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JQuery Introduction

- Fast and concise [JS library](#)
- Created by [John Resig](#) in 2006
- simplifies
 - HTML document traversing
 - event handling
 - Animation
 - Ajax interactions

What is JQuery?

- **DOM manipulation** – easy to select DOM elements, negotiate them and modify their content by using cross-browser open source selector engine called **Sizzle**.
- **Event handling** – offers an elegant way to capture events without the need to clutter the HTML code itself with event handlers.
- **AJAX Support** – helps to develop a responsive and feature rich site using AJAX technology

What is JQuery?

- **Animations** – comes with plenty of built-in animation effects
- **Lightweight** – The jQuery is very lightweight library – about 85KB in size
- **Cross Browser Support** – has cross-browser support, and works well in IE 6.0+, FF 2.0+, Safari 3.0+, Chrome and Opera 9.0+
- **Latest Technology** – supports CSS3 selectors and basic XPath syntax

How to use jQuery?

- **Local Installation** – You can download jQuery library on your local machine and include it in your HTML code
- **CDN Based Version** – You can include jQuery library into your HTML code directly from Content Delivery Network (CDN)

Local Installation

- Go to the <https://jquery.com/download/> to download the latest version available
- Now put downloaded **jquery-3.3.1.min.js** file in a directory of your website, e.g. /jquery

Call jQuery library function

```
$(document).ready(function() {  
    // do stuff when DOM is ready  
});
```

Example-1 (Local Installation)

```
<script src = "jquery/jquery-3.3.1.min.js"></script>
```

```
<script>  
    $(document).ready(function() {  
        document.write("Hello,World!");  
    });  
</script>
```

```
<body>  
    <h1>This statement will be overwritten</h1>  
</body>
```


Example-2 (CDN based version)

```
<script  
src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1  
/jquery.min.js"></script>
```

```
<script>  
    $(document).ready(function() {  
        document.write("Hello,World!");  
    });  
</script>
```

```
<body>  
    <h1>This statement will be overwritten</h1>  
</body>
```

jQuery Selectors (Ex. 1)

```
<script>
    $(document).ready(function() {
        $("p").css("background-color", "yellow");
    });
</script>
```

```
<body>
    <div>
        <p class = "myclass">This is a paragraph.</p>
        <p id      = "myid">    This is second paragraph.</p>
        <p>                This is third paragraph.</p>
    </div>
</body>
```

jQuery Selectors (Ex.1 Output)

This is a paragraph.

This is second paragraph.

This is third paragraph.

How to use Selectors?

Selector	Description
Name	Selects all elements which match with the given element Name .
#ID	Selects a single element which matches with the given ID .
.Class	Selects all elements which match with the given Class .
Universal (*)	Selects all elements available in a DOM.
Multiple Elements (E, F, G)	Selects the combined results of all the specified selectors E, F or G

Selectors Examples

Selector	Description
<code>\$("*")</code>	selects all elements in the document
<code>\$("p > *")</code>	selects all elements that are children of a paragraph element
<code>\$("#specialID")</code>	gets the element with id="specialID"
<code>\$("li:not(.myclass)")</code>	Selects all elements matched by that do not have class = "myclass"
<code>\$("a#specialID.specialClass")</code>	matches links with an id of <i>specialID</i> and a class of <i>specialClass</i>
<code>\$("p a.specialClass")</code>	matches links with a class of <i>specialClass</i> declared within <p> elements
<code>\$("ul li:first")</code>	gets only the first element of the

Get Attribute Value (Ex.)

```
<script>
    $(document).ready(function() {
        var title = $("em").attr("title");
        $("#divid").text(title);
    });
</script>
```

```
<div>
    <em title = "Bold and Brave">first paragraph.</em>
    <p id = "myid">This is second paragraph.</p>
    <div id = "divid"></div>
</div>
```

jQuery – Attributes (Ex. Output)

This is first paragraph.

This is second paragraph.

