

SOEN 387

WEB-BASED ENTERPRISE

APPLICATIONS DESIGN

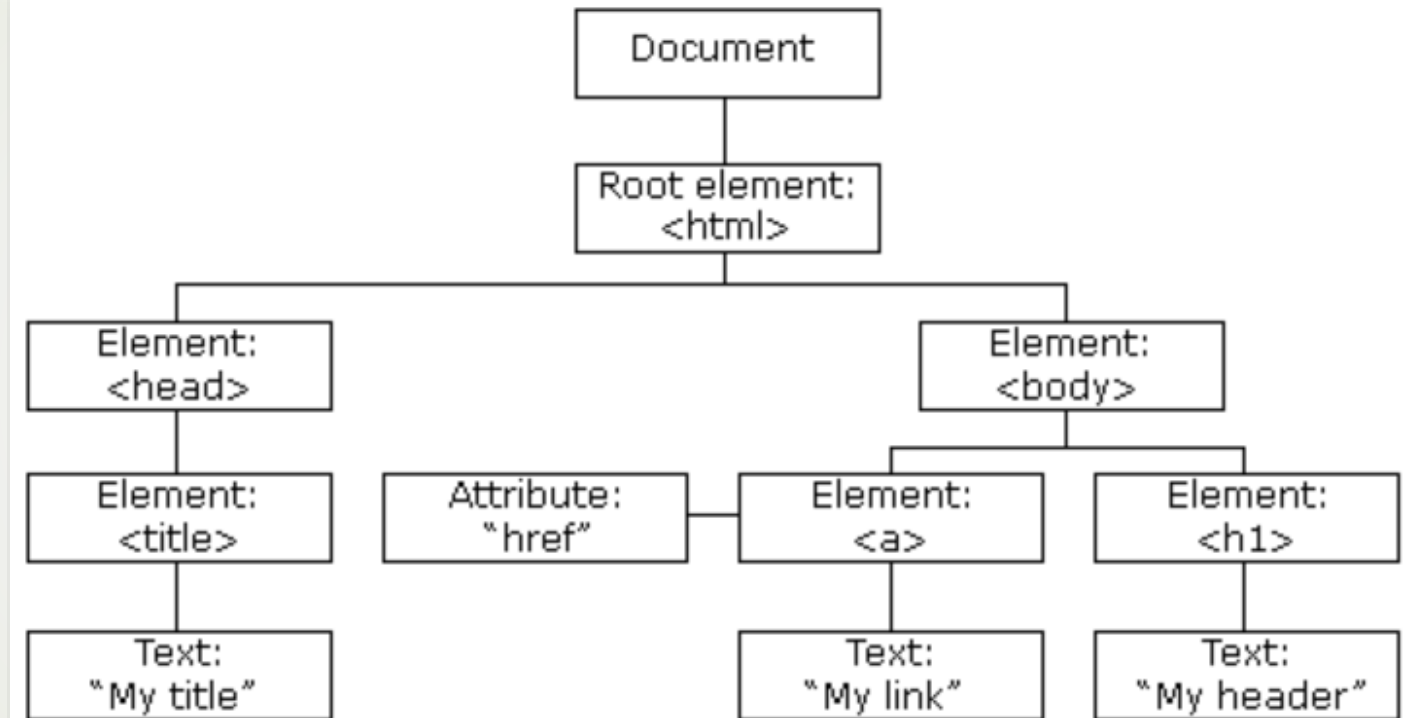
TUTORIAL – 9

DOM & JQUERY

DOM Nodes

Everything in an HTML document is a node

- The entire document is a document node
- Every HTML element is an element node
- The text inside HTML elements are text nodes
- Every HTML attribute is an attribute node (deprecated)
- All comments are comment nodes



DOM Methods with Examples

Example 1. Finding Element by ClassName

- `var x = document.getElementsByClassName("test");`

Example 2. Finding Element by Id

- `var myElement = document.getElementById("test");`

Example 3. Finding Element by TagName

- `var x = document.getElementsByTagName("p");`

Example 4. Finding Element by CSS selector

- `var x = document.querySelectorAll("p.intro");`

Example 1

For finding element by Id and Tagname

```
<!DOCTYPE html>
<html>
<body>

<h2>DOM Method</h2>

<p id="name"></p>

<script>
document.getElementById("name").innerHTML =
"Setting inner text for paragraph with id=name";
</script>

<p id="name2"></p>
<script>
var x = document.getElementsByTagName("h2");
document.getElementById("name2").innerHTML =
'The text in first paragraph (index 0) is: ' + x[0].innerHTML;
</script>

</body>
</html>
```

