jQuery Rich Internet Applications

Text: EN

Software: EN

REALDOLMEN
to get there, together

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1. Developing Rich Internet Applications using jQuery

1.1. Goal

Learn the fundamentals of jQuery to create compelling, interactive web applications

1.2. Agenda

- Introduction
- Selecting
- Decorating
- Events and Functions
- Modifying the DOM
- Adding Effects
- Animating
- Scrolling
- Resizing
- Images and Slideshows
- Navigating and Organizing Content
- Code Practices
- Adding Ajax
- Enhancing Forms
- Advanced Controls
- Extending jQuery
- Appendix

2. Introduction

2.1. What is jQuery?

- jQuery is a JavaScript Library
  - Allows you to change web pages on the fly
  - Can let you do in 3 lines of code what you would need 15 lines of JavaScript for
  - Enables you to work easily with Ajax
  - jQuery motto: "Write Less. Do More"
  - Has a robust, cross-platform compatibility
- jQuery has an active community
  - Hundreds of plugins have been created that extend its functionality
- jQuery exists in two versions, each a single compact file
  - Production
    - Smaller file size optimized for speed of execution
  - Development
    - To see behind the magic and for debugging

2.2. Advantages of jQuery

- HTML and CSS let you create great-looking, but static web pages
  - They give your pages structure and style
  - They tell the browser how the page is displayed
- To make the web pages more responsive you need
  - Interactivity
  - Action
  - Animation
  - Interaction
  - All kinds of effects
- You could load a new page for each action, but... real interactivity should be done without reloading
- To add behaviour to the web page, you need a scripting language, such as JavaScript
  - Every browser comes with a JavaScript interpreter
  - Follows the directions in the `<script></script>` tags
- jQuery is a specialised library that eases JavaScript development
- jQuery allows you to
  - Dynamically add elements to a web page without reloading
  - Change menu items when users hover their mouse over them
  - Validate form fields and notifying the user
  - Add animations and transitions to text and pictures
  - Load data from a server asynchronously, when needed
  - and much more!
- jQuery is executed on the client side

2.3. Downloading and Installing

- You can download jQuery from the website
  - http://www.jquery.com
  - Save it in a folder "scripts"

- Browsers may behave differently when executing jQuery
  - You will need to test jQuery code in multiple browsers
  - You want your pages to work well for most of your users

2.4. Preparing Your Pages

- You can load jQuery by adding the following line at the end of your page

```
<script src="scripts/jquery-3.1.1.min.js"></script>
```

- You can now start to add jQuery code inside a `<script>`

```
jQuery(function() { // ready event
    jQuery("#button1").click( function() { // click event
        $("#div").animate({top:30},200); // moves up
    });
    jQuery("#button2").click( function() {
        $("#div").animate({top:500},2000); // moves down
    });
    jQuery("#button3").click( function() {
        $("#div").css("color", "purple"); // changes color
    });
    jQuery("#button4").click( function() {
        $("#div").toggle("slow"); // hides / shows
    }); });
```

- While the browser displays changes, the original HTML and CSS will not change

2.5. Starting with jQuery

```
<script>
jQuery(document).ready(function(){
    jQuery("button").click(function(){
        jQuery("h1").hide("slow");
        jQuery("h2").show("fast");
        jQuery("img").slideUp();
    });
});
</script>
```

- The code above shows how concise jQuery can be
  - When the document is ready
  - When any button element is clicked on
  - Hide all h1 elements slowly
  - Show all h2 elements quickly
  - Let all img elements slide upward and disappear
- Accessing elements in a document

```
jQuery('div.content').find('p');
```

- Adding CSS classes dynamically

```
jQuery('ul > li:first').addClass('active');
```

- Alter the content of a document

```
jQuery('#container').append('<a href="more.html">more</a>');
```

- Respond to a user's interaction

```
jQuery('button.show-details').click(function() {
    $('div.details').show();
});
```

- Retrieve information from the server with Ajax

```
jQuery('div.details').load('more.html #content');
```

2.6. jQuery and HTML

- A browser uses the HTML structure in a file to build a document
  - Uses the HTML Document Object Model (DOM)
- The DOM can be visualised as a tree
  - Has a root
  - Each part of the tree is called a node
  - All HTML tags are called elements
  - Text nodes are not elements, they just contain text
- The browser then renders the page in its viewport
- The JavaScript interpreter will reference the DOM
  - It is able to make changes to the DOM without reloading the page
  - This will change the structure on the page

2.7. jQuery vs. JavaScript

- jQuery can be considered as a more approachable version of JavaScript
  - It is JavaScript, but easier to use

    ```
    document.getElementsByTagName("p")[0].innerHTML = "Update";
    ```

  - in jQuery:

    ```
    jQuery("p").html("Update");
    ```

- Fetch elements from the DOM

  ```
  for (i = 0; i <= 4; i++){
  document.getElementsByTagName("p")[i].innerHTML="Update";
  }
  ```

  - jQuery uses CSS selectors to fetch elements:

    ```
    jQuery("p").html("Update");
    ```

- jQuery uses JavaScript underneath, but hides the complexity of the DOM

2.8. Selecting Elements

- jQuery selects elements in the same way as CSS
- Examples:
  - An element selector: selects all corresponding elements

```
h1 {
  text-align: left;
}
```

```
jQuery("h1").hide();
```

- Examples:
  - A class selector: allows you to select a grouping of elements

```
.footer {
  position: absolute;
}
```

```
jQuery(".footer").slideUp();
```

- Examples:
  - An ID selector: to select one, and only one element

```
#header {
  color: #3300FF;
}
```

```
jQuery("#header").fadeOut();
```

- While CSS adds style to the selected elements, jQuery selectors will add behaviour to them

2.9. Your first Effects

- Sliding effect
  - Slide up to 0 height, or slide down from 0 to the height defined in CSS
  - Adding a parameter such as "slow" will change the default behaviour

```
jQuery("div").slideUp();
jQuery("div").slideDown();
jQuery("div").slideToggle();
```

- Fading effect
  - Fading in lets an element go from being invisible (transparent) to being visible (opaque)
  - Adding a parameter (in ms) specifies how fast the element fades

```
jQuery("div").fadeIn();
jQuery("div").fadeOut();
jQuery("div").fadeTo();
jQuery("div").fadeToggle();
```

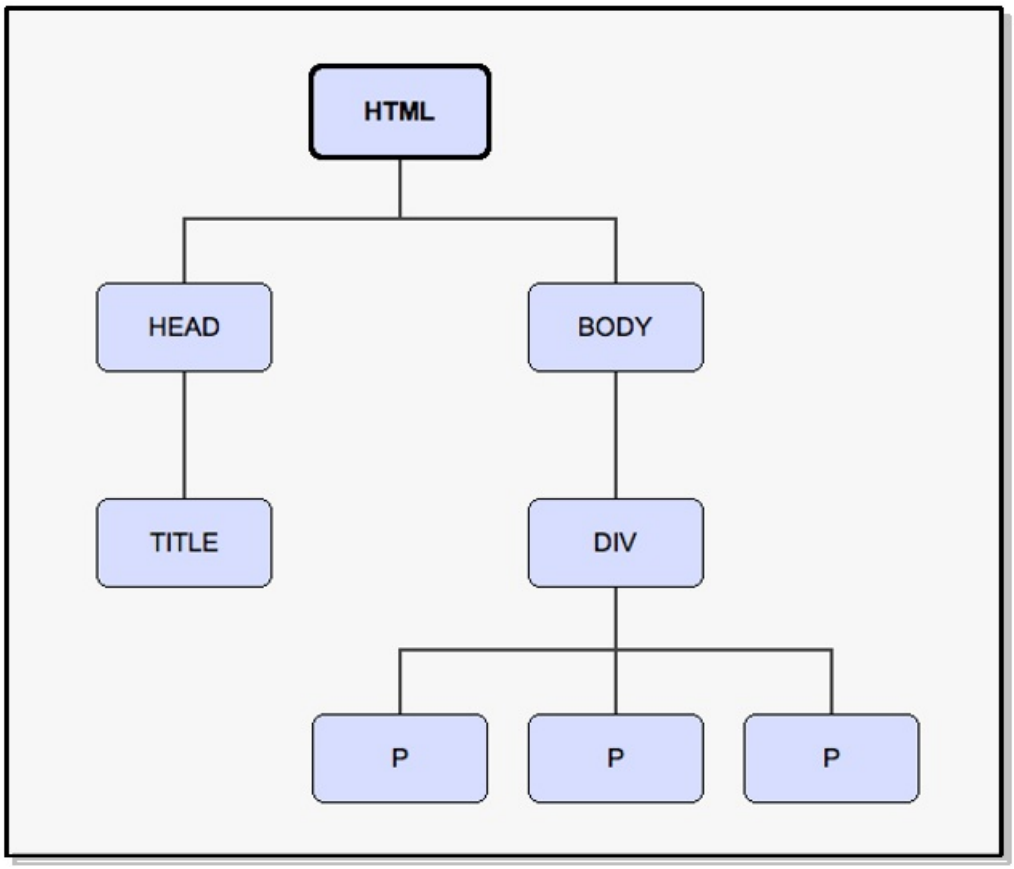
3. Selecting

3.1. The DOM

- Sample HTML code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>the title</title>
    </head>
    <body>
        <div>
            <p>This is a paragraph.</p>
            <p>This is another paragraph.</p>
            <p>This is yet another paragraph.</p>
        </div>
    </body>
</html>
```

- When starting with jQuery, it is important to visualize the DOM in your mind... or to use some tools
- Corresponding DOM tree



3.2. The jQuery Alias $()

- The `$()` is a shorter version of the `jQuery()` function
  - This saves you from writing those five extra characters
  - Is referred to as the jQuery wrapper
    - `jQuery()` becomes: `$()`
  - Both notations point to the same thing
- The `jQuery()` function accepts multiple things

    - CSS selectors
        - Returns the set of elements that match that selector
    - HTML
        - Will let you add DOM elements to the browser page on the fly
    - JavaScript objects
- Note:
    - When combining jQuery with other client-side scripting, the `jQuery()` function may help avoid naming conflicts

3.3. CSS Selectors

- CSS selectors let you grab elements from a page
- jQuery accepts the same selectors
    - You will always start with the `$()` function

Selector Type	CSS	JQuery
Tag name	`p { }`	`$('p')`
ID	`#div-id { }`	`$('#div-id')`
Class	`.class-name { }`	`$('.class-name')`

- The elements returned from the $() function are automatically and implicitly looped through!

3.4. Other Selectors

- You can select child elements with the child combinator

```
$('#nav > li').addClass('horizontal');
```

    - Find each list item (li) that is a child (>) of the element with an ID of nav (#nav)
- The following shows how you can select with the negative pseudo-class

```
$('#nav li:not(.horizontal)').addClass('sub-level');
```

    - Find each list item (li) that is a descendant of the element with ID of nav (#nav) that does not have a class of horizontal (:not(.horizontal))
- You can just select descendants by leaving a space

```
$('div p').remove();
```

    - Find all descendant p elements that are directly inside div elements and remove them
- The current element can be selected with the word `this`

```
var value = Math.round((Math.random() * 9) + 1);
var msg = '<p>A number between 1 and 10: ' + value +'</p>';
$(this).append(msg); // context sensitive!
```

    - On the currently selected element, add a p element with a random value between 1 and 10
    - Note the use of JavaScript methods, variables and concatenation
    - `append()` and `remove()` are jQuery methods
    - `this` removes the need for re-selecting the current element

- Selecting all elements of the DOM tree with *

```
$('*').hide();
```

  - All elements will be hidden...

3.5. Attribute Selectors

- You can also select elements by one of its HTML attributes

```
$('img[alt]')
```

  - Find all images that have an alt attribute
- Attribute selectors accept a wildcard syntax
  - Inspired by regular expressions
    - ^ : at the beginning of a string
    - $: at the ending of a string
    - * : at an arbitrary position within a string
    - ! : indicates a negated value
- Attribute selector examples

```
$('a[href^="mailto:"]').addClass('mailto');
```

- Find all anchor elements (a) with a href attribute ([href]) that begins with mailto: (^="mailto:")

```
$('a[href$=".pdf"]').addClass('pdflink');
```

- Find all anchor elements (a) with a href attribute ([href]) that ends with .pdf ($=".pdf")

```
$('a[href*="real"]').addClass('realdolmen');
```

- Find all anchor elements (a) with a href attribute ([href]) that contains the word real anywhere (*="real")

3.6. Custom Selectors

- If that is not enough, jQuery adds its own custom selectors
  - They enhance the capabilities of CSS to locate page elements
  - They are a lot slower than normal selecting with the DOM selector engine
- You would like the fetch the first element of list

```
$('div.horizontal:eq(0)')
```

  - Is zero-based, because a JavaScript array is zero-based
- You would like to select the div element that are the first child of their parent element

```
$('div:nth-child(1)')
```

- CSS is one-based
  - Better use:

```
$('div:first-child')
```

- You can select only the odd rows of a table to give them a different style

```
$('tr:even').addClass('alt');
```

- Use even for the odd rows
  - The :even and :odd selectors use JavaScript zero-based numbering
  - The first row (odd) counts as 0 (even)

- But, what if you have two tables on the page
  - The next table could begin with an odd row...

```
$('tr:nth-child(odd)').addClass('alt');
```

  - This selector is one-based, but counts an element's position relative to its parent element

- To select on content, you can use the :contains() selector

```
$('td:contains(Malaz)').addClass('highlight');
```

  - This selector is case-sensitive

3.7. Form Selectors

- jQuery custom selectors also allow you to fetch form elements

Selector	Match
:input	Input, textarea, select, and button elements
:button	Button elements and input elements with a type attribute equal to button
:enabled	Form elements that are enabled
:disabled	Form elements that are disabled
:checked	Radio buttons or checkboxes that are checked
:selected	Option elements that are selected

- Example

```
$('input[type="radio"]:checked')
```

  - Find all checked radio buttons, but not checkboxes

3.8. Traversing the DOM

- Sometimes, you will need to access the parent or ancestor element of a node
  - DOM traversal methods let you go up, down and all around the DOM tree

- Using the `filter()` method

```
$('tr').filter(':even').addClass('alt');
```

  - Is nearly identical to the :even selector, but filter is more powerful, as it accepts functions!

