    <h5>footer - page 2</h5>
  </div><!-- /footer -->
</div><!-- /page2 -->
</body>
```

jQuery Mobile - working with dialogs - demo I



- demo of basic modal dialog I

jQuery Mobile - working with dialogs - part 2

transitions

- a modal dialog is, in effect, an extension of a page container
- by default it is set with a standard page transition, **fade**
- customise this transition effect
- specify any of the available page transitions on the applicable dialog

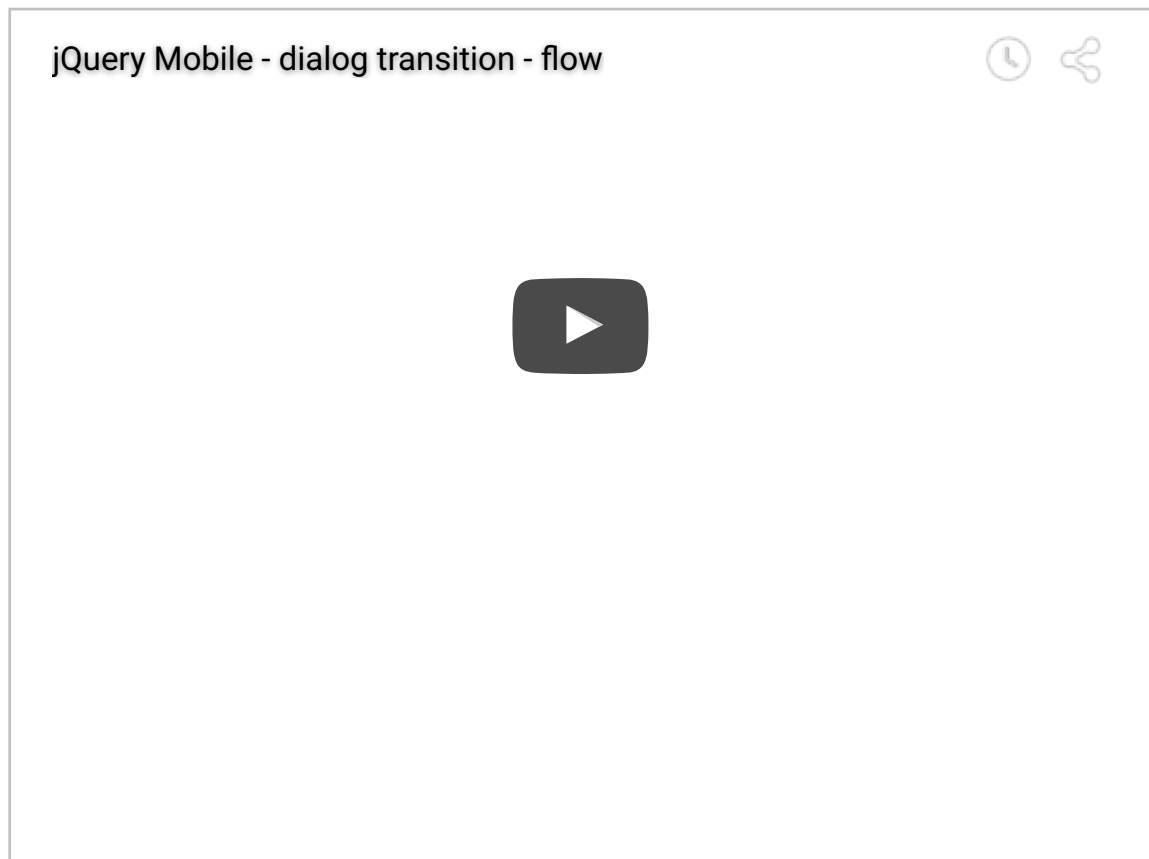
```
<a href="#page2" data-transition="flow">page2</a>
```

jQuery Mobile - working with dialogs - template 2

```
<body>
  <!-- page1 -->
  <div data-role="page" id="page1">
    <div data-role="header">
      <h3>Welcome - page 1</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p>View internal page - <a href="#page2" data-tr
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 1</h5>
    </div><!-- /footer -->
  </div><!-- /page1 -->

