jQuery overview:

Selectors	Events	Effects	HTML/CSS	Traversing
AJAX	Misc	Properties		

jQuery Tutorial

jQuery is a JavaScript Library.

jQuery greatly simplifies JavaScript programming.

jQuery is easy to learn.

The purpose of jQuery is to make it much easier to use JavaScript on your website.

What You Should Already Know?

Before you start studying jQuery, you should have a basic knowledge of:

1. HTML
2. CSS
3. JavaScript

What is jQuery?

jQuery is a lightweight, "write less, do more", JavaScript library.

The purpose of jQuery is to make it much easier to use JavaScript on your website.

jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.

jQuery also simplifies a lot of the complicated things from JavaScript, like AJAX calls and DOM manipulation.

The jQuery library contains the following features:

- HTML/DOM manipulation

- CSS manipulation
- HTML event methods
- Effects and animations
- AJAX
- Utilities

Tip: In addition, jQuery has plugins for almost any task out there.

Why jQuery?

There are lots of other JavaScript libraries out there, but jQuery is probably the most popular, and also the most extendable.

Many of the biggest companies on the Web use jQuery, such as:

- Google
- Microsoft
- IBM
- Netflix

Will jQuery work in all browsers?

The jQuery team knows all about cross-browser issues, and they have written this knowledge into the jQuery library. jQuery will run exactly the same in all major browsers.

jQuery Get Started

Adding jQuery to Your Web Pages

There are several ways to start using jQuery on your web site. You can:

- Download the jQuery library from jQuery.com
- Include jQuery from a CDN, like Google

Downloading jQuery

There are two versions of jQuery available for downloading:

- Production version - this is for your live website because it has been minified and compressed
- Development version - this is for testing and development (uncompressed and readable code)

Both versions can be downloaded from jQuery.com.

The jQuery library is a single JavaScript file, and you reference it with the HTML `<script>` tag (notice that the `<script>` tag should be inside the `<head>` section):

```
<head>
<script src="jquery-3.5.1.min.js"></script>
</head>
```

Tip: Place the downloaded file in the same directory as the pages where you wish to use it.

jQuery CDN

If you don't want to download and host jQuery yourself, you can include it from a CDN (Content Delivery Network).

Google is an example of someone who host jQuery:

Google CDN:

```
<head>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
</head>
```

jQuery Syntax

With jQuery you select (query) HTML elements and perform "actions" on them.

The jQuery syntax is tailor-made for **selecting** HTML elements and performing some **action** on the element(s).

Basic syntax is: **$(*selector*).*action*()**

- A $ sign to define/access jQuery
- A (*selector*) to "query (or find)" HTML elements
- A jQuery *action*() to be performed on the element(s)

Examples:

`$(this).hide()` - hides the current element.

`$("p").hide()` - hides all <p> elements.

`$(".test").hide()` - hides all elements with class="test".

`$("#test").hide()` - hides the element with id="test".

The Document Ready Event

You might have noticed that all jQuery methods in our examples, are inside a document ready event:

```
$(document).ready(function(){

  // jQuery methods go here...

});
```

This is to prevent any jQuery code from running before the document is finished loading (is ready).

It is good practice to wait for the document to be fully loaded and ready before working with it. This also allows you to have your JavaScript code before the body of your document, in the head section.

Here are some examples of actions that can fail if methods are run before the document is fully loaded:

- Trying to hide an element that is not created yet
- Trying to get the size of an image that is not loaded yet

Tip: The jQuery team has also created an even shorter method for the document ready event:

```
$(function(){

  // jQuery methods go here...

});
```

Use the syntax you prefer. We think that the document ready event is easier to understand when reading the code.

jQuery Selectors

jQuery selectors allow you to select and manipulate HTML element(s).

jQuery selectors are used to "find" (or select) HTML elements based on their name, id, classes, types, attributes, values of attributes and much more. It's based on the existing CSS Selectors, and in addition, it has some own custom selectors.

All selectors in jQuery start with the dollar sign and parentheses: $().

The element Selector

jQuery selectors are one of the most important parts of the jQuery library.

The jQuery element selector selects elements based on the element name.

You can select all <p> elements on a page like this:

```
$("p")
```

Example

When a user clicks on a button, all <p> elements will be hidden:

```
$(document).ready(function(){
  $("button").click(function(){
    $("p").hide();
  });
});
```

The #id Selector

The jQuery *#id* selector uses the id attribute of an HTML tag to find the specific element.

An id should be unique within a page, so you should use the #id selector when you want to find a single, unique element.

To find an element with a specific id, write a hash character, followed by the id of the HTML element:

```
$("#test")
```

Example

When a user clicks on a button, the element with id="test" will be hidden:

```
$(document).ready(function(){
  $("button").click(function(){
    $("#test").hide();
  });
});
```

The .class Selector

The jQuery *.class* selector finds elements with a specific class.

To find elements with a specific class, write a period character, followed by the name of the class:

```
$(".test")
```

Example

When a user clicks on a button, the elements with class="test" will be hidden:

```
$(document).ready(function(){
  $("button").click(function(){
    $(".test").hide();
  });
});
```

More Examples of jQuery Selectors

Syntax	Description	Example
$("*")	Selects all elements	Try it
$(this)	Selects the current HTML element	Try it
$("p.intro")	Selects all <p> elements with class="intro"	Try it
$("p:first")	Selects the first <p> element	Try it
$("ul li:first")	Selects the first element of the first	Try it
$("ul li:first-child")	Selects the first element of every	Try it
$("[href]")	Selects all elements with an href attribute	Try it
$("a[target='_blank']")	Selects all <a> elements with a target attribute value equal to "_blank"	Try it
$("a[target!='_blank']")	Selects all <a> elements with a target attribute value NOT equal to "_blank"	Try it
$(":button")	Selects all <button> elements and <input> elements of type="button"	Try it
$("tr:even")	Selects all even <tr> elements	Try it
$("tr:odd")	Selects all odd <tr> elements	

Functions In a Separate File

If your website contains a lot of pages, and you want your jQuery functions to be easy to maintain, you can put your jQuery functions in a separate .js file.

When we demonstrate jQuery in this tutorial, the functions are added directly into the <head> section. However, sometimes it is preferable to place them in a separate file, like this (use the src attribute to refer to the .js file):

Example

```
<head>
<script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></scri
pt>
<script src="my_jquery_functions.js"></script>
</head>
```

jQuery Event Methods

What are Events?