```
$('a').filter(function() {
return this.hostname && this.hostname != location.hostname;
}).addClass('external');
```

  - Find all anchor elements (a) that have a href attribute with a domain name (this.hostname), and the domain name must not match (!=) the domain of the current page (location.hostname)

- Using `next()`, you can select the element next to your current selection

```
$(document).ready(function() {
      $('td:contains(Real)').next().addClass('highlight');
});
```

- Style all the cells next to the cell containing the word 'Real'
- Replace `next()` by `nextAll()` to style all the following cells

- Other DOM traversal methods
  - The `next()` method counterparts: `prev()` and `prevAll()`
  - The method `siblings()` will give you all the elements at the same DOM level (before and after)
  - If you want to include the current element, you can use `addBack()`

```
$(document).ready(function() {
$('td:contains(Henry)').nextAll().addBack().addClass('highlight');
});
```

- You can also access the `parent()` of the current element or its `children()`

3.9. Accessing DOM Elements

- Sometimes, traversal is not enough
  - What if you wanted to know the tag name of an element
  - This is a property of the DOM element
  - For these rare situation, jQuery offers the `get()` method

```
var myTag = $('#my-element').get(0).tagName;
```

  - jQuery also gives you a shorthand notation

```
var myTag = $('#my-element')[0].tagName;
```

- If you want to select the text of a node, use `text()`

```
var text = $('#my-element').text();
```

3.10. Method Chaining

- jQuery lets you select elements and do multiple things on them, in a single line of code
  - Most jQuery methods, return a jQuery object, so you can apply extra methods to your result
  - This can improve performance, because you will not need to respecify another selector

- It is recommended to break a single line into multiple ones for readability

```
$('td:contains(Real)')       // find every cell containing "Real"
.parent()                    // select its parent
.find('td:eq(1)')            // find the 2nd descendant cell
.addClass('highlight')       // add the "highlight" class
.end()                       // return to the parent of the cell containing "Real"
.find('td:eq(2)')            // find the 3rd descendant cell
.addClass('highlight');      // add the "highlight" class
```

4. Decorating

4.1. CSS with jQuery

- Selecting elements in jQuery is the hard part
  - Changing styles and decorating is easy and fun!
  - Once you have selected your target, you can manipulate them to build effects
- jQuery does not only use CSS for selecting
  - jQuery also allows adding and removing styles, classes, and more
  - This is called decorating

4.2. Reading CSS Properties

- Before you try to change CSS properties, you have to access it
  - jQuery does this with the `css()` function

```
$(document).ready(function() {
var fontSize = $('h1').css('font-size');
alert(fontSize);
});
```

  - The `css()` function always returns the property for the first matched element, so you do not have to use it on multiple elements
- jQuery will return the calculated style
  - You will receive the value that has been rendered in the browser
  - This does not strictly correspond to what has been specified in the CSS file, but it is the actual value

4.3. Setting CSS Properties

- To change a CSS property inline, you only need to add an extra parameter to the `css()` function

```
$(document).ready(function() {
  $('h1').css('background-color','#dddddd');
});
```

  - You first choose the property you would like to set
  - Next you provide the value you wish to set for that property
- If you want to change multiple properties, best use an object literal

```
$('tr:even').css('background-color','#dddddd');
$('tr:even').css('color', '#666666');
```

```
$('tr:even').css({'background-color': '#dddddd',
  'color': '#666666'});
```

  - Notice the curly braces, and the key/value pairs separated by a colon, each pair separated by a comma

4.4. Adding and Removing Classes

- jQuery provides and easy way to give an element CSS classes and to remove them
  - This allows you to change how an element looks dynamically

```
$(document).ready(function() {
          $("#btn1").click( function(){
              $("#header").addClass("hover");
              $("#header").removeClass("no_hover");
```

```
        });
        $("#btn2").click( function(){
            $("#header").removeClass("hover");
            $("#header").addClass("no_hover");
    });
});
```

- jQuery also includes `toggleClass()`, that automatically checks for the presence of a class before applying or removing it

- This technique is often preferred over setting with css()
  - The `css()` function changes the style inline, while we prefer putting style in a separate CSS file

5. Events and Functions

5.1. Using Events

- An event is a mechanism that allows you to run a piece of code when something happens to the page
  - Examples: ready, click, ...
- The code that gets run is a function
  - Allows you to make your jQuery code more efficient and reusable
  - Functions that react on events are called handler functions
- Event listeners are what make events work
  - Are part of the DOM
  - Can be added to any element on the page, not just buttons and links
  - The browser will pay attention to the user's interactions, and execute the function specified

```
$("#showMessage")                          // to an element of ID showMessage
    .click(                                    // add a click event
        function() {                           // run this code
            alert('You Clicked Me!');
});
```

5.2. Binding an Event

- Adding an event to an element is called binding
- There are two ways of binding
  - The convenience method, for when the DOM elements already exist

```
$("#myElement").on( function() {
alert($(this).text());
});
```

```
$("#myElement").on('click', function() {
alert($(this).text());
});
```

  - ~~The bind() method, for binding events to elements that you dynamically add after the page is loaded~~
  - To attach an event for all elements that match the selector, now and in the future, use the on() method
- jQuery always registers event handlers in the bubbling phase of the model

5.3. Event Triggers

- Many things can trigger an event
- jQuery groups events in five different categories
  - Browser events
    - ~~error,~~ resize, scroll
  - Document loading events
    - load, ready, ~~unload~~
  - Form events
    - blur, change, focus, select, submit
  - Keyboard events
    - keydown, keypress, keyup
  - Mouse events

        - click, dblclick, focusin, focusout, mousedown, mouseenter, mouseleave, hover, mousemove, mouseover, mouseup

- There are nearly 30 different event types
    - Most will accept one event handler, while some of them, like hover, will accept two handlers

5.4. Triggering Events

- You can also trigger events in code
    - For submitting forms for validation
    - To hide pop-up boxes
    - ...
- To trigger the event, use the trigger() method

```
$(document).ready(function(){
    $("input").select(function(){
        $("input").after(" Text marked!");
    });
    $("button").click(function(){
        $("input").trigger("select");
    });
});
```

5.5. The Event Object

- Events are handled differently in different browsers
    - Internet Explorer supports different events than Chrome, Safari, Firefox, Opera
    - This is a result of the '90s browser wars...
- Luckily for us, jQuery handles these browser issues
    - jQuery knows which browser is in use and handles events accordingly
    - jQuery makes binding events easier
- The event object contains variables and functions
    - Can be used for programmatic triggering of events
    - Has interesting information
        - target, pageX, pageY, ...
- You can pass any function to a bound event as handler
- An event can also be unbounded

5.6. Removing Events

- You will often need to remove events from objects
    - You don't want people to click a submit button twice
    - You want people to only do something once
- After an event is bound, you can then remove it

```
$("#myElement").bind ('click', function() {
  alert($(this).text());
});
```

```
$("#myElement").unbind('click');
```

- Notice how the unbind() method takes the event as argument
- You can bind multiple events to an element, and remove them all at once

```
$("#myElement").bind('focus', function() { // focus event
    alert("I've got focus");
});
$("#myElement").click(function(){ // click event
    alert('You clicked me.');
});
```

```
$("#myElement").unbind();
```

- Notice how the unbind() method takes no arguments...

5.7. Stopping an Event

- Events will automatically bubble up to parent elements
  - This might result in unwanted behaviour
- To get access to the event, add the event as variable to the handler

```
$('#switcher').click(function(event) {
    $('#switcher button').toggleClass('hidden');
});
```

- Now you can use the event object in your code

```
$('#switcher').click(function(event) {
    if (event.target == this) {
        $('#switcher button').toggleClass('hidden');
    }
});
```

- You can also stop the event from propagating

```
$('#switcher button').click(function(event) {
    // more code
    event.stopPropagation();
});
```

5.8. What does the following code do?

```
$(document).ready(function(){
    $("span").click(function(){
        event.stopPropagation();
        alert("The span element was clicked.");
    });
    $("p").click(function(){
        alert("The p element was clicked.");
    });
    $("div").click(function(){
        alert("The div element was clicked.");
    });
});
```

5.9. Stopping Default Actions

- Some elements have default actions
  - When adding event handlers to an anchor element, the browser will also load a new page
  - When pressing the Enter key when editing a form, a submit event is triggered
- If you do not want the default action, use preventDefault()
  - Useful when you want to do specific checks, and only use the default action when everything is valid
- Event propagation and default actions are separate
  - You can disable them separately
  - If you want to halt both, then return false at the end of your event handler, which calls both stopPropagation() and preventDefault()

5.10. Using Event Bubbling

- Bubbling can also be very useful!
  - The technique that exploits bubbling is called event delegation
  - Imagine: a large table with information, each row containing an interactive item with a click handler
    - Adding handlers with implicit iteration is easy...
    - ... but performance will suffer from the internal jQuery loops
    - ... and memory will suffer from maintaining all the handlers
  - Instead, assign a single click handler to the ancestor element, and let the event bubble up to it!

```
$('#switcher').click(function(event) {
      if ($(event.target).is('button')) {
          // more code
          $(event.target).addClass('selected');

      }
});
```

  - Using event.target, we have access to the element where the event came from
  - The is() method checks if the element matches the selector

5.11. Separating Scripts

- When your page becomes heavy on script code, you should separate the jQuery script in a separate file
- Advantages
  - You can include it in more than one page (code reuse)
  - Your page will load faster
  - The HTML code you write will be cleaner and easier to read
- Steps
  - Create a new script file, ending in .js
  - Move the JavaScript and jQuery code to this file
  - Create a link to this file in your HTML page

```
<script src="scripts/scripts.js"></script>
```

- The browser will only ask for this file once, and cache it

5.12. Creating Functions

- Functions are blocks of code
  - They are separate from the rest of your code

    - You can execute them wherever you want in your script

- jQuery provides lots of functions
- Event handlers are also functions, but anonymous
- Creating your own functions allows you to organize your code by name, so that they can easily be reused
- There are two ways to create functions
    - Function declaration

```
function myFunc1(){
$("div").hide();
}
```

    - Function expression

```
var myFunc2 = function() {
$("div").show();
}
```

- The difference between the two ways is timing
    - A named function expression cannot be used until after it is encountered and defined
    - A named function declaration can be called whenever you want, even as an onload event handler

- Anonymous functions
    - Do not have names
    - Get called immediately when they are encountered in code
    - Any variables declared inside are only available when the function is running
    - Cannot be called anywhere else

- Named functions can be called and assigned as event handlers

```
myFunc1();                      // calls the function, hides the divs
$("#myElement").click(myFunc2); // calls when clicked, shows the divs
```

    - Notice how assigning does not required the use of parentheses

5.13. Passing Variables and Returning Values

- Functions can behave differently, depending on the information we give it
    - Functions can accept variables
    - When variables are passed into functions, they are called arguments (or sometimes referred as parameters)

```
function welcome (name) { // argument name
alert ("Hello " + name);
}
welcome("John");
```

    - By changing the variable, we can now change the behaviour of the function, without having to rewrite it

- Functions can also return values, representing results

```
function multiply (num1, num2) {
  var result = num1*num2;
  return result;
}
var total = multiply (6, 7);
```

    - If no return is present, the function returns undefined

5.14. jQuery Loops

- If you need to interact with a group of elements one by one, you can use a loop
  - Also known as iteration
  - While going through the group, you can do something to each element along the way

```
$(".nav_item").each(function(){
$(this).hide();
});
```

- In other words
  - each() uses the selector that calls it and creates an array of elements identified by that selector
  - It then loops through each element in the array sequentially
  - Note: If you return false from inside a loop, it will stop executing and move on
- The function passed to each() can also take two variables

```
$(".nav_item").each(function(index, value){
  // use index and value here
});
```

  - The index refers to where the element appears in the list
  - Indexes always start at 0
  - Value represents the current object the loop is working on
    - Is the same as using $(this) inside the each() loop

5.15. Using Conditional Logic

- jQuery uses the JavaScript conditional logic
  - This lets you run different code based on decisions you want your code to make, based on the information you provide

```
if( myBool == true ){
          // do something!
      } else {
          // otherwise do something else!
      }
```

- jQuery has a static method that checks if the first parameter contains whatever is in the second parameter

```
if($.contains(this, document.getElementById("my_element"))){
      // when true, do something!
}
```

  - Notice how an if does not require an else
  - Static means the function is part of the jQuery library instead of being from an object, and works simply with $ or jQuery

6. Modifying the DOM

6.1. DOM Traversal Revisited

- You have already seen how to traverse the DOM tree
  - next(), nextAll(): returns the next elements at the same DOM level
  - prev(), prevAll(): returns the previous elements at the same DOM level
  - parent(): returns the parent element
  - children(): returns the children of an element
  - siblings(): returns all the elements at the same DOM level
  - addBack(): to include the current node in the selection
- jQuery offers other interesting traversal options
  - parents(): let's you traverse all of the element's parent elements
  - closest(): climbs through the parents, but stops when a matching element is found

```
$("li").closest("ul")
```

6.2. Removing and Detaching

- With jQuery, you can remove elements from the DOM

```
$("img#thumbnail").remove();
```

  - This will remove the element from the DOM permanently
  - If you remove a parent element, its children will also be removed
- jQuery also offers the detach() method

```
$("img#thumbnail").detach();
```

  - This will take the element out, but holds on to it so that it can be reattached later
  - All elements matched by the selector will be detached
  - To store the detached elements and its contents, you can use a variable
- To get rid of something inside an element, you can use the empty() method

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

6.3. jQuery Arrays

- To store elements returned from jQuery, it is common practice to place a $-sign in front of the variable