  <!-- page2 -->
  <div data-role="page" data-dialog="true" id="page2">
    <div data-role="header">
      <h3>page 2</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p><a href="#page1">Return to page1</a></p>
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 2</h5>
    </div><!-- /footer -->
  </div><!-- /page2 -->
</body>
```


jQuery Mobile - working with dialogs - demo 2



- demo of basic modal dialog 2

jQuery Mobile - working with dialogs - template 3

```
<body>
  <!-- page1 -->
  <div data-role="page" id="page1">
    <div data-role="header">
      <h3>Welcome - page 1</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p>View internal page - <a href="#page2" data-tr
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 1</h5>
    </div><!-- /footer -->
  </div><!-- /page1 -->

  <!-- page2 -->
  <div data-role="page" data-dialog="true" id="page2">
    <div data-role="header">
      <h3>page 2</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p><a href="#page1" data-transition="flow">Return
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 2</h5>
    </div><!-- /footer -->
  </div><!-- /page2 -->
</body>
```

jQuery Mobile - working with dialogs - demo 3



- demo of basic modal dialog 3

jQuery Mobile - working with dialogs - part 2

closing - part 1

- when we close an open modal dialog we return to the requested page
- could be the previous page, another link, and so on
- for styling and consistency, jQuery Mobile looks for a defined header element in the page
- if present, a close button will be added to the left side of the header in the modal dialog
- change position of button by adding the following attribute to the dialog container,

```
data-close-btn="right"
```

- also remove this default button,

```
data-close-btn="none"
```

jQuery Mobile - working with dialogs - part 3

closing - part 2

- add a **cancel** button to the dialog
 - *create a link to the originating page for the dialog*
 - *then add the following attribute*

```
data-rel="back"
```

- nice feature of using back is preservation of originating transition
- customise the text for our close button
 - *programmatically or with attribute and value*
 - *close icon remains*
 - *accessibility feature not UI*

```
data-close-btn-text="closed text"
```

- chain dialogs from one to another
- chaining also works in reverse
- notable features of this chaining
 - *always navigates to previous dialog until reaching root of*

```
data-role="page"
```

jQuery Mobile - working with dialogs - template 4

```
<body>
  <!-- page1 -->
  <div data-role="page" id="page1">
    <div data-role="header">
      <h3>Welcome - page 1</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p>View internal page - <a href="#page2" data-tr
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 1</h5>
    </div><!-- /footer -->
  </div><!-- /page1 -->

  <!-- page2 -->
  <div data-role="page" data-dialog="true" id="page2">
    <div data-role="header">
      <h3>page 2</h3>
    </div><!-- /header -->
    <div role="main" class="ui-content">
      <p><a href="#page1" data-rel="back">Cancel</a></p>
    </div><!-- /content -->
    <div data-role="footer">
      <h5>footer - page 2</h5>
    </div><!-- /footer -->
  </div><!-- /page2 -->
</body>
```

jQuery Mobile - working with dialogs - demo 4



- demo of basic modal dialog 4

jQuery Mobile - working with dialogs - part 4

styling...

- as a page we can customise the style and theming for our dialogs
- set an attribute on the dialog's page container,

```
data-theme="b"
```

- allows us to specify theme attributes to the header, content or footer containers
- default includes two themes, **a** or **b**
 - **a** = dark text on light background, and **b** = the reverse
- also change the design of the corners, rounded by default
- add a custom overlay for the dialog
- custom overlay really allows us to tailor our dialog designs
- manage this custom design with standard CSS
 - set this using a class on the originating page container for the dialog

jQuery Mobile - working with dialogs - template 5