Bold and Brave

Set Attribute Value (Ex.)

```
<script>
    $(document).ready(function() {
        $("#myimg").attr("src", "images/jquery.png");
    });
</script>
```

```
<body>
    <div>
        <img id = "myimg" src = ""/>
    </div>
</body>
```


Set Attribute Value (Ex. Output)



Applying Styles (addClass)

- The **addClass(classes)** method can be used to apply defined style sheets onto all the matched elements.
- You can specify multiple classes separated by space.

Applying Styles (addClass)

```
<script>
    $(document).ready(function() {
        $("em").addClass("selected");
        $("#myid").addClass("highlight");
    });
</script>
```

```
<style>
    .selected { color:red; }
    .highlight { background:yellow; }
</style>
```

```
<body>
    <em title = "Bold and Brave">This is first paragraph.</em>
    <p id = "myid">This is second paragraph.</p>
</body>
```

Applying Styles (output)

This is first paragraph.

This is second paragraph.

DOM Traversing

- jQuery provides a variety of DOM traversal methods to help us select elements in a document *randomly* as well as in *sequential* method
- Most of the DOM Traversal Methods do not modify the jQuery object and they are used to filter out elements from a document based on given conditions

Find Elements by Index

```
<script>
    $(document).ready(function() {
        $("li").eq(2).addClass("selected");
    });
</script>
```

```
<style>        .selected { color:red; }        </style>
```

```
<div> <ul>
    <li>list item 1</li>        <li>list item 2</li>
    <li>list item 3</li>        <li>list item 4</li>
    <li>list item 5</li>        <li>list item 6</li>
</ul> </div>
```

Find Elements by Index (output)

- list item 1
- list item 2
- list item 3
- list item 4
- list item 5
- list item 6

Filtering out Elements

- The **filter(selector)** method can be used to filter out all elements from the set of matched elements that do not match the specified selector(s)

Filtering out Elements

```
<script>
    $(document).ready(function() {
        $("li").filter(".middle").addClass("selected");
    });
</script>
```

```
<style>    .selected { color:red; }    </style>
```

```
<div> <ul>
    <li class = "top">list item 1</li>
    <li class = "middle">list item 2</li>
    <li class = "bottom">list item 3</li>
</ul> </div>
```

Filtering out Elements (Output)

- list item 1
- list item 2
- list item 3

Filter(function) method

```
$(document).ready(function() {  
    $("li").filter(function (index) {  
        return (index == 1 ||  
                $(this).attr("class") == "bottom");  
    }).addClass("selected");  
});
```

```
<style>    .selected { color : red; }    </style>
```

```
<div> <ul>  
    <li class = "top">list item 1</li>  
    <li class = "middle">list item 2</li>  
    <li class = "bottom">list item 3</li>  
</ul> </div>
```

Filter(function) method

- list item 1
- list item 2
- list item 3

Locating Descendant Elements

```
<script>
    $(document).ready(function() {
        $("p").find("span").addClass("selected");
    });
</script>
```

```
<style>        .selected { color:red; }        </style>
```

```
<p>1st paragraph <span>THIS IS RED</span></p>
```

```
<p>2nd paragraph <span>THIS IS ALSO RED</span></p>
```

Locating Descendant Elements (Output)

1st paragraph THIS IS RED

2nd paragraph THIS IS ALSO RED

JQuery DOM Traversing Methods

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

```
<style>    .blue { color : blue; }    </style>
```

```
<div>  
    <span>Hello</span>  
    <p class = "selected">Hello Again</p>  
    <div class = "selected">And Again</div>  
    <p class = "biggest">And One Last Time</p>  
</div>
```

JQuery DOM Traversing Methods (output)

Hello

Hello Again

And Again

And One Last Time

CSS Selectors Methods

- The jQuery library **supports** nearly all of the **selectors** included in Cascading Style Sheet (**CSS**) specifications **1 through 3**, as outlined on the World Wide Web Consortium's site

Apply CSS Properties

```
$(document).ready(function() {  
    $("li").eq(2).css("color", "red");  
});
```

```
<div>  
    <ul>  
        <li>list item 1</li>  
        <li>list item 2</li>  
        <li>list item 3</li>  
        <li>list item 4</li>  
        <li>list item 5</li>  
        <li>list item 6</li>  
    </ul>  
</div>
```

Apply CSS Properties (output)