```
$s = $(".sold-out").parent().parent().detach();
```

  - This variable will store multiple elements
  - jQuery puts the result in a JavaScript array
  - Using the $-sign is a coding convention for a jQuery array
  - Note the method chaining capability of jQuery
- To access values from an array, you use an index

```
$array[2] = 15;
```

  - This will put a value in the third slot
  - An array index is a sequential number that starts at 0
- To find elements elements in an array, you use find()

```
var $my_elements = $("li");
$my_elements.find("a");
```

6.4. Replacing Elements

- If you need to replace elements with new ones, you can use the replaceWith() method

```
$("h2").replaceWith("<h1>My Books</h1>");
```

  - The element will be taken out of the DOM to be replaced by the new code (creating new DOM nodes)
  - You can provide HTML in the parentheses to replace

- This works well for a one-to-one replacement
  - You can always put the replaced element back
- If you use this method on one-to-many substitution...
  - ... the elements will be replaced, but you would not know what was there before...
  - The DOM has forgotten about the replaced elements
- If you need to remember what was replaced, you will need two steps
  - Insert the new elements into the DOM before or after the selected element
  - Detach the selected elements and hold them in a variable
- jQuery has operations that allow to add elements

```
$(".sold-out").before("<li>Sold Out!</li>");
$(".sold-out").after("<li>Sold Out!</li>");
```

  - before() adds the element before the selection
  - after() adds the element after the selection

6.5. Other Filter Methods

- To narrow your selection, you can use filter methods
  - first(): will filter out everything but the first element in a selection
  - eq(): will filter out everything but the element whose index is equal to what you put in the parameter
  - last(): will filter out everything but the last element in a selection

```
$(".books").children().first();
$(".books").children().last();
$(".books").children().eq(0); // same as first
```

  - slice(): will filter out everything except elements with an index between the numbers you put in parentheses
    - You can also specify a negative starting number!
  - filter(): will filter out everything but elements that match the selector you put in parentheses (even accepts functions!)
  - not(): will filter out everything that does not match the selector

```
$(".books").children().slice(1,3); // returns two elements [1,3[
$(".books").parents().filter(".fantasy");
$("ul.books.fantasy").children().not(".expensive");
```

6.6. Wrapping Elements

- Sometimes, you would like to wrap an element inside another element

- jQuery gives you the wrap() method
  - Without it, it would take you multiple calls to detach, append, before, and so on … to put the element inside another

```
$("img#logo").wrap("<a href='http://www.realdolmen.com'></a>");
```

7. Adding Effects

7.1. Hiding and Revealing Elements

- To hide an element, you can use the hide() function

```
$('#hideButton').click(function() {
  $('#disclaimer').hide();
});
```

  - When the button is clicked, the element #disclaimer will disappear
- It can be confusing that jQuery uses methods for selecting, actions and also for events and effects...
  - The name of the action gives you a good clue to its purpose
  - Consult the jQuery API regularly to sort them out!
- To reveal a hidden element, you use the show() function

```
$('#showButton').click(function() {
  $('#disclaimer').show();
});
```

  - When the button is clicked, the element #disclaimer will appear
- You could combine the hide() and show() in one action

```
$('#toggleButton').click(function() {
  if ($('#disclaimer').is(':visible')) {
      $('#disclaimer').hide();
  } else {
      $('#disclaimer').show();
  }
});
```

  - The is() function lets you check if a selector matches the element it was called on... in this case:
    - Is the element also selected by the selector :visible?
  - The above construct is called a toggle, which is very useful!
  - But we need this toggle lots of times in our code...
- jQuery has a toggle version of most functions

```
$('#toggleButton').click(function() {
  $('#disclaimer').toggle();
});
```

7.2. Progressive Enhancement

- Some users do not have JavaScript...
  - Using very old computers
  - Using limited devices (like mobile phones...)
  - People with visual impairments who require screen readers
  - Those users who worry about JavaScript security and have it disabled
- Around 5 to 10% of users might be browsing without JavaScript
  - You don't want to alienate 10% of potential customers
- Solution: progressive enhancement
  - Provide an acceptable experience to those users
  - Beef up your website for the others!
- Show some elements by default... but hide, add or remove functionality with jQuery

7.3. Adding New Elements

- Any valid HTML string put inside the jQuery function will be created and made ready for page addition

```
$('<p>A new paragraph!</p>').addClass('new');
```

- After creating the element, there are several ways to add the element to the page
  - We have already seen append(), after() and before()
  - jQuery also has insertAfter() and insertBefore() to insert as siblings

```
$('<input type="button" value="toggle" id="toggleButton">')
.insertAfter('#disclaimer');
```

  - The difference lays in the fact that jQuery applies the function to the newly created element and adds to the parameter
  - The same can be said about appendTo() and prependTo()

```
$('<strong>START!</strong>').prependTo('#disclaimer');
```

  - The element will appear inside the existing element

7.4. Removing Elements

- We have already seen the remove() operation
  - But remove() can also take parameters to refine the selection further

```
$('#books tr').remove(':contains("Fantasy")');
```

  - This will remove only those rows that contain the text "Fantasy"
- Removing elements is one of the things you should do for progressive enhancement

```
<p id="no-script">
  We recommend that you have JavaScript enabled!
</p>
```

  - The paragraph will be visible to all users
  - Remove the paragraph for people with JavaScript enabled

```
$('#no-script').remove();
```

7.5. Modifying Content

- Adding, removing and replacing are fun, but if you want to replace the contents of an element... what then?
  - jQuery has it all!
  - You can use the html() and text() methods

```
$('p').html('good bye, cruel paragraphs!');
$('h2').text('All your titles are belong to us');
```

- Use text() if you need to add plain text, but html() to add HTML

```
$('p').html('<strong>Warning!</strong> Text has been replaced … ');
$('h2').text('<strong>Warning!</strong> Title elements can be …');
```

  - In this example, the paragraphs will contain bold-faced text, but the h2 tags will contain the text exactly as defined
  - The same methods can also be used to retrieve the contents

7.6. Basic Animation

- We have already worked with fadeIn() and fadeOut()
  - These methods accept as parameter the time it takes to complete
  - You can also use some predefined values: slow, fast or normal
  - Use these instead of show() and hide() to give your page more visual impressiveness
- jQuery does not have a fadeToggle()... but you can simply animate the toggle() method!
  - Pass a time span parameter to the method

```
$('#toggleButton').click(function() {
$('#disclaimer').toggle('slow');
});
```

- Further basic animation element include slideDown(), slideUp() and slideToggle()
- Animation is important
  - When things change on the page, the user should not get lost!

7.7. Callback Functions

- Many effects accept a callback function
  - This enables you to run some code when the effect has finished

```
$('#disclaimer').slideToggle('slow', function() {
alert('The slide has finished sliding!')
});
```

  - You pass the function in the same way as you provide event handlers
- You can use this to chain effects one after the other

```
$('#disclaimer').slideUp('slow', function() {
  $('#hideButton').fadeOut();
});
```

8. Animating

8.1. Animating CSS Properties

- Basic animation was easy, but what if you want more control?
  - jQuery lets you animate() a whole host of CSS properties to create your own effects

```
$('p').animate({
padding: '20px',
borderBottom: '3px solid #8f8f8f',
borderRight: '3px solid #bfbfbf'
}, 2000);
```

  - This code animates all paragraphs on the page, changing the padding, and adding a bevelled border over a period of 2 seconds
  - Pass an object literal to animate, with camel-cased properties
  - You can also use relative values with += and -=

```
$('#navigation li').hover(function() {
    $(this).animate({paddingLeft: '+=15px'}, 200);
}, function() {
    $(this).animate({paddingLeft: '-=15px'}, 200);
});
```

- animate() gives you more control over showing, hiding, and toggling

```
$('#disclaimer').animate({
  opacity: 'hide',
  height: 'hide'
}, 'slow');
```

- You should try to animate as much elements as possible
  - You will stumble upon some nice effects!
  - But... keep it sensible!
    - At one time, the tag was considered sensible...

8.2. Color Animation

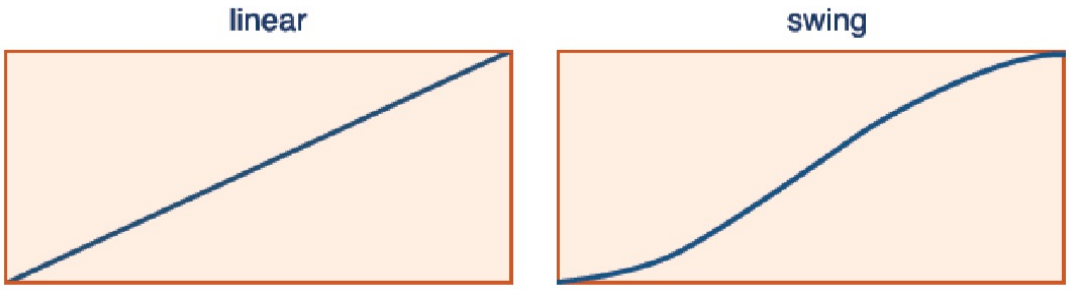
- Animating color is a bit tricky...
  - Color values in between start and end colors need to be calculated
  - This color calculating functionality is not included in jQuery
    - Most projects do not need this functionality
    - This is to keep the jQuery library size as small as possible
  - You will need to download the Color Animations plugin
    - http://plugins.jquery.com/color/ or https://github.com/jquery/jquery-color/
  - jQuery has lots of plugins you can download and use freely
  - You will just need to add the plugin to your page
- Once added to your page, you can now start animating colors

```
$('#disclaimer').animate({'backgroundColor':'#ff9f5f'}, 2000);
```

8.3. Easing

- Easing refers to the acceleration and deceleration that occurs during an animation
  - Gives the animation a more natural feel
  - Applies a mathematical algorithm to alter the speed of the animation as it progresses

- jQuery has two types of easing available
  - linear and swing
  - Any time you use an animation, you can add these as parameters to control the easing

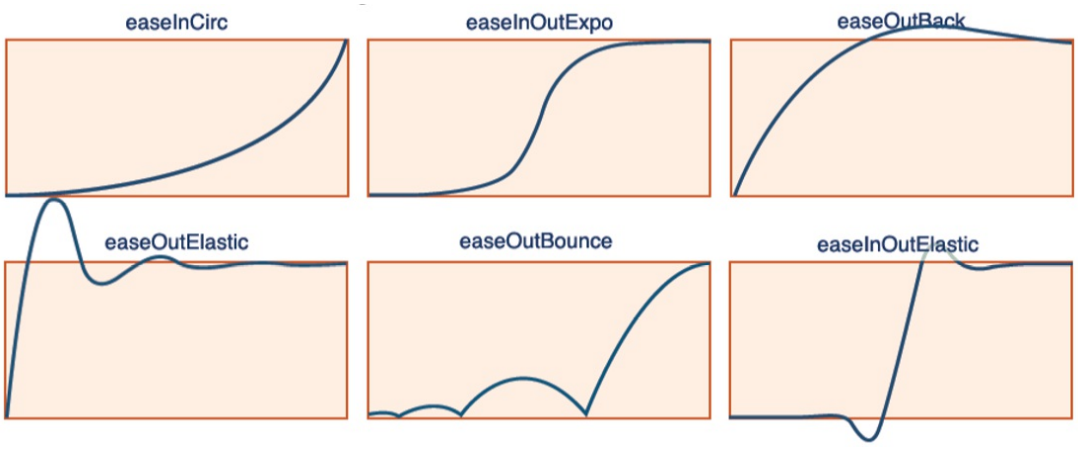



```
$('p:first').toggle(function() {
    $(this).animate({'height':'+=150px'}, 1000, 'linear');
}, function() {
    $(this).animate({'height':'-=150px'}, 1000, 'swing');
});
```

- What happens here?
  - We select only the first paragraph tag
  - A toggle event executes each passed function on successive clicks
  - Inside the handlers we use $(this) to reference the paragraph
  - The first handler uses the += format to grow the paragraphs height, using linear easing
  - The other handler shrinks the height with -= with swing easing
- You will notice the shrinking animation feels a bit more natural...

8.4. Bouncing

- There is a vast array of easing options including bouncing!
  - More than 30 options can be found in the easing plugin
  - http://plugins.jquery.com/jquery.easing/
  - The easing library is also included in the jQuery UI library
    - jQuery UI includes several common plugins: color animation, class transitions, easing, ...



- To use the algorithms, pass its name to the animate function

```
$('p:first').animate({height: '+=300px'}, 2000, 'easeOutBounce');
$('p:first').animate({height: '-=300px'}, 2000, 'easeInOutExpo');
$('p:first').animate({height: 'hide'}, 2000, 'easeOutCirc');
$('p:first').animate({height: 'show'}, 2000, 'easeOutElastic');
```

- The algorithms can be found at this website
  - http://www.robertpenner.com/easing/
  - The algorithms originated from Robert Penner's easing equations
- To see all the available equations just view the plugin's source code
  - If you use your text editor to open up the file you downloaded, you'll see a list of the functions you can use in jQuery animations

8.5. The Animation Queue

- The animate() function can also be called with extra options
  - These options are bundled together as object literal
  - This format is only necessary when you need the queue parameter

```
$('p:first').animate({
      height: '+=100px',
      backgroundColor: 'green'
      }, {
      duration: 'slow',
      easing: 'swing',
      complete: function() {alert('done!');},
      queue: false
});
```

  - The queue is the list of animations waiting to occur on a particular element
- Queued animations will be performed one at a time until everything is complete
  - But sometimes, you want multiple animations to happen at the same time
  - The queue is then not desirable
- The queue can be controlled using the queue option
  - Other alternatives: jQuery actions stop(), queue(), and dequeue()
  - This will give you super-fine control over how your animations will run

8.6. Chaining Actions

- We have already seen the advantages of method chaining
- You can apply chaining on animations as well

```
$('p:first').hide().slideDown('slow').fadeOut();
```

  - Be careful: chaining can become addictive!
  - You can add, and remove elements, or move around the DOM, still based on your initial selection... which creates weird statements
  - It is recommended to lay out your actions in separate lines for readability
- If you want your animation to pause briefly in the middle of a chain, use the delay() action

```
$('p:first')
.hide()
.slideDown('slow')
.delay(2000)
.fadeOut();
```

  - This code will slide down the paragraph, then wait 2 seconds before fading out
  - This can be a great way to control your animations more precisely!

8.7. Animated Navigation

- Many web sites use animated navigation on their pages
- You can use a Flash control that wobbles and zooms as the user interacts with it...
  - But you would not be here if you wanted to use Flash...
  - You can apply what you have learned to create animated navigation with free technologies: HTML, CSS and jQuery
- Step 1: Adding a navigation menu to the page

```
<ul id="navigation">
      <li><a href="#">Home</a></li>
      <li><a href="#">About Us</a></li>
      <li><a href="#">Buy!</a></li>
      <li><a href="#">Gift Ideas</a></li>
</ul>
```

- Step 2: Changing the navigation style

```
#navigation {
  margin-top: 10px;
  padding: 5px;
  list-style-type: none;
  position: relative;
  z-index: 1;
  background: #c0d0d0;
  float:none;
}
#navigation ul {
  margin: 0;
  padding: 0;
}
#navigation li {
  display: inline;
  margin: 0;
  padding: 0;
}

#navigation a {
  color: #000;
  display: inline-block;
  padding: 5px;
  text-decoration: none;
}
```

- Step 3 : Adding the background color blob
  - This div will be positioned behind whatever link the user is mousing over

```
$('<div id="navigation_blob"></div>').css({
width: $('#navigation li:first a').width() + 10,
height: $('#navigation li:first a').height() + 10
}).appendTo('#navigation');
```

- Step 4: Styling the background blob

```
#navigation_blob {
top: 5px;
background: #826c4b;
position: absolute;
z-index: -1;
}
```

- Step 5: Setting up the event handler functions

```
$('#navigation a').hover(function() {
  // Mouse over function
  ⋮
}, function() {
```

```
  // Mouse out function
  :
});
```

- Step 6: The fun part!