```
...
<!-- page2 -->
<div data-role="page" data-dialog="true" data-theme="b" id="page2">
  <div data-role="header">
    <h3>page 2</h3>
  </div><!-- /header -->
  <div role="main" class="ui-content">
    <p><a href="#page1" data-rel="back">Cancel</a></p>
  </div><!-- /content -->
  <div data-role="footer">
    <h5>footer - page 2</h5>
  </div><!-- /footer -->
</div><!-- /page2 -->
...
```

jQuery Mobile - working with dialogs - demo 5



- demo of basic dialog styling

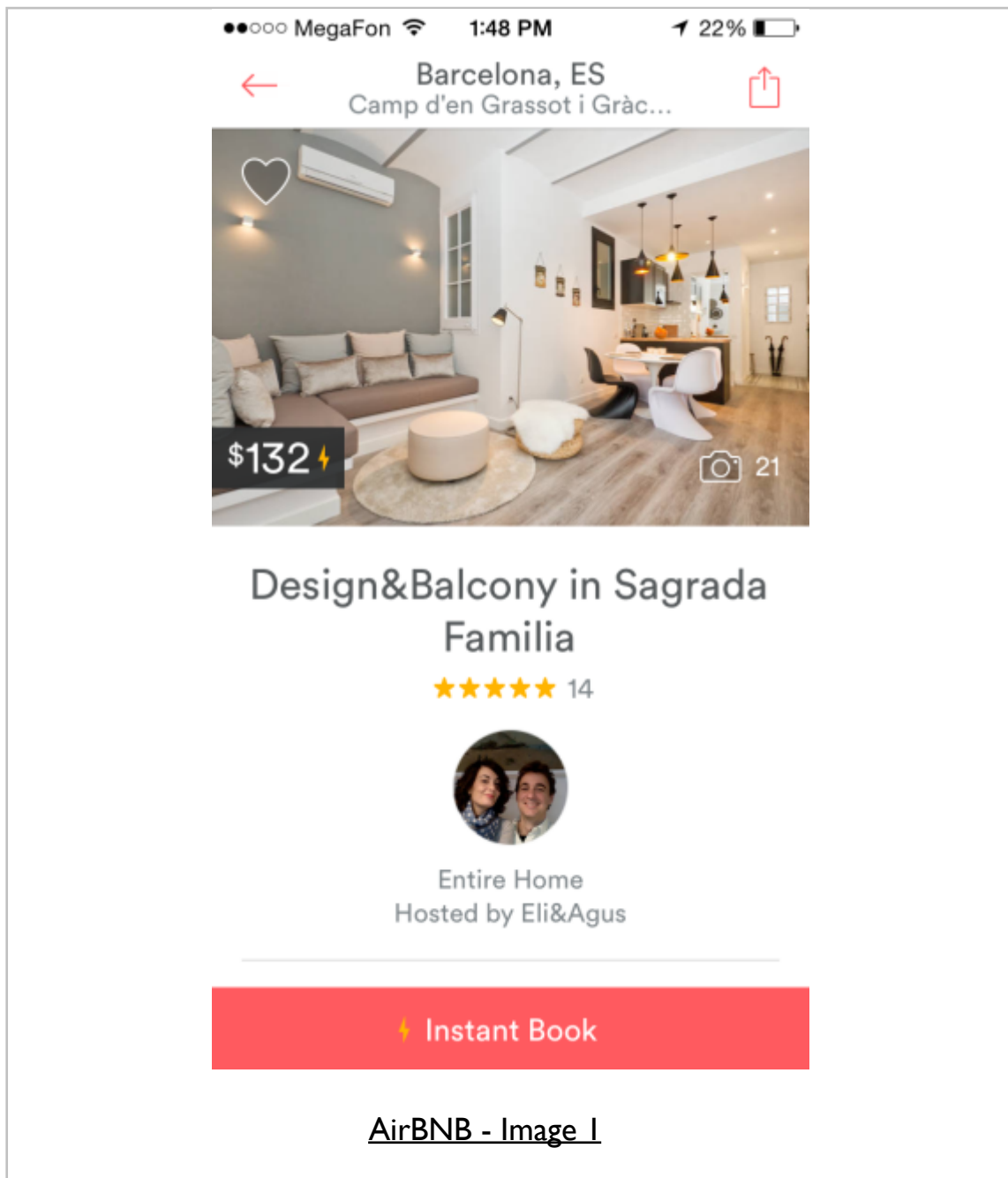
jQuery Mobile - working with dialogs - part 5

size *properties...*

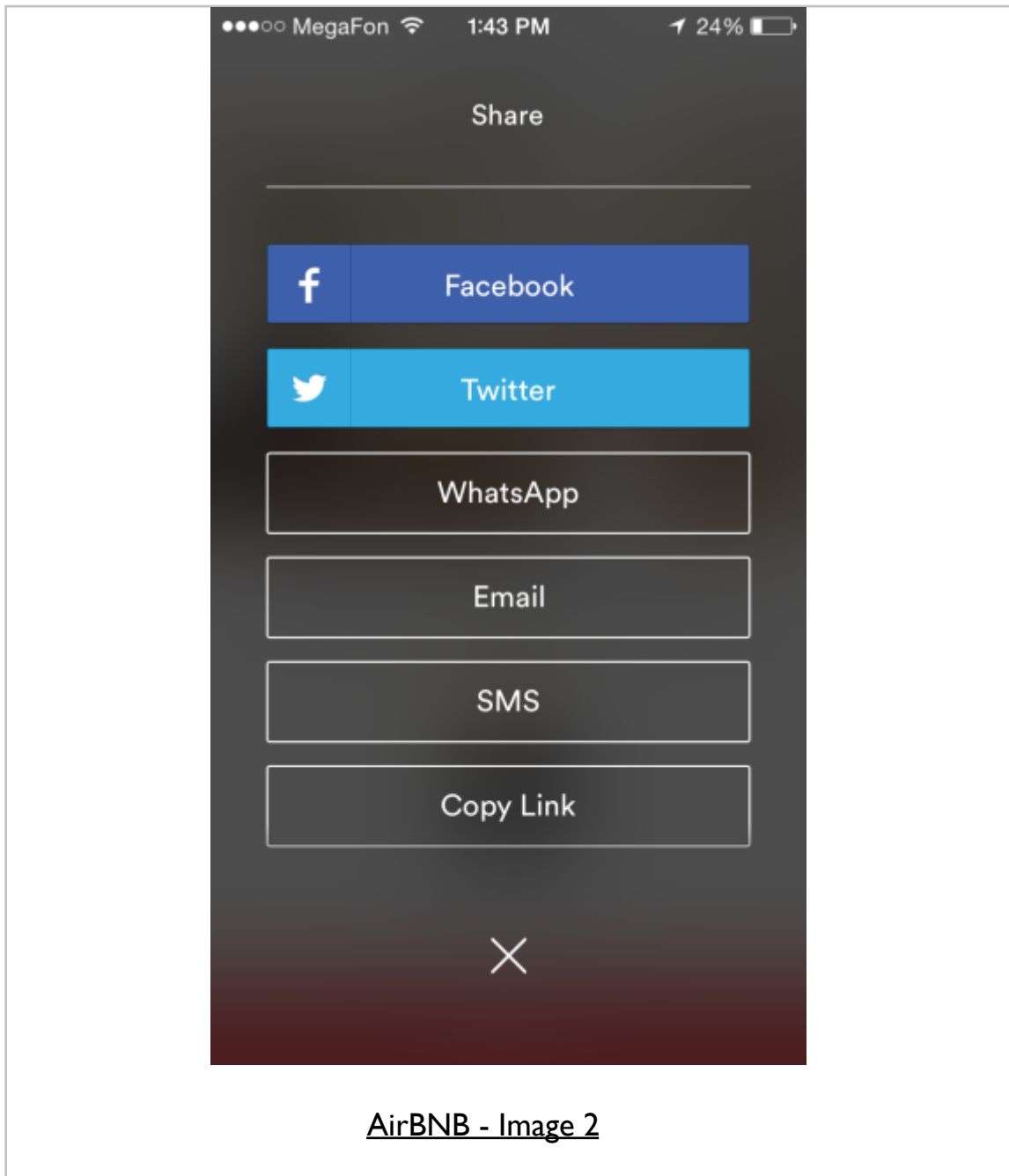
```
.ui-dialog-contain {  
    width: 92.5%;  
    max-width: 500px;  
    margin: 10% auto 15px auto;  
    padding: 0;  
