Comp 388/424 - Client-side Web Design - notes

Spring Semester 2016 - Week 10

Dr Nick Hayward

Contents

jQuery Deferred

- jQuery provides a useful solution to the escalation of code for asynchronous development
- known as the `$.Deferred` object
  - *effectively acts as a central despatch and scheduler for our events*
- with the **deferred** object created
  - *parts of the code indicate they need to know when an event completes*
  - *whilst other parts of the code signal an event's status*
- **deferred** coordinates different activities
  - *enables us to separate how we trigger and manage events*
  - *from having to deal with their consequences*

Ajax, JSON & jQuery - part 2

using deferred objects

- now update our AJAX request with **deferred** objects
- separate the asynchronous request
  - *into the initiation of the event, the AJAX request*
  - *from having to deal with its consequences, essentially processing the response*
- separation in logic
  - *no longer need a success function acting as a callback parameter to the request itself*
- now rely on `.getJSON()` call returning a **deferred** object
- function returns a restricted form of this **deferred** object
  - *known as a **promise***

```
deferredRequest = $.getJSON (
  "file.json",
  {format: "json"}
);
```

Ajax, JSON & jQuery - part 3

using deferred objects

- indicate our interest in knowing when the AJAX request is complete and ready for use

```
deferredRequest.done(function(response) {
  //do something useful...
});
```

- key part of this logic is the `done()` function
- specifying a new function to execute
  - *each and every time the event is successful and returns complete*
  - *our AJAX request in this example*
- **deferred** object is able to handle the abstraction within the logic
- if the event is already complete by the time we register the callback via the `done()` function
  - *our **deferred** object will execute that callback immediately*
- if the event is not complete
  - *it will simply wait until the request is complete*

Ajax, JSON & jQuery - part 4

handling errors with deferred objects

- also signify interest in knowing if the AJAX request fails
- instead of simply calling `done()`, we can use the `fail()` function
- still works with JSONP
  - *the request itself could fail and be the reason for the error or failure*

```
deferredRequest.fail(function() {
  //report and handle the error...
});
```

Ajax, JSON & jQuery - part 5

example

- add the option to read and write from a JSON file
- we'll use AJAX for these requests
- initially we can consider our application as follows
  - *read data from JSON file*
  - *load initial data to application*
- no edit features for now
- add edit features with DB

Ajax, JSON & jQuery - part 6

example - JSON

- test reading and loading JSON file and data
- ignore standard AJAX pattern
  - *passing two callbacks, success and error*
- use `deferred` and `promise`
- initial JSON for Travel Notes app

```
{
  "travelNotes": [{
    "created": "2015-10-12T00:00:00Z",
    "note": "a note from Cannes..."
  }, {
    "created": "2015-10-13T00:00:00Z",
    "note": "a holiday note from Nice..."
  }, {
    "created": "2015-10-14T00:00:00Z",
    "note": "an autumn note from Antibes..."
  }]
}
```

Ajax, JSON & jQuery - part 7

example - deferred

- start by submitting a query for the required JSON file
- then retain the deferred object we're using for tracking
- then indicate interest in knowing when AJAX request is complete

```
//load main app logic
function loadApp() {
  "use strict";

    var $deferredNotesRequest = $.getJSON (
      "docs/json/notes.json",
      {format: "json"}
    );

    $deferredNotesRequest.done(function(response) {
        console.log("tracking json...");
    });

};
$(document).ready(loadApp);
```

Ajax, JSON & jQuery - part 8

example - deferred

- `done()` method is the key part
- helps us specify the required logic to execute
  - *when the request is complete*
- if the given event has already completed as callback is registered via `done()`
  - *deferred object will execute required callback immediately*
- if not, it will simply wait until request is complete
- respond to an error
  - *add `fail()` method for errors handling and reporting*

Ajax, JSON & jQuery - part 9

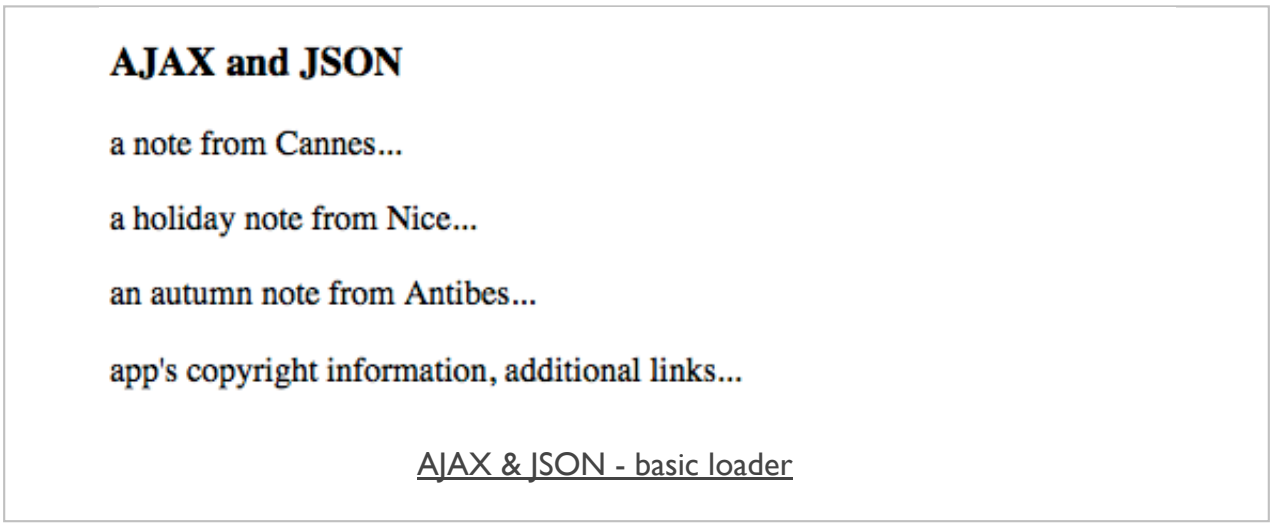
example - work with data

- returned data
  - *our response returns an object containing an array with notes*
- we could simply extract the required notes
  - *then append them to the DOM*

```
$deferredNotesRequest.done(function(response) {
    //get travelNotes
    var $travelNotes = response.travelNotes
    //process travelNotes array
    $travelNotes.forEach(function(item) {
      if (item !== null) {
        var note = item.note;
        //create each note's <p>
        var p = $("<p>");
        //add note text
        p.html(note);
        //append to DOM
        $(".note-output").append(p);
      }
    });
});
```

