

Javascript & the Data Object Model

1. OBJECTIVES

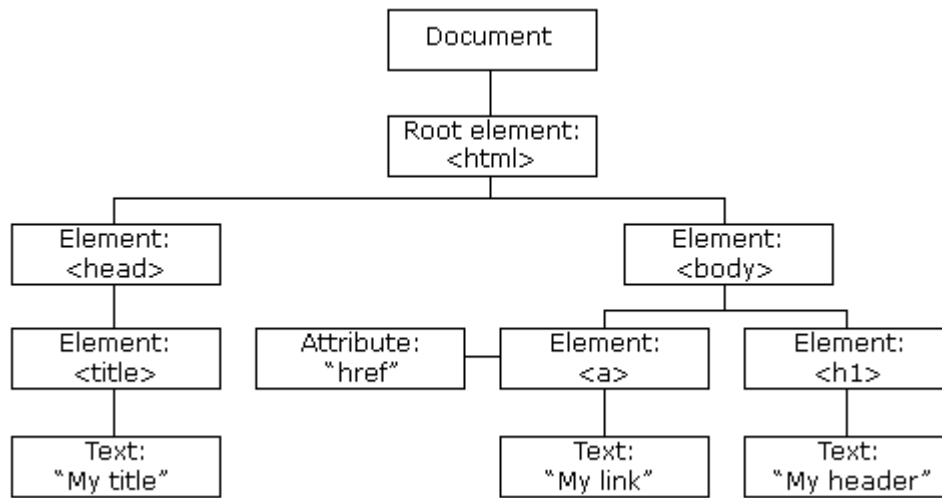
At the end of the session, the student should be able to:

- define what DOM is;
- identify some DOM objects; and
- use DOM to manipulate their documents.

2. DISCUSSION

What is the HTML DOM?

- In order to do modify and restructure an HTML document (add, remove, change or re-order), we need to access all the elements in the document. And this access is made possible by the HTML DOM.
- The HTML Document Object Model (HTML DOM) defines a standard way for accessing and manipulating HTML documents.
- The DOM presents an HTML document as a **tree-structure** (a node tree), with **elements**, **attributes**, and **text**.



DOM Nodes

- The entire document is a **document node**
- Every HTML tag is an **element node**
- The texts contained in the HTML elements are **text nodes**
- Every HTML attribute is an **attribute node**
- Comments are **comment nodes**
- These nodes have an hierarchical relationship with each other. See diagram above.
- You will see that all nodes have relationships with each other.
- A node can either be a **parent**, **child** or a **sibling** of another.
- Some of the nodes can also have **ancestors** or **descendants**.

An Example

- Try to translate this code into its corresponding document-tree.

```
<html>
  <head>
    <title>DOM Tutorial</title>
  </head>
  <body>
    <h1>DOM Lesson one</h1>
    <p>Hello world!</p>
  </body>
</html>
```

Node Information

- every node has some properties that contain some information about the node. The properties are:
 - nodeName
 - nodeValue
 - nodeType

Node Access

- We can access the nodes of the document using two methods:

getElementById()

- this method returns the element with the specified ID
- SYNTAX: `document.getElementById("someID")`

Example:
use the getElementById to

1. change the value of a textField
2. change the background color
3. change the table color

• **getElementsByTagName()**

- this method returns all elements (as a nodeList) with the specified tag name that are descendants of the element you are on when using this method.
- The getElementsByTagName() can be used on any HTML element, and also on the document object
- SYNTAX: `document.getElementsByTagName("tagname")` ;
- When working with a nodeList, we usually store it in an array.
`var x=document.getElementsByTagName("p")` ;
- now the variable x contains the nodeList and can be treated like an ordinary array.
`var y=x[0]` //y now contains the 1st element in the nodeList

Example:

1. change the alignment of all paragraphs
2. change the row colors of a table (alternating).

• **parentNode, firstChild, lastChild**

- we can also use these 3 properties to access the parentNode, firstChild and the lastChild of a specific node
- An example of firstChild (usually used to get the text values):

```
var x=[a paragraph];
var text=x.firstChild.nodeValue;
```

- An example of parentNode:

```
var x=document.getElementById("maindiv");
x.parentNode.removeChild(x);
```

A Sample DOM Program

```
<html>
<head>
<script type="text/javascript">
function ChangeColor()
{
document.body.bgColor="yellow"
}
</script>
</head>

<body onclick="ChangeColor()">
Click on this document!
```

```
</body>
```

```
</html>
```

3. EXERCISE

Small Exercises:

1. Alternating Colors
2. Random Background onLoad

Clarifications:

1. *Use of Comments*

```
<!--  
//-->
```

2. *Use of **document** in form validation*
document.formName.elementName...

3. *Form Validation*

```
onSubmit = "return validate()"  
function validate(){  
  //return true;  
  //return false;  
}
```

```
<html>  
<head>
```

```

<script type="text/javascript">
<!--

function ChangeColor(){

//change background color
document.body.bgColor="yellow"

//change textfield value
document.getElementById("myText1").value="Linux"

//change table color
var myT = document.getElementById("myTable")
myT.bgColor="cyan"

//change alignment using getElementsByTagName
var x = document.getElementsByTagName("p")
x[0].align = "center"
x[1].align = "right"

//change the row color
var rows = document.getElementById("myTable").getElementsByTagName("tr")

for(i=0; i < rows.length; i++){
    if ((i % 2) == 0)
        rows[i].bgColor="lightgreen"
}

//change the value of a cell
var cols = new Array()
cols[0] = rows[0].getElementsByTagName("td")
cols[0][0].firstChild.nodeValue = "duh!"

//alert the value of a text node
alert(cols[0][0].firstChild.nodeValue)

//remove a node
rows[0].parentNode.removeChild(rows[0])

}

//-->
</script>
</head>

<body onclick="ChangeColor()">
Click on this document!

<p text="red" align="right">This is a paragraph</p>
<p align="left">This is another paragraph</p>

<input type="text" id="myText1" value="Bubu">

<table border="1" id="myTable" bgColor="blue">
    <tr>
        <td> Hello World! Philippines </td>
        <td> World </td>
    </tr>
    <tr>
        <td> Hello World! Philippines </td>
        <td> World </td>
    </tr>
</table>
</body>

</html>

```