```
// Mouse over function
$('#navigation_blob').animate(
{width: $(this).width() + 10, left: $(this).position().left},
{duration: 'slow', easing: 'easeOutElastic', queue: false}
);
```

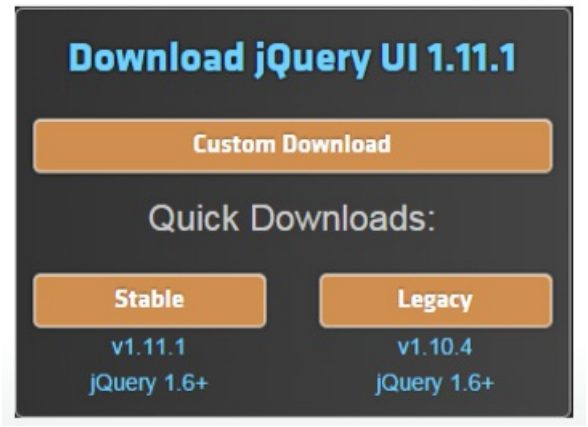
- Notice the position() method, which does nothing but exposes the top and left properties, so we can change the relative position
- Step 7: When the user moves the mouse off the link

```
// Mouse out function
var leftPosition = $('#navigation li:first a').position().left;
$('#navigation_blob').stop(true).animate(
{width:0},{duration:'slow', easing: 'easeOutCirc', queue: false}
).animate({left: leftPosition}, 'fast' );
```

- Two animations are chained together
  - The first one will hide the element with some easing applied
  - The second one will send it to the side
- Notice the stop() method
  - Two arguments: clearQueue and gotoEnd
  - clearQueue set to true will clear any queued animations
  - gotoEnd will let the element immediately go to the end of its animation

8.8. Using jQuery UI

- jQuery UI library
  - Is a collection of advanced jQuery widgets, effects, and interactions
  - Contains date pickers, accordions, and drag-and-drop functionality and more
  - Most elements included are widely applicable to web development
- Downloading jQuery UI
  - The full jQuery UI library is very big in size (more than 1Mb!)
  - The jQuery web site has a tool to create a custom version of jQuery UI that contains only the elements you need
  - http://www.jqueryui.com



- The download builder is broken into several sections

    - Core, Interaction, Widgets, Effects, and Themes
    - Core is the main jQuery UI library
    - Best practice: deselect everything and then add only what you require
        - If a component relies on another component to function,it will be automatically selected for you
    - While developing, it is safe to grab the whole library
        - Once happy with the result, you can then create a custom library with reduced file size
    - Themes will greatly influence the visual output
    - The downloaded library contains demo's and examples
- To get started, you will need
    - The jquery-ui.min.js file
    - The images directory
    - The jquery-ui.min.css file
- jQuery UI has an interesting effects package
    - It includes the color and easing plugins, so you no longer need to add them
    - It adds extra effects and functionality for advanced animation

```
$('p:first')
.effect('shake', {times:3}, 300)
.effect('highlight', {}, 3000)
.hide('explode', {}, 1000);
```

    - Some can only be used with effect(), others can be applied on hide(), show() and toggle()
        - blind, clip, puff, fold, and slide
- If these effects are still not enough, there are hundreds of them available from the plugin repository

9. Scrolling

9.1. Scroll Event

- Scrolling is like animation
  - The elements move on the page
  - But... the user is still in control!
  - jQuery lets you customize the scroll experience
- You will need to know when and what the user scrolls
  - jQuery has a scroll() event
  - This event fires updates as the user changes the scroll position
  - scroll() events are usually put on the window element...
- But you can also set up scrolling effects on other elements

```
#news {
  height: 100px;
  width: 300px;
  overflow: scroll;
}
```

- The following adds some text every time the scroll() event fires

```
$('#news').scroll(function() {
  $('#header')
  .append('<span class="scrolled">You scrolled!</span>');
});
```

  - This will be very annoying, ... but it is easy to implement!
- scroll() events will fire for multiple user interactions
  - Dragging the scroll bar
  - Using the mouse wheel
  - Clicking inside the scrollable zone and using the arrow keys

9.2. Floating Navigation

- A floating navigation pane is always present at the top part of the screen
  - This is regardless of the scroll position
  - It is as if the navigation menu follows the users as they scroll down
- Step 1: Set up CSS properties

```
#navigation {
  position: relative;
}
#main {
  height: 2000px;
}
```

  - The large height for the main content is to force it to have a scrollbar
- Step 2: Responding to the scroll() event

```
$(window).scroll(function() {
  $('#navigation').css('top', $(document).scrollTop());
});
```

  - Notice the use of scrollTop()
    - This returns the top offset of the matched element
    - In the above example, on $('document'), it returns the top of the screen

- The above example works... but is a little jumpy
  - Every time the user changes the scroll bar, it fires many events!

- Step 3: Adding some animation
  - It will add some refinement to our floating panel

```
$(window).scroll(function() {
$('#navigation')
.stop(true)
.animate({top: $(document).scrollTop()},'slow','easeOutBack');
});
```

  - stop() will prevent the jumpiness

9.3. Scrolling the Document

- It is common to have a hyperlinked list at the top of the page
  - Especially when a whole list of subjects has to displayed in the same HTML document
  - The links will let you jump to the correct position
  - After the content, you can have a link that takes you back to the top of the page

- This should be easy
  - Add a `<a href="#">Top</a>` at the end of the page
  - Animate with scrollTop()
  - Disable the default link action (or else the animation will not occur)

```
$('a[href=#]').click(function() {
$('html').animate({scrollTop: 0},'slow');
return false; // cancel the default link action
}
```

- The code works, but there is an issue!
  - The $('html') fails when the browser is in 'quirks' mode
  - http://reference.sitepoint.com/css/doctypesniffing
  - It can happen when you are working with legacy code...

- To make it work you can
  - Change the selector to $('body')
  - Or target both $('html, body')
    - But this in turn gives issues in Opera which tries to scroll both...

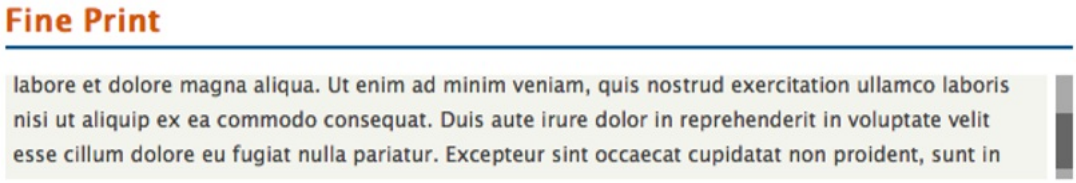
- But jQuery should handle all these cross-browser issues!
  - You're right! jQuery handles most of them
  - This is a trickier one that you need a plugin for, called ScrollTo
  - http://plugins.jquery.com/scrollTo/

```
$('a[href=#]').click(function() {
$.scrollTo(0,'slow'); // scroll the window
// $('div#scrolly').scrollTo(0, 'slow');
return false;
});
```

9.4. Custom Scroll Bars

- This can be interesting for internal elements like scrolling divs
  - But you have to be aware of some usability implications
    - People expect how certain elements of their OS will function
    - Breaking user's expectations can be extremely frustrating

        - This type of UI customization should be undertaken with extreme care!
    - It can still make a world of difference to the overall feel of the interface
- You do not have to build it from scratch
    - You can use the jScrollPane plugin
    - Allows you to replace the browser's default vertical scroll bars with custom ones in any element with overflowed content
    - https://github.com/vitch/jScrollPane
    - Demo's and documentation will help you get started
- Include the following files in your page
    - jquery.jscrollpane.css: styles needed by jScrollPane
    - jquery.mousewheel.js: optional, but recommended to allow users to scroll content with the mouse wheel
    - jquery.jscrollpane.min.js: the actual JavaScript for jScrollPane
- You can extend or overwrite the styles to customize
- The default scroll bars are already sleek-looking




```
$('#fine_print').jScrollPane({
  scrollbarWidth: 10,
  scrollbarMargin: 10,
  showArrows: false
});
```

10. Resizing

10.1. Resize Event

- Resizing has different meanings
  - Resizing the browser window (which is hard to do!)
  - Resizing of windows, images, etc... inside applications
- jQuery can gather information of user resizing, and gives resizing capabilities to any element on the page
- The resize() event is fired whenever a document view is resized

```
$(window).resize(function() {
  alert("You resized the window!");
});
```

  - Here an alert will be shown every time the user resizes the window...
  - Better to use resizing for more than that!

10.2. Layout Switcher

- Instead of debating the use of fluid or fixed-width layouts
  - Just give your users separate fixed-width layouts for different screen sizes
  - You could then switch them using the resize() event
- Step 1: Set up the wider CSS

```
body #main {
  width: 850px;
}
body #main p {
  width: 650px;
}
body #header {
  background-image: url('../../css/images/wide.png');
}
body #books table {
  width: 650px;
  margin-left: 5px;
}
```

  - This CSS is set up to 850px width instead of the default 650px
  - The use of the superfluous body makes sure these rules take precedence over the default because they are more specific
- Step 2: Switch layouts when resizing / at initialization

```
$(function() {
  stylesheetToggle();
  $(window).resize(stylesheetToggle);
});
function stylesheetToggle() {
  if ($('body').width() > 900) {
      $('<link rel="stylesheet" href="wide.css" type="text/css" />')
      .appendTo('head');
  } else {
      $('link[href=wide.css]').remove();
  }
}
```

  - Tests if the body width is greater than 900px at resize, then append the wide stylesheet, if not, remove the stylesheet
  - The function has been given to resize() as a parameter

10.3. Resizable Elements

- jQuery UI contains a Resizable plugin
  - Elements you select get a small handle to the bottom corner
  - This can be stretched around with the mouse
  - Very easy to use and highly configurable
- The basic use of the Resizable plugin is very easy

```
$('p').resizable();
```

  - Just call the resizable() function
  - Of course, jQuery UI must be included in your page

- This is very handy for resizing textarea elements

```
$('textarea').resizable({
  grid : [20, 20], // resizes by steps
  minWidth : 160, // min width
  minHeight : 30, // min height
  maxHeight : 220, // constraining the max
  containment: 'parent' // limit to the parent
});
```

  - Add a handles parameter with n, e, s, w, ne, se, sw, nw, and all to specify in which directions the element can be resized

---

10.4. Pane Splitter

- A splitter divides multiple areas on a page
  - Users are allowed to resize these elements
  - They can decide how much space they want to allot each area
  - Are commonplace in desktop applications
    - On the left: table of contents, tree structure, ...
    - On the right: the contents to show
- Step 1: Setting up the structure

```
<div id="splitter">
  <div class="pane" id="tocPane">
      <div class="inner">
      ⋮
      </div>
  </div>
  <div class="pane" id="contentPane">
      <div class="inner">
      ⋮
      </div>
  </div>
</div>
```

- Step 2: Adding some styles in a new CSS file

```
#splitter {
  height: 150px;
  margin-top: 30px; margin-bottom: 50px;
}
#splitter .pane {
  width: 50%; height: 100%;
  float: left;
}
#splitter h2 {
```

```
  margin-bottom: 0;
  padding-bottom: 0;
}
#tocPane {
overflow: hidden;
background: #d6dde5 url(../images/handle.png) no-repeat right center;
}
#tocPane .inner {
  width: 300px;
}
#contentPane {
  overflow: auto;
}
#contentPane .inner {
  padding: 0 5px;
}
```

- Step 3: The jQuery code
  - Make the first element resizable
  - Recalculate the width of the right element as the component is resized
  - Use outerwidth() to include padding and borders

```
$('#splitter > div:first').resizable({
handles: 'e',
minWidth: '100',
maxWidth: '400',
resize: function() {
  var remainingSpace = $(this).parent().width() -
      $(this).outerWidth();
  var divTwo = $(this).next();
  var divTwoWidth = remainingSpace - (divTwo.outerWidth() -
      divTwo.width());
  divTwo.css('width', divTwoWidth + 'px');
}
});
```

- While very useful, if you need more complex behaviour, you could use the jQuery Splitter plugin

11. Images and Slideshows

11.1. Images and jQuery

- The Internet would be fairly boring without images
  - Much of the content we receive is in the form of pictures and design elements
    - Borders, icons, gradients, ...
- Combine all of these elements with a dose of jQuery and you can add some startling effects
  - Let your creativity go wild!
    - Image galleries, slideshows, fading effects, ...
- jQuery lets you implement less common effects that would be rather difficult to do in JavaScript alone
- We will only look at two examples
  - Creating a Custom Lighbox
  - Creating a Slideshow
- More you can do with images...
  - Cross-fading slideshows, automatic scrolling with JavaScript timers, ...

11.2. Custom Lightbox

- Is used to display full-sized versions of an image thumbnail in a modal dialog
  - The entire background becomes darker to indicate it has been disabled
  - The user must interact with the image to continue working on the page, such as closing it
- Let's create our own custom lightbox!
  - There are some plugins, such as ColorBox, that are able to do all this, but we want to see what's under the hood!
    - http://plugins.jquery.com/colorbox/
  - Clicking on a link will pop up the image file, centered, and the surrounding area will be disabled and darkened
- Step 1: Adding the link

```
<a href="/images/book01.jpg" class="lightbox">Picture</a>
```

- Step 2: Making the screen go dark
  - Make a div as tall and wide as the page
  - Inside that div, you can add another div into which we load the image
  - Fade the opacity to give the div a shadowy effect
  - You can also add a spinning loader image as extra effect

```
#overlay {
position:absolute;
top:0;
left:0;
height:100%;
width:100%;
background:black url(../images/loader.gif) no-repeat scroll center center;
}
#container {
position:absolute;
}
```

- Step 3: Adding the click handler
  - When clicked, we'll add the dark overlay, an image container, and the image itself
  - The container is not strictly necessary, but helpful if you want to add borders, descriptions or next and previous buttons later...