All the different visitors' actions that a web page can respond to are called events.

An event represents the precise moment when something happens.

Examples:

- moving a mouse over an element
- selecting a radio button
- clicking on an element

The term **"fires/fired"** is often used with events. Example: "The keypress event is fired, the moment you press a key".

Here are some common DOM events:

Mouse Events	Keyboard Events	Form Events	Document/Window Events
click	keypress	submit	load
dblclick	keydown	change	resize
mouseenter	keyup	focus	scroll
mouseleave		blur	unload

jQuery Syntax For Event Methods

In jQuery, most DOM events have an equivalent jQuery method.

To assign a click event to all paragraphs on a page, you can do this:

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

The next step is to define what should happen when the event fires. You must pass a function to the event:

```
$("p").click(function(){
  // action goes here!!
});
```

Commonly Used jQuery Event Methods

$(document).ready()

The `$(document).ready()` method allows us to execute a function when the document is fully loaded. This event is already explained in the jQuery Syntax chapter.

click()

The `click()` method attaches an event handler function to an HTML element.

The function is executed when the user clicks on the HTML element.

The following example says: When a click event fires on a `<p>` element; hide the current `<p>` element:

Example

```
$("p").click(function(){
  $(this).hide();
});
```

dblclick()

The `dblclick()` method attaches an event handler function to an HTML element.

The function is executed when the user double-clicks on the HTML element:

Example

```
$("p").dblclick(function(){
  $(this).hide();
});
```

mouseenter()

The `mouseenter()` method attaches an event handler function to an HTML element.

The function is executed when the mouse pointer enters the HTML element:

Example

```
$("#p1").mouseenter(function(){
  alert("You entered p1!");
});
```

mouseleave()

The `mouseleave()` method attaches an event handler function to an HTML element.

The function is executed when the mouse pointer leaves the HTML element:

Example

```
$("#p1").mouseleave(function(){
  alert("Bye! You now leave p1!");
});
```

mousedown()

The `mousedown()` method attaches an event handler function to an HTML element.

The function is executed, when the left, middle or right mouse button is pressed down, while the mouse is over the HTML element:

Example

```
$("#p1").mousedown(function(){
  alert("Mouse down over p1!");
});
```

mouseup()

The `mouseup()` method attaches an event handler function to an HTML element.

The function is executed, when the left, middle or right mouse button is released, while the mouse is over the HTML element:

Example

```
$("#p1").mouseup(function(){
  alert("Mouse up over p1!");
});
```

hover()

The `hover()` method takes two functions and is a combination of the `mouseenter()` and `mouseleave()` methods.

The first function is executed when the mouse enters the HTML element, and the second function is executed when the mouse leaves the HTML element:

Example

```
$("#p1").hover(function(){
  alert("You entered p1!");
},
function(){
  alert("Bye! You now leave p1!");
});
```

focus()

The `focus()` method attaches an event handler function to an HTML form field.

The function is executed when the form field gets focus:

Example

```
$("input").focus(function(){
  $(this).css("background-color", "#cccccc");
});
```

blur()

The `blur()` method attaches an event handler function to an HTML form field.

The function is executed when the form field loses focus:

Example

```
$("input").blur(function(){
  $(this).css("background-color", "#ffffff");
});
```

The on() Method

The on() method attaches one or more event handlers for the selected elements.

Attach a click event to a <p> element:

Example

```
$("p").on("click", function(){
  $(this).hide();
});
```

Attach multiple event handlers to a <p> element:

Example

```
$("p").on({
  mouseenter: function(){
    $(this).css("background-color", "lightgray");
  },
  mouseleave: function(){
    $(this).css("background-color", "lightblue");
  },
  click: function(){
    $(this).css("background-color", "yellow");
  }
});
```

jQuery Effects -

(Hide, Show, Toggle, Slide, Fade, Animate)

jQuery hide() and show()

With jQuery, you can hide and show HTML elements with the `hide()` and `show()` methods:

Example

```
$("#hide").click(function(){
  $("p").hide();
});

$("#show").click(function(){
  $("p").show();
});
```

Syntax:

```
$(selector).hide(speed,callback);

$(selector).show(speed,callback);
```

The optional speed parameter specifies the speed of the hiding/showing, and can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the `hide()` or `show()` method completes (you will learn more about callback functions in a later chapter).

The following example demonstrates the speed parameter with `hide()`:

Example

```
$("button").click(function(){
  $("p").hide(1000);
});
```

jQuery toggle()

You can also toggle between hiding and showing an element with the `toggle()` method.

Shown elements are hidden and hidden elements are shown:

Example

```
$("button").click(function(){
  $("p").toggle();
});
```

Syntax:

```
$(selector).toggle(speed,callback);
```

The optional speed parameter can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after `toggle()` completes.

jQuery Effect Methods

The following table lists all the jQuery methods for creating animation effects.

Method	Description
animate()	Runs a custom animation on the selected elements
clearQueue()	Removes all remaining queued functions from the selected elements
delay()	Sets a delay for all queued functions on the selected elements
dequeue()	Removes the next function from the queue, and then executes the function
fadeIn()	Fades in the selected elements
fadeOut()	Fades out the selected elements
fadeTo()	Fades in/out the selected elements to a given opacity
fadeToggle()	Toggles between the fadeIn() and fadeOut() methods
finish()	Stops, removes and completes all queued animations for the selected elements

hide()	Hides the selected elements
queue()	Shows the queued functions on the selected elements
show()	Shows the selected elements
slideDown()	Slides-down (shows) the selected elements
slideToggle()	Toggles between the slideUp() and slideDown() methods
slideUp()	Slides-up (hides) the selected elements
stop()	Stops the currently running animation for the selected elements
toggle()	Toggles between the hide() and show() methods

jQuery Effects - Fading

With jQuery you can fade elements in and out of visibility.

jQuery Fading Methods

With jQuery you can fade an element in and out of visibility.

jQuery has the following fade methods:

- `fadeIn()`
- `fadeOut()`
- `fadeToggle()`
- `fadeTo()`

jQuery fadeIn() Method

The jQuery `fadeIn()` method is used to fade in a hidden element.

Syntax:

```
$(selector).fadeIn(speed,callback);
```

The optional speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the fading completes.

The following example demonstrates the `fadeIn()` method with different parameters:

Example

```
$("button").click(function(){
  $("#div1").fadeIn();
  $("#div2").fadeIn("slow");
  $("#div3").fadeIn(3000);
});
```

It is good to use "display:none" in CSS files if you want to use fadeIn() functions.