- DEMO - ajax & json basic loader

Image - HTML5, CSS, & JS - AJAX & JSON



Ajax, JSON & jQuery - part 10

example - work with data

- we can use simple deferred requests with our local JSON data
- with staggered API calls to data, need to use slightly modified approach
  - *digging through data layer by layer*
  - *submitting a request as one layer returns*
- we could now create a second deferred object
  - *use to track additional processing requests*
  - *stagger our requests to the API*
  - *ensuring we only request certain data as needed or available*
- also create multiple deferred objects to handle our requests and returned data
  - *allows us to respond accordingly within the application*

Ajax, JSON & jQuery - part 11

example - work with data

`resolve()`

- use this method with the deferred object to change its state, effectively to complete
- as we resolve a deferred object
  - *any **doneCallbacks** added with `then()` or `done()` methods will be called*
  - *these callbacks will then be executed in the order added to the object*
  - *arguments supplied to `resolve()` method will be passed to these callbacks*

`promise()`

- useful for limiting or restricting what can be done to the deferred object

```
function returnPromise() {
  return $.Deferred().promise();
}
```

- method returns an object with a similar interface to a standard `deferred` object
  - *only has methods to allow us to attach callbacks*
  - *does not have the methods required to resolve or reject deferred object*
- restricting the usage and manipulation of the deferred object
  - *eg: offer an API or other request the option to subscribe to the deferred object*
  - ***NB:** they won't be able to resolve or reject it as standard*

Ajax, JSON & jQuery - part 12

example - work with data

- still use the `done()` and `fail()` methods as normal
- use additional methods with these callbacks including the `then()` method
- use this method to return a new promise
  - *use to update the status and values of the deferred object*
  - *use this method to modify or update a deferred object as it is resolved, rejected, or still in use*
- can also combine promises with the `when()` method
  - *method allows us to accept many promises, then return a sort of master deferred*
- updated `deferred` object will now be resolved when all of the promises are resolved
  - *it will likewise be rejected if any of these promises fail*
- use standard `done()` method to work with results from all of the promises
  - *eg: could use this pattern to combine results from multiple JSON files*
  - *multiple layers within an API*
  - *staggered calls to paged results in a API...*

Ajax, JSON & jQuery - part 13

example - work with data

- now start to update our test AJAX and JSON application
  - *begin by simply abstracting our code a little*

```
function buildNote(data) {
  //create each note's <p>
  var p = $("<p>");
  //add note text
  p.html(data);
  //append to DOM
  $(".note-output").append(p);
}

//get the notes JSON
function getNotes() {
  //.get returns an object derived from a Deferred object - do not need explicit deferred
  var $deferredNotesRequest = $.getJSON (
  "docs/json/notes.json",
  {format: "json"}
  );
  return $deferredNotesRequest;
}
```

- DEMO - ajax & json abstract loader

Ajax, JSON & jQuery - part 14

example - work with data

- requesting our JSON file using `.getJSON()`
  - *we get a returned **promise** for the data*
- with a **promise** we can only use the following
  - *deferred object's method required to attach any additional handlers*
  - *or determine its state*
- our **promise** can work with
  - *`then`, `done`, `fail`, `always`...*
- our **promise** can't work with
  - *`resolve`, `reject`, `notify`...*

Ajax, JSON & jQuery - part 15

example - work with data

- one of the benefits of using **promises** is the ability to load one JSON file
  - *then wait for the results*
  - *then issue a follow-on request to another file*
  - ...
- a simple example of chained `then()` methods

```
getNotes().then(function(response1) {
  console.log("response1="+response1.travelNotes[2].note);
  $(".note-output").append(response1.travelNotes[2].note);
  return getPlaces();
}).then(function(response2) {
  console.log("response2="+response2.travelPlaces[2].place);
  $(".note-output").append(response2.travelPlaces[2].place);
});
```

- outputting a limited test result to the DOM and the console
- as we chain our `then()` methods
  - *pass returned results to next chained `then()` method...*
- DEMO - ajax & json deferred .then()

HTML5, CSS, & JS - example - part 1

add AJAX and JSON - load notes from json

- update our **travel notes** app to allow us to load some test persistent notes from a local JSON file
- initial JSON is as follows

```
{
  "travelNotes": [{
    "created": "2015-10-12T00:00:00Z",
    "note": "a note from Cannes..."
  }, {
    "created": "2015-10-13T00:00:00Z",
    "note": "a holiday note from Nice..."
  }, {
    "created": "2015-10-14T00:00:00Z",
    "note": "an autumn note from Antibes..."
  }]
}
```

HTML5, CSS, & JS - example - part 2

add AJAX and JSON - load notes from json

- add option to load notes from JSON as app initially loads
  - *use deferred promise pattern*
  - *checks source JSON as it loads via the promise*
  - *then outputs the end result*
- start with the following update

```
//get the notes JSON
function getNotes() {
  //.get returns an object derived from a Deferred object - do not need explicit deferred
  var $deferredNotesRequest = $.getJSON (
    "docs/json/notes.json",
    {format: "json"}
  );
  return $deferredNotesRequest;
}
```

HTML5, CSS, & JS - example - part 3

add AJAX and JSON - load notes from json

- help us better manage logic of our notes from app's loading and execution
  - *create two separate JS files*
- our updated structure might be as follows

```
...
|- assets
   |- scripts
      |- travel.js
      |- notes.js
...
```