```
$('a.lightbox').click(function(e) {
```

```
$('body').css('overflow-y', 'hidden'); // hide scrollbars!
$('<div id="overlay"></div>') // add overlay
  .css('top', $(document).scrollTop())
  .css('opacity', '0')
  .animate({'opacity': '0.5'}, 'slow') // create shadow
  .appendTo('body');
$('<div id="container"></div>').hide().appendTo('body');
$('<img />').attr('src', $(this).attr('href'))
.load(function() { // when image is loaded
  positionLightboxImage();
})
.click(function() { // remove the lightbox
  removeLightbox();
})
.appendTo('#container');
return false;
});
```

- Step 4: Positioning the lightbox

```
function positionLightboxImage() {
  var top = ($(window).height() - $('#container').height()) / 2;
  var left = ($(window).width() - $('#container').width()) / 2;
  $('#container').css({
      'top': top + $(document).scrollTop(),
      'left': left
  }).fadeIn();
}
```

  - Calculate the center point and fades in the image

- Step 5: Removing the lightbox when the image is clicked

```
function removeLightbox() {
  $('#overlay, #container')
  .fadeOut('slow', function() {
      $(this).remove();
      $('body').css('overflow-y', 'auto'); // scrollbars!
  });
}
```

- Use console.log() for troubleshooting!
  - But don't forget to remove them before going into production...

11.3. Slideshow

- We will create a slideshow widget for use on our pages
  - Mousing over the left or right side of the current image will scroll to the previous or the next image
  - This lets users flip casually through the gallery

- Step 1: Start with a list of images

```
<div id="covers">
  <a href="#" class="trigger">Cover Gallery</a>
     <ul id="covers_inner">
         <li>
          <img src="images/book01.jpg" />
     </li>
     <li>
         <img src="images/book02.jpg" />
     </li>
     ⋮
  </ul>
</div>
```

  - If JavaScript and CSS are disabled, the user will just see a stack of images

- Step 2: Enhancing with CSS

```
#covers {
  border: 1px solid #BEBEBE;
  height: 400px;
  overflow: hidden;
  position: relative;
  width: 268px;
}
#covers ul {
  left: 0;
  list-style-type: none;
  margin: 0;
  padding: 0;
  position: absolute;
  top: 0;
  width: 1072px;
}
#covers li {
  float: left;
}
#covers .trigger {
  left: 0;
  position: absolute;
  top: 0;
  z-index: 10;
  text-indent: -9999px;
  height: 400px;
  width: 268px;
  display: block;
}
```

  - Set the display constraints and hide too wide images
  - The width of the ul depends on the number of images
  - The last CSS lets the trigger cover the whole gallery, with its text hidden away

- Step 3: Creating a widget
  - Will let you reuse the code easily and will help you learn a few JavaScript concepts

```
var gallery = {};
```

  - This creates a JavaScript object literal
    - Put it outside the $(function(){})-block
    - It gives your code a named boundary, and limits the chance of code conflicts with other scripts included in the page
    - It allows you to use a shorter code notation

- Next, you can add some properties to the object inside the$(function(){})-block

```
gallery.trigger = $('#covers .trigger'); // the trigger
gallery.content = $('#covers_inner'); // the list of images
gallery.scroll = false;
gallery.width = 268;
gallery.innerWidth = gallery.content.width();
gallery.timer = false;
gallery.init();
```

- Step 4: Creating an offset() function
  - Sets how far to slide the gallery along
  - Put these function declarations outside the$(function(){})-block

```
gallery.offset = function() {
var left = gallery.content.position().left;
if (gallery.scroll == '>') { // check direction
if (left < 0) {
left += gallery.width; // generate new left value
}
}
else {
```

```
if (left <= 0 && left >= ((gallery.innerWidth * -1)
      + (gallery.width * 2))) {
left -= gallery.width; // generate new left value
}
}
return left + "px"; // return CSS value
}
```

- Step 5: Creating a slide() function
  - Animates the gallery sliding

```
gallery.slide = function() {
if (gallery.timer) { // check if timer set
clearTimeout(gallery.timer); // to be safe...
}
if (gallery.scroll) { // only scroll when needed
$(gallery.content).stop(true,true) // prevent piling up
  .animate({left: gallery.offset()}, 500);
// let the next slide happen
gallery.timer = setTimeout(gallery.slide, 1500)
}
}
```

  - Notice the use of JavaScript clearTimeout() and setTimeout()

- Step 6: Sorting out the direction to scroll to
  - Notice the use of the ternary operation ?:

```
gallery.direction = function(e,which) {
var x = e.pageX - which.offset().left;
gallery.scroll = (x >= gallery.width / 2) ? ">" : "<";
}
```

- Two parameters: the event and the trigger
- Step 7: Initializing the gallery

```
gallery.init = function() {
  $(gallery.trigger)
  .mouseout(function() {gallery.scroll = false;})
  .mousemove(function(e) {gallery.direction(e,gallery.trigger);})
  .mouseover(function(e) {
      gallery.direction(e,gallery.trigger);
      gallery.slide();
  });
}
```

  - This sets the event handlers, which in turn set the parameters for the sliding animation

12. Navigating and Organizing Content

12.1. Creating Rich Internet Applications (RIA)

- Static content is a shrinking part of the Web
  - More and more fully featured, highly functional, and impressive looking applications are sprouting up every day
  - jQuery allows you to create such Rich Internet Applications
- RIA need a user interface
  - Grouping content logically
  - Easy access with drop-down menus
  - Tabbed interfaces
  - Sliding panels
  - Tooltips
  - Accordion controls

12.2. Menus

- While we have created menus before, they have been no more than just simple, top-level navigation panes
- jQuery lets you create more intricate menus
  - Collapsible menus with indicators and hover effects
  - Drop-down menu
- In this chapter you will create a cross-browser compatible drop-down menu
  - By adding a little jQuery on top of the CSS, you will make it a little sleeker!
- Step 1: The menu markup

```
<ul id="menu">
  <li><a href="#">News</a>
      <ul class="active">
          <li><a href="#">Weekly promotions</a></li>
          <li><a href="#">Popular books</a></li>
          <li><a href="#">New books</a></li>
      </ul>
  </li>
  <li><a href="#">Book information</a>
      <ul>
          <li><a href="#">Book summaries</a></li>
          <li><a href="#">Book reviews</a></li>
  ⋮
```

  - The menu consists of multi-leveled unordered lists
- Step 2: Styling the menu with CSS

```
#menu {
position: absolute;
top: 10px;
left: 10px;
z-index: 1;
}
#menu, #menu ul {
padding: 0;
margin: 0;
list-style: none;
}
#menu li {
float: left;
background: #C0D0D0;
}
#menu li:hover {
background: #826C4B;
}
```

```
#menu a {
display: block;
padding: 5px;
width: 150px;
text-decoration: none;
}
#menu li ul {
position: absolute;
left: -999em;
width: 160px;
}
#menu li:hover ul,
  #menu li ul:hover {
left:auto;
}
```

- The menu will already be fully functional!
  - No JavaScript required
  - Based on the Suckerfish drop-down menu
    - http://www.alistapart.com/articles/dropdowns
- Step 3: Add jQuery for smoother animation

```
$('#menu li ul').css({
  display: "none",
  left: "auto"
});
$('#menu li').hover(function() {
      $(this)
      .find('ul')
      .stop(true, true)
      .slideDown('fast');
  }, function() {
      $(this)
      .find('ul')
      .stop(true,true)
      .fadeOut('fast');
});
```

- When JavaScript is enabled, jQuery takes over the CSS behaviour
- The menu can perhaps feel too eager to activate
  - The moment the mouse hovers over the element, the effects spring to life...
  - With menus, a false start can appear unnecessary and distracting
  - You should delay the effect until you're sure the user want to activate the menu
- Use the Hover Intent plugin
  - Can be used instead of the standard hover()
  - http://cherne.net/brian/resources/jquery.hoverIntent.html
  - Calculates the speed of the mouse pointer, and only lets the effects kick in if the mouse slows down enough
  - This lets the plugin think the user intends to stop there

```
$('#menu li').hoverIntent(function() {
⋮
}, function() {
⋮
});
```

12.3. Accordion Menus

- In accordion menus, the expansion of one area leads to the contraction of another
  - Accordions are usually fixed so that one the areas must be visible at all times
- You can easily create an accordion yourself, but jQuery UI offers you an accordion with many options

- Comes with a cost of file size and bandwidth use...
- ... but you don't have to implement it yourself

- Include jQuery UI and its theme, and then...

```
<div id="accordion">
  <h3><a href="#">News</a></h3>
  <div>
    News content here
  </div>
  <h3><a href="#">Books</a></h3>
  <div>
    Books content here
  </div>
  ⋮
```

```
$('#accordion').accordion();
```

12.4. Tabs

- Tabs provide a way to group content logically
  - Allow you to break content into multiple sections that can be swapped in order to save space
- You can create tabs easily with jQuery, but you will not be the first to attempt this...
- jQuery UI includes a very feature-rich tab widget

- Include jQuery UI and its theme, and then...

```
<div id="tabs">
 <ul>
   <li>
     <a href="#news">
       <span>News</span>
     </a>
   </li>
   ⋮
 </ul>
 <div id="news">
   <p>News information here</p>
 </div>
 ⋮
</div>
```

```
$('#tabs').tabs();
```

- jQuery UI tabs have many options

```
$('#info').tabs({
  event: 'mouseover',
  fx: {
      opacity: 'toggle',
      duration: 'fast'
  },
  spinner: 'Loading...',
  cache: true
});
```

  - The user only needs to hover to change tabs
  - A fade animation will fast fade the tabs when switching
  - Spinner defines the HTML to show when the tab is loading
  - Cache keeps a copy of the tab after it is loaded

- jQuery UI tabs can also be controlled with code

```
$('#info').tabs().tabs('rotate', 3500);
```

- Instructs jQuery to cycle through the tabs every 3.5 seconds

12.5. Tooltips

- A tooltip is an interface component that appears when the user hovers over a control
  - Most browsers already have them with the title attribute for a link or an alt attribute for an image
- You can replace the browser's default tooltips with jQuery
- Step 1: Reuse the title attribute

```
<a href="#" title="Check out all the … " class="promo">Promotions</a>
```

  - This lets the user see default tooltips when JavaScript is disabled
- You will probably want more advanced tooltips that allow to add any markup and even images
- Step 2: Styling the tooltips with CSS

```
.tooltip {
  display: none;
  position: absolute;
  border: 1px solid #333;
  background-color: #ffed8a;
  padding: 2px 6px;
}
```

- Step 3: Turning the tooltip on and off, and positioning with jQuery

```
$('.promo').hover(function(e) {
  var titleText = $(this).attr('title');
  $(this)
  .data('tipText', titleText)
  .removeAttr('title');
  $('<p class="tooltip"></p>')
  .text(titleText)
  .appendTo('body')
  .css('top', (e.pageY - 10) + 'px')
  .css('left', (e.pageX + 20) + 'px')
  .fadeIn('slow');
}, function() {
  $(this).attr('title', $(this).data('tipText'));
  $('.tooltip').remove();
}).mousemove(function(e) {
  $('.tooltip')
  .css('top', (e.pageY - 10) + 'px')
  .css('left', (e.pageX + 20) + 'px');
});
```

13. Code Practices

13.1. Cleaner jQuery

- JavaScript is a wonderful language!
  - But you have to follow some good coding practices
    - Encapsulation, reuse, minimize inline coding, using code libraries...
  - Adding Ajax functionality is not really an issue with jQuery
    - But you want to avoid to create a mess of unmaintainable code spaghetti
  - As the jQuery components and effects grow more complex, we will need to structure our code
- Tip 1: Add code comments as documentation
  - Make your code more reusable and maintainable

```
// Assign the value '3' to the variable 'count':
var count = 3;
```

```
/* An example of
a multiline
comment */
var count = 3;
```

- Tip 2: Encapsulate data in map objects

```
var id = $('input#id').val();
var name = $('input#name').val();
var age = $('input#age').val();
// prefer mapping as shown below
var data = {
  type: 'person',
  id: id,
  name: name,
  age: age
}
```

  - The data gets encapsulated, and you can pass it around where needed
  - To access the data, use a dot (.)
- Tip 3: Namespacing your code
  - Take the previous tip, and now add functions to it!
  - You can then execute the function on the object with the dot (.)
  - By giving a scope to your functions, their names will not conflict with other JavaScript on the page
  - Namespace names should be unique, short and helpful

```
function exclaim () {
alert("hooray");
}
exclaim();// hooray
```

```
var AMAZON = {};
AMAZON.exclaim = function () {
alert("hooray");
};
```

```
var AMAZON = {
name: "My Bookshop",
exclaim: function() {
  alert("hooray");
}
};
```

- Tip 4: Use scope effectively
  - Scope refers to the area where a variable exists

- Important when using callback methods with Ajax
  - These methods will usually run in a different context
- You will need to use closures!