JQuery fadeOut() Method

The jQuery `fadeOut()` method is used to fade out a visible element.

Syntax:

```
$(selector).fadeOut(speed,callback);
```

The optional speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the fading completes.

The following example demonstrates the `fadeOut()` method with different parameters:

Example

```
$("button").click(function(){
  $("#div1").fadeOut();
  $("#div2").fadeOut("slow");
  $("#div3").fadeOut(3000);
});
```

jQuery fadeToggle() Method

The jQuery `fadeToggle()` method toggles between the `fadeIn()` and `fadeOut()` methods.

If the elements are faded out, `fadeToggle()` will fade them in.

If the elements are faded in, `fadeToggle()` will fade them out.

Syntax:

```
$(selector).fadeToggle(speed,callback);
```

The optional speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the fading completes.

The following example demonstrates the `fadeToggle()` method with different parameters:

Example

```
$("button").click(function(){
  $("#div1").fadeToggle();
  $("#div2").fadeToggle("slow");
  $("#div3").fadeToggle(3000);
```

jQuery fadeTo() Method

The jQuery `fadeTo()` method allows fading to a given opacity (value between 0 and 1).

Syntax:

```
$(selector).fadeTo(speed,opacity,callback);
```

The required speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The required opacity parameter in the `fadeTo()` method specifies fading to a given opacity (value between 0 and 1).

The optional callback parameter is a function to be executed after the function completes.

The following example demonstrates the `fadeTo()` method with different parameters:

Example

```
$("button").click(function(){
  $("#div1").fadeTo("slow", 0.15);
  $("#div2").fadeTo("slow", 0.4);
  $("#div3").fadeTo("slow", 0.7);
});
```

jQuery Effects - Sliding

With jQuery you can create a sliding effect on elements.

jQuery has the following slide methods:

- `slideDown()`
- `slideUp()`
- `slideToggle()`

jQuery slideDown() Method

The jQuery `slideDown()` method is used to slide down an element.

Syntax:

```
$(selector).slideDown(speed,callback);
```

The optional speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the sliding completes.

The following example demonstrates the `slideDown()` method:

Example

```
$("#flip").click(function(){
  $("#panel").slideDown();
});
```

jQuery slideUp() Method

The jQuery `slideUp()` method is used to slide up an element.

Syntax:

```
$(selector).slideUp(speed,callback);
```

The optional speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the sliding completes.

The following example demonstrates the `slideUp()` method:

Example

```
$("#flip").click(function(){
  $("#panel").slideUp();
});
```

jQuery slideToggle() Method

The jQuery `slideToggle()` method toggles between the `slideDown()` and `slideUp()` methods.

If the elements have been slid down, `slideToggle()` will slide them up.

If the elements have been slid up, `slideToggle()` will slide them down.

```
$(selector).slideToggle(speed,callback);
```

The optional speed parameter can take the following values: "slow", "fast", milliseconds.

The optional callback parameter is a function to be executed after the sliding completes.

The following example demonstrates the `slideToggle()` method:

Example

```
$("#flip").click(function(){
  $("#panel").slideToggle();
});
```

Nocice: ‘toggle’ methods are the mix of ‘hide-show’ ,’fadeIn-fadeOut’,’slideUp-slideDown’ and so on....

jQuery Effects - Animation

With jQuery, you can create custom animations.

jQuery Animations - The animate() Method

The jQuery `animate()` method is used to create custom animations.

Syntax:

```
$(selector).animate({params},speed,callback);
```

The required params parameter defines the CSS properties to be animated.

The optional speed parameter specifies the duration of the effect. It can take the following values: "slow", "fast", or milliseconds.

The optional callback parameter is a function to be executed after the animation completes.

The following example demonstrates a simple use of the `animate()` method; it moves a element to the right, until it has reached a left property of 250px:

Example

```
$("button").click(function(){
  $("div").animate({left: '250px'});
});
```

By default, all HTML elements have a static position, and cannot be moved.
To manipulate the position, remember to first set the CSS position property of the element to relative, fixed, or absolute!

jQuery animate() - Manipulate Multiple Properties

Notice that multiple properties can be animated at the same time:

Example

```
$("button").click(function(){
  $("div").animate({
    left: '250px',
    opacity: '0.5',
    height: '150px',
    width: '150px'
  });
});
```

Is it possible to manipulate ALL CSS properties with the animate() method?

Yes, almost! However, there is one important thing to remember: all property names must be camel-cased when used with the animate() method: You will need to write paddingLeft instead of padding-left, marginRight instead of margin-right, and so on.

Also, color animation is not included in the core jQuery library.
If you want to animate color, you need to download the Color Animations plugin from jQuery.com.

jQuery animate() - Using Relative Values

It is also possible to define relative values (the value is then relative to the element's current value). This is done by putting += or -= in front of the value:

Example

```
$("button").click(function(){
  $("div").animate({
    left: '250px',
    height: '+=150px',
    width: '+=150px'
  });
});
```

jQuery animate() - Using Pre-defined Values

You can even specify a property's animation value as "show", "hide", or "toggle":

Example

```
$("button").click(function(){
  $("div").animate({
    height: 'toggle'
  });
});
```

jQuery animate() - Uses Queue Functionality

By default, jQuery comes with queue functionality for animations.

This means that if you write multiple `animate()` calls after each other, jQuery creates an "internal" queue with these method calls. Then it runs the animate calls ONE by ONE.

So, if you want to perform different animations after each other, we take advantage of the queue functionality:

Example 1

```
$("button").click(function(){
  var div = $("div");
  div.animate({height: '300px', opacity: '0.4'}, "slow");
  div.animate({width: '300px', opacity: '0.8'}, "slow");
  div.animate({height: '100px', opacity: '0.4'}, "slow");
  div.animate({width: '100px', opacity: '0.8'}, "slow");
});
```

The example below first moves the `<div>` element to the right, and then increases the font size of the text:

Example 2

```
$("button").click(function(){
  var div = $("div");
  div.animate({left: '100px'}, "slow");
  div.animate({fontSize: '3em'}, "slow");
});
```

jQuery Stop Animations

The jQuery stop() method is used to stop animations or effects before it is finished.

The `stop()` method works for all jQuery effect functions, including sliding, fading and custom animations.

Syntax:

```
$(selector).stop(stopAll,goToEnd);
```

The optional stopAll parameter specifies whether also the animation queue should be cleared or not. Default is false, which means that only the active animation will be stopped, allowing any queued animations to be performed afterwards.