DOM Method

Setting inner text for paragraph with id=name

The text in first paragraph (index 0) is: DOM Method

DOM Events

Examples of HTML events:

- When a user clicks the mouse
- When a web page has loaded
- When an image has been loaded
- When the mouse moves over an element
- When an input field is changed
- When an HTML form is submitted
- When a user strokes a key

Example 2

Display date on clicking time button

```
<!DOCTYPE html>
<html>
<body>

<p>Click the button to display the date.</p>

<button onclick="displayDate()">The time is?</button>

<script>
function displayDate() {
    document.getElementById("demo").innerHTML = Date();
}
</script>

<p id="demo"></p>

</body>
</html>
```

Click the button to display the date.

The time is?

Once you click here

Click the button to display the date.

The time is?

Thu Oct 31 2019 00:15:35 GMT-0400 (Eastern Daylight Time)

Example 3

Event Listener

method attaches an event handler to the specified element.

1. Use **addEventListener()** method to display date when user clicks myBtn

```
document.getElementById("myBtn").addEventListener("click", displayDate);
```

2. Use **addEventListener()** method to Alert "Hello World!" when the user clicks on an element:

```
element.addEventListener("click", function(){ alert("Hello World!"); });
```

Example 4

```
<!DOCTYPE html>
```

```
<html>
```

```
<body>
```

```
<h2>Lets learn EventListener</h2>
```

```
<p>This example uses the addEventListener() method to attach  
a click event to a button.</p>
```

```
<button id="myBtn">Try it</button>
```

```
<script>
```

```
document.getElementById("myBtn").addEventListener("click",  
function() {  
    alert("Tutorial for SOEN 387!");  
});
```

```
</script>
```

```
</body>
```

```
</html>
```

**Alert will be displayed
On top of web browser**

Lets learn EventListener

This example uses the addEventListener() method to attach a click event to a button.

Try it

Once you click here

An embedded page on this page says

Tutorial for SOEN 387!

OK

Navigation

For Navigation between nodes, the following node properties to navigate are used:

- parentNode
- childNodes[nodenummer]
- firstChild:
- lastChild
- nextSibling
- previousSibling

Example 5 Learning Navigation in DOM

```
<!DOCTYPE html>  
<html>  
<body>
```

```
<h1 id="id01">Learning Navigation in DOM</h1>  
<p id="id02"></p>
```

```
<script>  
document.getElementById("id02").innerHTML =  
document.getElementById("id01").firstChild.nodeValue;  
</script>
```

```
</body>  
</html>
```

Learning Navigation in DOM

Learning Navigation in DOM

Accessing DOM

```
<html>
  <head>
    <script>
      // run this function when the document is loaded
      window.onload = function() {

        // create a couple of elements in an otherwise empty HTML
        page
        var heading = document.createElement("h2");
        var heading_text = document.createTextNode("We are adding
text in DOM!");
        heading.appendChild(heading_text);
        document.body.appendChild(heading);
      }
    </script>
  </head>
  <body>
  </body>
</html>
```

We are adding text in DOM!

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Example 6

Accessing first child node

```
Option 1) var myTitle =  
document.getElementById("demo").firstChild.nodeValue;
```

```
Option 2) var myTitle =  
document.getElementById("demo").childNodes[0].nodeValue;
```