    position: relative;  
    top: -15px;  
}
```

- add the above ruleset to your CSS stylesheet
- then override as required per design

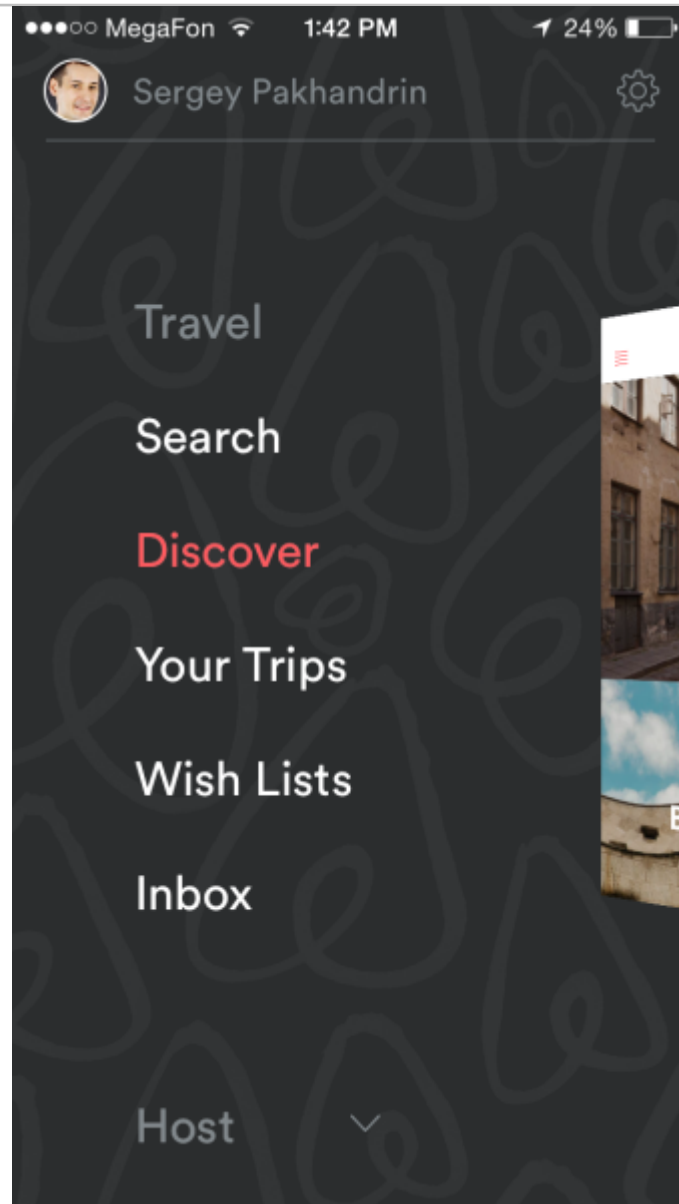
Considering mobile design patterns - screen 1



Considering mobile design patterns - screen 2

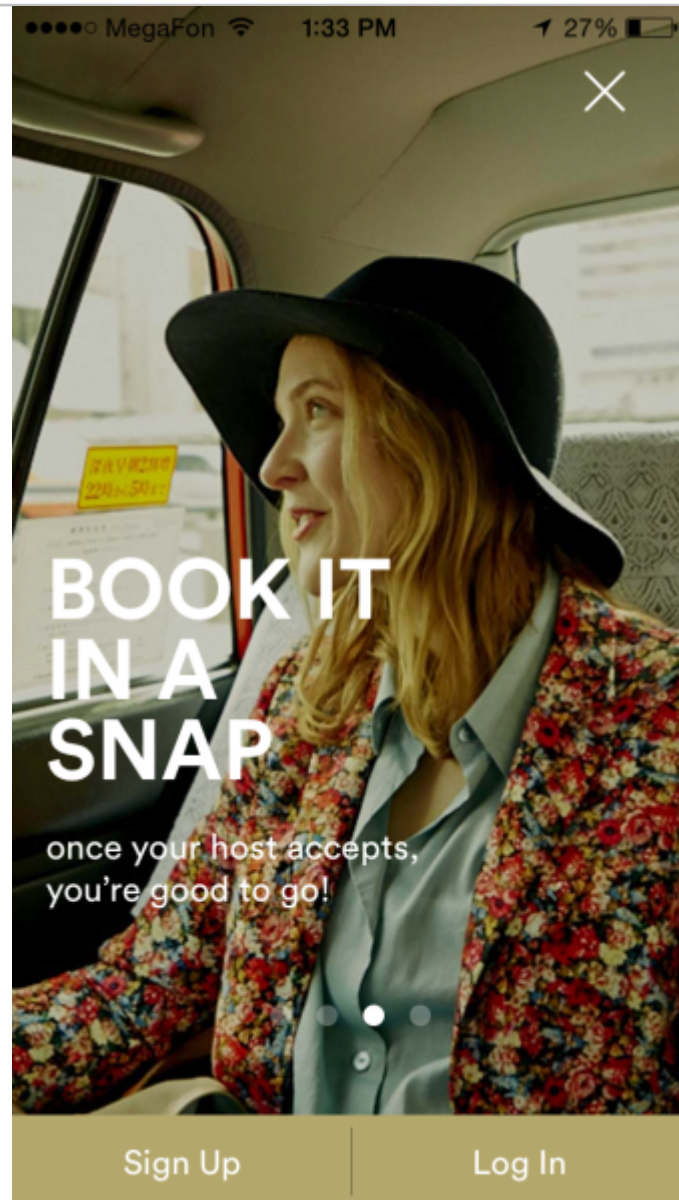


Considering mobile design patterns - screen 3



