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About the Tutorial

The **D**ocument **O**bject **M**odel (DOM) is a W3C standard. It defines a standard for accessing documents like HTML and XML.

This tutorial will teach you the basics of XML DOM. The tutorial is divided into sections such as XML DOM Basics, XML DOM Operations and XML DOM Objects. Each of these sections contain related topics with simple and useful examples.

Audience

This reference has been prepared for the beginners to help them understand the basic-to-advanced concepts related to XML DOM. This tutorial will give you enough understanding on XML DOM from where you can take yourself to a higher level of expertise.

Prerequisites

Before proceeding with this tutorial you should have basic knowledge of XML, HTML and Javascript.

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Table of Contents

1. XML DOM – Overview

The **D**ocument **O**bject **M**odel (DOM) is a W3C standard. It defines a standard for accessing documents like HTML and XML.

Definition of DOM as put by the W3C is:

> The Document Object Model (DOM) is an application programming interface (API) for HTML and XML documents. It defines the logical structure of documents and the way a document is accessed and manipulated.

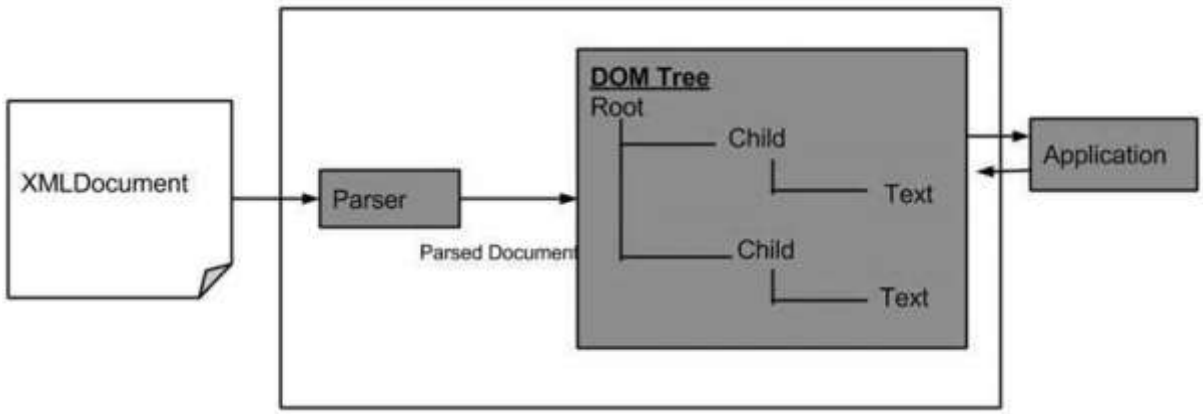
DOM defines the objects and properties and methods (interface) to access all XML elements. It is separated into 3 different parts / levels:

- **Core DOM** - standard model for any structured document
- **XML DOM** - standard model for XML documents
- **HTML DOM** - standard model for HTML documents

XML DOM is a standard object model for XML. XML documents have a hierarchy of informational units called *nodes*; DOM is a standard programming interface of describing those nodes and the relationships between them.

As XML DOM also provides an API that allows a developer to add, edit, move or remove nodes at any point on the tree in order to create an application.

Following is the diagram for the DOM structure. The diagram depicts that parser evaluates an XML document as a DOM structure by traversing through each node.



Advantages of XML DOM

The following are the advantages of XML DOM.

- XML DOM is language and platform independent.
- XML DOM is **traversable** - Information in XML DOM is organized in a hierarchy which allows developer to navigate around the hierarchy looking for specific information.

- XML DOM is **modifiable** - It is dynamic in nature providing the developer a scope to add, edit, move or remove nodes at any point on the tree.

Disadvantages of XML DOM

- It consumes more memory (if the XML structure is large) as program written once remains in memory all the time until and unless removed explicitly.

- Due to the extensive usage of memory, its operational speed compared to SAX is slower.