- list item 1
- list item 2
- list item 3
- list item 4
- list item 5
- list item 6

Apply Multiple CSS Properties

```
$(document).ready(function(){  
    $("li").eq(2).css({"color":"red",  
                        "background-color":"yellow"});  
});
```

```
<div> <ul>  
    <li>list item 1</li>  
    <li>list item 2</li>  
    <li>list item 3</li>  
    <li>list item 4</li>  
    <li>list item 5</li>  
    <li>list item 6</li>  
</ul> </div>
```

Apply Multiple CSS Properties (output)

- list item 1
- list item 2
- list item 3
- list item 4
- list item 5
- list item 6

Setting Element Width & Height

```
$("#div:first").width(100);
```

```
$("#div:first").css("background-color", "blue");
```

```
div {  
    width:70px; height:50px; float:left;  
    margin:5px; background:red; cursor:pointer;  
}
```

```
<div></div>
```

```
<div>d</div>
```

```
<div>d</div>
```

```
<div>d</div>
```

```
<div>d</div>
```

Setting Element Width & Height (Output)



DOM Manipulation

```
$("#div").click(function () {  
    var content = $(this).html();  
    $("#result").text( content );  
});
```

```
#division { margin:10px; padding:12px;  
            border:2px solid #666; width:60px;}
```

<p>Click on the square below:</p>

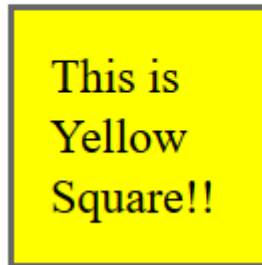
<div id = "division" style = "background-color:yellow;">

 This is Yellow Square!!

</div>

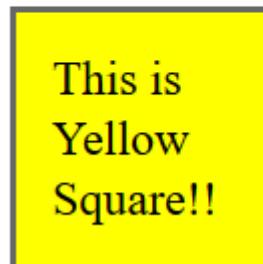
DOM Manipulation (Output)

Click on the square below:



Click on the square below:

This is Yellow Square!!



DOM Manipulation

```
$("#div").click(function () {  
    $(this).html("My content is changed!!!");  
});
```

```
#division { margin:10px; padding:12px;  
            border:2px solid #666; width:60px;}
```

```
<p>Click on the square below:</p>
```

```
<span id = "result"> </span>
```

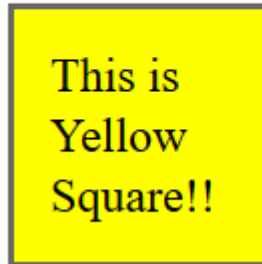
```
<div id = "division" style = "background-color:yellow;">
```

```
    This is Yellow Square!!
```

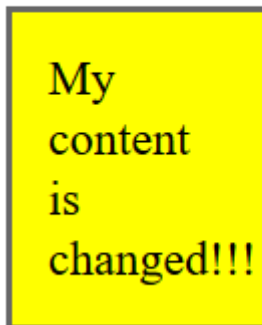
```
</div>
```

DOM Manipulation (Output)

Click on the square below:



Click on the square below:



DOM Element Replacement

```
$("#div").click(function () {  
    $(this).replaceWith("<h1>jQuery is Great</h1>");  
});
```

```
#division { margin:10px; padding:12px;  
            border:2px solid #666; width:60px;}
```

<p>Click on the square below:</p>

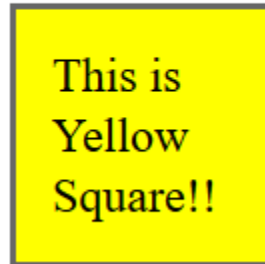
<div id = "division" style = "background-color:yellow;">

 This is Yellow Square!!

