Comp 324/424 - Client-side Web Design

Spring Semester 2020 - Week 11

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add grid layout

- update the layout of our Travel Notes application to include a grid layout
- apply this grid layout to the overall application
 - organisation and presentation of the notes
- remove the centred, fixed width for the body in our style.css stylesheet
- removes centre styling, results in content spanning full width of browser window
- add the grid layout to help us control this layout

```
<link rel="stylesheet" type="text/css" href="assets/styles/grid.css">
```

then modify content categories, child elements to use new grid css

Image - HTML5, CSS, & JS - grid layout

travel notes record notes from various places visited	
add note	
app's copyright information, additional links	
Grid Layout - Updated Header	

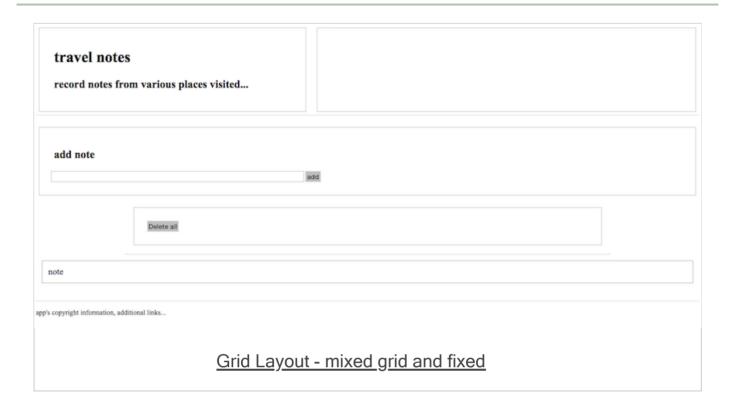
add grid layout

 update our main content to position the note-input and notecontrols

```
<!-- note input -->
<section class="note-input">
 <div class="row">
    <div class="col-12">
      <h5>add note</h5>
      <input><button>add</button>
    </div>
 <div>
</section>
<!-- note controls for delete... -->
<section class="note-controls">
 <div class="row">
    <div class="col-12">
      <button id="notes-delete">Delete all</button>
    </div>
 </div>
</section>
```

still need to amend style.css to remove additional fixed styling

Image - HTML5, CSS, & JS - grid layout 2



add grid layout

fix mixed rendering by removing width, margin, and padding for .note-controls

```
/* note controls */
.note-controls {
  border-bottom: 1px solid #dedede;
  display: none;
}
```

- continue to update Travel Notes app
- modify output for notes
- add further options for users

DEMO - Travel Notes - grid layout with media queries

add flex to grid layout

- an additional option to consider flex layouts
- a recent W3 working draft
- aims to provide efficient way to align and proportion content
- known as Flexbox Layout
 - idea is to apportion width and height for content
 - proportions relative to container even when their size is unknown or dynamic
- flex layout could, in theory, replace a full grid layout
- considered more a complement to overall grid structure
- defined flex container expands items to fill the container's available space
- can also shrink them to prevent any possible overflow
- think of a flex layout as supporting multiple directions
 - direction agnostic
- many properties available for flex
 - focus upon styling flex container and any flex items

add flex to grid layout

we might specify CSS properties for a flex container

```
.flex-container {
display: flex; /* defines container as flex */
flex-direction: row; /* defines positioning of items added to container */
flex-wrap: wrap; /* defines whether to wrap items to another line */
justify-content: flex-start; /* defines start point and distribution of items */
}
```

- allows us to position our container starting at the left
- items contained in a row
- contained items wrapping to additional lines if necessary
- many additional options available for each property
- also add rulesets for specific styling of items within a flex container
- we could add properties to a flex item such as
 - specify the order of the flex items
 - whether a particular item can grow or shrink relative to content
- default size of an item before any remaining space is distributed
- individual alignment for a given item...