- we can extend this further, as needed by app features and data

HTML5, CSS, & JS - example - part 4

add AJAX and JSON - load notes from json

- add our `.when()` function to the app's loader
  - *`.when()` function accepts a deferred object*
  - *in our case a limited promise*
- then allows us to chain additional deferred functions
  - *including required `.done()` function*
- for returned data, use standard response object to get `travelNotes`
  - *then iterate over the array for each property*
  - *for each iteration, we can simply call our `createNote` function*
  - *builds and renders required notes to the app's DOM*

```
//use deferred object from getJson
$.when(getNotes()).done(function(response) {
  //get travelNotes object
  var $travelNotes = response.travelNotes
  //process travelNotes array
  $travelNotes.forEach(function(item) {
    //check each property
    if (item !== null) {
      //get note
      var note = item.note;
      //create each note for rendering
      createNote(note);
    }
  });//end foreach
});
```

HTML5, CSS, & JS - example - part 5

add AJAX and JSON - load notes from json

- simple problem - existing `createNote()` function does not accept a parameter
- need to update the logic of that function to accept and handle a parameter
- also requires a quick update to any functions and calls to the `createNote()`
  - *event handlers for creating a new note using the `add` button and keypress within the input field*

```
//manage input field and new note output
function createNote(data) {
  ...
  //conditional check for data
  if (data !== "") {
  //set content for note
  $note.html(data);
  ...
  }
}
```

HTML5, CSS, & JS - example - part 6

add AJAX and JSON - load notes from json

- update our event handlers for the note input button and input field keypress as follows,

```
//handle user event for `add` button click
$(".note-input button").on("click", function(e) {
  var $note_data = getNoteInput();
  //call note builder function
  createNote($note_data);
});
```

```
//handle user event for keyboard press
$(".note-input input").on("keypress", function(e) {
  //check code for keyboard press
  if (e.keyCode === 13) {
    var $note_data = getNoteInput();
    //call note builder function
    createNote($note_data);
  }
});
```

- our notes now load by default as the app starts
- note input button and keypress work as expected
- DEMO - travel notes & JSON

Working with APIs - part 1

remote api options - Flickr

- **Travel Notes** app loads data from a local JSON file
- add option to load different types of data using remote APIs
  - *Flickr API for images, tags...*
- basics and principles are similar to the patterns we've already seen and tested
- test a sample JSON return from the Flickr API
- JSON return - useful properties for app
  - *title*
  - *link*
  - *media (direct url for image - where available)*
  - *description*
  - ...
- public feed for searching public photos, videos, groups, recent activity...
- Flickr API Public Feed - Cannes and France

Working with APIs - part 2

working with Flickr API

- query Flickr's public feed for photos
  - *we can use our now familiar pattern for requesting JSON*

```
//get the Flickr public feed JSON for images
function getImages() {
  //.get returns an object derived from a Deferred object - do not need explicit deferred
  var $deferredNotesRequest = $.getJSON (
  "http://api.flickr.com/services/feeds/photos_public.gne?jsoncallback=?",
    { tags: "cannes,france,boules",
      tagmode: "all",
      format: "json"
    });
  return $deferredNotesRequest;
}
```

- need to make a few specific modifications to the request
  - *JSONP to avoid browser security restrictions*

Working with APIs - part 3

working with Flickr API

- Flickr's public feed includes options
  - *eg: a specific user ID for photos, various tags, how tags are interpreted by the search...*
- use our `.when()` function to load and render some test images from Flickr

```
$.when(getImages()).done(function(response) {
  console.log("done..."+response);
  //use jQuery's generic iterative function for the response...
  $.each( response.items, function( i, item ) {
    buildImage(item.media.m);
    //limit test images to 8
    if ( i === 7 ) {
      return false;
    }
  });
});
```

- DEMO - AJAX and JSON - Flickr api

HTML5, CSS, & JS - example - part 7

working with Flickr API - update travel notes

- add option to Travel Notes app to allow a user to view images from Flickr
- need to update app's HTML, CSS, and JS
- modify how our notes, and associated options, are rendered to our users
- add a search option for photos on Flickr
- render our images to match the notes
- app's structure still reflects three primary content categories
  - *`header`, `main`, and `footer` with slight modifications to the `main` category*
- `main` content category updated to create two distinct rows for initial content
  - *contain defined semantic containers*
- row containing `.note-input` and Flickr search option `.contextual-choice`
  - *then split this row into two columns of 6*

HTML5, CSS, & JS - example - part 8

working with Flickr API - update travel notes HTML

- updated HTML for `.note-input` and Flickr search `.contextual-choice`

```
<div class="row">
  <!-- note input -->
  <section class="note-input col-6">
    <h5>add note</h5>
    <input><button>add</button>
  </section>
  <!-- contextual choice -->
  <section class="contextual-choice col-6">
    <h5>search flickr</h5>
    <input><button>search</button>
  </section>
</div>
```

HTML5, CSS, & JS - example - part 9

working with Flickr API - update travel notes HTML

- update the HTML for rendering the images
  - *add alongside our notes*
- create another row for these containers
  - *add two section containers for `.note-output` and `.contextual-output`*
- make `.note-output` slightly larger to show primary app focus

```
<div class="row">
  <!-- note output -->
  <section class="note-output col-7 flex-container">
  </section>
  <!-- contextual output -->
  <section class="contextual-output col-5 flex-container">
  </section>
</div>
```

HTML5, CSS, & JS - example - part 10

working with Flickr API - update travel notes JS

- add further functionality to **Travel Notes** app
- split our JS logic into three files to help with oranisation
  - *a main loader file, `travel.js`,*
  - *and a file each for notes and contextual options*
- updated app structure for JS

```
...

|- assets
   |- scripts
      |- contextual.js
      |- notes.js
      |- travel.js
...
```

- underlying logic for the notes will remain the same
  - *move loading of default notes to the `travel.js` main loader file*
- updates for searching, returning, and rendering images from Flickr
  - *added to the `contextual.js` file*