The optional goToEnd parameter specifies whether or not to complete the current animation immediately. Default is false.

So, by default, the `stop()` method kills the current animation being performed on the selected element.

The following example demonstrates the `stop()` method, with no parameters:

Example

```
$("#stop").click(function(){
  $("#panel").stop();
});
```

jQuery Callback Functions

A callback function is executed after the current effect is 100% finished.

JavaScript statements are executed line by line. However, with effects, the next line of code can be run even though the effect is not finished. This can create errors.

To prevent this, you can create a callback function.

A callback function is executed after the current effect is finished.

Typical syntax: **$(*selector*).hide(*speed,callback*);**

Examples

The example below has a callback parameter that is a function that will be executed after the hide effect is completed:

Example with Callback

```
$("button").click(function(){
  $("p").hide("slow", function(){
```

```
    alert("The paragraph is now hidden");
  });
});
```

The example below has no callback parameter, and the alert box will be displayed before the hide effect is completed:

Example without Callback

```
$("button").click(function(){
  $("p").hide(1000);
  alert("The paragraph is now hidden");
});
```

jQuery - Chaining

With jQuery, you can chain together actions/methods.

Chaining allows us to run multiple jQuery methods (on the same element) within a single statement.

jQuery Method Chaining

Until now we have been writing jQuery statements one at a time (one after the other).

However, there is a technique called chaining, that allows us to run multiple jQuery commands, one after the other, on the same element(s).

Tip: This way, browsers do not have to find the same element(s) more than once.

To chain an action, you simply append the action to the previous action.

The following example chains together the `css()`, `slideUp()`, and `slideDown()` methods. The "p1" element first changes to red, then it slides up, and then it slides down:

Example

```
$("#p1").css("color", "red").slideUp(2000).slideDown(2000);
```

We could also have added more method calls if needed.

Tip: When chaining, the line of code could become quite long. However, jQuery is not very strict on the syntax; you can format it like you want, including line breaks and indentations.

This also works just fine:

Example

```
$("#p1").css("color", "red")
  .slideUp(2000)
  .slideDown(2000);
```

jQuery throws away extra whitespace and executes the lines above as one long line of code.

jQuery HTML

jQuery - Get Content and Attributes

jQuery contains powerful methods for changing and manipulating HTML elements and attributes.

jQuery DOM Manipulation

One very important part of jQuery is the possibility to manipulate the DOM.

jQuery comes with a bunch of DOM related methods that make it easy to access and manipulate elements and attributes.

DOM = Document Object Model

The DOM defines a standard for accessing HTML and XML documents:

"The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document."

Get Content - text(), html(), and val()

Three simple, but useful, jQuery methods for **DOM manipulation** are:

- `text()` - Sets or returns the text content of selected elements
- `html()` - Sets or returns the content of selected elements (including HTML markup)
- `val()` - Sets or returns the value of form fields

The following example demonstrates how to get content with the jQuery `text()` and `html()` methods:

Example

```
$("#btn1").click(function(){
  alert("Text: " + $("#test").text());
});
$("#btn2").click(function(){
  alert("HTML: " + $("#test").html());
});
```

The following example demonstrates how to get the value of an input field with the jQuery `val()` method:

Example

```
$("#btn1").click(function(){
  alert("Value: " + $("#test").val());
});
```

Get Attributes - attr()

The jQuery `attr()` method is used to get attribute values.

The following example demonstrates how to get the value of the href attribute in a link:

Example

```
$("button").click(function(){
  alert($("#w3s").attr("href"));
});
```

The next chapter explains how to set (change) content and attribute values.

jQuery - Set Content and Attributes

Set Content - text(), html(), and val()

We will use the same three methods from the previous page to **set content**:

- `text()` - Sets or returns the text content of selected elements
- `html()` - Sets or returns the content of selected elements (including HTML markup)
- `val()` - Sets or returns the value of form fields

The following example demonstrates how to set content with the jQuery `text()`, `html()`, and `val()` methods:

Example

```
$("#btn1").click(function(){
  $("#test1").text("Hello world!");
});
$("#btn2").click(function(){
  $("#test2").html("<b>Hello world!</b>");
});
$("#btn3").click(function(){
  $("#test3").val("Dolly Duck");
});
```

Set Attributes - attr()

The jQuery `attr()` method is also used to set/change attribute values.

The following example demonstrates how to change (set) the value of the href attribute in a link:

Example

```
$("button").click(function(){
  $("#w3s").attr("href", "https://www.w3schools.com/jquery/");
});
```

The attr() method also allows you to set multiple attributes at the same time.

The following example demonstrates how to set both the href and title attributes at the same time:

Example

```
$("button").click(function(){
  $("#w3s").attr({
    "href" : "https://www.w3schools.com/jquery/",
    "title" : "W3Schools jQuery Tutorial"
  });
});
```

jQuery - Add Elements

With jQuery, it is easy to add new elements/content.

Add New HTML Content

We will look at four jQuery methods that are used to add new content:

- append() - Inserts content at the end of the selected elements
- prepend() - Inserts content at the beginning of the selected elements
- after() - Inserts content after the selected elements
- before() - Inserts content before the selected elements

jQuery append() Method

The jQuery append() method inserts content AT THE END of the selected HTML elements.

Example

```
$(document).ready(function(){

  $("#btn1").click(function(){

    $("p").append(" <b>Appended text</b>.");

  });

});
```

jQuery prepend() Method

The jQuery `prepend()` method inserts content AT THE BEGINNING of the selected HTML elements.

Example

```
$(document).ready(function(){
  $("#btn1").click(function(){
    $("p").prepend("<b>Prepended text</b>. ");
  });
});
```

Add Several New Elements With append() and prepend()

In both examples above, we have only inserted some text/HTML at the beginning/end of the selected HTML elements.

However, both the `append()` and `prepend()` methods can take an infinite number of new elements as parameters. The new elements can be generated with text/HTML (like we have done in the examples above), with jQuery, or with JavaScript code and DOM elements.

