Comp 388/424 - Client-side Web Design

Fall Semester 2015 - Week 6

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Contents

DEV week overview...

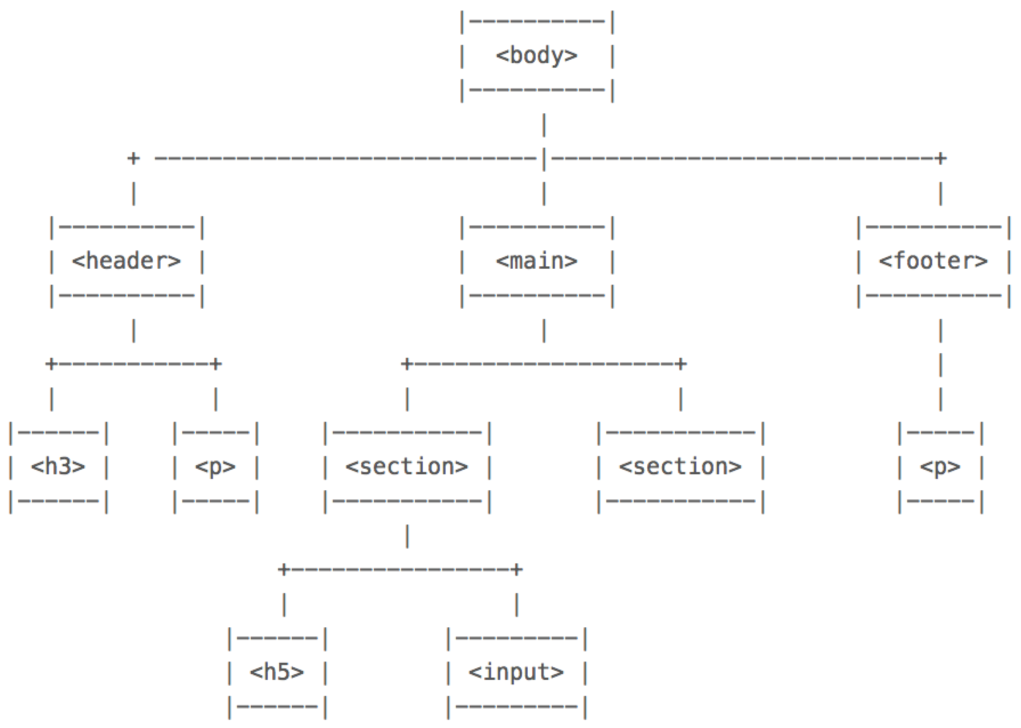
- begin development of a web application
- built from scratch
- builds upon examples, technology outlined during weeks 1 to 6
- outline research conducted
- describe data chosen for application
- show any mockups/prototypes, patterns, and designs

DEV week presentation and demo...

brief presentation or demonstration of current project work

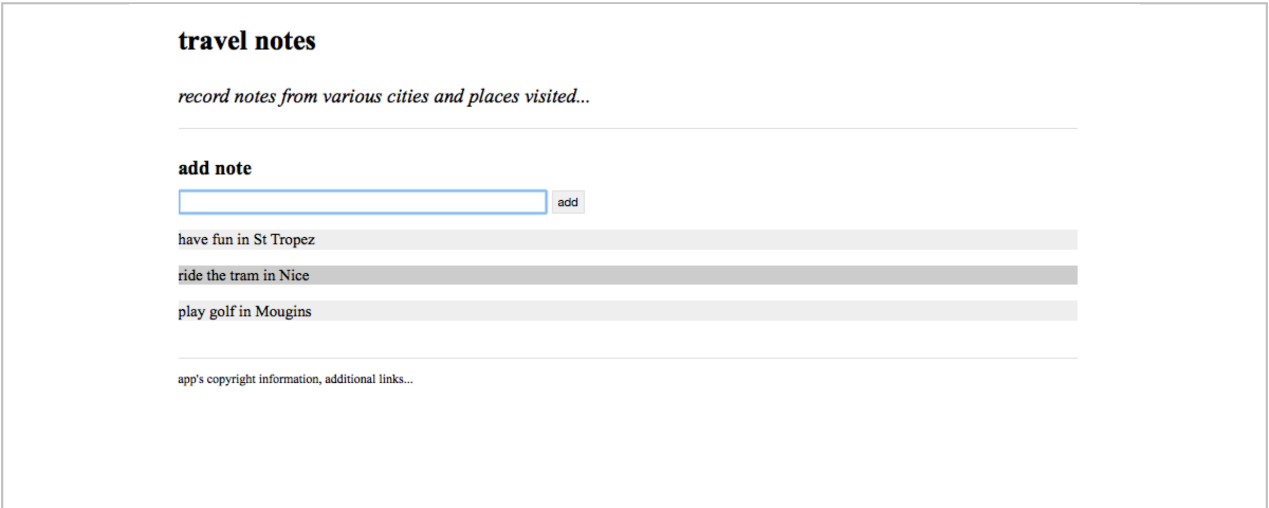
- ~ 5 to 10 minutes per group
- analysis of work conducted so far
  - *eg: during semester & DEV week*
- presentation, demonstration, or video overview...
  - *outline current state of web app*
  - *show prototypes and designs*
  - *explain what works & does not work*
  - *anything else considered relevant to your research or development...*