HTML5, CSS, & JS - example - part 11

working with Flickr API - update travel notes JS

- test Flickr API in our app using some set data for image tags
  - *respond to the user clicking on the search button*
  - *submit our query to Flickr*
  - *process the returned JSON for the images*
  - *render them for viewing*
- request and process our images using the familiar pattern

```
//get the Flickr public feed JSON for images
function getImages(data) {
  var img_tags = data;
  //.get returns an object derived from a Deferred object - do not need explicit deferred
  var $deferredNotesRequest = $.getJSON (
    "http://api.flickr.com/services/feeds/photos_public.gne?jsoncallback=?",
    { tags: img_tags,
      tagmode: "all",
      format: "json"
    });
  return $deferredNotesRequest;
}
```

HTML5, CSS, & JS - example - part 12

working with Flickr API - update travel notes JS

- returned data using standard deferred promise object
  - *add a new function to handle the processing of the images*

```
function processImages(data) {
  $.when(getImages($img_data)).done(function(response) {
    //use jQuery's generic iterative function for the response...
    $.each( response.items, function( i, item ) {
      createImage(item.media.m);
      //limit test images to 4
      if ( i === 3 ) {
        return false;
      }
    });
  });
}
```

- using deferred promise object with `.when()` function chained to `.done()` function
- add jQuery's generic iterative function to help us process the response
  - *instead of standard JavaScript `.forEach()` option*
- loop through each value, and pass the image to our new function, `createImage()`
  - *ready for rendering to our app's DOM*
  - *limit number of images for testing*

HTML5, CSS, & JS - example - part 13

working with Flickr API - update travel notes JS

```
//manage new image output
function createImage(data) {
  //create each image element
  var img = $('<img class="flex-img">');
  //add image
  img.attr("src", data);
  //append to DOM
  $(".contextual-output").append(img);
}
```

- `.createImage()` function accepts a parameter for image data
- then process ready for rendering to the app's DOM
- image is added to a new `img` element with a new class of `.flex-img`
  - *creates a flex item for rendering*
- added to the new `.contextual-output` section
- rendered images displayed as thumbnails for the user
  - *complementary to the existing notes*

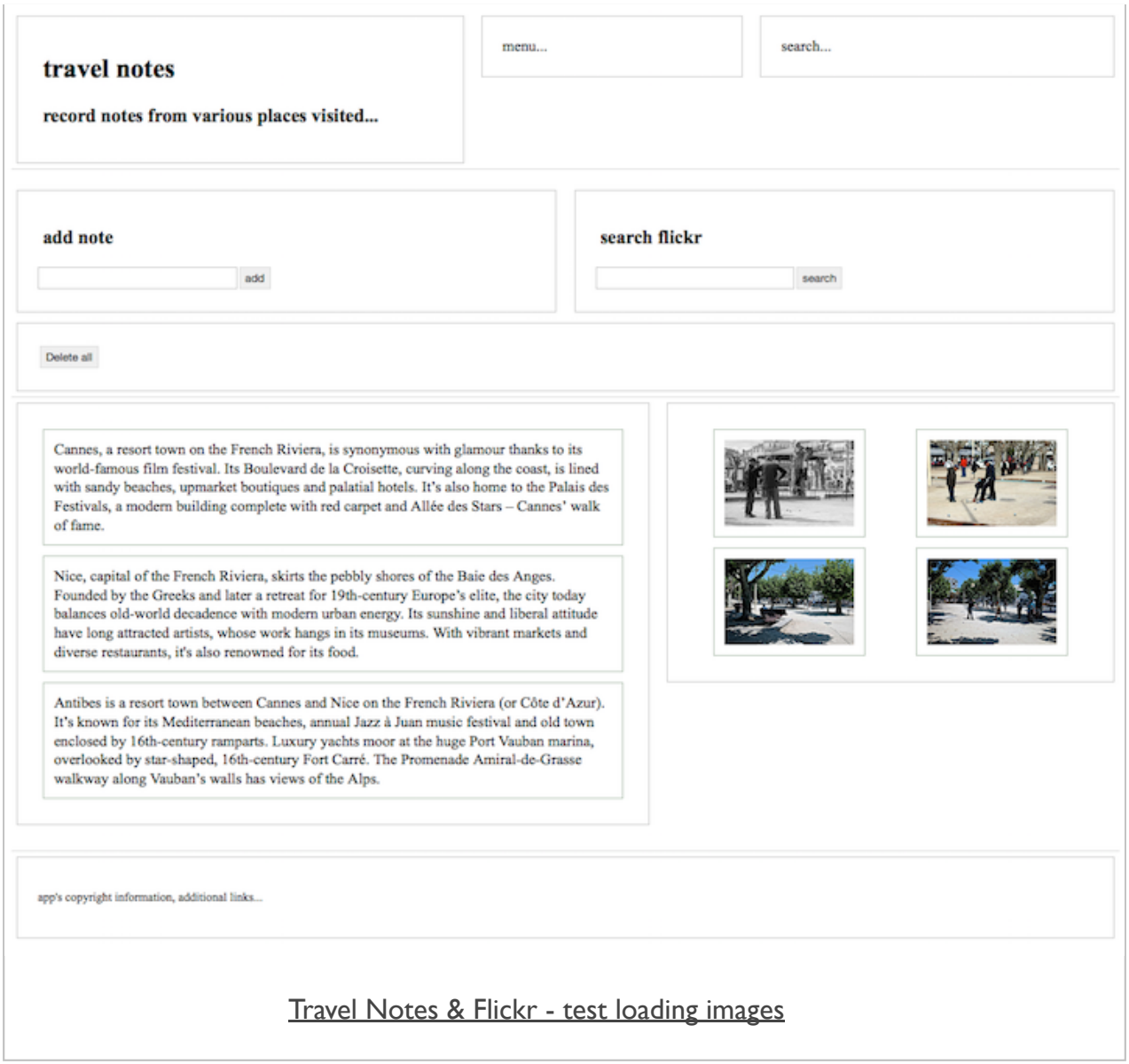
HTML5, CSS, & JS - example - part 14

working with Flickr API - update travel notes JS

- to add images to the app
  - *a user can enter their requested tags in the search field*
  - *then click on the `search` button to return any available images*
- event handler for this `search` button click uses the requested tags
  - *passes them as a parameter to the `processImages()` function*

```
//handle user event for image `search` button click
$(".contextual-choice button").on("click", function(e) {
  //test tags for testing image search
  $img_data = "cannes,france,boules"
  //process images
  processImages($img_data);
});
```