In the following example, we create several new elements. The elements are created with text/HTML, jQuery, and JavaScript/DOM. Then we append the new elements to the text with the `append()` method (this would have worked for `prepend()` too) :

Example:

```
<html>
<head>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
<script>
```

```
function appendText() {
  var txt1 = "<p>Text.</p>";       // Create text with HTML
  var txt2 = $("<p></p>").text("Text.");  // Create text with jQuery
    var txt3 = document.createElement("p").innerHTML = '<p>Text.          </p>'; // Create text with DOM
  $("body").append(txt1, txt2, txt3);   // Append new elements before </body>
}
</script>
</head>
<body>
<p>This is a paragraph.</p>
<button onclick="appendText()">Append text</button>
</body>
</html>
```

Or :

In js file:

```
$("#button1").click(function () {
   var txt1 = "<p>Text.</p>"; // Create text with HTML
   var txt2 = $("<p></p>").text("Text."); // Create text with jQuery
   var txt3 = document.createElement("p").innerHTML = '<p>Text.</p>'; // Create text with DOM
   $("body").append(txt1, txt2, txt3); // Append new elements
 });
```

jQuery after() and before() Methods

The jQuery `after()` method inserts content AFTER the selected HTML elements.

The jQuery `before()` method inserts content BEFORE the selected HTML elements.

Example

```
$(document).ready(function(){
```

```
 $("#btn1").click(function(){
   $("img").before("<b>Before</b>");
 });
});
```

Example

```
$(document).ready(function(){
 $("#btn1").click(function(){
   $("img").after("<b>Before</b>");
 });
});
```

Add Several New Elements With after() and before()

Also, both the `after()` and `before()` methods can take an infinite number of new elements as parameters. The new elements can be generated with text/HTML (like we have done in the example above), with jQuery, or with JavaScript code and DOM elements.

In the following example, we create several new elements. The elements are created with text/HTML, jQuery, and JavaScript/DOM. Then we insert the new elements to the text with the `after()` method (this would have worked for `before()` too) :

Example

```
<!DOCTYPE html>
<html>
<head>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
<script>
function afterText() {
```

```
  var txt1 = "<b>I </b>";          // Create element with HTML
  var txt2 = $("<i></i>").text("love ");  // Create with jQuery
  var txt3 = document.createElement("b");   // Create with DOM
  txt3.innerHTML = "jQuery!";
  $("img").after(txt1, txt2, txt3);    // Insert new elements after img
}
</script>
</head>
<body>

<img src="/images/w3jquery.gif" alt="jQuery" width="100" height="140">

<p>Click the button to insert text after the image.</p>

<button onclick="afterText()">Insert after</button>

</body>
</html>
```

jQuery - Remove Elements

With jQuery, it is easy to remove existing HTML elements.

Remove Elements/Content

To remove elements and content, there are mainly two jQuery methods:

- `remove()` - Removes the selected element (and its child elements)
- `empty()` - Removes the child elements from the selected element

jQuery remove() Method

The jQuery `remove()` method removes the selected element(s) and its child elements.

Example

```
$("#div1").remove();
```

jQuery empty() Method

The jQuery `empty()` method removes the child elements of the selected element(s).

Example

```
$("#div1").empty();
```

Filter the Elements to be Removed

The jQuery `remove()` method also accepts one parameter, which allows you to filter the elements to be removed.

The parameter can be any of the jQuery selector syntaxes.

The following example removes all `<p>` elements with `class="test"`:

Example

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

This example removes all `<p>` elements with `class="test"` and `class="demo"`:

Example

```
$("p").remove(".test, .demo");
```

jQuery - Get and Set CSS Classes

jQuery Manipulating CSS

jQuery has several methods for CSS manipulation. We will look at the following methods:

- `addClass()` - Adds one or more classes to the selected elements
- `removeClass()` - Removes one or more classes from the selected elements

- `toggleClass()` - Toggles between adding/removing classes from the selected elements
- `css()` - Sets or returns the style attribute

Example Stylesheet

The following stylesheet will be used for all the examples on this page:

```
.important {
  font-weight: bold;
  font-size: xx-large;
}

.blue {
  color: blue;
}
```

jQuery addClass() Method

The following example shows how to add class attributes to different elements. Of course you can select multiple elements, when adding classes:

Example

```
$("button").click(function(){
  $("h1, h2, p").addClass("blue");
  $("div").addClass("important");
});
```

You can also specify multiple classes within the `addClass()` method:

Example

```
$("button").click(function(){
  $("#div1").addClass("important blue");
});
```

jQuery removeClass() Method

The following example shows how to remove a specific class attribute from different elements:

Example

```
$("button").click(function(){
  $("h1, h2, p").removeClass("blue");
});
```

jQuery toggleClass() Method

The following example will show how to use the jQuery `toggleClass()` method. This method toggles between adding/removing classes from the selected elements:

Example

```
$("button").click(function(){
  $("h1, h2, p").toggleClass("blue");
});
```

jQuery - css() Method

The `css()` method **sets or returns** one or more style properties for the selected elements.

Return a CSS Property

To return the value of a specified CSS property, use the following syntax:

```
css("propertyname");
```

The following example will return the background-color value of the FIRST matched element:

Example

```
$("p").css("background-color");
```

Set a CSS Property

To set a specified CSS property, use the following syntax:

```
css("propertyname","value");
```

The following example will set the background-color value for ALL matched elements:

Example

```
$("p").css("background-color", "yellow");
```

Set Multiple CSS Properties

To set multiple CSS properties, use the following syntax:

```
css({"propertyname":"value","propertyname":"value",...});
```

The following example will set a background-color and a font-size for ALL matched elements:

Example

```
$("p").css({"background-color": "yellow", "font-size": "200%"});
```

jQuery - Dimensions

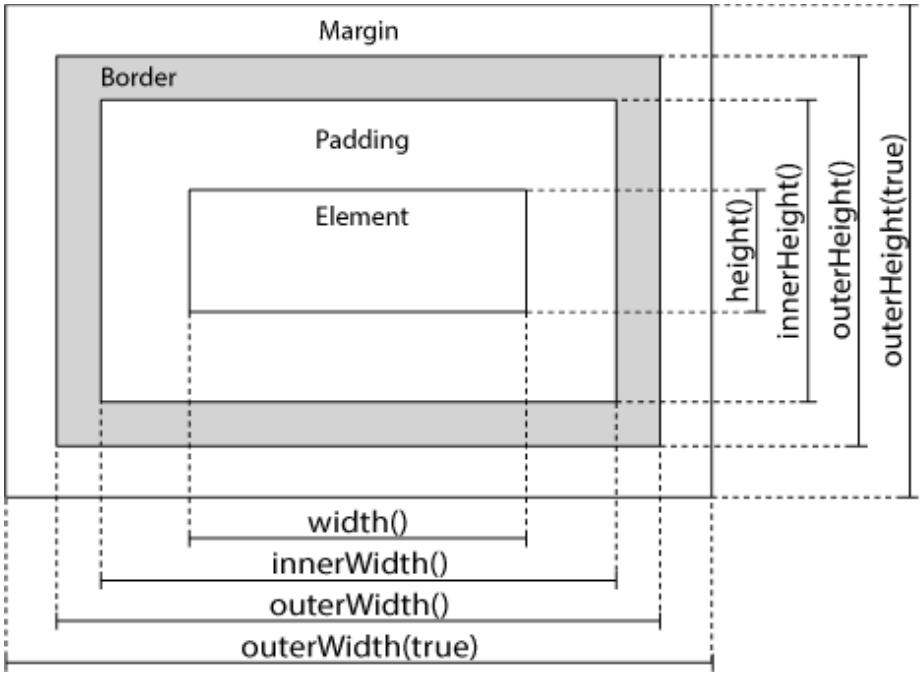
With jQuery, it is easy to work with the dimensions of elements and browser window.