```
var WIDGET = {};
WIDGET.delay = 1000;
WIDGET.run = function() {
alert(this.delay); // 1000 … good!
$(p).click(function() {
  alert(this.delay) // undefined! bad!
});
};
```

```
var WIDGET = {};
WIDGET.delay = 1000;
WIDGET.run = function() {
      alert(this.delay); // 1000 … good!
      var _widget = this;
      $(p).click(function() {
            alert(_widget.delay) // 1000 … yes!
      });
};
```

13.2. Client-side Templating

- Text on pages is likely to change
  - When using Ajax
  - When data is dynamic, based on what can be found in a database
- The simplest way to update the text is to replace the entire contents

```
$('#cartitems').html("<p>You have " + cart.items.length + " items in your cart.</p>");
```

- But for more elaborate contents...
  - You would need lots of concatenation and string manipulation
  - You will run into trouble when creating complex tables...
- The solution: client-side templating
  - Provide hooks in your HTML content

```
<div id='overlay'>
<p>You have <span id='num-items'>0</span> items in your cart.</p>
<p>Total cost is $<span id='total-cost'>0</span></p>
</div>
```

  - Update the data with jQuery as required

```
$(this).find('#num-items').text(cart.items.length);
$(this).find('#total-cost').text(cart.getTotalCost());
```

- You could also create an element that acts as a template
  - This object can then be copied and edited whenever you need it

```
<table id="cart">
      <thead>
          <tr>
              <th>Name</th>
              <th>Qty.</th>
              <th>Total</th>
          </tr>
      </thead>
      <tr class="template" style="display:none;">
          <td><span class="item_name">Name</span></td>
          <td><span class="item_qty">Quantity</span></td>
```

```
            <td><span class="item_total">Total</span>.00</td>
        </tr>
</table>
```

- Notice the row with display:none that will be used as template

- This helper function will do the templating for us

```
function template(row, cart) {
  row.find('.item_name').text(cart.name);
  row.find('.item_qty').text(cart.qty);
  row.find('.item_total').text(cart.total);
  return row;
}
```

- We can now use the template and add new rows to the DOM with new data inserted

```
var newRow = $('#cart .template').clone().removeClass('template');
var cartItem = {
  name: 'The Crippled God',
  qty: 1,
  total: 450
};
template(newRow, cartItem)
  .appendTo('#cart')
  .fadeIn();
```

13.3. Feature Detection

- Browser sniffing... is bad!
  - It is the process of using JavaScript to figure out which version of which web browser the user is browsing with
  - Once you know the browser, you can work around any known bugs that exist in it, to make your pages consistent...
  - This technique has become unreliable!
    - Old browsers are updated with patches
    - New versions are released
    - Completely new browsers are introduced...
  - Workaround code will quickly break or become redundant
- Use a library such as Modernizr to detect features

14. Adding Ajax

14.1. What is Ajax?

- Ajax stands for Asynchronous JavaScript and XML
  - But in fact stands for any technique or technology that lets a user's browser interact with a server without disturbing the existing page
  - Can be finicky to implement, unless you are using jQuery!
- Ajax mimics the feel of a desktop application
  - You can fire requests from the browser to the server without page reload
  - You can update a part of the page while the user continues on working
  - Gives the user a more responsive and natural experience
- jQuery makes sure you do not have to worry about browser differences
  - There are only a handful of Ajax functions in jQuery
  - Most of those are wrappers to help you out!

14.2. Loading Remote HTML

- jQuery has a load() method
  - This method will let you grab an HTML file off the server
  - Its contents can then be inserted in the current web page
  - You can load either static HTML files, or dynamic pages that generate HTML output

```
$('div:first').load('page.html');
```

  - This dynamically inserts the entire contents of the page.html (anything inside the tags) into the first div
  - You can use any selector to decide where it should go
  - You can even load into multiple locations at the same time
- Be careful!
  - Do not mistake this method for the load() event, which fires when an object (window or image) has finished loading
  - load() is limited to content coming from the same domain to prevent cross-site scripting
- Lets use the load() operation to intercept hyperlinks and load the information in the same page
- Step 1: Create separate HTML pages for basic content

```
<body>
      <h1>The Crippled God</h1>
      <p id="text">
          Savaged by the K'Chain Nah'Ruk, the Bonehunters    ...
      </p>
</body>
```

  - You will need one page per content link...
  - If you have lots of entries, you would load the data from a database, by passing a query string to a server-side script
- Step 2: Creating the central page with content links

```
<ul id="books">
      <li><a href="book01.html">Book 01</a></li>
      <li><a href="book02.html">Book 02</a></li>
      <li><a href="book03.html">Book 03</a></li>
      <li><a href="book04.html">Book 04</a></li>
</ul>
<div id="summary">
      Click on a book to found out more!
</div>
```

- Notice the div under the list of links
- This is where the content will be put after the Ajax call

- Step 3: Intercept the links and do some Ajax

```
$('#books a').click(function(e) {
  var url = $(this).attr('href') + ' #text';
  $('#summary').load(url);
  e.preventDefault();
});
```

- All the links are prevented to do their default action
- The original destination (href) from the link is passed to the load() function

- You may want to only load a part of the page, and not the whole contents...
  - Notice the selector in the code above and below

```
$('#summary').load('books.html div:first');
```

- If you want to show the page is still loading, you can use a quick solution

```
$('#summary').html('loading…').load(url);
```

- The load() function can further be tweaked
  - You could pass some information along to the server

```
$('div#results').load('search.php', 'q=jQuery&maxResults=10');
```

  - If you pass a string, jQuery will execute a GET request
  - If you pass an object, jQuery will execute a POST request

- You can also perform some extra processing when a request has finished by passing a callback function

```
$('div#result').load('feed.php', function(data, status, response) {
  // post-processing here
});
```

  - The data and callback function are optional

- As the content is loaded, you would like some effects to happen

```
$('p#text').mouseover(function() {
  $(this).css('background-color','yellow');
});
```

  - The code will fail to work, as the p#text does not exist, but is added later on with our Ajax call

- jQuery adds the on() method that binds on current but also on future elements

```
$('p#text').on('mouseover', function() {
  $(this).css('background-color', 'yellow');
});
```

  - If you can set on, you can also set off()

```
$('p#description').off('mouseover');
```

  - The off() operation will let you stop the event from occurring later

14.3. Fetching JSON Data

- For data interchange in Ajax, JSON (JavaScript Object Notation) has become very popular format
  - It is a lightweight alternative to XML
  - Data is structured as plain JavaScript objects

    - No parsing or interpretation is required, it is immediately ready to use in your scripts
- jQuery provides a $.getJSON() function
    - This accepts a URL and a callback function
    - The URL should point to a service returning JSON data
    - If the data is in JSONP format, you could even do cross domain requests

```
$.getJSON(
'http://feeds.delicious.com/v2/json/tag/books?callback=?',
function(data) {
  alert('Fetched ' + data.length + ' items!');
});
```

    - You will have to read the API at http://delicious.com/help/api
- The data returned from $.getJSON() can be difficult to decipher...
    - Different services return different data
    - The API documentation is not always of quality or even clarity
    - You will mostly have to figure it out for yourself
    - One way to examine the result, is to type the URL directly in your web browser and inspect the resulting JSON directly

14.4. Ajax with jQuery

- All of jQuery's Ajax functions are simply wrappers around the $.ajax() method
    - $.ajax() is the hearth of jQuery Ajax functionality
    - Is the most powerful and has the most options
- While the $.ajax() method has a more complex syntax, it is still easy to use

```
$.ajax({
  type: 'GET',
  url: 'getDetails.php',
  data: { id: 142 },
  success: function(data) {
      // grabbed some data!
  };
});
```

    - The above code specifies a GET request
    - The complexity emerges from the number of possible options you can provide
- jQuery allows you to specify global Ajax settings
    - This prevents you from having to type them for each Ajax call
    - Use the $.ajaxSetup() method

```
$.ajaxSetup({
type: 'POST'
url: 'send.php',
timeout: 3000
});
```

    - This really simplifies the code for actually sending the request, while still giving you the possibility to override them

```
$.ajax({
data: { id: 142 }
});
```

14.5. Loading External Scripts

- The $.getScript() function will load and execute a JavaScript file via Ajax
  - This decreases the download time as your application becomes larger
  - It keeps your application snappy and reactive
  - You will only load the script when you need it, starting with a minimum of code, then pulling in further files later on

```
$.getScript('http://view.jquery.com/trunk/plugins/color/jquery.color.js',
      function() {
          $('body').animate({'background-color': '#fff'}, 'slow');
      }
);
```

14.6. GET and POST Requests

- jQuery Ajax packs a few helpers for performing GET and POST requests
  - Those are simple wrappers around the $.ajax() but are more convenient to use
  - You just need to select the URL and any data you want to push

```
$.get(url, data, callback, dataType);
$.post(url, data, callback, dataType);
```

    - Only the URL is a required parameter
    - The data parameter should contain any data that needs to be sent
    - The callback we specify will be passed the response data and status
    - The type parameter lets you specify the data type: xml, html, script, json, jsonp, or text

```
$.get("getInfo.php", function(data) {
alert("got your data:" + data);
});
$.post("setInfo.php", {id: 2, name: "The Crippled God"});
```

- $.get() and $.post() are very easy and convenient, but...
- Beware!
  - These methods are supposed to be for quick, one-off requests
  - The callback function only fires when everything goes well
  - Unless you're watching with a global event handler you'll never know if a call fails
  - For most production-level functionality, the $.ajax() method is the only solution...

14.7. jQuery Ajax Events

- When making Ajax requests with jQuery, a number of events are fired
  - These can be handled anytime for some extra processing
  - Example: adding a "loading" message when a request begins and removing it when it concludes, or handling errors

- There are two types of Ajax events in jQuery
  - Local events: apply only to individual Ajax requests
    - You handle local events as callbacks

  - Global events: are broadcast to any handlers that are listening
    - To implement functionality that should apply to all requests

- Ajax Events:
  - error and ajaxError
  - succes and ajaxSuccess
  - complete and ajaxComplete
  - beforeSend and ajaxSend

    - ajaxStart and ajaxStop

- A local event

```
$.ajax({
  url: "test.html",
  error: function() {
      alert('an error occurred!');
  }
});
```

- A global event

```
$("#msg").ajaxError(function(event, request, settings) {
  $(this).html("Error requesting page " + settings.url + "!");
});
```

    - You add the event on the DOM node where you want to show the error
    - The handler will be called when the Ajax call fires an error

---

14.8. Sending Form Data

- jQuery allows you to quickly collect data from forms and send them with Ajax
    - You could read all the field values and concatenate them, but...
    - ...why would you do that if you have the serialize() method!

- The serialize() method sucks up input fields that have a name attribute attached to them

```
<form>
  <input type="text" name="name" />
  <input type="text" name="tags" />
  <input type="hidden" name="id" />
  <input type="button" value="update" />
</form>
```

    - Make sure you name your fields

```
var form_data = $("form").serialize();
```

    - The result:

```
name=Crippled+God&tags=books+fantasy&id=8
```

- You can also use the serializeArray() method
    - This returns an object containing key/value pairs of the form fields

- You can now send the data to the server

```
var form_data = $('form').serialize();
$.post(url, form_data, function() {
  $('#status').text('Update successful!');
});
```

    - There is no way to tell if this did succeed or not...
    - Better use the $.ajax() method instead

- Use the jQuery Ajax events to react on possible errors

```
$.ajax({
  type: "POST",
  url: url,
  data: form_data,
  beforeSend: function() {
      $('#ajaxDetails').addClass('progress');
  },
  error: function() {
```

```
        $('#status').text('Update failed—try again.').slideDown('slow');
    },
    success: function() {
        $('#status').text('Update successful!');
    },
    complete: function() {
        $('#ajaxDetails').removeClass('progress');
        setTimeout(function() {
            $('#status').slideUp('slow');
        }, 3000);
    }
});
```

- You can check the data being send with the JavaScript console
- You should probably have to create some server-side code...

15. Enhancing Forms

15.1. Form Validation

- While form validation often seems boring, it is essential
  - Proper and well designed forms influence the user's perception of your web site
- You should use client-side validation only to help the user
  - You cannot rely on it to prevent certain data being sent
  - Remember that the user can always disable JavaScript... so they can submit any data they want!
  - The server should thoroughly validate the sent data
- jQuery provides convenient methods to access and set form values
  - Using the :input filter

```
$('#form:input').css('background-color', 'lemonchiffon')
```

  - Other filters:
    - :text, :password, :radio, :checkbox, :submit, :button, :image (for image buttons), :file, :enabled, :disabled, :checked and :selected
- jQuery filters can be useful when doing conditional logic

```
if($(this).is(':checked')){}
```

- Once selected, you should use the value of the field, and validate
  - Checking if any text boxes in the form are empty

```
$(':submit').click(function(e) {
$(':text').each(function() {
  if ($(this).val().length == 0) {
      $(this).css('border', '2px solid red');
  }
});
e.preventDefault();
});
```

  - The val() method also works on select boxes and radio buttons

```
$(':radio[name=sex]').change(function() {
alert($(this).val());
});
```

- The change() and blur() events can be useful for inline validation
  - Testing for empty fields whenever the user moves to the next field

