jQuery

CSC309

Purpose of jQuery

- HTML – used to describe content of a page (.html file)
- CSS – used to describe how content should be displayed (.css file)
- Javascript – used for interaction with the page (.js file)
- jQuery – a Javascript library that makes javascript easy and manageable

Getting started with jQuery

- include reference to jQuery library in HTML
- jQuery interacts with DOM to access and modify HTML

- $() = jQuery()
- **document** tells us that we're about to work our magic on the HTML
- .ready()'s parentheses is the jQuery event that occurs as soon as the HTML document is ready

Getting some elements

```
$( '#header' ); // select the element with an ID of 'header'
$( 'li' );      // select all list items on the page
$( 'ul li' );   // select list items that are in unordered lists
$( '.person' ); // select all elements with a class of 'person'
```

Did my selection get anything?

```
if ( $( '#nonexistent' ) ) {
  // Wrong! This code will always run!
}

if ( $( '#nonexistent' ).length > 0 ) {
  // Correct! This code will only run if there's an element in your page
  // with an ID of 'nonexistent'
}

if ( $( '#nonexistent' ).length ) {
  // This code will only run if there's a matching element
}
```

Getters, setters, and implicit iteration

- There are many methods you can call once you've made a selection. These methods generally fall into two categories:
  - getters
    - retrieve a piece of information from the selection
    - getters operate only on the first element in a selection
  - setters: setters alter the selection in some way
    - alter the selection in some way
    - operate on *all* elements in a selection, using what's known as *implicit iteration*

Examples for Setters

- Setters

```
$( 'li' ).html( 'New HTML' );

$( 'li' ).html(function( index, oldHtml ) {
  return oldHtml + '!!!'
});
```

```
$( 'li' ).each(function( index, elem ) {
  // this: the current, raw DOM element
  // index: the current element's index in the selection
  // elem: the current, raw DOM element (same as this)
  $( elem ).prepend( '<b>' + index + ': </b>' );
});
```

Chaining

```
$( 'li' )
  .click(function() {
    $( this ).addClass( 'clicked' );
  })
  .find( 'span' )
    .attr( 'title', 'Hover over me' );
```

- can call a series of methods on a selection
- Extensive chaining can make code extremely difficult to read

Creating new elements

- If you pass an HTML snippet to $ (), it will create a new element in memory
- it won't be placed on the page until you place it on the page

```
$( '<p>Hello!</p>' ); // creates a new <p> element with content
```

```
$( '<p>', {
  html: 'Hello!',
  'class': 'greet'
});
```