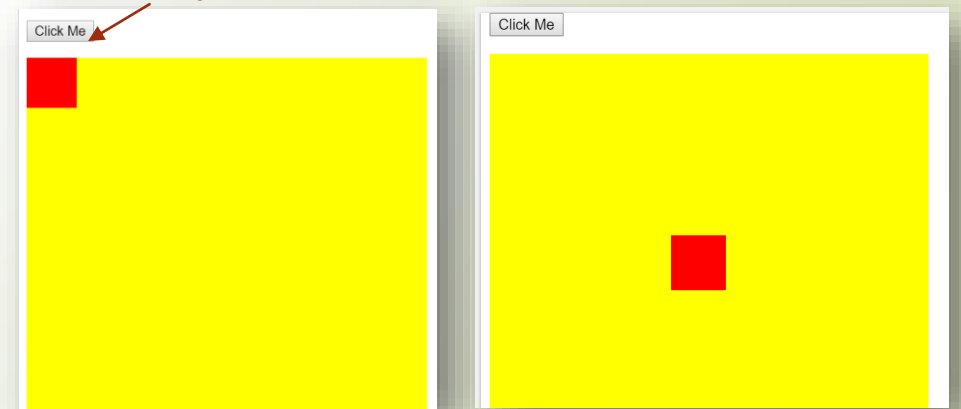
Example 7

DOM Animation for moving square

```
<!DOCTYPE html>
<html>
<style>
#container {
  width: 400px;
  height: 400px;
  position: relative;
  background: yellow;
}
#animate {
  width: 50px;
  height: 50px;
  position: absolute;
  background-color: red;
}
</style>
<body>
<p><button onclick="myMove()">Click Me
</button></p>
<div id ="container">
  <div id ="animate"></div>
</div>
```

```
<script>
function myMove() {
  var elem = document.getElementById("animate");
  var pos = 0;
  var id = setInterval(frame, 5);
  function frame() {
    if (pos == 350) {
      clearInterval(id);
    } else {
      pos++;
      elem.style.top = pos + "px";
      elem.style.left = pos + "px";
    }
  }
}
</script>
</body>
</html>
```

Once you click here



jQuery

It's a Document Object Model (DOM) manipulation library.

Referenced with HTML **<script>** tag inside head section

Download the jQuery library from [jQuery.com](http://jquery.com)

jQuery Syntax

It **selects** HTML elements and performs some **action** on the element(s).

- Basic syntax is: **`$(selector).action()`**
- A \$ sign to access jQuery
- A (selector) to "find" HTML elements
- A jQuery *action()* to be performed on the element(s)

jQuery methods are inside a document ready event to prevent any jQuery code from running before the document is finished loading

```
$(document).ready(function(){  
    // jQuery methods go here...  
});
```


Exercise 1

Simple jQuery

Q) Use the correct selector to hide all odd table rows in a table.

Solution) `$("tr:odd").hide();`

Q) How can we show all the elements with an href attribute.

Solution) `$("[href]").show();`

Q) How to hide all elements in the document

Solution) `$("[*]").hide();`

Q) How to display div tag with id =div1 for appearing in fade effect

Solution) `$("#div1").fadeIn();`

Q) How to remove an element with id=UserEmail

Solution) `<script>$(document).ready(function() {
 $("#UserEmail").remove(); }); </script>`

Exercise 2

- Write jQuery in jsp page with 2 buttons named "Hide" and "Show". When user clicks the hide button, all the "p" tags are hide and when user clicks the show button, then all "p" tags are visible again

If you click on the "Hide" button, I will disappear.

Hide

Show

```
<!DOCTYPE html>
<html>
<head>
<script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js">
</script>
<script>
$(document).ready(function(){
    $("#hide").click(function(){
        $("p").hide();
    });
    $("#show").click(function(){
        $("p").show();
    });
});
</script>
</head>
<body>
```

method allows us to execute a function when the document is fully loaded.

```
<p>If you click on the "Hide" button, I will disappear.</p>
```

```
<button id="hide">Hide</button>
<button id="show">Show</button>
```

```
</body>
</html>
```

Exercise 3

- Write jQuery in jsp page with a toggle button to hide and show the paragraph once toggle button is clicked and toggle functionality is triggered for the user

Its a Toggle Button

Welcome to tutorial class!!

We are learning jQuery in SOEN 387.

Its a Toggle Button

```
<!DOCTYPE html>
<html>
<head>
<script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"
></script>
<script>
$(document).ready(function(){
  $("button").click(function(){
    $("p").toggle();
  });
});
</script>
</head>
<body>

<button>Its a Toggle Button </button>

<p>Welcome to tutorial class!!</p>
<p>We are learning jQuery in SOEN 387.</p>

</body>
</html>
```

toggle between hiding and showing an element

Exercise 4

jQuery Animation

```

<html>
<head>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
<script>
$(document).ready(function(){
  $("button").click(function(){
    $("div").animate({left: '250px'});
  });
});
</script>
</head>
<body>

<button>Start Animation</button>

<p>HTML elements have a static position by default, and cannot be moved. To manipulate
the position, we are firstly setting the CSS position property of the element to relative, fixed, or
absolute!</p>
<div style="background:#98bf21;height:100px;width:100px;position:absolute;"></div>

</body>
</html>

```

Start Animation

HTML elements have a static position by default, and cannot be moved. To manipulate the position, we are firstly setting the CSS position property of the element to relative, fixed, or absolute!