add flex to notes

- flex container and items useful for organising and positioning our notes
- due to uncertainty about content, size, and general note requirements
 - flex positioning and styling removes the need for assumptions or fixed sizes
- we can start to modify the styling and rendering of our notes using flex

```
/* flex item */
.flex-item {
  flex-basis: 300px; /* default size before extra */
  flex-grow: 1; /* all items will be equal */
}
```

- gives us a default smallest size for each note
- then the ability for each note to grow to fill the row as required
- also work with responsive layouts
- due to the minimum size and the option to grow for each item
- and wrap flex items per flex container
- modify and update styles as we develop travel notes app

DEMO - Travel Notes - grid layout with flex notes

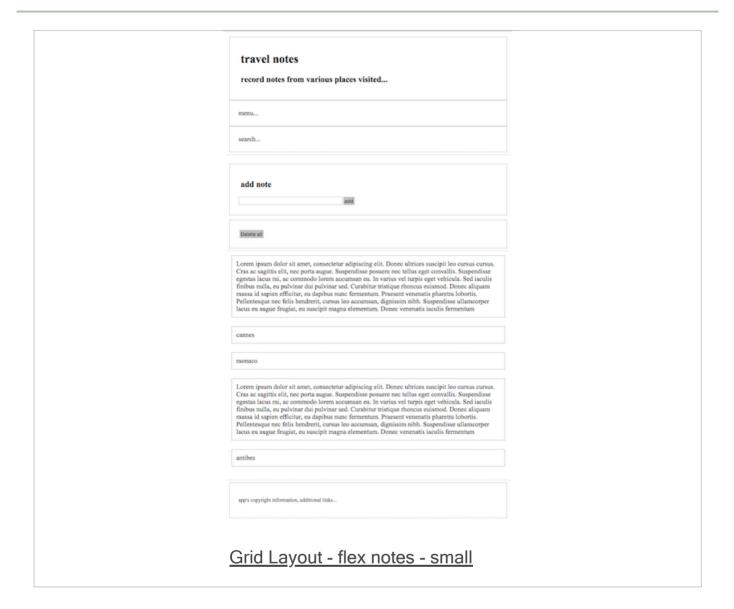
Image - HTML5, CSS, & JS - Flex Notes

record notes from various places visi	ited				
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Image - HTML5, CSS, & JS - Flex Notes 2

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Image - HTML5, CSS, & JS - Flex Notes 3



add flex to notes

Notes with Flex and Media Queries

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..."
}]
}
```

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
- o then outputs the end result
- start with the following update

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

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
});
```

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);
        ...
    }
}
```

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
        object

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

- 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

working with Flickr API - update travel notes HTML

 updated HTML for .note-input and Flickr search .contextualchoice

- 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>
```

- 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

- 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

- 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

- 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 . for Each() 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

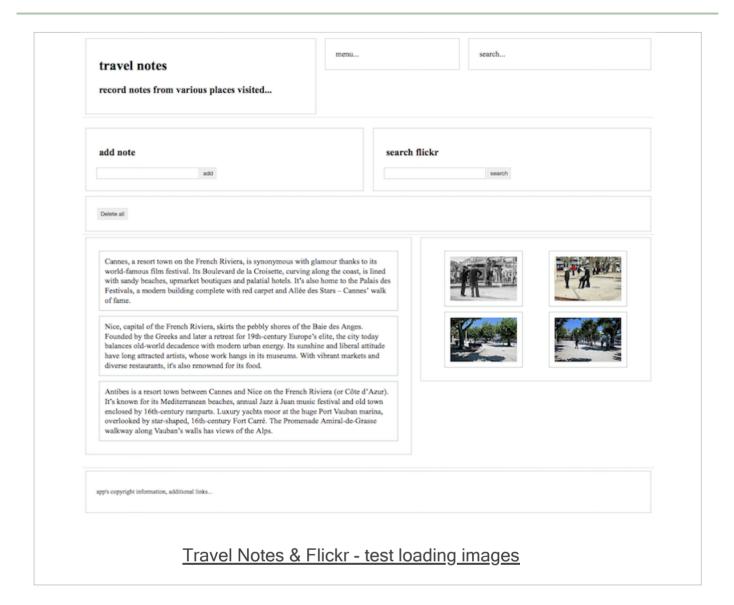
```
//manage new image output
function createImage(data) {
   //create each image element
   var img = $('<img class="flex-img">');
   //add image
   img.attr("src", data);
   //append to DOM
   $(".contextual-output").append(img);
}
```