</div>

DOM Element Replacement (Output)

Click on the square below:



Click on the square below:

JQuery is Great

Removing DOM Elements

- The **empty()** method remove all child nodes from the set of matched elements
- The **remove([expr])** method removes all matched elements from the DOM

Removing DOM Elements

```
$("#div").click(function () {  
    $(this).remove( );  
});
```

```
.div { margin:10px;          padding:12px;  
        border:2px solid #666; width:60px;}
```

<p>Click on any square below:</p>

<div class = "div" style = "background-color:blue;"></div>

<div class = "div" style = "background-color:green;"></div>

<div class = "div" style = "background-color:red;"></div>

Removing DOM Elements (Output)

Click on any square below:



Click on any square below:



Click on any square below:



Inserting DOM Elements

- The **after(content)** method insert content after each of the matched elements
- The **before(content)** method inserts content before each of the matched elements

Inserting DOM Elements

```
$("#div").click(function () {  
    $(this).before('<div class="div"></div>');  
});
```

```
.div { margin:10px;           padding:12px;  
        border:2px solid #666; width:60px;}
```

<p>Click on any square below:</p>

<div class = "div" style = "background-color:blue;"></div>

<div class = "div" style = "background-color:green;"></div>

<div class = "div" style = "background-color:red;"></div>

Inserting DOM Elements (Output)

Click on any square below:



Click on any square below:



Click on any square below:



jQuery – Event Handling

- We can create dynamic web pages by using events
- Events are actions that can be detected by your Web Application.
- Examples events:
 - A mouse click
 - A web page loading
 - Taking mouse over an element
 - Submitting an HTML form
 - A keystroke on your keyboard, etc.

Binding Event Handlers

The full syntax of the bind() command :

```
selector.bind( eventType[, eventData], handler)
```

eventType – A string containing a JavaScript event type, such as click or submit

eventData – This is a map of data that will be passed to the event handler.

handler – A function to execute each time the event is triggered.

Binding Event Handlers

```
$('#div').bind('click', function( event ){  
    alert('Hi there!');  
});
```

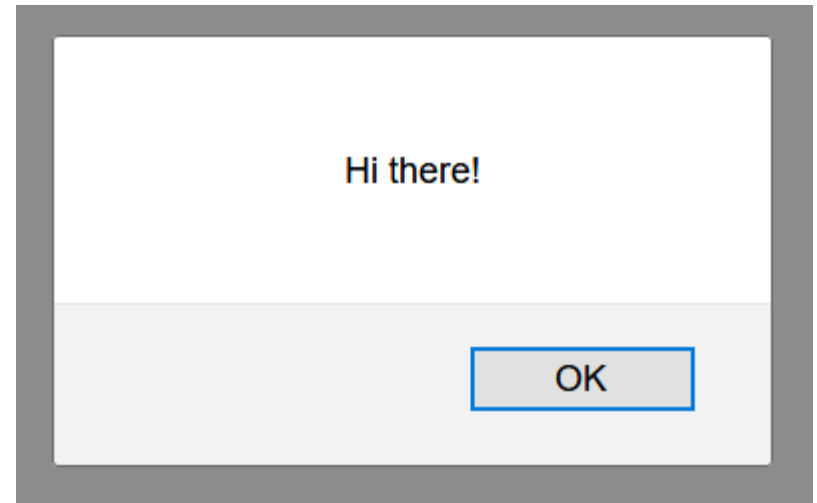
```
.div { margin:10px;           padding:12px;  
        border:2px solid #666; width:60px;}
```

<p>Click on any square below:</p>

```
<div class = "div" style = "background-color:blue;">1</div>  
<div class = "div" style="background-color:green;">2</div>  
<div class = "div" style = "background-color:red;">3</div>
```

Binding Event Handlers (Output)

Click on any square below:



The Event Object & its Attributes

- The callback function takes a single parameter; (the JavaScript event object)
- The event object is often unnecessary and the parameter is omitted
- There are certain attributes which you can access

The Event Object & its Attributes

```
$('#div').bind('click', function( event ){  
    console.log('Event type is ' + event.type);  
    console.log ('pageX : ' + event.pageX);  
    console.log ('pageY : ' + event.pageY);  
    console.log ('Target : ' + event.target.innerHTML);  
});
```

```
.div { margin:10px; padding:12px;  
    border:2px solid #666; width:60px;}
```

<p>Click on any square below:</p>

```
<div class = "div" style = "background-color:blue;">1</div>  
<div class = "div" style="background-color:green;">2</div>  
<div class = "div" style = "background-color:red;">3</div>
```