jQuery Dimension Methods

jQuery has several important methods for working with dimensions:

- `width()`
- `height()`
- `innerWidth()`
- `innerHeight()`
- `outerWidth()`
- `outerHeight()`

jQuery Dimensions



jQuery width() and height() Methods

The `width()` method sets or returns the width of an element (excludes padding, border and margin).

The `height()` method sets or returns the height of an element (excludes padding, border and margin).

The following example returns the width and height of a specified `<div>` element:

Example

```
$("button").click(function(){
  var txt = "";
  txt += "Width: " + $("#div1").width() + "</br>";
  txt += "Height: " + $("#div1").height();
  $("#div1").html(txt);
});
```

jQuery innerWidth() and innerHeight() Methods

The `innerWidth()` method returns the width of an element (includes padding).

The `innerHeight()` method returns the height of an element (includes padding).

The following example returns the inner-width/height of a specified `<div>` element:

Example

```
$("button").click(function(){
  var txt = "";
  txt += "Inner width: " + $("#div1").innerWidth() + "</br>";
  txt += "Inner height: " + $("#div1").innerHeight();
  $("#div1").html(txt);
});
```

jQuery outerWidth() and outerHeight() Methods

The `outerWidth()` method returns the width of an element (includes padding and border).

The `outerHeight()` method returns the height of an element (includes padding and border).

The following example returns the outer-width/height of a specified `<div>` element:

Example

```
$("button").click(function(){
  var txt = "";
  txt += "Outer width: " + $("#div1").outerWidth() + "</br>";
  txt += "Outer height: " + $("#div1").outerHeight();
  $("#div1").html(txt);
});
```

The `outerWidth(true)` method returns the width of an element (includes padding, border, and margin).

The `outerHeight(true)` method returns the height of an element (includes padding, border, and margin).

Example

```
$("button").click(function(){
  var txt = "";
  txt += "Outer width (+margin): " + $("#div1").outerWidth(true) + "</br>";
  txt += "Outer height (+margin): " + $("#div1").outerHeight(true);
  $("#div1").html(txt);
});
```

jQuery More width() and height()

The following example returns the width and height of the document (the HTML document) and window (the browser viewport):

Example

```
$("button").click(function(){
  var txt = "";
  txt += "Document width/height: " + $(document).width();
  txt += "x" + $(document).height() + "\n";
  txt += "Window width/height: " + $(window).width();
  txt += "x" + $(window).height();
  alert(txt);
});
```

The following example sets the width and height of a specified `<div>` element:

Example

```
$("button").click(function(){
  $("#div1").width(500).height(500);
});
```

jQuery Traversing

What is Traversing?

jQuery traversing, which means "move through", are used to "find" (or select) HTML elements based on their relation to other elements. Start with one selection and move through that selection until you reach the elements you desire.

The image below illustrates an HTML page as a tree (DOM tree). With jQuery traversing, you can easily move up (ancestors), down (descendants) and sideways (siblings) in the tree, starting from the selected (current) element. This movement is called traversing - or moving through - the DOM tree.

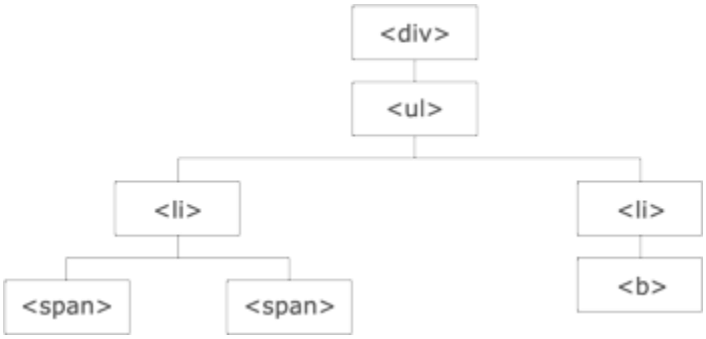


Illustration explained:

- The element is the **parent** of <ul>, and an **ancestor** of everything inside of it
- The <ul> element is the **parent** of both <li> elements, and a **child** of
- The left <li> element is the **parent** of , **child** of <ul> and a **descendant** of
- The element is a **child** of the left <li> and a **descendant** of <ul> and
- The two <li> elements are **siblings** (they share the same parent)
- The right <li> element is the **parent** of <b>, **child** of <ul> and a **descendant** of
- The <b> element is a **child** of the right <li> and a **descendant** of <ul> and

An ancestor is a parent, grandparent, great-grandparent, and so on.
A descendant is a child, grandchild, great-grandchild, and so on.
Siblings share the same parent.

Traversing the DOM

jQuery provides a variety of methods that allow us to traverse the DOM.

The largest category of traversal methods are tree-traversal.

The next chapters will show us how to travel up, down and sideways in the DOM tree.

jQuery Traversing - Ancestors

With jQuery you can traverse up the DOM tree to find ancestors of an element.

An ancestor is a parent, grandparent, great-grandparent, and so on.

Traversing Up the DOM Tree

Three useful jQuery methods for traversing up the DOM tree are:

- `parent()`
- `parents()`
- `parentsUntil()`

jQuery parent() Method

The `parent()` method returns the direct parent element of the selected element.

This method only traverse a single level up the DOM tree.

The following example returns the direct parent element of each `<span>` elements:

Example

```
$(document).ready(function(){
  $("span").parent();
});
```

jQuery parents() Method

The `parents()` method returns all ancestor elements of the selected element, all the way up to the document's root element (`<html>`).