Image - HTML5, CSS, & JS - DOM recap



Travel Notes - DOM recap

Image - HTML5, CSS, & JS - week 5 recap



travel notes

record notes from various cities and places visited...

add note

have fun in St Tropez

ride the tram in Nice

play golf in Mougins

app's copyright information, additional links...

Travel Notes - Demo 8 recap

HTML5, CSS, & JS - example - add-ons

new features and add-ons...

- delete all notes
- delete a single note
- new event handlers
- additional styling

HTML5, CSS, & JS - example - part I

delete option - all notes

- standard `remove()` function in jQuery

```
$("p").remove();
```

- option to **delete all** notes from `.note-output`
- add a new toolbar for note controls and options

```
<section class="note-controls">
  <button id="notes-delete">Delete all</button>
</section>
```

- then add some simple styling for this new toolbar

```
/* note controls */
.note-controls {
  margin: 10px 0 10px 0;
  padding: 2px;
  border-bottom: 1px solid #dedede;
  display: none;
}
/* simplify default button styles for note controls */
.note-controls button {
  padding: 2px;
  margin: 2px;
  border-radius: 0;
  border: 1px solid #dedede;
  cursor: pointer;
}
```

HTML5, CSS, & JS - example - part 2

delete option - all notes

- note controls toolbar is hidden, by default in the CSS
- need some way to check its visibility as we add our notes
  - *no notes, then the toolbar is not required*

```
//check element visibility - expects single element relative to display:none
function checkVisible(element) {
  if (element.is(":hidden")) {
    element.fadeIn();
  }
}
```

- simply checking a passed element to see whether it is hidden
  - *then `fadeIn()` as necessary*
- can update this method later on to check hidden and visible
- call this function as required

```
checkVisible($(".note-controls"));
```

HTML5, CSS, & JS - example - part 3

delete option - all notes

- add a note, the `.note-controls` toolbar is shown
  - ***delete all*** *button now becomes available to our users*

```
//handle deletion of all notes
$("#notes-delete").on("click", function(e) {
  var $note = $(".note-output p");
  $(this).parent().hide();
  $note.remove();
});
```

- creating a new handler for the click events on the `#notes-delete` button
- hides its own container, the notes toolbar
- then removes all of the notes, `p`, from the `.note-output` section

HTML5, CSS, & JS - example - part 4

JS code so far

```
//check element visibility - expects single element relative to display:none
function checkVisible(element) {
  if (element.is(":hidden")) {
    element.fadeIn();
  }
}
...
//handle deletion of all notes
$("#notes-delete").on("click", function(e) {
  var $note = $(".note-output p");
  $(this).parent().hide();
  $note.remove();
});
```

- DEMO 1 - travel notes - week 6 - demo 1

HTML5, CSS, & JS - example - part 5

delete option - all notes

- still making an assumption notes exist in the note-output section
- add an additional function to check element exists in the DOM or not
- use jQuery's `length()` function

```
$("p").length()
```

- new function for checking elements in the DOM is as follows,

```
//check elements exists
function checkExist(element) {
  if (element.length) {
    return true;
  } else {
    return false;
  }
}
```