```
$(':input').blur(function() {
if ($(this).val().length == 0) {
  $(this).addClass('error')
  .after('<span class="error">This field must … </span>');
}
});
$(':input').focus(function() {
$(this).removeClass('error').next('span').remove();
});
```

  - While the example only checks if the fields are filled in, you can do any type of validation this way
- Warning: avoid over-validation!
  - The more rules you add, the more likely you'll have forgotten an edge case
  - Offer your user guidance, sample inputs, hints... instead of scaring away your users with lots of error messages
- You should also make use of the submit() event
  - Use this instead of a button click, as the user may use the Enter key to submit the form
  - If you return false, the form will not be submitted

```
$("form").submit(function() {
        var error = false;
        $(this).find(":text").each(function() {
        if ($(this).val().length == 0) {
            alert("Textboxes must have a value!");
            $(this).focus();
            error = true;
            return false; // only exits the "each" loop
            }
        });
        if (error) {
            return false;
        }
        return true;
});
```

15.2. Using the Validation Plugin

- There are lots of edge cases to consider when designing form validation
  - And you would like your validation to be bullet-proof!
  - You have to know regular expressions to verify the syntax of email addresses, credit cards...
  - Building your own inline validation is a difficult endeavour!
- The Validation plugin solves a lot of these problems
  - It lets you add sophisticated and customizable inline validation to your forms with minimal effort
  - You can download the Validation plugin from the following website
  - http://bassistance.de/jquery-plugins/jquery-plugin-validation
- Example form for testing the plugin

```
<form action="">
  <div>
      <label for="name">Name:</label>
      <input name="name" id="name" type="text"/>
  </div>
  <div>
      <label for="email">Email:</label>
      <input name="email" id="email" type="text"/>
  </div>
  <div>
      <label for="website">Web site URL:</label>
      <input name="website" id="website" type="text" />
  </div>
  <div>
      <label for="password">Password:</label>
      <input name="password" id="password" type="password" />
  </div>
  <div>
      <label for="passconf">Confirm Password:</label>
      <input name="passconf" id="passconf" type="password" />
  </div>
  <input type="submit" value="Submit!" />
</form>
```

- You just need to call validate() on a selection of our form
  - You then pass options, such as rules, to validation the input
  - There are many predefined rules available, and you can define your own
  - The plugin will add a new label element after each form field to contain the error message, with CSS class of error

```
$('#signup form').validate({
rules: {
    name: {required: true},
    email: {required: true,
        email: true
```

```
    },
    website: {url: true},
    password: {minlength: 6,
        required: true
    },
    passconf: {equalTo: "#password"}
},
success: function(label) {
    label.text('OK!');
}
});
```

15.3. Form Hints

- Adding hints to forms helps users fill in the form correctly
- You could, for example, display the remaining characters next to the form field
  - Think about limiting the number of characters to 140 "à la Twitter"

```
$('.maxlength')
.after("<span></span>") // add a span
.next() // move into it
.hide() // hide it
.end() // come back to the field
.keypress(function(e) { // add a key press event
    var current = $(this).val().length;
    if (current >= 140) { // check the length
        // accept delete and backspace
        if (e.which != 0 && e.which != 8){
            e.preventDefault();
        }
    }
    $(this).next().show().text(140 - current);
});
```

- Another trick, is to put the label for a field inside the input itself, to decrease the space the form takes up
  - When users move their focus to it, the label vanishes, allowing them to type
  - If they leave the field empty and move away, the label returns

```
$('input.clear').each(function() {
    $(this)
    .data('default', $(this).val())
    .addClass('inactive')
    .focus(function() {
        $(this).removeClass('inactive');
        if ($(this).val() == $(this).data('default') || '') {
            $(this).val('');
        }
    })
    .blur(function() {
        var default_val = $(this).data('default');
        if ($(this).val() == '') {
            $(this).addClass('inactive');
            $(this).val($(this).data('default'));
        }
    });
});
```

15.4. Inline Editing

- The most common approach is to allow the editing of non-form elements
  - Elements such as paragraph tags and title tags, for example
  - When the user clicks on the tag, the contents are replaced with a text box or textarea that the user can

interact with
- When the task is complete, the original tags are replaced with the new content
- This will require some markup as well as Ajax

- Step 1: The editable titles and paragraphs

```
<h3 id="book-01-title" class="editable">The Crippled God</h3>
<p id="book-01-summary" class="editable-area">
Savaged by the K'Chain Nah'Ruk, the Bonehunters march ...
</p>
```

- Step 2: The CSS styles

```
.over-inline {
background-color: #FFFACD;
}
body .active-inline {
background-color: inherit;
}
```

  - These will allow us to see if an element is editable or not

- Step 3: The events
  - The hover event, to apply the above CSS
  - The click event, to start editing
  - The blur event, to stop editing

```
$(".editable, .editable-area").hover(function() {
$(this).toggleClass("over-inline");
})
.click(function(e) {
})
.blur(function(e) {
});
```

- Step 4: Starting the inline editing

```
var $editable = $(this);
if ($editable.hasClass('active-inline')) {
  return;
}
```

  - The goal of the if-test is to check if we are already editing
    - We do not want to replace our edit box with another edit box...

- Step 5: Grabbing the contents of the element, then removing it

```
var contents = $.trim($editable.html());
$editable
.addClass("active-inline")
.empty();
```

  - The empty() method removes the children
  - Adding the CSS class indicates the editing is in progress

- Step 6: Insert the text box or textarea

```
// determine what kind of form element we need
var editElement = $editable.hasClass('editable') ?
  '<input type="text" />' : '<textarea></textarea>';
// replace the target with the form element
$(editElement)
.val(contents)
.appendTo($editable)
.focus()
.blur(function(e) {
  $editable.trigger('blur'); // manually fire the event
});
```

- Trigger shows to the reader you want to manually fire the event
- As the input is blurred, you tell the original element you are finished editing

- Step 7: End of the inline editing
  - Grab the value of the element
  - Send it to the server with $.post(), while adding a "Saving..." message
  - When the posting is done, replace with the updated value

```
.blur(function(e) {
var $editable = $(this);
var contents = $editable.find(':first-child:input').val();
$editable
.contents()
.replaceWith('<em class="ajax">Saving … </em>');
$.post('save',
{id: $editable.attr('id'), value: contents},
function(data) {
$editable
.removeClass('active-inline')
.contents()
.replaceWith(contents);
});
});
```

- Note: the POST has been faked with the 'save' file...

15.5. Autocomplete

- Autocomplete lets users quickly find and select from a pre-populated list of values
  - Is added to an input field
  - Leverages searching and filtering
- jQuery UI has all the functionality and styling we need
  - http://jqueryui.com/autocomplete/
- You can pull data in from a local and/or a remote source
  - Local is good for small data sets (like an address book with 50 entries)
  - Remote is necessary for big data sets, like a database with hundreds or millions of entries to select from
- Autocomplete can be customized to work with various data sources
  - An Array with local data
  - A String, specifying a URL, which will be called with Ajax
  - a Callback
- Expected data format
  - An Array of Strings: ["Choice1", "Choice2"]
  - An Array of Objects with label and value properties: [{ label: "Choice1", value: "value1" }, ...]
- Step 1: Add the field to your page

```
<label for="titles">Search Books:</label>
<input type="text" id="titles"/>
```

- Step 2: Adding the autocomplete with source

```
var titles = ['The Crippled God', 'Mistborn', 'The Girl with...', ...];
$('#titles').autocomplete({
  source: titles,
  autoFill: true,
  selectFirst: true,
  width: '240px'
```

```
});
```

- autoFill gives a nice type-ahead effect
- matchContains will cause a match substrings of words
- The autocomplete also fires a result() event

15.6. Form Controls: Date Picker

- jQuery UI adds more capabilities for interaction
- A popular control is a date picker
  - If you ever tried to write one yourself, you will be inclined to avoid ever doing it again
  - It is a lot of hard work, and can be frustrating when done wrongly
- jQuery UI contains a highly customizable and fully-featured date picker control
- A date picker is easy to add

```
<input type="text" id="date" />
```

```
$("#date").datepicker();
```

  - While this date picker offers nothing new, it is fully packed with features such as localization, date formats, multiple selection, keyboard navigation and much much more!

- Some options:

```
$('#date').datepicker({
  showOn: 'button', // when will the calendar pop up
  buttonText: 'Choose a date',
  buttonImage: 'calendar.png', // show an icon
  buttonImageOnly: true, // show only the icon
  numberOfMonths: 2, // show two months of days
  maxDate: '0d', // specify max range of choices (today)
  minDate: '-1m -1w', // specify min range of choices
  showButtonPanel: true
});
```

  - Even though we specify a maximum date, users can still select a data outside the range by typing the date manually
  - You will need to add validation on the server side!
  - The date picker will only help the users to pick valid options

- jQuery UI also adds functions to help manipulating dates
  - $.datepicker.iso8601Week(): returns the week of the year
  - $.datepicker.parseDate(): pass a string, returns a date
  - $.datepicker.formatDate(): formats a date in a chosen format

15.7. Form Controls: Slider

- Lets your users easily select ranges of values
- jQuery UI lets you add the slider on select boxes
  - The jQuery UI slider has lots of options!
- Step 1: Adding the basic form

```
<div id="price-range">
    <form>
        <label for="min">Minimum Price:</label>
        <select id="min">
```

```
            <option value="0">0</option>
            <option value="10">10</option>
            ⋮
            <option value="90">90</option>
        </select>
        <br/>
        <label for="max">Maximum Price:</label>
        <select id="max">
            <option value="10">10</option>
            <option value="20">20</option>
            ⋮
            <option value="100">100</option>
        </select>
    </form>
</div>
```

- Step 2: Initiate the slider

```
var max = $('#max').val();
var min = $('#min').val();
var rangeSlider = $('<div></div>')
.slider({
    min: 0,
    max: 100,
    step: 10,
    values: [min, max], // the default values
    range: true, // for a slider with more handles
    animate: true,
    slide: function(e,ui) { // event handler
        $('#min')
        .val(ui.values[0]);
        $('#max')
        .val(ui.values[1]);
        showBooks(); // to filter the books
    }
})
.before('<h3>Drag the slider to filter by price:</h3>');
$('#price-range').after(rangeSlider).hide();
```

- Step 3: Filter the books

```
function showBooks() {
  var min = $('#min').val();
  var max = $('#max').val();
  $('.data tr').each(function() {
      var price = parseInt($(this).find('td:last').text()
          .substring(1)); // strips the $ or € signs
      if (price >= min && price <= max) {
          $(this).fadeIn();
      } else {
          $(this).fadeOut();
      }
  });
}
```

  - The above operation filters on the client side
  - Sliders are great, because they are intuitive
    - Users will know how to use them without being told
    - Lets the users easily and visually filter the data

15.8. Form Controls: Progress Bar

- A progress bar is one of the most recognizable messages a user can see
  - It effectively shows how far through a long-running process we are
  - It also shows how far we have to go

- jQuery UI has a progress bar widget
- Step 1: Adding an empty div

```
<form>
    <fieldset>
        <legend>Type your message</legend>
        <textarea id="text" rows=""></textarea>
        <div id="console">
            <div id="bar"></div>
            <div id="count">0</div>
        </div>
        <input type="submit" value="Send!" />
    </fieldset>
</form>
```

- Step 2: Adding the progress bar

```
$('#bar').progressbar();
```

- Step 3: Updating the progress bar as the user types

```
$('#text')
.val('')
.keyup(function(e) {
  var characters = 140;
  var value = $('#text').val();
  var count = value.length;
  if (count <= characters) {
      $('#bar').progressbar('value', (count / characters) * 100);
      $('#count').text(count);
  } else {
      $('#text').val(value.substring(0,characters));
  }
});
```

  - The progress bar is updated with a percentage value
  - When the maximum is reached, the user is not allowed to type any more characters

15.9. Dialogs and Notifications

- Dialogs lets you add information that pops up
  - Can be used for many reasons: validation messages, status updates, error handling messages...
  - They can be overwhelming and annoying, so only use them when interaction is essential
- Step 1: Markup for a simple modal dialog

```
<div id="overlay">
  <div id="blanket"></div>
</div>
<!-- the dialog contents -->
<div id="eula" class="dialog">
  <h4>End User License Agreement</h4>
  ⋮
  <div class="buttons">
      <a href="#" class="ok">Agree</a>
      <a href="#" class="cancel">Disagree</a>
  </div>
</div>
```

  - The CSS plays a big part on how effective the dialog looks
- Step 2: The CSS styling

```
#overlay {
    display:none;
    top: 0;
```

```
    right: 0;
    bottom: 0;
    left: 0;
    margin-right: auto;
    margin-left: auto;
    position: fixed;
    width: 100%;
    z-index: 100;
}
#blanket {
    background-color: #000000;
    top: 0;
    bottom: 0;
    left: 0;
    display: block;
    opacity: 0.8;
    position: absolute;
    width: 100%;
}
.dialog {
    display: none;
    margin: 100px auto;
    position: relative;
    width: 500px;
    padding: 40px;
    background: white;
    -moz-border-radius: 10px;
}
```

- Step 3: Opening the dialog

```
function openDialog(selector) {
  $(selector)
  .clone()
  .show()
  .appendTo('#overlay')
  .parent()
  .fadeIn('fast');
}
```

```
$("#eulaOpen").click(function() {
  openDialog("#eula");
});
```

  - We clone the dialog, so we can remove it later, and keep the original one available

- Step 4: Closing the dialog

```
function closeDialog(selector) {
  $(selector)
  .parents("#overlay")
  .fadeOut('fast', function() {
      $(this)
      .find(".dialog")
      .remove();
  });
}
```

  - When closing, we remove the cloned dialog

- Step 5: You should add different handlers for the buttons

```
$('#eula')
.find('.ok, .cancel')
.on('click', function() {
  closeDialog(this);
})
.end()
.find('.ok')
.on('click', function() {
  // Clicked Agree!
```

```
})
.end()
.find('.cancel')
.on('click', function() {
  // Clicked disagree!
});
```

- The on() method will keep the button handlers available no matter how often we clone and delete the dialogs

- Creating dialogs this way can be tiring... so use jQuery UI!
- jQuery UI Dialogs have all the bells and whistles, and offer many options to configure
- Step 1: Easy dialog markup for jQuery UI