Traversal

- make an initial selection
- move through the DOM relative to that selection

Filtering selections

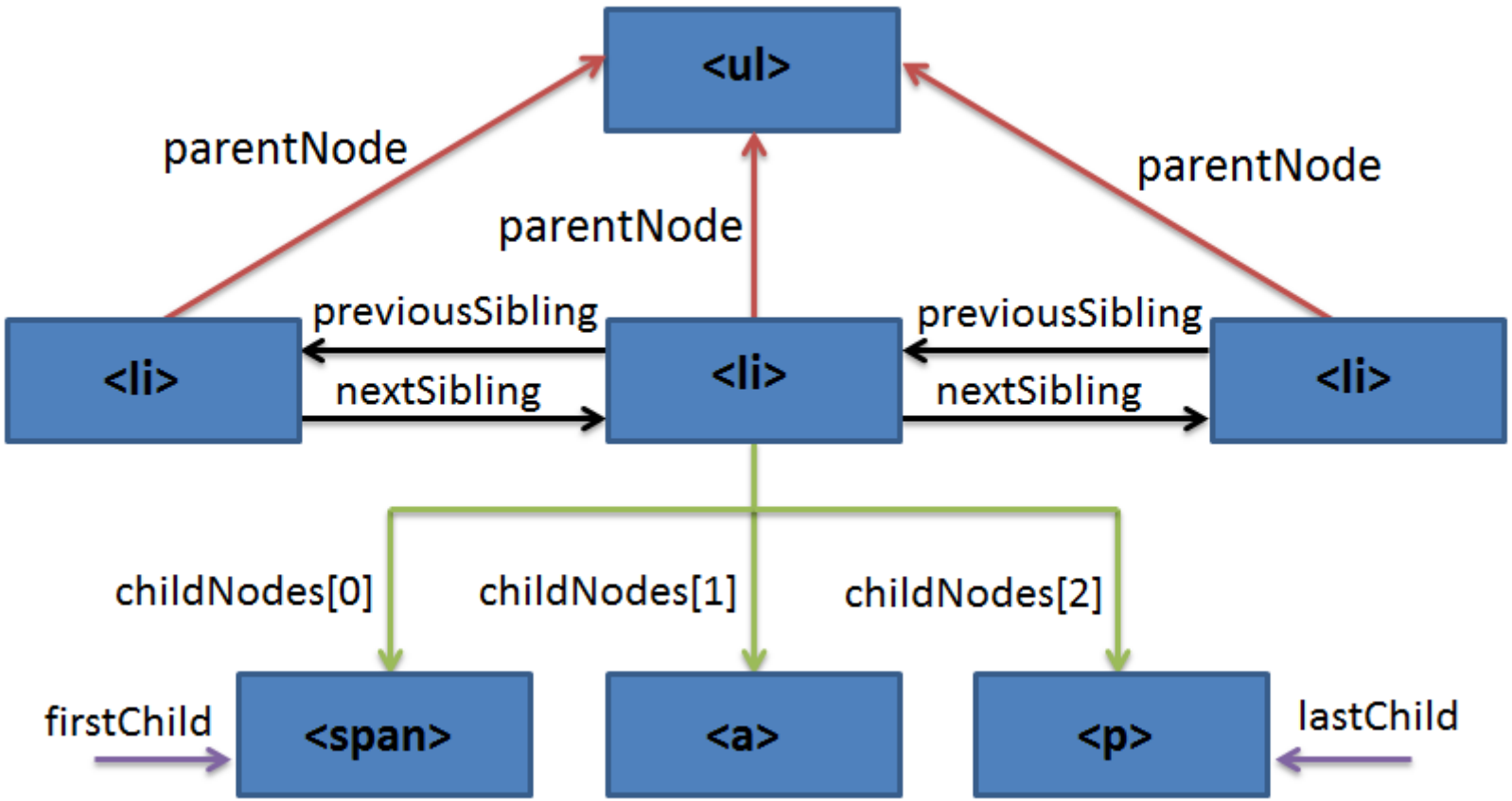
```
var listItems = $( 'li' );

// filter the selection to only items with a class of 'special'
var special = listItems.filter( '.special' );

// filter the selection to only items without a class of 'special'
var notSpecial = listItems.not( '.special' );

// filter the selection to only items that contain a span
var hasSpans = listItems.has( 'span' );
```

Tree Traversal Recap



Finding elements relative to a selection

```
// get the first list item on the page
var listItem = $( 'li' ).first(); // also: .last()

// get the siblings of the list item
var siblings = listItem.siblings();

// get the next sibling of the list item
var nextSibling = listItem.next(); // also: .prev()

// get the list item's parent
var list = listItem.parent();

// get the list items that are immediate children of the list
var listItems = list.children();

// get ALL list items in the list, including nested ones
var allListItems = list.find( 'li' );

// find all ancestors of the list item that have a class of "module"
var modules = listItem.parents( '.module' );

// find the closest ancestor of the list item that has a class of "module"
var module = listItem.closest( '.module' );
```

Getting back to your original selection

- jQuery stores a reference to your initial selection in case you want to get back to it
- use the jQuery .end() method to get back to your original selection
- use it sparingly

```
$( '#my-unordered-list' )
  .find('li')

  // now we're working with the list items
  .addClass('special')

.end()

// now we're back to working with the list
.addClass('super-special');
```

Altering elements

- Whenever possible, you should use classes combined with CSS rules to affect the presentation of elements, and use jQuery only to add and remove those classes as shown above

- $('li').addClass('hidden');
- $
  ('li').eq(1).removeClass('hidde
  n');

- $
  ('li').eq(1).toggleClass('hidden'
  );

Placing elements in the document

- consider the case where you want to move the first list item in a list to the end of the list. There are several ways to achieve this:
- appendT0()
- .append()
- .insertAfter()
- .after()

```
var listItem = $( '#my-unordered-list li' ).first();
listItem.appendTo( '#my-unordered-list' );
$(‘#my-unordered-list’).append(listItem);
```