HTML5, CSS, & JS - example - part 6

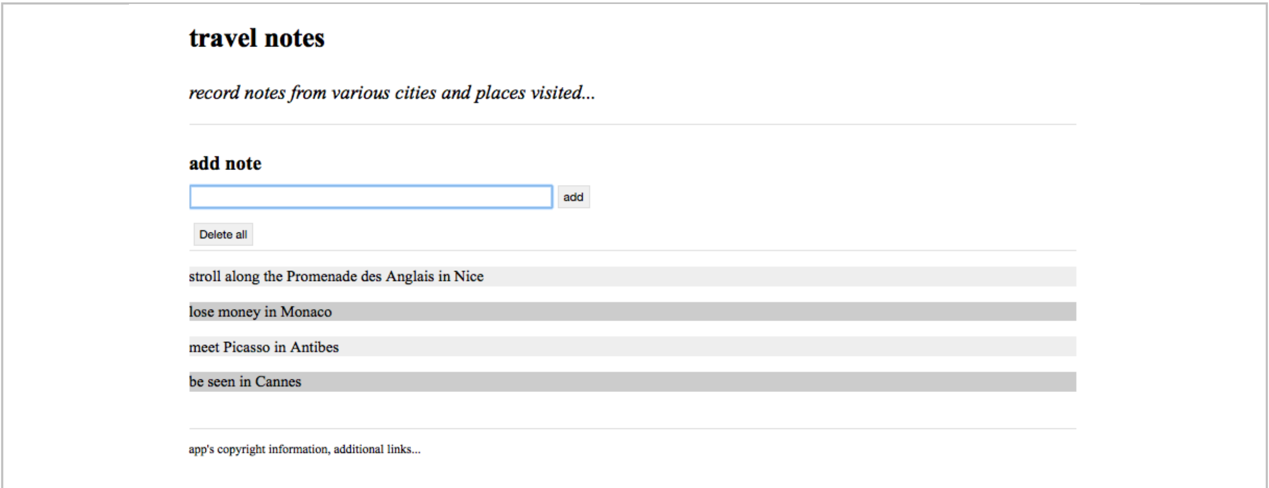
delete option - all notes

- updated delete all notes option to include check for notes
- call `checkExist()` function in conditional statement

```
//handle deletion of all notes
$("#notes-delete").on("click", function(e) {
  //set note selector
  var $note = $(".note-output p");
  //check $note exists
  if (checkExist($note) === true) {
    //hide note-controls
    $(this).parent().hide();
    //remove all notes
    $note.remove();
  }
});
```

- DEMO 2 - travel notes - week 6 - demo 2

Image - HTML5, CSS, & JS - week 6 - demo 2



travel notes

record notes from various cities and places visited...

add note

stroll along the Promenade des Anglais in Nice

lose money in Monaco

meet Picasso in Antibes

be seen in Cannes

app's copyright information, additional links...

Travel Notes - Week 6 - Demo 2

HTML5, CSS, & JS - example - part 7

delete option - per note

- consider adding a single delete option per note
- allowing a user to selectively delete their chosen note
  - *regardless of hierarchical position within the `.note-output` section*
- design decisions for such an option might include
  - *do we offer a selection option, such as checkboxes, to select one or more delete items*
  - *perhaps a single delete button per note*
  - *a drag and drop to delete option*
  - *there are many different ways to present and use this option*
- programmatically follow a similar pattern for deletion of the note
- three jQuery functions can help us remove elements from a document
  - *`remove()`*
  - *`detach()`*
  - *`replaceWith()`*

jQuery - removing elements - quick overview

- used `remove()` function with delete all notes
  - *best used to remove elements permanently from a document*
  - *will **unbind** any attached event handlers for elements being removed*
  - *will return reference to removed elements, but not the original bound events*
- `detach()` often used for any temporary removal requirements
  - *eg: update a lot of the DOM, detach affected elements, then insert later...*
  - *retains its event handlers, and we can add these elements later*

```
$("p").detach();
```

- then append the attached elements as required

```
var $detachP = $("p").detach();
$detachP.appendTo("#detached");
```

- `replaceWith()` replaces an element, or group of elements, with passed element
- event handlers for the replaced elements are unbound

```
var $replacedP = $(".note-output p").first().replaceWith("<p>replaced...</p>");
```