The following example returns all ancestors of all `<span>` elements:

Example

```
$(document).ready(function(){
  $("span").parents();
});
```

You can also use an optional parameter to filter the search for ancestors.

The following example returns all ancestors of all `<span>` elements that are `<ul>` elements:

Example

```
$(document).ready(function(){
  $("span").parents("ul");
});
```

jQuery parentsUntil() Method

The `parentsUntil()` method returns all ancestor elements between two given arguments.

The following example returns all ancestor elements between a `<span>` and a `<div>` element:

Example

```
$(document).ready(function(){
  $("span").parentsUntil("div");
});
```

jQuery Traversing - Descendants

With jQuery you can traverse down the DOM tree to find descendants of an element.

A descendant is a child, grandchild, great-grandchild, and so on.

Traversing Down the DOM Tree

Two useful jQuery methods for traversing down the DOM tree are:

- `children()`
- `find()`

jQuery children() Method

The `children()` method returns all direct children of the selected element.

This method only traverses a single level down the DOM tree.

The following example returns all elements that are direct children of each `<div>` elements:

Example

```
$(document).ready(function(){
  $("div").children();
});
```

You can also use an optional parameter to filter the search for children.

The following example returns all `<p>` elements with the class name "first", that are direct children of `<div>`:

Example

```
$(document).ready(function(){
  $("div").children("p.first");
});
```

jQuery find() Method

The `find()` method returns descendant elements of the selected element, all the way down to the last descendant.

The following example returns all `<span>` elements that are descendants of `<div>`:

Example

```
$(document).ready(function(){
  $("div").find("span");
});
```

The following example returns all descendants of `<div>`:

Example

```
$(document).ready(function(){
  $("div").find("*");
});
```

jQuery Traversing - Siblings

With jQuery you can traverse sideways in the DOM tree to find siblings of an element.

Siblings share the same parent.

Traversing Sideways in The DOM Tree

There are many useful jQuery methods for traversing sideways in the DOM tree:

- `siblings()`
- `next()`
- `nextAll()`
- `nextUntil()`
- `prev()`
- `prevAll()`
- `prevUntil()`

jQuery siblings() Method

The `siblings()` method returns all sibling elements of the selected element.

The following example returns all sibling elements of `<h2>`:

Example

```
$(document).ready(function(){
  $("h2").siblings();
});
```

You can also use an optional parameter to filter the search for siblings.

The following example returns all sibling elements of `<h2>` that are `<p>` elements:

Example

```
$(document).ready(function(){
  $("h2").siblings("p");
});
```

jQuery next() Method

The `next()` method returns the next sibling element of the selected element.

The following example returns the next sibling of `<h2>`:

Example

```
$(document).ready(function(){
  $("h2").next();
});
```

jQuery nextAll() Method

The `nextAll()` method returns all next sibling elements of the selected element.

The following example returns all next sibling elements of `<h2>`:

Example

```
$(document).ready(function(){
  $("h2").nextAll();
});
```

jQuery nextUntil() Method

The `nextUntil()` method returns all next sibling elements between two given arguments.

The following example returns all sibling elements between a `<h2>` and a `<h6>` element:

Example

```
$(document).ready(function(){
  $("h2").nextUntil("h6");
});
```

jQuery prev(), prevAll() & prevUntil() Methods

The `prev()`, `prevAll()` and `prevUntil()` methods work just like the methods above but with reverse functionality: they return previous sibling elements (traverse backwards along sibling elements in the DOM tree, instead of forward).

jQuery Traversing - Filtering

The first(), last(), eq(), filter() and not() Methods

The most basic filtering methods are `first()`, `last()` and `eq()`, which allow you to select a specific element based on its position in a group of elements.

Other filtering methods, like `filter()` and `not()` allow you to select elements that match, or do not match, a certain criteria.

jQuery first() Method

The `first()` method returns the first element of the specified elements.

The following example selects the first `<div>` element:

Example

```
$(document).ready(function(){
  $("div").first();
});
```

jQuery last() Method

The `last()` method returns the last element of the specified elements.

The following example selects the last `<div>` element:

Example

```
$(document).ready(function(){
  $("div").last();
});
```

jQuery eq() method

The `eq()` method returns an element with a specific index number of the selected elements.

The index numbers start at 0, so the first element will have the index number 0 and not 1. The following example selects the second `<p>` element (index number 1):

Example

```
$(document).ready(function(){
  $("p").eq(1);
});
```

jQuery filter() Method

The `filter()` method lets you specify a criteria. Elements that do not match the criteria are removed from the selection, and those that match will be returned.

The following example returns all `<p>` elements with class name "intro":

Example

```
$(document).ready(function(){
  $("p").filter(".intro");
});
```

jQuery not() Method

The `not()` method returns all elements that do not match the criteria.

Tip: The `not()` method is the opposite of `filter()`.

The following example returns all `<p>` elements that do not have class name "intro":

Example

```
$(document).ready(function(){
  $("p").not(".intro");
});
```

jQuery - AJAX Introduction

AJAX is the art of exchanging data with a server, and updating parts of a web page - without reloading the whole page.

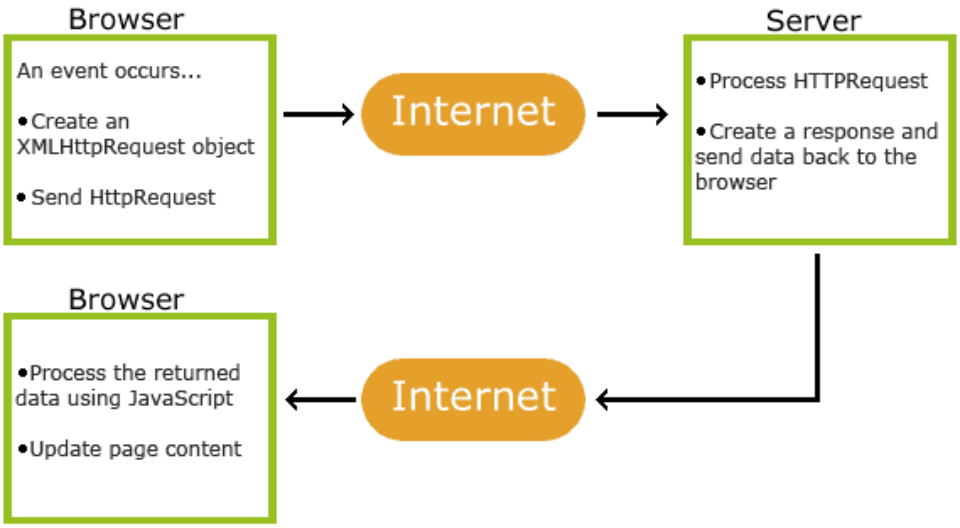
What is AJAX?