Removing elements

- .remove()
  - used to remove elements permanently
- .detach()
  - temporarily removing elements from the document
- .replaceWith()
  - replaces an element or elements with the element or HTML passed as an argument

```
var removedListItem = $( '#my-unordered-list li' ).first().remove();
```

```
var detachedListItem = $( '#my-unordered-list li' ).first().detach();
```

```
var replacedListItem = $( '#my-unordered-list li' ).first()
  .replaceWith( '<li>new!</li>' );
```

Events and Event Delegation

- selects all list items on the page, then binds a handler function to the click event of each list item using jQuery's .click() method.

```
$('thingToAffect').click();


$( 'li' ).click(function( event ) {
  console.log( 'clicked', $
( this ).text() );
});
```

Some jQuery methods

Native Event Name	Shorthand Method
click	.click()
keydown	.keydown()
keypress	.keypress()
keyup	.keyup()
mouseover	.mouseover()
mouseout	.mouseout()
mouseenter	.mouseenter()
mouseleave	.mouseleave()
scroll	.scroll()
focus	.focus()
blur	.blur()
resize	.resize()

On() event handler

- What if you interact with items that weren't there when the DOM was loaded?

- We will need a new event handler: .on(). You can think of .on() as a general handler that takes the event, its selector, and an action as inputs.

```
$('.item').click(function() {
    $(this).remove();
}); // will not work
```

```
$(document).on('event', 'selector',
function() {
    Do something!
});
$(document).on('click', '.item',
function() { $(this).remove() } );
```

Namespace events

- Not using namespace events

```<span class="caution">caution</span> antipattern
$( 'li' ).on( 'click', function() {
  console.log( 'a list item was clicked' );
});

$( 'li' ).on( 'click', function() {
  registerClick();
  doSomethingElse();
});

$( 'li' ).off( 'click' ); //unbind all click handlers on all li elemtns
```

- Using Namespace events, allows for finder control

```
$( 'li' ).on( 'click.logging', function() {
  console.log( 'a list item was clicked' );
});

$( 'li' ).on( 'click.analytics', function() {
  registerClick();
  doSomethingElse();
});

$( 'li' ).off( 'click.logging' ); // will leave analytics-related click untouched
```

Event object

- Whenever an event is triggered, the event handler function receives one argument, an event object that is normalized across browsers

```
$( document ).on( 'click', function( event ) {
  console.log( event.type );    // The event type, eg. "click"
  console.log( event.which );   // The button or key that was pressed.
  console.log( event.target );  // The originating element.
  console.log( event.pageX );   // The document mouse X coordinate.
  console.log( event.pageY );   // The document mouse Y coordinate.
});
```

Review

```
$(document).ready(function() {
    $('thingToTouch').event(function() {
        $('thingToAffect').effect();
    });
});
```

Inside the event handler

- When you specify a function to be used as an event handler, that function gets access to the raw DOM element that initiated the event as this

```
$( 'input' ).on( 'keydown', function( event ) {
  // this: The element on which the event handler was bound.
  // event: The event object.

  // Change the input element's background to red if backspace was
  // pressed, otherwise green.
  $( this ).css( 'background', event.which === 8 ? 'red' : 'green' );
});
```

Preventing the default action

- Often, you'll want to prevent the default action of an event; for example, you may want to handle a click on an a element using AJAX, rather than triggering a full page reload

```
$( 'a' ).on( 'click', function( event )
{
  // Prevent the default action.
  event.preventDefault();
  // Log stuff.
  console.log( 'I was just clicked!' );
});
```

Event bubbling

- What happens when you click on an a element that's nested inside other elements?
- In fact, the click event will be triggered for the a element as well as for all of the elements that contain the a — all the way up to the document and the window.

- I am a Link!
- When you click on "I am a Link!", you are not actually clicking on an a, but rather on a span inside of an a.

Event delegation

- it allows us to bind fewer event handlers than we'd have to bind if we were listening to clicks on individual elements, which can be a big performance gain
- it allows us to bind to parent elements — such as an unordered list — and know that our event handlers will fire as expected even if the contents of that parent element change

```
$( '#my-unordered-list' ).on( 'click', function( event ) {
  console.log( event.target ); // logs the element that initiated the event
});
$('#my-unordered-list').on(
'click', 'p', function( event ) {
  console.log(event.target);
});
```

Resources

- Slides based on http://jqfundamentals.com/
- jQuery hands-on tutorial on code academy (3 hours)
- http://www.w3schools.com/jquery/jquery_examples.asp