AirBNB - Image 3

Considering mobile design patterns - screen 4



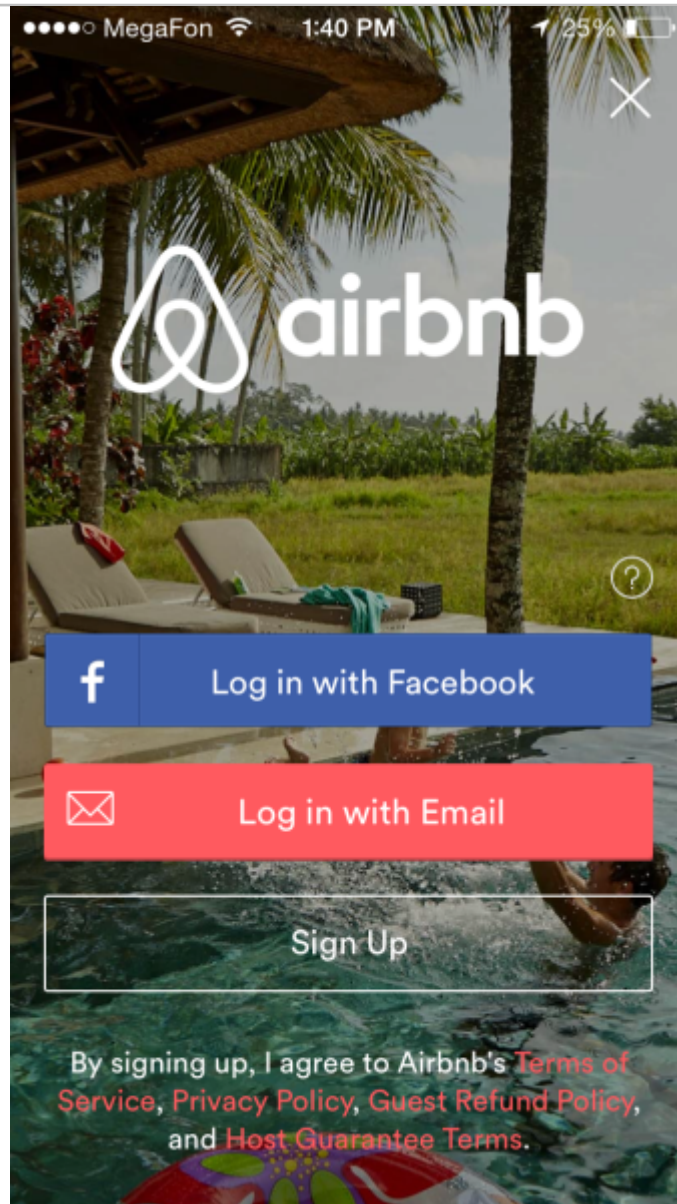
AirBNB - Image 4

Considering mobile design patterns - screen 5



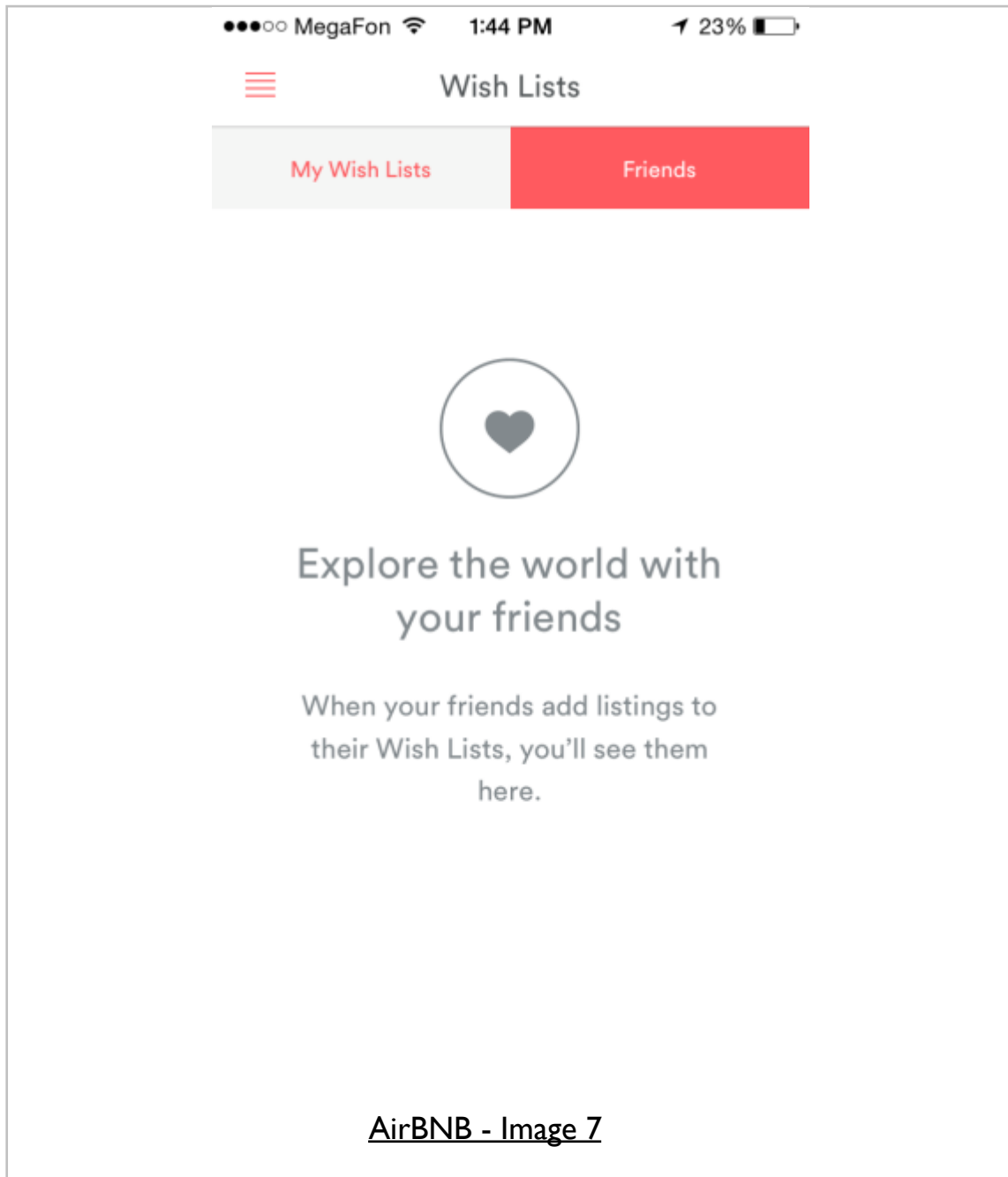
AirBNB - Image 5

Considering mobile design patterns - screen 6



AirBNB - Image 6

Considering mobile design patterns - screen 7



Demos

- demo of basic page template
- demo of basic multi page template
- demo of basic modal dialog 1
- demo of basic modal dialog 2
- demo of basic modal dialog 3
- demo of basic modal dialog 4
- demo of basic dialog styling

References

- [jQuery Mobile API](#)
- [Pagecontainer widget](#)
- [jQuery Mobile 1.4 Browser Support](#)
- [jQuery Mobile ThemeRoller](#)
- [Responsive Web Design](#)