HTML5, CSS, & JS - example - part 8

delete option - per note

- simply need to delete the selected note
  - *use the same `remove()` function for single and all notes*
- add option per note to allow user to delete a required note
- add a delete button for each note
  - *add programmatically with each new note*

```
function createButton(buttonClass, buttonText) {
  var $button = $('<button class="'+buttonClass+'">'+buttonText+'</button>');
  return $button;
}
```

- new function allows us to create simple buttons as required
  - *a specified class and button text passed as parameters*
  - *use function to build required delete button in `createNote()` function*

```
//create delete button
var $delete_button = createButton("note-delete", "delete");
```

HTML5, CSS, & JS - example - part 9

delete option - per note

- append delete option to note
  - *before adding note to the DOM in* `createNote` *function*

```
function createNote() {
...
//set content for note
$note.html($note_text.val());
//append delete button to each note
$note.append($delete_button);
...
}
```

HTML5, CSS, & JS - example - part 10

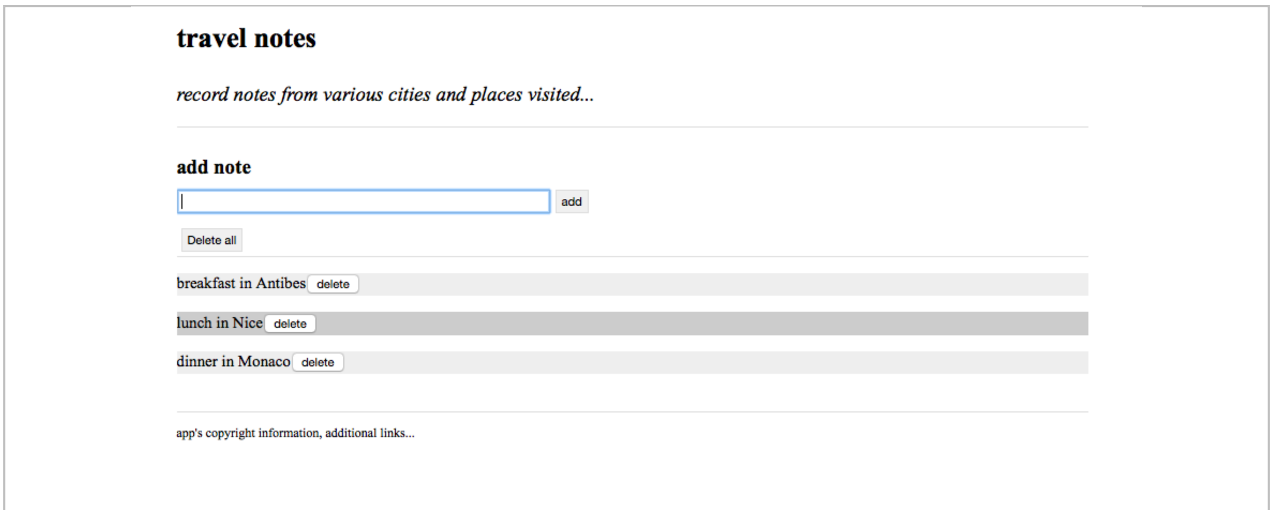
delete option - per note

- need to bind a click event to the dynamically created delete note button
- delete button is being added to the DOM dynamically
  - *need to add handler for single note deletion event to existing DOM element*
  - *add handler to parent `.note-output` and then new `button.note-delete`*

```
$(".note-output").on("click", "button.note-delete" , function() {
  //delete parent note
  $(this).parent().remove();
  //set note selector
  var $note = $(".note-output p");
  //check for empty notes, and then remove note-controls
  if (checkExist($note) === false) {
    //hide note-controls
    $(".note-controls").hide();
  }
});
```

- DEMO 3 - travel notes - week 6 - demo 3

Image - HTML5, CSS, & JS - week 6 - demo 3



travel notes

record notes from various cities and places visited...

add note

breakfast in Antibes

lunch in Nice

dinner in Monaco

app's copyright information, additional links...