- .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 .fleximg
- 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

- 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



- 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

- 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;
   }
}
```

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;
     }
    });
 });
```

working with Flickr API - update travel notes JS

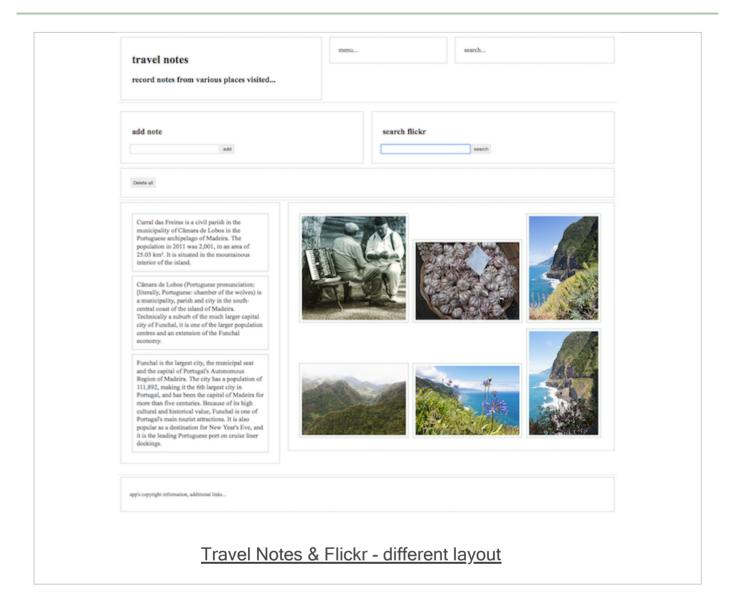
- updated processImages() function then called within event handlers
- for the search button and a keypress in the search input field

```
//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



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

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

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

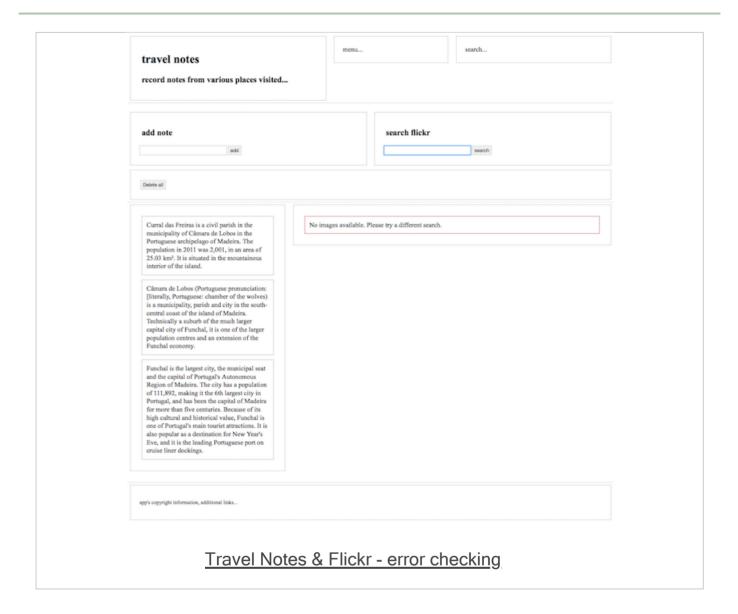
working with Flickr API - modify travel notes JS

- 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 = $('').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



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 process Images () function
- metadata from Flickr JSON response in the deferred promise object

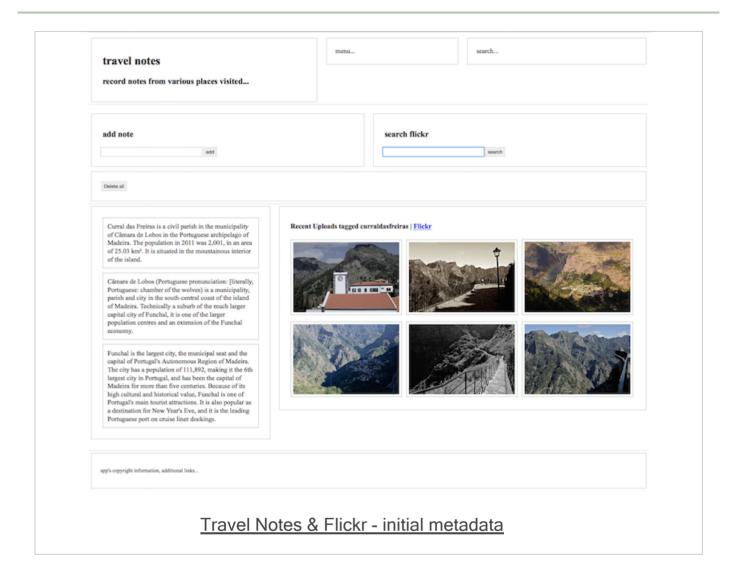
```
...
//create object for search metadata
var search_meta = {title:response.title, link:response.link};
...
```

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 - 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 = $('').html(message);
  //check for visible contextual-output - if not visible
  if (checkVisible($(".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");
}
```

