

Mobile Local Walkthrough

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Announcements

Mobile Local
Walkthrough

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Setup

JSONP

YQL

Tips and
Tricks

- ▶ Lecture videos available at:
<https://www.cs76.net/Lectures>
- ▶ Section information: <https://www.cs76.net/Sections>

Today

Mobile Local
Walkthrough

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Setup

JSONP

YQL

Tips and
Tricks

- ▶ Setup
- ▶ JSONP
- ▶ YQL
- ▶ Tips and Tricks

Section Feedback

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Tips and
Tricks

- ▶ <http://tommymacwilliam.com/e76/feedback>
 - ▶ let me know how I'm doing!
- ▶ I don't like long surveys either, so give me feedback via an anonymous (I promise) 140-character tweet!

HTML Setup

Mobile Local
Walkthrough

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Setup

JSONP

YQL

Tips and
Tricks

- ▶ we can do this using a single HTML page
 - ▶ remember, we'll be using JavaScript+jQuery to update the contents of this page
- ▶ multiple HTML pages (or “pages” using jQuery Mobile or jQTouch) are not necessary, but you can certainly use more than one page if you'd like to

HTML Setup

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Tips and
Tricks

- ▶ **HTML5 Doctype:** `<!doctype html>`
- ▶ **jQuery:** `<script type="text/javascript" src="cdn link here"></script>`
 - ▶ http://docs.jquery.com/Downloading_jQuery
- ▶ `<meta>` tags!

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Tips and
Tricks

- ▶ other things we'll need
 - ▶ text box: so users can enter a location
 - ▶ submit button: so users can get news for a location
 - ▶ news area: so your news has a place to be displayed to the user
 - ▶ geolocate: up to you!
 - ▶ history: up to you!

HTML Setup

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Tips and
Tricks

- ▶ let's test out our setup to make sure we're good to go before we dive in
- ▶ HTML sanity check: are the elements visible on the page and selectable?
- ▶ jQuery sanity check: can we say hello to the user via `$(document).ready?`
 - ▶ remember, `$` is a jQuery function, so this will only work if we've loaded jQuery correctly

HTML Setup

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Tips and
Tricks

- ▶ example time!
 - ▶ <http://tommyacwilliam.com/e76/section2/setup.html>

JSON

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Tips and
Tricks

- ▶ JSON stands for JavaScript Object Notation
- ▶ despite having JavaScript in its name, JSON is a language-independent data interchange standard
 - ▶ RFC 4627, if you're interested
 - ▶ just like XML, but much less verbose
 - ▶ more human-readable, too

- ▶ syntax is identical to the syntax for creating a JavaScript object

```
{
  "car": {
    "color": "red",
    "miles": 20918,
    "owners": [ "tommy", "alycia" ]
  }
}
```

- ▶ isn't that so much nicer than XML?

JSON

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Tips and
Tricks

- ▶ WebKit browsers have a built-in JSON parser
- ▶ `JSON.parse(string)`: parse a JSON string and return an object
 - ▶ will fail silently if your JSON string has a syntax error!
- ▶ `JSON.stringify(object)`: convert an object into a string that can be parsed by JSON later

JSON

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Tips and
Tricks

- ▶ example time!
 - ▶ <http://tommyacwilliam.com/e76/section2/json.html>

AJAX Win?

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Tips and
Tricks

- ▶ remember, AJAX allows us to make requests to other pages from JavaScript
- ▶ cool beans, let's try to load the Google News homepage with a GET request

AJAX Win?

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Tips and
Tricks

- ▶ example time!
 - ▶ get.html

Same Origin Policy

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Tips and
Tricks

- ▶ “XMLHttpRequest cannot load http://news.google.com/. Origin http://tommymacwilliam.com is not allowed by Access-Control-Allow-Origin.”
 - ▶ forget it, let's just go home
- ▶ this is a security feature of JavaScript: we cannot load content from different domains
 - ▶ news.google.com is a different domain than tommymacwilliam.com

JSONP

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Tips and
Tricks

- ▶ the solution: JSONP
 - ▶ or, “JSON with padding”
- ▶ we can use `<script>` tags to load content from other domains
- ▶ so instead of directly using the `XMLHttpRequest` object, we can add a `<script>` tag to the DOM
 - ▶ the `src` attribute will be the URL we'd like to make a GET request to
- ▶ the server also has to cooperate by wrapping its response in a JavaScript function we can call
 - ▶ the name of this function will match the function name for our event handler, so it will be called when the server responds