Image - HTML5, CSS, & JS - Travel Notes & Flickr



Travel Notes & Flickr - test loading images

HTML5, CSS, & JS - example - part 15

working with Flickr API - update travel notes CSS

- need to update and modify existing CSS
  - *helps with correct rendering of the thumbnail images*
- CSS additions are initially modest
  - *reflects integration with existing app, grid, and flex layouts*
- add new ruleset for image rendering in the `.contextual-output` section

```
/* contextual output images */
.contextual-output img {
  margin: 5px;
  padding: 5px;
  border: 1px solid #b1c4b1;
}
```

- update `.flex-container` class to change `justify-content` property to value of `space-around`
- add new ruleset for a `.flex-img` class.

```
/* flex image */
.flex-img {
  flex-basis: 150px;
  flex-grow:0;
}
```

- specify size of a thumbnail image
  - *initially restrict their ability to grow relative to flex*

HTML5, CSS, & JS - example - part 16

working with Flickr API - update travel notes JS

- we can now request, process, and render images from Flickr to Travel Notes app
  - *still need to accept and process search queries from search input field.*
- add option to check search input field
  - *then submit query to Flickr for images*

```
//get input value for image search
function getImageInput() {
  //define img value
  var img_val = "";
  //define input field
  var $img_tags = $(".contextual-choice input");
  if ($img_tags.val() !== "") {
    img_val = $img_tags.val();
    return img_val;
  } else {
    return img_val;
  }
}
```

HTML5, CSS, & JS - example - part 17

working with Flickr API - update travel notes JS

- use `getImageInput()` function with a modified `processImages()` function

```
//process image production, loading, and pass to rendering
function processImages() {
  //check img visibility for contextual-output - clear existing images
  if (checkVisible($(".contextual-output img")) === false) {
    //empty existing images
    $(".contextual-output").empty();
  }
  //get data from image search input field
  var $img_data = getImageInput();
  //use image data to get images, and pass for rendering
  $.when(getImages($img_data)).done(function(response) {
    console.log("done..."+response);
    //use jQuery's generic iterative function for the response...
    $.each( response.items, function( i, item ) {
      createImage(item.media.m);
      //limit test images to 4
      if ( i === 3 ) {
        return false;
      }
    });
  });
}
```

HTML5, CSS, & JS - example - part 18

working with Flickr API - update travel notes JS

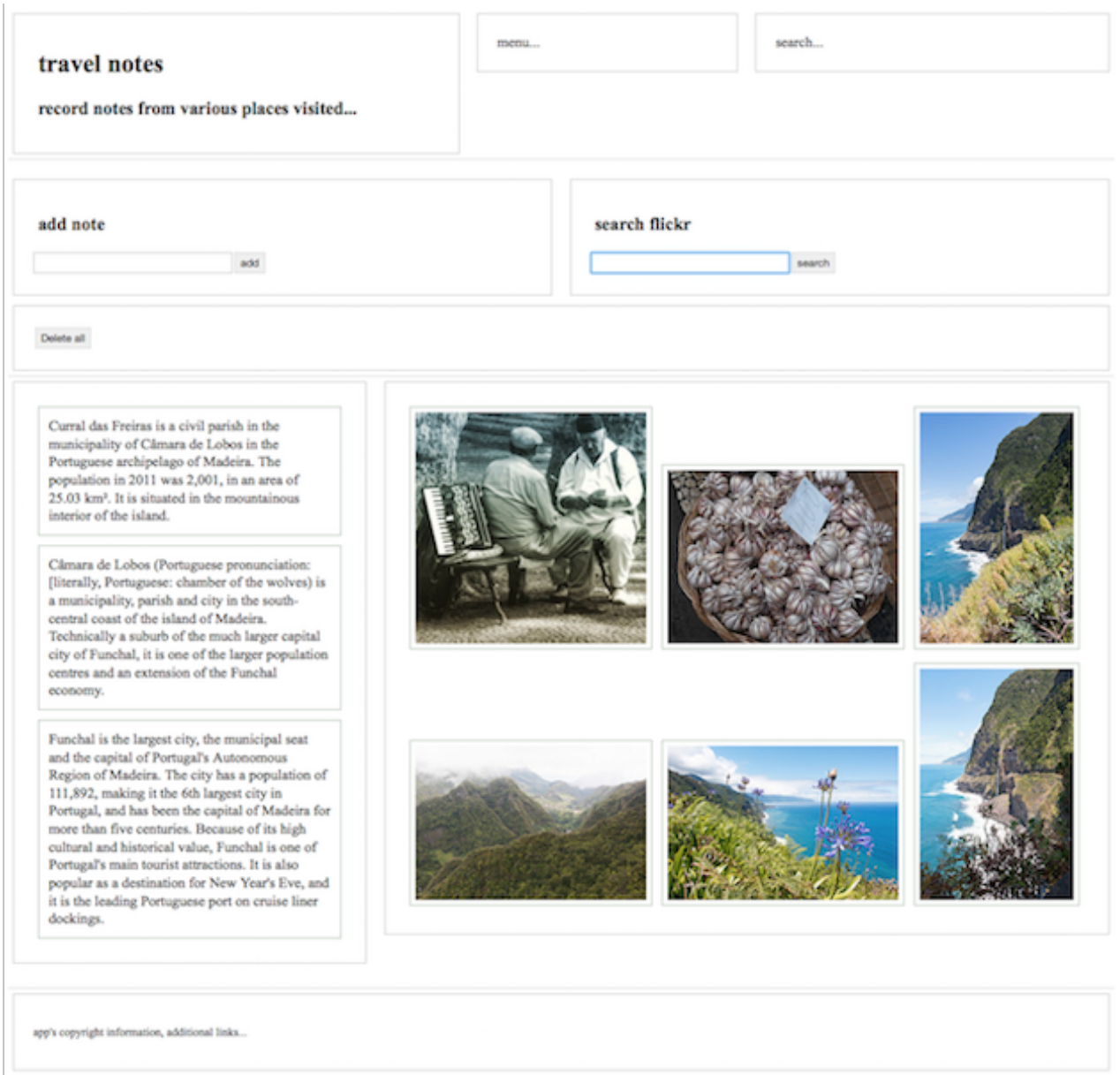
- updated `processImages()` function then called within event handlers
  - *for the search button and a keypress in the search input field*

```
//handle user event for image search button click
$(".contextual-choice button").on("click", function(e) {
  //process images
  processImages();
});

//handle user event for keyboard press
$(".contextual-choice input").on("keypress", function(e) {
  //check code for keyboard press
  if (e.keyCode === 13) {
    //process images
    processImages();
  }
});
```