```
<div id="dialog" title="Are you sure?">
  <p>You have just rated this book 0 out of 5 stars...</p>
  <p>Did you read it before providing a rating?</p>
</div>
```

- Where are the buttons?

- Step 2: Applying the dialog and adding buttons

```
$('#dialog').dialog({
    autoOpen: false, // only open on event
    height: 280,
    modal: true,
    resizable: false,
    buttons: {
        'Continue': function() {
            $(this).dialog('close');
            // Submit Rating
        },
        'Change Rating': function() {
            $(this).dialog('close');
            // Update Rating
        }
    }
});
```

- Step 3: Adding the event to open the dialog

```
$('#rating-0').click(function() {
  $('#dialog').dialog('open');
});
```

- Pass the string 'open' to the dialog() method to display itself
- This is a nice way to communicate with the dialog after its initialization

16. Advanced Controls

16.1. Advanced Controls

- Most sites need some kind of administration module
  - This area is traditionally the most neglected part of the site
  - It is not visible to the general public, so less thought is put into usability and user experience
  - The rise of the Rich Internet Application is changing that!
  - Clients expect web-based systems to rival desktop applications in usability and design
- jQuery lets you create impressively rich and interactive administration modules
  - While you have to do most of the work, the need for administration elements will let you find a solution quickly
  - Use "cookbooks" with jQuery recipes to help you out!

16.2. Lists

- jQuery offers capabilities to manipulate and improve the use of lists
  - They can be used as menus, navigation panels, tag clouds, ...
  - jQuery UI's selectable behavior gives the user the ability to lasso any of the element's children to select them
    - http://jqueryui.com/selectable/
  - jQuery lets you create reusable sorters that will let you sort lists on the client side
  - You can create swappable lists, in which you can select multiple options from the list on the left to put them in the list on the right
  - You can easily add searching functionality by just filtering on queried objects

16.3. Trees

- Trees are hard to do well, and there are few situations where they make sense
  - A nested set of categories is a valid use of a tree structure
  - A more common one is representing a directory structure
- Trees are lists!
  - jQuery will let you make sure where you are in the list so you can open and close branches
  - Once the markup is created, dynamically assigned CSS will let you style and add icons to the tree
- Event delegation will limit the creation of event handlers on each part of the tree
  - A single event handler intercepts the click, and figures out on which element the click was aimed at

16.4. Tables

- While tables have been misused in the past for hacking layouts into a website, we now use CSS for that
- Tables can be used for their original purpose: to show tabular data
  - jQuery lets you create fixed table headers, so when the user scrolls, the headers follow along
  - jQuery can also dynamically repeat the header at regular intervals, which is nice when printing the table
  - With jQuery, you can sort, filter, search, page, resize columns, and edit rows on a table
  - Use jQuery to create selectable rows in the table with column of checkboxes
  - Let the user select multiple rows by holding the Shift-key
  - If you need lots of features fast, use plugins!
    - http://www.datatables.net/index

17. Extending jQuery

17.1. Plugins

- Once you have a nice jQuery solution running, do not start using copy-paste!
  - This can let your beautiful web site degenerate into your worst JavaScript nightmare!
- The solution: create plugins!
  - We have used multiple plugins throughout the course
  - jQuery makes it easy to convert your existing code into a plugin
  - Once created, you can add options and callbacks
  - You can then include it in your page whenever you need it
- More information
  - http://learn.jquery.com/plugins/

17.2. Adding Methods

- jQuery provides a mechanism for extending and overwriting its core functionality
  - You can extend jQuery with your new functionality without creating a plugin, directly from inside your script
  - With $.fn.extend() you can pass an object that contains a new set of methods to extend jQuery
  - The net result is exactly the same as creating plugins, but also lets you overwrite default jQuery functionality
- Example:
  - Overwrite the trim() method to remove all spaces when clear = true

```
(function($) { // plugin shell
    var _trim = $.trim;
    $.extend({ // extending jQuery
        trim:function(text, clear) {
            if (clear) {return text.replace(/\s+/g,'');}
            return _trim.call(this, text);
        }
    });
})(jQuery); // end of plugin shell
```

17.3. Themes

- jQuery UI is very attractive to use, because...
  - ...out of the box the UI components look great!
- jQuery UI has a whole set of themes you can choose from
  - Take a look at the Theme Roller web application
    - http://jqueryui.com/themeroller/
  - This application lets you choose the theme you like
  - You can even roll your own theme by setting properties in the application and so modify every aspect of a jQuery UI theme
    - Changes will even be immediately reflected
  - Once finished, you can then download the packaged product

17.4. Other Extensions

- You can create your own selectors
- You can add your own custom events

- You can let jQuery react to non-standard events
  - Such as iPhone / Android / "the next big thing" events
- You can let treat standard JavaScript objects as jQuery objects
- You should make your own widgets as themeable as jQuery components
  - http://api.jqueryui.com/category/theming/

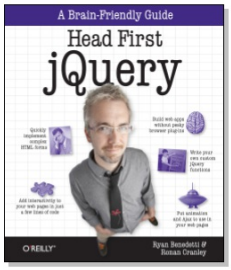
17.5. Next Steps

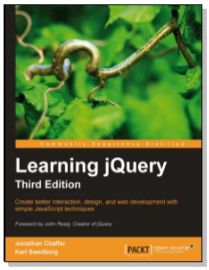
- Apply all what you have learned in a complete web application
  - Use jQuery UI to construct your page and forms
  - Add Ajax capabilities with server-side components in Java, PHP or .Net for fully functional and dynamic user interaction
  - Decide on effects that make the interactivity smooth and enjoyable
  - Add images and slide shows
  - Add plugins and advanced controls for an administration module
- Start learning more about jQuery!
  - It would be impossible to see everything in just a few days...
  - See the following chapter for very interesting references
  - Build up a library of code solutions that you can use in any project
- Do not wait until you have forgotten about this incredible JavaScript framework!

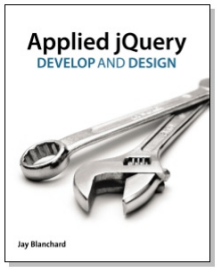
---

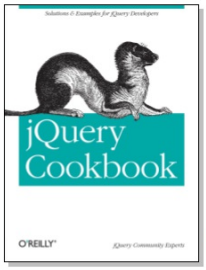
18. Appendix

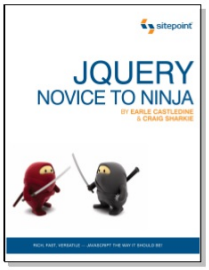
18.1. References











- Online resources
  - http://api.jquery.com
  - http://learn.jquery.com/
  - http://www.w3schools.com/jquery/default.asp
  - http://www.elated.com/articles/cat/jquery/

18.2. Development Tools

- To write jQuery code, you need:
  - A text editor: PSPad, Notepad++, Notepad
  - A browser: Google Chrome, Firefox
  - A web server: Apache, IIS, Tomcat
  - The jQuery library
- You will benefit from using browser development tools
  - Google Chrome
    - https://developer.chrome.com/devtools
  - Firebug in Firefox
    - http://getfirebug.com
  - Internet Explorer
    - http://msdn.microsoft.com/en-us/library/dd565628(v=vs.85).aspx
  - These tools will help you find errors, and have means for debugging your code

jQuery Rich Internet Applications Exercises

Text: EN

Software: EN

REALDOLMEN
to get there, together

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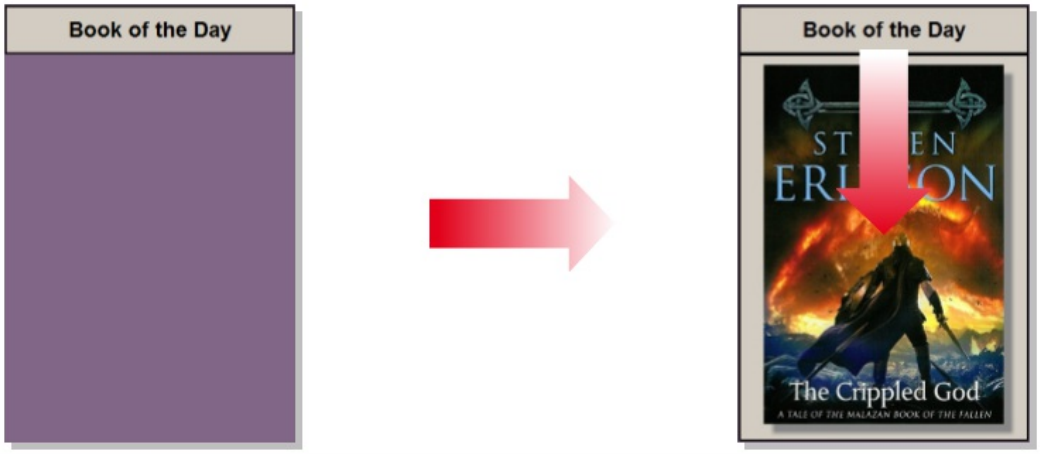
1. Introduction

1.1. Exercise #01

- Create a page that slides down and fades in a picture when a user clicks on a part of the page
- Hints:
  - Use `<div>` elements with IDs
  - Use CSS to hide part of the page
  - Style the elements in any way you like (background, font-size, ...)



2. Selecting

2.1. Exercise #02

- Create a page that gives promotions to users
- Hints:
  - Add 4 sections with images using divs
  - When the user clicks on an image, a message is added under the image, giving the user a random promotion between 5 and 10
  - When the user clicks again, get rid of the old message, and create a new one

3. Decorating

3.1. Exercise #03

- Create a page containing a table
  - Use alternate colored rows
  - The rows containing a “Fiction” book, should have bold text
  - The word “Fiction” itself should be colored red
  - Clicking on a cell will colorize all rows that contain a cell with that same value yellow
  - Clicking on the same puts the table in its original state, while clicking on another cell re-colorizes the table
  - Developing Rich Internet Applications using jQuery

4. Events and functions

4.1. Exercise #04 : Update exercise #02 as follows

- Put your script code in a separate file
- Make sure the user can only click once to get a promotion code
- Replace the click handler function with a named function declaration
- Create a function that generates random numbers
- Use the function to generate random numbers to 1000
- Highlight the book the user is currently hovering over
- Choose one book at random that will contain the promotion
  - Add an empty span element
- Show which book contained the promotion, but tell the user if he got it right
  - Check if the element contains the hidden span
- Fade in the promotion code in a separate box

5. Modifying DOM

5.1. Exercise #05

- Create a page with a list of books
  - Add navigation buttons: cheap and restore
  - When cheap is clicked, do the following:
    - Remove all authors with expensive books
    - Replace the collection title with some custom text
    - Replace all sold-out books with “Sold Out!”
    - Add a green color to all the cheap books
  - When restore is clicked, put the list back to its original state

6. Adding Effects

6.1. Exercise #06

- Create a page with book summaries
  - Use progressive enhancement
    - The page should still be accessible to users who do not have JavaScript!
    - Add a “no-script” element to warn the users when they do not have JavaScript
    - Test by putting your script in comment, then reloading the page
  - The book summaries should be hidden behind a “spoiler” span tag
  - Add a “Let me read...” span tag to reveal the hidden summary
    - When hovering over “Let me read...”, change the background style
    - When clicking on “Let me read...”, fade out the tag and fade in the “spoiler”

7. Basic Animation

7.1. Exercise #07

- Adapt your page with book summaries
- Hide all contents of the book except from the first one
- Add a color animation on the book title when the page loads
- When clicking on a title, animate the height of the contents to toggle with an easeOutBounce
- The other book summaries must close when a title is clicked

7.2. Exercise #08

- Follow the instructions on the slides to add animated navigation on your page
- Change the animation by switching the easing
- Add some animation on the blob's color

7.3. Exercise #09

- Follow the steps in the slides to implement a floating navigation pane
- Use the previous exercise as starting point

7.4. Exercise #10

- Adapt your book summaries exercise to add custom scroll bars
- Start from exercise #06
- Add custom scroll bars for the main div
- Add custom scroll bars for the articles

8. Resizing

8.1. Exercise #11

- Adapt your previous exercise with scrollable articles
  - Remove the scrolling on your articles
  - Make your articles resizable

9. Images slideshows

9.1. Exercise #12

- Add a custom lightbox on your book summaries page
- Follow the instructions on the slides to create the lightbox
- Make use of console.log() if you notice something is not working right...

9.2. Exercise #13

- Implement the custom slideshow
- Follow the instructions on the slides
- Make sure your images all have the same size

10. Navigation and Organizing Content

10.1. Exercise #14

- Create a page with a drop-down menu
- Follow the instructions on the slides
- Include the Hover Intent plugin for improved interaction
- You can try to combine this with exercise #08 and #09

10.2. Exercise #15

- Add a jQuery accordion, tabs, and tooltips to your page
- You may need to restyle some elements...

11. Adding Ajax

11.1. Exercise #16

- Create a page that loads summaries with Ajax
  - When a link is clicked, the corresponding page should be loaded
  - The loaded page contains a paragraph with a mouseover event that should still function for future Ajax loads

11.2. Exercise #17

- Create a news page that fetches information from the delicious feed
  - Show the title, the author and add a link to the source article
  - You will need the $.getJSON() and $.each()
  - Append the results to the main content on your page

12. Enhancing Forms

12.1. Exercise #18

- Create a page with a form that will let you create a book
  - A book has
    - An isbn number of exactly 13 characters long
    - A title with a maximum of 100 characters
    - An author that can be chosen with an autocomplete
    - A publication date that can be chosen with a date picker
    - A small description with with a maximum of 500 characters
    - A number of pages that is chosen with a slider
  - All fields are required (use the Validation plugin)
  - Clicking on the button will pop up a confirmation dialog
    - Use serialize() to see the contents of the form
    - Prevent the default form submission to keep to the current page
  - Prevent the user from typing more than 500 characters in the description