Travel Notes - Week 6 - Demo 3

HTML5, CSS, & JS - example - part 11

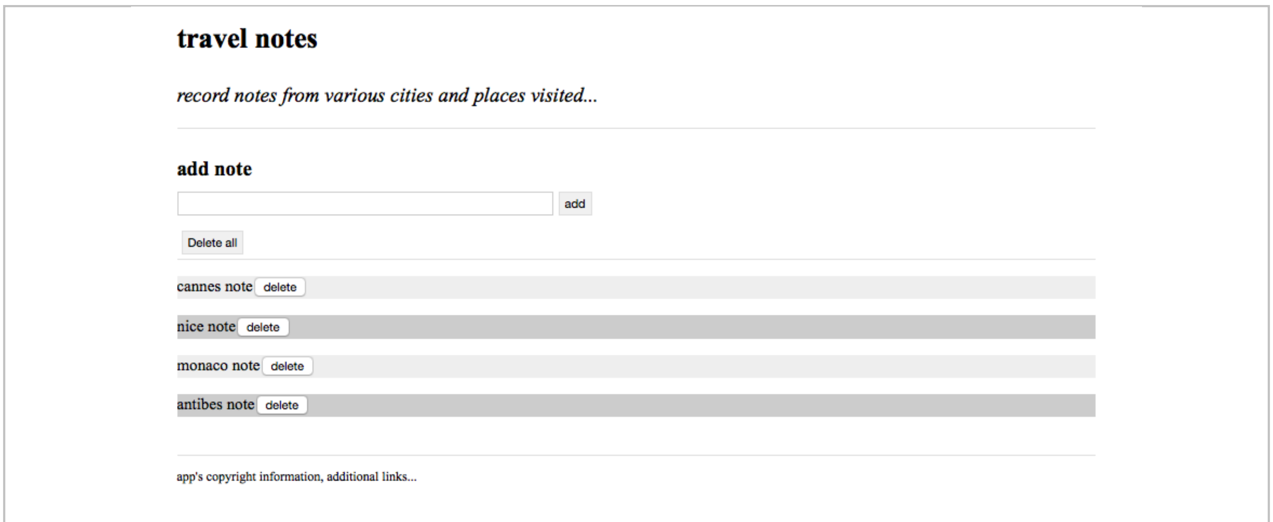
delete option - per note

- now allow our users to delete a single note
- single note option is awkward at the moment
- simply allow a user to either mouseover or select a note to show additional options
  - *showing the available delete button*
- enable a user to select their note of choice
  - *need to bind a click event to a note*

```
//handle click event per note
$(".note-output").on("click", "p", function() {
...
}
```

- user selects a note
  - *no check for previous other visible delete buttons*
  - *ensure only delete button for selected note is shown*

Image - HTML5, CSS, & JS - too many delete buttons



travel notes

record notes from various cities and places visited...

add note

cannes note

nice note

monaco note

antibes note

app's copyright information, additional links...

Travel Notes - Week 6 - Too many delete buttons

HTML5, CSS, & JS - example - part 12

delete option - per note

- return to our earlier function, `checkVisible()`
- modify to allow better abstraction and usage
- modify to test for visibility
    - *then simply return a boolean value*

```
//check element visibility - expects single element relative to display:none
function checkVisible(element) {
  //check if element is hidden or not
  if (element.is(":hidden")) {
    return true;
  } else {
    return false;
  }
}
```

- also need to modify check for the `.note-controls` in `createNote()` function

```
...
//check visibility of note controls
if (checkVisible($(".note-controls")) === true) {
  $(".note-controls").fadeIn();
}
...
```

HTML5, CSS, & JS - example - part 13

delete option - per note

- updated handler for note selection now checks for visible delete buttons

```
//handle click event per note
$(".note-output").on("click", "p", function() {
  //check if other delete buttons visible
  if (checkVisible($("button.note-delete")) === true) {
    $("button.note-delete").hide();
  }
  $(this).children("button.note-delete").show();
});
```

- bind handler for the user clicking on a note
- check whether other delete buttons are visible on any other notes
  - *if visible, we can simply hide these delete buttons*
  - *then show the delete option for the currently selected note*
- later abstract this function to handle other options associated with each note
- DEMO 4 - travel notes - week 6 - demo 4

HTML5, CSS, & JS - example - part 14

style note(s)