- DEMO - travel notes & Flickr

Image - HTML5, CSS, & JS - Travel Notes & Flickr



Travel Notes & Flickr - different layout

HTML5, CSS, & JS - example - part 19

working with Flickr API - update travel notes JS

- room for improvement, updates, abstraction, and general refactoring of the existing code
- return to this issue when we consider refactoring the code in general
  - *there are still a few simple features we need to add*
- for example,
  - *add images to the* `.contextual-output` *section, resize* `.note-output` *section*
  - *moves focus to the current images*
  - *check loading progress of the notes and images*
  - *show feedback to the user*
  - *need to output a title for the images*
  - *set using the search query*

HTML5, CSS, & JS - example - part 20

working with Flickr API - modify travel notes JS

- first modification is to resize the `.notes-output`
  - *create more space for the images*
  - *gently shift focus to the new images*
- update existing `.createImage()` function in the `contextual.js` file

```
//manage new image output
function createImage(data) {
...
    if (checkVisible($(".contextual-output img")) === true) {
      $(".note-output").removeClass("col-12");
      $(".note-output").addClass("col-4");
      $(".contextual-output").fadeIn("slow");
    }
...
}
```

- add check to ensure images are not visible in the DOM
- remove current class from `.note-output` section
  - *12 column class for the grid*
- add new grid class to resize `.note-output` to 4 columns
  - *then fade in the `.contextual-output` class*
  - *set in the app's HTML to a class of `.col-8`*

HTML5, CSS, & JS - example - part 21

working with Flickr API - modify travel notes JS

- next modification is some initial error handling
  - *checking for an empty array of images from the returned Flickr JSON*
- check `processImages()` function for an empty array of image items

```
...

if (response.items.length === 0) {
  var img = "";
  createImage(img);
} else {
  //return images from items array...
}
...
```

- checks images in the items array for the promise object
- if not, send an empty variable as a parameter to our `createImage()` function

HTML5, CSS, & JS - example - part 22

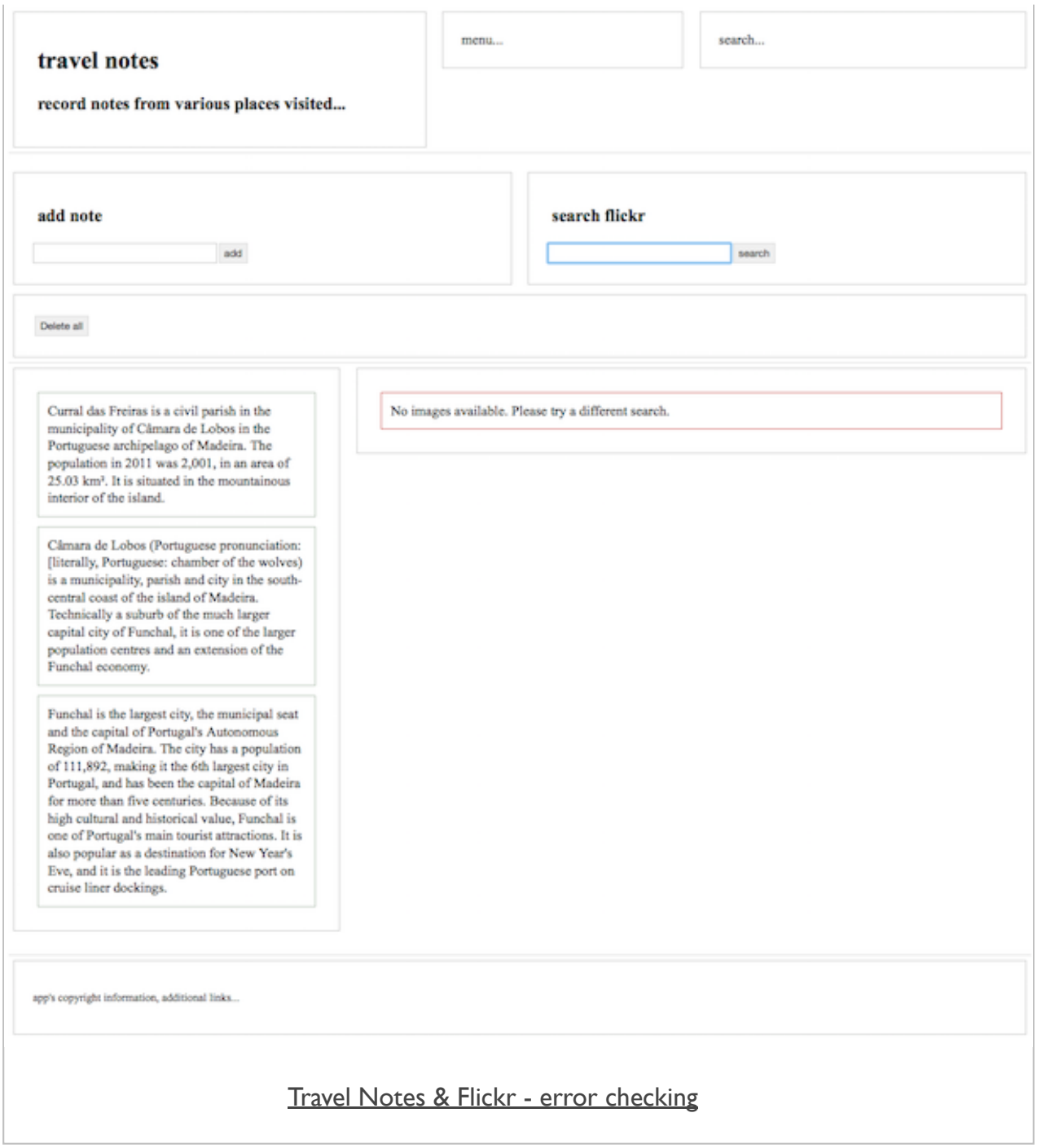
working with Flickr API - modify travel notes JS