JSONP

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Tips and
Tricks

- ▶ complicated? I agree!
- ▶ good thing jQuery does ALL of this for us so we don't need to worry about it
- ▶ `$.getJSON(<url>, <callback function>);`
 - ▶ treats your JSONP request to another domain just like it were a GET request to your own domain

- ▶ YQL is a service by Yahoo! that allows us to query web services with a SQL-like language
 - ▶ `select * from <format> where url="<url>"`
 - ▶ here we'll be using `rss` and `json` for formats
- ▶ <http://developer.yahoo.com/yql/>
- ▶ check out the console at:
<http://developer.yahoo.com/yql/console/>

- ▶ example time!
 - ▶ <http://developer.yahoo.com/yql/console/>

- ▶ okay great, but YQL is still on another domain, we can't get that either
- ▶ notice the buttons for XML and JSON underneath the query textbox
 - ▶ cbfunc? callback function? SWEET.
 - ▶ YQL can output data as JSONP, which means we can call it from another domain

JSONP+YQL

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Tips and
Tricks

- ▶ let's put these two things together
 - ▶ with YQL, can query any page and output data as JSONP
- ▶ as the problem set mentions, let's try `select * from rss where url = 'http://news.google.com/news?geo=02138&output=rss'`
 - ▶ notice the (long) URL at the very bottom of the page:
`http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20rss%20where%20url%3D%22http%3A%2F%2Fnews.google.com%2Fnews%3Foutput%3Drss%22&format=json&diagnostics=true&callback=cbfunc`

JSONP+YQL

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Tips and
Tricks

- ▶ that long URL is going to be the first argument to our call to `$.getJSON`
- ▶ remember, jQuery is going to take care of the callback, so remove “`&callback=cbfunc`”
 - ▶ our JSONP request is going to look just like a regular jQuery AJAX request, we don't need to do anything fancy

JSONP+YQL

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Tips and
Tricks

- ▶ example time!
 - ▶ <http://tommyacwilliam.com/e76/section2/yql.html>

JSONP+YQL

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Tips and
Tricks

- ▶ take that Same Origin Policy!
- ▶ we can also use YQL with the Google Geocoding API, which outputs JSON
 - ▶ `select * from json where url="http://maps.googleapis.com/maps/api/geocode/json?address=10+Cowperwaithe+St+Cambridge+MA&sensor=false"`
 - ▶ `select * from json where url="http://maps.googleapis.com/maps/api/geocode/json?latlng=42.36862,-71.115226&sensor=false"`

JSONP+YQL

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Tips and
Tricks

- ▶ don't forget about the JSON part of JSONP
- ▶ when using `$.getJSON`, the server response will be given as a JavaScript object (the JSON response is already parsed for you)
- ▶ we can see the properties of this object using the YQL console or `console.log` in JavaScript

JSONP+YQL

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Tips and
Tricks

▶ example time!



<http://tommyacwilliam.com/e76/section2/response.html>

Useful jQuery Stuff

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Tips and
Tricks

- ▶ `$ (<selector>) .val ()` : get the value of an input element
 - ▶ `val (value)` : set the value of an input element
- ▶ `$ (<selector>) .html ()` : get the HTML contained within the selected element(s)
 - ▶ `$ (<selector>) .html (value)` : set the HTML contained within the selected element(s)
- ▶ `$ (<selector>) .bind (<event> , <callback>)` : bind an event handler to an element(s)
- ▶ `$ (<selector>) .append (content)` : append content to the selected element(s)
 - ▶ `content` will be INSIDE of the selected elements

Useful JavaScript Stuff

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Tips and
Tricks

- ▶ `encodeURIComponent`: replaces special characters in a string so they can be used in a URL
- ▶ `+`: string concatenation
 - ▶

```
var name = "tommy"; var coolness = 11;  
var string = name + "has a coolness level  
of " + coolness;
```
- ▶ `JSON.parse(string)`: parse a JSON string and return an object
 - ▶ you don't need to do this if you're using jQuery's `$.getJSON`!
- ▶ `JSON.stringify(object)`: convert an object into a string that can be parsed by JSON later
 - ▶ `localStorage` stores strings, hmm....

Useful HTML Stuff

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Tips and
Tricks

- ▶ `<input type="text" />` will give you a textbox
- ▶ if you're using a submit `<button>`, jQuery can bind a `click` event that will work on mobile devices
- ▶ if you're using a `<form>`, jQuery can respond to the form submission with
`$(<selector>).submit(<callback>);`
- ▶ when either of these events are fired, the `.val()` of our textbox will contain whatever the user is searching!