- add some additional styling to our notes
  - *start with some changes to the design of each note*
  - *then considered the overall `.note-output` section*
- remove styling for alternating notes, set uniform style per note

```css
/* note paragraph output */
.note-output p {
  margin: 10px;
  padding: 10px;
  border: 1px solid #b1c4b1;
  cursor:pointer;
}
```

- need to add some styling for our delete button, and position it within each note

```css
/* note delete button */
.note-output p button.note-delete {
  display: block;
  padding: 5px;
  margin: 5px 5px 10px 0;
  border-radius: 0;
  border: 1px solid #dedede;
  cursor: pointer;
}
```

HTML5, CSS, & JS - example - part 15

style note(s)

- add some styling for the button's hover pseudo-class
  - *acts as useful feedback to the user that the button is an active element*

```
.note-output p button.note-delete:hover {
  background-color: #aaa;
  color: #fff;
}
```

- also consider adding some similar feedback to our note
  - *a sign of active as the user moves their mouse cursor over each note*

```
/* note paragraph output hover */
.note-output p:hover {
  border: 1px solid #1a3852;
}
```

- DEMO 5 - travel notes - week 6 - demo 5

HTML5, CSS, & JS - example - part 16

style note(s)

- a couple of issues that still need to be fixed in the application
  - *first issue is lack of consistency in styling our buttons*
- fixed by abstracting our CSS styling for a default button
  - *specific button styles can be added later*

```
/* default button style */
button {
  padding: 2px;
  margin: 2px;
  border-radius: 0;
  border: 1px solid #dedede;
  cursor: pointer;
}
```

- removed the need for a ruleset to style the button for
  - *adding a note, delete all notes, and the single delete button per note*

HTML5, CSS, & JS - example - part 17

style note(s)

- also create a default ruleset for a button hover pseudo-class
  - *again reducing our need for repetition in the stylesheet*

```css
/* default button hover style */
button:hover {
  background-color: #aaa;
  color: #fff;
}
```

- iterative development is fine
  - *continue to abstract styles, overall design, and logic as we develop an application*

HTML5, CSS, & JS - example - part 18

style note(s)

- second issue is the expected interaction with each note
  - *issue is simply that a user cannot choose to remove this option*
- should be able to toggle its view and options
- update interaction by modifying handler for click event on a note
  - ***NB:*** `toggle()` *for events was removed in jQuery 1.9*
  - *build our own*

```
//handle click event per note
$(".note-output").on("click", "p", function() {
  //check if other delete buttons visible
  if (checkVisible($("button.note-delete")) === true) {
    //set all siblings to active=false to ensure checks are correct
    $(this).siblings().attr("active", "false");
    $("button.note-delete").hide();
  }
  //then handle click event for current note
  if (!$(this).attr("active") || $(this).attr("active") === "false") {
  $(this).attr("active", "true");
  $(this).children("button.note-delete").show();
  } else if ($(this).attr("active") === "true") {
  $(this).attr("active", "false");
  $(this).children("button.note-delete").hide();
  }
});
```