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

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

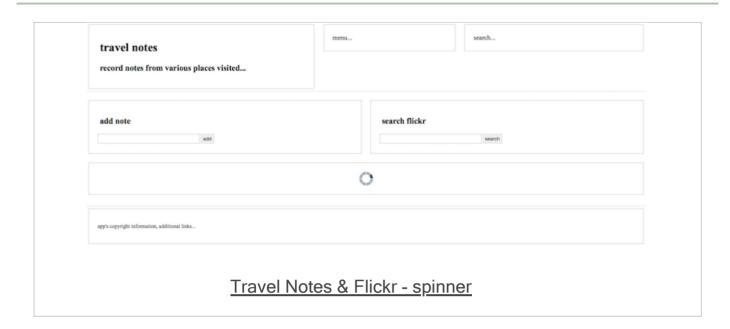
```
//add initial loader spinner for ajax...
$(".contextual-output").html('<img class="spinner" src="assets/images/ajax-loader.gif">');
```

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



JavaScript - ES Modules

extra material

- extra notes on ES Modules
 - general usage
 - custom design and structure
 - custom library
 - technical overview of module design
- extra source code examples available
- general usage
- custom modules
- custom library example

Demos

- Travel notes app series 3
- DEMO 1 Travel notes grid layout with media queries
- DEMO 2 Travel notes demo2
- Travel notes app series 4
 - DEMO 1 Travel Notes & JSON
 - DEMO 2 Travel Notes & Flickr
 - o DEMO 3 Travel Notes & Flickr error checking
 - DEMO 4 Travel Notes & Flickr initial metadata
 - DEMO 5 Travel Notes & Flickr spinner

Resources

- Flickr
- Flickr API Public feeds
- Flickr API Public feed public photos & video
- jQuery
- jQuery
- jQuery API
- jQuery deferred
- jQuery .getJSON()
- jQuery JSONP
- jQuery promise
- Various
 - Create your own AJAX loader
 - W3 Selector API
- W3
 - W3 CSS Flexible Box Layout Module 1
 - W3 JS Object
- W3 JS Performance