- check for empty value in `createImage()` function
  - *handle the simple errors as follows*

```
if (data !== "") {
  //create each image element
  var $img = $('<img class="flex-img">').attr("src", data);
  //add image
  img_output = $img;
} else {
  var $img_error = $('<p class="flex-item error">').html("No images available...");
  //add error
  img_output = $img_error;
}
```

- we've abstracted the return variable for the image output
  - *can hold either the image or the error output...*
- add a check to see whether the `.contextual-output` section is visible or not
- modify the column class for the `.note-output` section
- then append our image output
- then show the `.contextual-output` section within the app
- DEMO - travel notes & Flickr

Image - HTML5, CSS, & JS - Travel Notes & Flickr



Travel Notes & Flickr - error checking

HTML5, CSS, & JS - example - part 23

working with Flickr API - modify travel notes JS

- continue to modify and build our Travel Notes app
- add some metadata for the returned images
  - *using the title and link from the search query response*
- add initial metadata output in the `contextual.js` file
  - *modify the `processImages()` function*
  - *metadata from Flickr JSON response in the deferred promise object*

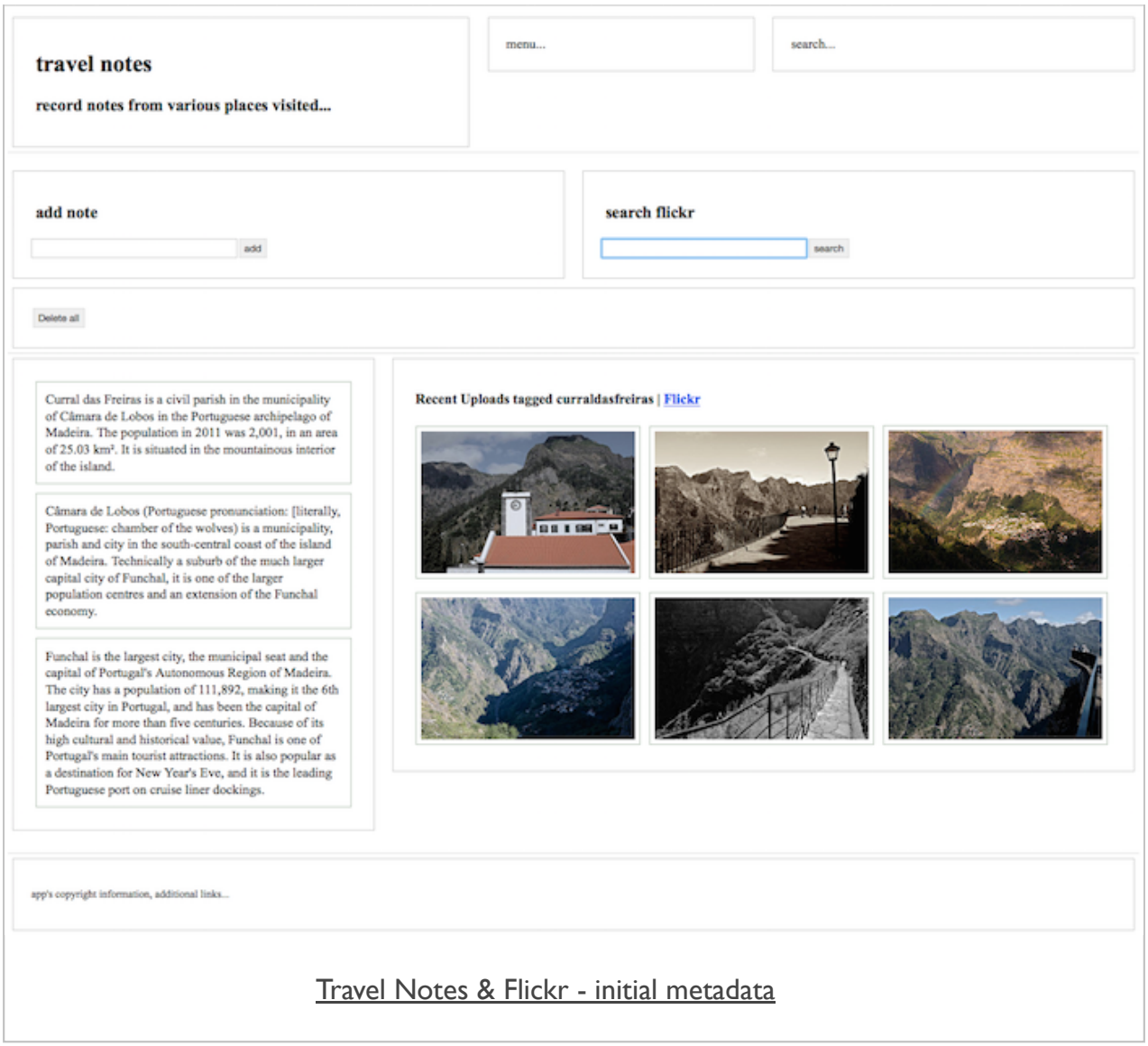
```
...
//create object for search metadata
var search_meta = {title:response.title, link:response.link};
...
```

- then pass this to a new function, called `metaOutput()`

```
//prepare and render metadata for returned search...
function metaOutput(data) {
  if (data !== "") {
  //search metadata from response
  var search_title = data.title;
  var search_link = data.link;
  //build heading output for metadata heading
  var metaHeading = '<h6>'+search_title+' | <a href="'+search_link+'">Flickr</a></h6>';
  //render metadata to contextual-output
  $(".contextual-output").prepend(metaHeading);
  }
}
```