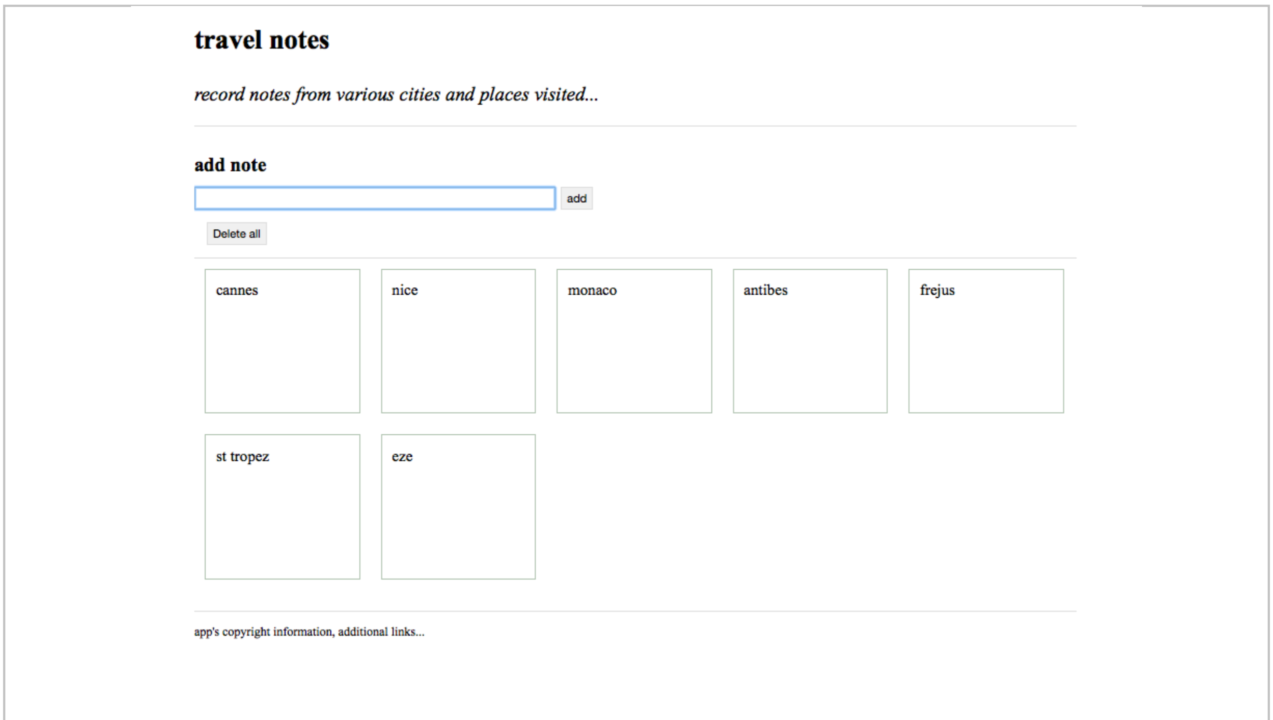
- DEMO 6 - travel notes - week 6 - demo 6

HTML5, CSS, & JS - example - part 19

a few extras to consider...

- alternative layouts
  - *grid*
  - *squares*
  - *snippet view*
  - *table*
  - *lists...*
- notifications
- snippets with expansion
- split views
  - *note snippet with contextual/media per note...*
- drag and drop delete
- filters
- sort options
- tags
- much more...

Image - Square notes - a bit of fun


travel notes

record notes from various cities and places visited...

add note

cannes

nice

monaco

antibes

frejus

st tropez

eze

app's copyright information, additional links...

Travel Notes - Week 6 - Squares

- DEMO - travel notes - week 6 - squares

JS Objects - quick recap - part 1

- important JavaScript primitive
    - *one of the most frequently used as well*
- created with curly braces,

```
var object1 = {
  "a":"nine",
  "b":"ten"
};
```

- access internal variables of this object using the dot `.` operator

```
console.log(object1.a);
```

- update the value of an internal variable

```
object1.a = "amelia";
```

JS Objects - quick recap - part 2

- also create an empty variable, and then assign values as necessary

```
var object1 = {};
```

- an object can contain variables with values of different types
- store variables in an object with types such as strings, arrays, and even other objects
- function variables behave just like any other variables in JavaScript
  - *we can also store them in our objects as needed*

```
var $a = $("p");
$a.hide();
```

- simply attach a function to a jQuery object

JSON - quick recap

- a JSON object is effectively a JavaScript object
  - *contained within curly braces*

```
{
  "country":"France",
  "city":"Marseille"
}
```

- objects can contain multiple name/value pairs
- object stored in the form of a string
- to send a JS object
  - *create it in the application's code*
  - *then convert it to a string*
  - *finally use it as required*
- a lot of the AJAX is abstracted to JavaScript libraries

JSON - pros and cons

useful pros

- more concise, less verbose than XML and HTML
  - *potentially faster execution of data...*
- regularly used with JavaScript
  - *includes good support*
- language agnostic, interoperability
  - *can be used with many different programming languages*
- can also be called from many different domains
  - *eg: JSON-P...*

some cons

- may present security risk
  - *malicious content due to JavaScript XSS*
  - *need to verify source for JSON...*
- syntax is precise, unforgiving

JS and JSON - functions

- creating some JSON string is easy enough
- also easily create a JSON string from a JavaScript object
  - *and vice-versa*
- use the JavaScript `stringify` function

```
var jsonObject1 = JSON.stringify(object1);
console.log(jsonObject1);
```