AJAX = Asynchronous JavaScript and XML.

In short; AJAX is about loading data in the background and display it on the webpage, without reloading the whole page.

Examples of applications using AJAX: Gmail, Google Maps, Youtube, and Facebook tabs.

How AJAX Works?



- 1. An event occurs in a web page (the page is loaded, a button is clicked)
- 2. An XMLHttpRequest object is created by JavaScript
- 3. The XMLHttpRequest object sends a request to a web server
- 4. The server processes the request
- 5. The server sends a response back to the web page
- 6. The response is read by JavaScript
- 7. Proper action (like page update) is performed by JavaScript

Note: AJAX is a technique for accessing web servers from a web page.

What About jQuery and AJAX?

jQuery provides several methods for AJAX functionality.

With the jQuery AJAX methods, you can request text, HTML, XML, or JSON from a remote server using both HTTP Get and HTTP Post - And you can load the external data directly into the selected HTML elements of your web page!

Without jQuery, AJAX coding can be a bit tricky!

Writing regular AJAX code can be a bit tricky, because different browsers have different syntax for AJAX implementation. This means that you will have to write extra code to test for different browsers. However, the

jQuery team has taken care of this for us, so that we can write AJAX functionality with only one single line of code.

jQuery - AJAX load() Method

jQuery load() Method

The jQuery `load()` method is a simple, but powerful AJAX method.

The `load()` method loads data from a server and puts the returned data into the selected element.

Syntax:

```
$(selector).load(URL,data,callback);
```

The required URL parameter specifies the URL you wish to load.

The optional data parameter specifies a set of querystring key/value pairs to send along with the request.

The optional callback parameter is the name of a function to be executed after the `load()` method is completed.

Here is the content of our example file: "demo_test.txt":

```
<h2>jQuery and AJAX is FUN!!!</h2>
<p id="p1">This is some text in a paragraph.</p>
```

The following example loads the content of the file "demo_test.txt" into a specific `<div>` element:

Example

```
$("#div1").load("demo_test.txt");
```

It is also possible to add a jQuery selector to the URL parameter.

The following example loads the content of the element with id="p1", inside the file "demo_test.txt", into a specific `<div>` element:

Example

```
$("#div1").load("demo_test.txt #p1");
```

The optional callback parameter specifies a callback function to run when the `load()` method is completed. The callback function can have different parameters:

- `responseTxt` - contains the resulting content if the call succeeds
- `statusTxt` - contains the status of the call
- `xhr` - contains the XMLHttpRequest object

The following example displays an alert box after the load() method completes. If the `load()` method has succeeded, it displays "External content loaded successfully!", and if it fails it displays an error message:

Example

```
$("button").click(function(){
  $("#div1").load("demo_test.txt", function(responseTxt, statusTxt, xhr){
    if(statusTxt == "success")
      alert("External content loaded successfully!");
    if(statusTxt == "error")
      alert("Error: " + xhr.status + ": " + xhr.statusText);
  });
});
```

jQuery - AJAX get() and post() Methods

The jQuery get() and post() methods are used to request data from the server with an HTTP GET or POST request.

HTTP Request: GET vs. POST

Two commonly used methods for a request-response between a client and server are: GET and POST.

- **GET** - Requests data from a specified resource
- **POST** - Submits data to be processed to a specified resource

GET is basically used for just getting (retrieving) some data from the server. **Note:** The GET method may return cached data.

POST can also be used to get some data from the server. However, the POST method NEVER caches data, and is often used to send data along with the request.

jQuery $.get() Method

The $.get() method requests data from the server with an HTTP GET request.

Syntax:

```
$.get(URL,callback);
```

The required URL parameter specifies the URL you wish to request.

The optional callback parameter is the name of a function to be executed if the request succeeds.

The following example uses the $.get() method to retrieve data from a file on the server:

```
$("button").click(function(){
  $.get("demo_test.asp", function(data, status){
    alert("Data: " + data + "\nStatus: " + status);
  });
});
```

he first parameter of $.get() is the URL we wish to request ("demo_test.asp").

The second parameter is a callback function. The first callback parameter holds the content of the page requested, and the second callback parameter holds the status of the request.

jQuery $.post() Method

The $.post() method requests data from the server using an HTTP POST request.

Syntax:

```
$.post(URL,data,callback);
```

The required URL parameter specifies the URL you wish to request.

The optional data parameter specifies some data to send along with the request.

The optional callback parameter is the name of a function to be executed if the request succeeds.

jQuery Misc

jQuery - The noConflict() Method

What if you wish to use other frameworks on your pages, while still using jQuery?

jQuery and Other JavaScript Frameworks

As you already know; jQuery uses the `$` sign as a shortcut for jQuery.

There are many other popular JavaScript frameworks like: Angular, Backbone, Ember, Knockout, and more.

What if other JavaScript frameworks also use the $ sign as a shortcut?

If two different frameworks are using the same shortcut, one of them might stop working.

The jQuery team have already thought about this, and implemented the `noConflict()` method.

The jQuery noConflict() Method

The `noConflict()` method releases the hold on the $ shortcut identifier, so that other scripts can use it.

You can of course still use jQuery, simply by writing the full name instead of the shortcut:

Example

```
$.noConflict();
jQuery(document).ready(function(){
  jQuery("button").click(function(){
    jQuery("p").text("jQuery is still working!");
  });
});
```

You can also create your own shortcut very easily. The noConflict() method returns a reference to jQuery, that you can save in a variable, for later use. Here is an example:

Example

```
var jq = $.noConflict();
jq(document).ready(function(){
  jq("button").click(function(){
    jq("p").text("jQuery is still working!");
  });
});
```

If you have a block of jQuery code which uses the $ shortcut and you do not want to change it all, you can pass the $ sign in as a parameter to the ready method. This allows you to access jQuery using $, inside this function - outside of it, you will have to use "jQuery":

Example

```
$.noConflict();
jQuery(document).ready(function($){
  $("button").click(function(){
    $("p").text("jQuery is still working!");
  });
});
```

jQuery - Filters

Use jQuery to filter/search for specific elements. Perform a case-insensitive search