Removing Event Handlers (Output)

Click on any square below:



Event type is click

pageX : 47

pageY : 73

Target : 1

Event type is click

pageX : 67

pageY : 129

Target : 2

Event type is click

pageX : 66

pageY : 189

Target : 3

jQuery - AJAX

- **load()** method to load any static or dynamic data using AJAX
`[selector].load(URL, [data], [callback]);`
- **URL** – The URL of the server-side resource to which the request is sent
- **data** – This is an object whose properties are serialized into properly encoded parameters to be passed to the request. If specified, the request is made using the **POST** method. If omitted, the **GET** method is used
- **callback** – A callback function invoked after the response data has been loaded into the elements of the matched set. The first parameter passed to this function is the **response text** received from the server and second parameter is the **status code**

Loading Simple Data

```
$("#driver").click(function(event){  
    $('#stage').load('result.html');  
});
```

<p>Click on the button to load result.html file</p>

<div id = "stage" style = "background-color:cc0;">

STAGE

</div>

<input type = "button" id = "driver" value = "Load Data" />

Loading Simple Data (Output)

Click on the button to load result.html file

STAGE

Load Data

Click on the button to load result.html file

This is the result...

Load Data

Getting JSON Data

`[selector].getJSON(URL, [data], [callback]);`

- **URL** – The URL of the server-side resource contacted via the GET method.
- **data** – An object whose properties serve as the name/value pairs used to construct a query string to be appended to the URL, or a preformatted and encoded query string
- **callback** – A function invoked when the request completes. The data value resulting from digesting the response body as a JSON string is passed as the first parameter to this callback, and the status as the second.

Getting JSON Data

```
$("#driver").click(function(event) {  
    $.getJSON('result.json', function(jd) {  
        $('#stage').html('<p> Name: ' + jd.name + '</p>');  
        $('#stage').append('<p>Age : ' + jd.age+ '</p>');  
        $('#stage').append('<p> Gender: ' + jd.gender+ '</p>');  
    });  
});
```

<p>Click on the button to load result.json file</p>

<div id = "stage" style = "background-color : #cc0;">

STAGE

</div>

<input type = "button" id = "driver" value = "Load Data" />

Getting JSON Data (Output)

Click on the button to load result.json file

STAGE

Load Data

Click on the button to load result.json file

Name: Mahesh Patel

Age : 22

Gender: male

Load Data

Effects – Show and Hide Elements

```
[selector].show( speed, [callback] )  
[selector].hide( speed, [callback] )
```

- **speed** – A string ("slow", "normal", or "fast") or the number of milliseconds to run the animation (e.g. 1000)
- **callback** – a function to be executed whenever the animation completes; executes once for each element animated against.

Effects – Show and Hide Elements

```
$("#show").click(function () {  
    $(".mydiv").show( 1000 );  
});  
$("#hide").click(function () {  
    $(".mydiv").hide( 1000 );  
});
```

```
.mydiv {      margin:10px;    padding:12px;  
    border:2px solid #666; width:100px; height:100px; }
```

```
<div class = "mydiv">  
    This is a SQUARE
```

```
</div>
```

```
<input id = "hide" type = "button" value = "Hide" />
```

```
<input id = "show" type = "button" value = "Show" />
```

Effects – Show and Hide Elements (Output)

Toggling the Elements

- jQuery provides methods to toggle the display state of elements between revealed or hidden.
- If the element is initially displayed, it will be hidden; if hidden, it will be shown

```
[selector].toggle([speed][, callback]);
```

Toggling the Elements

```
$(".clickme").click(function(event){  
    $(".target").toggle('slow', function(){  
        $(".log").text('Transition Complete');  
    });  
});
```

```
.clickme { margin:10px; padding:12px; width:100px;  
border:2px solid #666; height:50px; }
```

```
<div class = "content">  
    <div class = "clickme">Click Me</div>  
    <div class = "target">  
        <img src = "./images/jquery.png" alt = "jQuery" />  
    </div>  
    <div class = "log"></div>  
</div>
```

Effects – Show and Hide Elements (Output)



References

- <https://www.tutorialspoint.com/jquery/>