- similarly parse a JSON string to a JS object

```
var object2 = JSON.parse(jsonObject1);
console.log(object2);
```

AJAX and JSON - part 1

intro

- AJAX is as a simple way to load data
  - *often new or updated data*
  - *into a current page without having to refresh the browser window*
- common form of data for work with AJAX is JSON
- many common usage scenarios and examples for AJAX
  - *autocomplete in forms*
  - *live filtering of search queries*
  - *real-time updates for content and data streams*
- also use AJAX to help us load data behind the scenes
  - *preparing content for our users before a specific request is received*
  - *helps to speed up page responses and data load times*
- AJAX uses an asynchronous model for processing requests
- user can continue to perform various tasks, queries, and work
  - *whilst the browser itself continues to load data*
- inherent benefit of AJAX should include
  - *a more responsive site, intuitive usage and interface experience*

AJAX and JSON - part 2

asynchronous model

- traditional synchronous model normally stops a page
  - *until it has loaded and processed a requested script*
- AJAX enables a browser to request data from the server
  - *without this synchronous pause in usage*
- AJAX's **asynchronous processing model**
  - *often known as* ***non-blocking***
  - *allows a page to load data and process user's interactions*
- server responds with the requested data
  - *an event will be fired by the browser*
  - *event can then call a function to process the data*
  - *often JSON, XML, or simply HTML*
- browser will use an **XMLHttpRequest** object to help handle these AJAX requests
- browser will not wait for a response

JSON and jQuery - get a file - part 1

initial setup

- try some AJAX with a JSON file

```
{
  "country":"France",
  "city":"Marseille"
}
```

- save this content to our `docs/json/trips.json` file
- run on a server, local or remote
  - *browser security restrictions for JavaScript*
  - *local server such as XAMPP, Python's SimpleHTTPServer, Node.js...*

```
python -m SimpleHTTPServer 8080
```

- initially use the `getJSON()` function to test reading this content

```
$.getJSON("docs/json/trips.json", function(trip) {
  console.log(trip);
});
```

- console output is expected JSON object

```
Object { country: "France", city: "Marseille" }
```

JSON and jQuery - get a file - part 2

test with site

- now use this return object to load our data as required within a site

```
//overall app logic and loader...
function loadJSON() {
  "use strict";

  $.getJSON("docs/json/trips.json", function(trip) {
    //element for trip data
    var $tripData = $("<p>");
    //add some content from json to element
    $tripData.html(trip.city + ", " + trip.country);
    //append content to .note-output section
    $(".note-output").append($tripData);
  });
};

$(document).ready(loadJSON);
```

- DEMO-AJAX1 - AJAX - week 6 - demo 1

JSON and jQuery - get a file - part 3

array for trips...

- need to store multiple trips
    - *multiple countries, multiple cities, and so on...*
- need to work with JSON arrays
    - *update `trips.json` file for cities*

```json
{
    "cities": [
        {
            "name": "Marseille",
            "region": "Provence-Alpes-Côte d'Azur"
        },
        {
            "name": "Paris",
            "region": "Île-de-France"
        }
    ]
}
```

JSON and jQuery - get a file - part 4

load an array for trips...

- update JavaScript to load array and set data as required

```
//overall app logic and loader...
function loadJSON() {
  "use strict";

  $.getJSON("docs/json/trips.json", function(trips) {
    //element for trip data
    var $cityData = $("<ul>");

    //iterate over cities array - trips.cities...
    var $cities = trips.cities;
    $cities.forEach(function (item) {
      var $city = $("<li>");
      $city.html(item.name + " in the region of " + item.region);
      $cityData.append($city);
    })
    //append list to .note-output
    $(".note-output").append($cityData);
  });
};

$(document).ready(loadJSON);
```

- DEMO-AJAX2 - AJAX - week 6 - demo 2

Demos

- Travel Notes app
    - *DEMO 1 - travel notes - week 6 - demo 1*
    - *DEMO 2 - travel notes - week 6 - demo 2*
    - *DEMO 3 - travel notes - week 6 - demo 3*
    - *DEMO 4 - travel notes - week 6 - demo 4*
    - *DEMO 5 - travel notes - week 6 - demo 5*
    - *DEMO 6 - travel notes - week 6 - demo 6*

References

- jQuery API
- jQuery - .getJSON()