- DEMO - travel notes & Flickr - initial metadata

Image - HTML5, CSS, & JS - Travel Notes & Flickr



Travel Notes & Flickr - initial metadata

HTML5, CSS, & JS - example - part 24

travel notes - basic refactoring of JS

- as we continue to add features and modify existing code
  - *may start to see unnecessary repetition and function calls in the code*
- eg: initial error handling for our contextual images
  - *`createImage()` function is being called in the `processImages()` function*
  - *called regardless of returned image data*
- `createImage()` is being used unnecessarily to manage the error handling
- move check to `processImages()` function
  - *then call function to render necessary error message*

```
function outputError(message) {
  var $img_error = $('<p class="flex-item error">').html(message);
  //check for visible contextual-output - if not visible
  if (checkVisible($(".contextual-output")) === true) {
    $(".note-output").removeClass("col-12");
    $(".note-output").addClass("col-4");
  }
  //append output to DOM
  $(".contextual-output").append($img_error);
  //fade in contextual-output with appended results
  $(".contextual-output").fadeIn("slow");
}
```

HTML5, CSS, & JS - example - part 25

travel notes - basic refactoring of JS

- updated `processImages()` function can call `.outputError()` function as needed

```
...
if (response.items.length !== 0) {
//logic to add metadata and each image...
}
else {
  var img_error = "No images available - please try a different search.";
  outputError(img_error);
}
...
```

- use this function to output error messages for any type of contextual data
- also remove some unnecessary replication of code
  - *by adding a simple function to change an element's class*

```
//modify element class - from, to
function changeClass(element, size1, size2) {
    $(element).removeClass(size1);
    $(element).addClass(size2);
}
```

- resize a class, for example to modify our grid output
  - *call this function - pass the selector to update, original class to remove, and new class to add*

HTML5, CSS, & JS - example - part 26

working with Flickr API - modify travel notes JS

- add a modification to check for the image loading and the notes
  - *offer status feedback to the user*

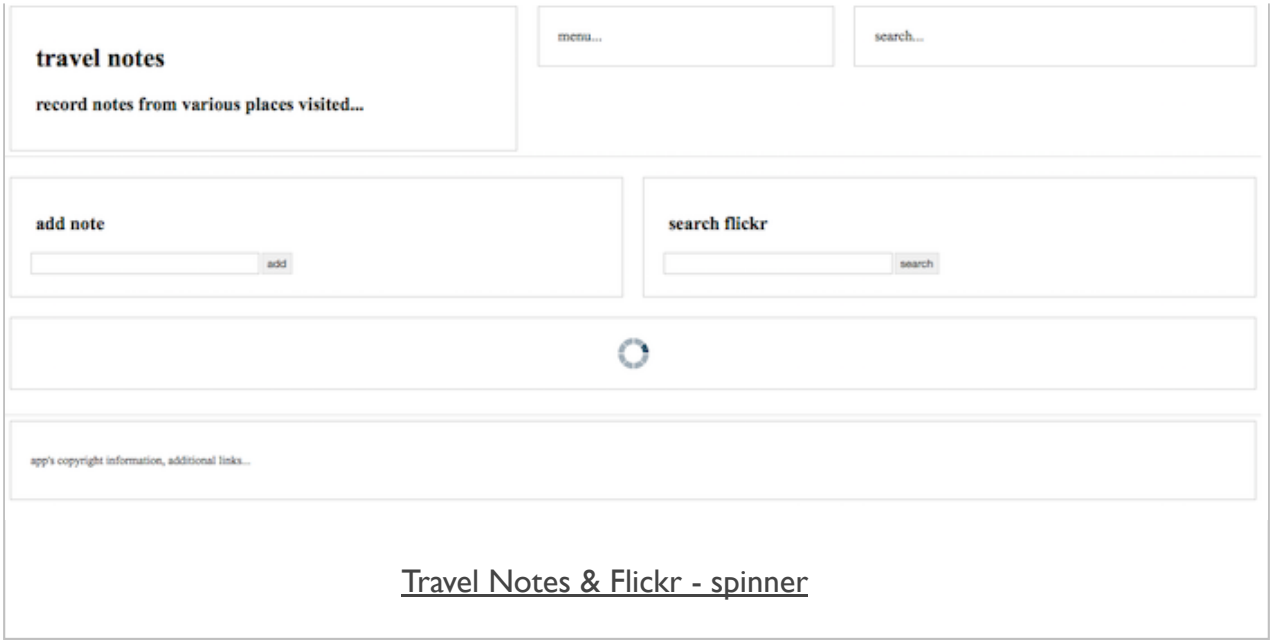
```
//add initial loader spinner for ajax...
$(".contextual-output").html('<img class="spinner" src="assets/images/ajax-loader.gif">');
```

- remove it when the deferred promise object has returned

```
//remove ajax spinner
$(".spinner").remove();
```

- DEMO - travel notes & Flickr - spinner

Image - HTML5, CSS, & JS - Travel Notes & Flickr



Travel Notes & Flickr - spinner

Demos

- AJAX and JSON
  - *AJAX-JSON 1 - load a JSON file*
  - *AJAX-JSON 2 - abstract code for load a JSON file*
  - *AJAX-JSON 3 - test deferred .then()*
  - *AJAX-JSON 4 - Flickr API*
- Travel Notes app
  - *DEMO 1 - Travel Notes & JSON*
  - *DEMO 2 - Travel Notes & Flickr*
  - *DEMO 3 - Travel Notes & Flickr - error checking*
  - *DEMO 4 - Travel Notes & Flickr - initial metadata*
  - *DEMO 5 - Travel Notes & Flickr - spinner*

References

- jQuery
  - *jQuery - deferred*
  - *jQuery - promise*
- Flickr API
  - *Public feeds*
  - *Public feed - public photos & video*
- Various
  - *Create your own AJAX loader*