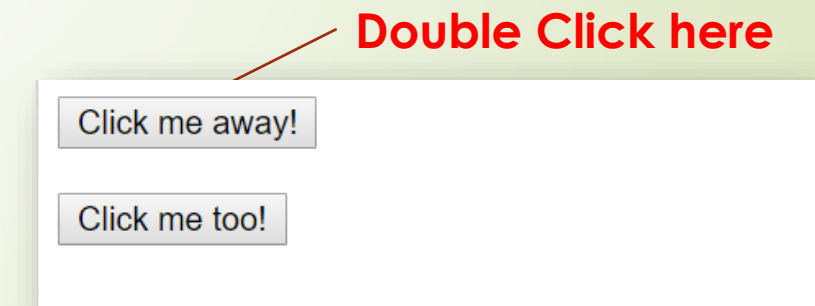
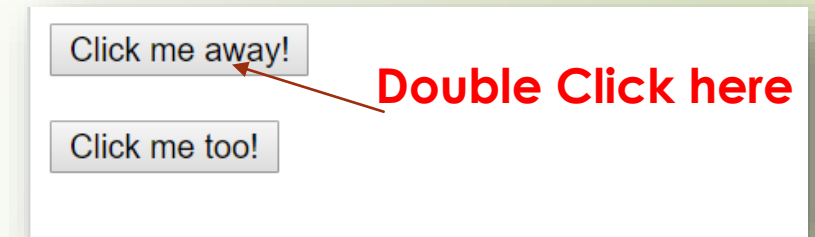
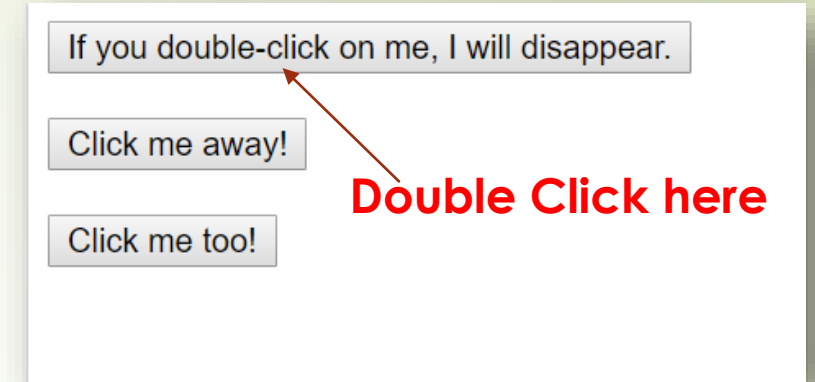
Exercise 5

jQuery Events

Create 3 buttons in jsp page and double click them to make them hide.

```
<script src=
"https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js">
</script>
<script>
    $(document).ready(function(){
        $("button").dblclick(function(){
            $(this).hide();
        });
    });
</script>

<body>
    <button>If you double-click on me, I will
    disappear.</button><br><br>
    <button>Click me away!</button><br><br>
    <button>Click me too!</button><br><br>
</body>
```



In class Exercise

- Create a jsp to select a value from a dropdown and to display it in various sections.
- Hint: Use document ready

Learning jQuery dropdown box

-- Select -- ▼

Display Selected

Select China

Select Malaysia


```

<html>
<head>
<title>Learning jQuery dropdown box</title>

<script type="text/javascript" src="jquery-1.3.2.min.js">
</script>

</head>
<body>
<h1>Learning jQuery dropdown box</h1>
<script type="text/javascript">
$(document).ready(function(){

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

        alert($('#country').val());

    });
    $("#selectChina").click(function () {

        $("#country").val("China");
    });
    $("#selectMalaysia").click(function () {
        $("#country").val("Malaysia");
    });
});
</script>

```

```

</head><body>

```

```

<select id="country">
<option value="None">-- Select --</option>
<option value="China">China</option>
<option value="Malaysia">Malaysia</option>
</select>

```

```

<br/>
<br/>
<br/>

```

```

<input type='button' value='Display Selected' id='isSelect'>
<input type='button' value='Select China' id='selectChina'>

```

```

<input type='button' value='Select Malaysia' id='selectMalaysia'>

```

```

</body>
</html>

```


Related Technologies

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- jQueryUI -> User interface interactions, effects, widgets, and themes built on top of the jQuery JavaScript Library.
- React -> JavaScript library for building user interface
- AngularJS -> JavaScript-based open-source front-end web framework
- Bootstrap -> Open-source CSS framework directed at responsive, mobile-first front-end web development.
- Node.js -> Open-source, cross-platform, JavaScript runtime environment that executes JavaScript code outside of a browser

Technologies Encapsulating the Frontend



References

- https://www.w3schools.com/js/js_htmlDOM.asp
- <https://jquery.com>
- https://www.w3schools.com/jquery/jquery_syntax.asp