2. XML DOM — Model

Now that we know what DOM means, let's see what a DOM structure is. A DOM document is a collection of *nodes* or pieces of information, organized in a hierarchy. Some types of *nodes* may have *child* nodes of various types and others are leaf nodes that cannot have anything under them in the document structure. Following is a list of the node types, with a list of node types that they may have as children:

- ***Document --*** Element (maximum of one), ProcessingInstruction, Comment, DocumentType (maximum of one)
- ***DocumentFragment --*** Element, ProcessingInstruction, Comment, Text, CDATASection, EntityReference
- ***EntityReference --*** Element, ProcessingInstruction, Comment, Text, CDATASection, EntityReference
- ***Element --*** Element, Text, Comment, ProcessingInstruction, CDATASection, EntityReference
- ***Attr --*** Text, EntityReference
- ***ProcessingInstruction --*** No children
- ***Comment --*** No children
- ***Text --*** No children
- ***CDATASection --*** No children
- ***Entity --*** Element, ProcessingInstruction, Comment, Text, CDATASection, EntityReference
- ***Notation --*** No children

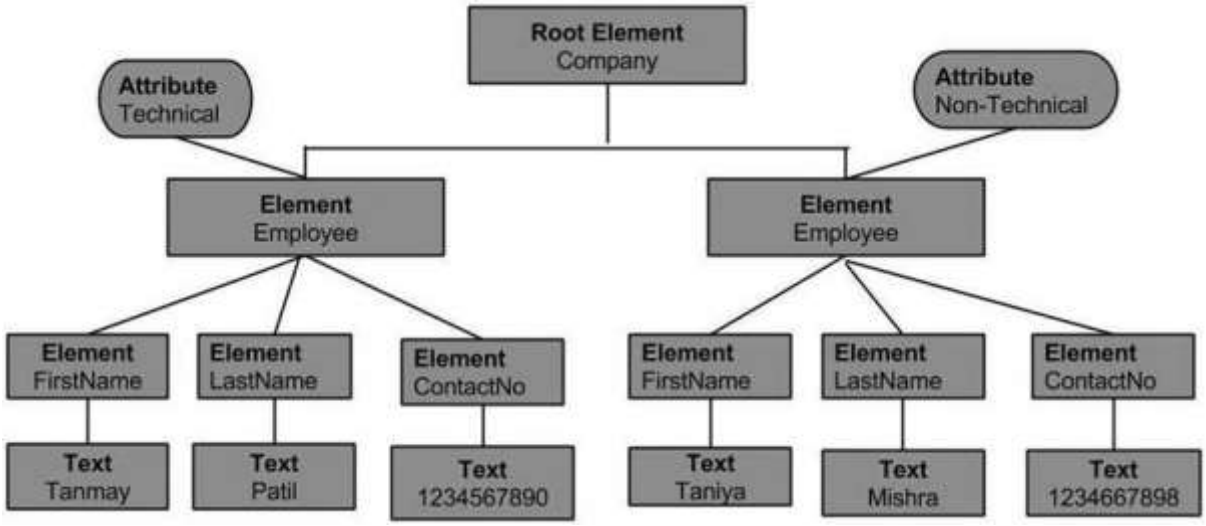
Example

Consider the DOM representation of the following XML document **node.xml**.

```
<?xml version="1.0"?>
<Company>
   <Employee category="technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
   </Employee>
   <Employee category="non-technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
```

```
      <ContactNo>1234667898</ContactNo>
   </Employee>
</Company>
```

The Document Object Model of the above XML document would be as follows:



From the above flowchart, we can infer:

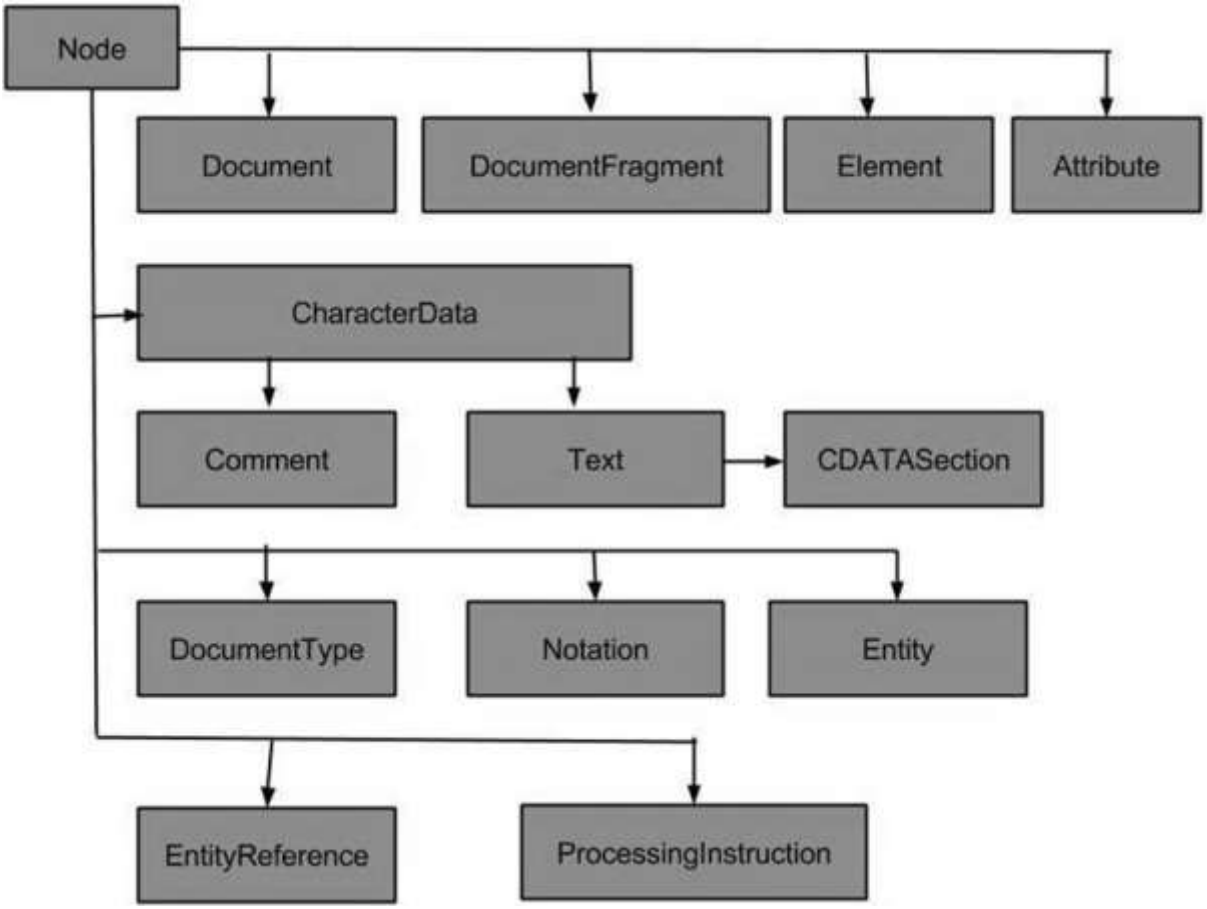
- *Node* object can have only one *parent node* object. This occupies the position above all the nodes. Here it is *Company*.
- The *parent node* can have multiple nodes called the *child* nodes. These *child* nodes can have additional nodes called the *attribute* nodes. In the above example, we have two attribute nodes — *Technical* and *Non-technical*. The *attribute* node is not actually a child of the element node, but is still associated with it.
- These *child* nodes in turn can have multiple child nodes. The text within the nodes is called the *text* node.
- The node objects at the same level are called as siblings.
- The DOM identifies:
    - the objects to represent the interface and manipulate the document.
    - the relationship among the objects and interfaces.

3. XML DOM — Nodes

In this chapter we will study about the XML DOM *Nodes*. Every XML DOM contains the information in hierarchical units called *Nodes* and the DOM describes these nodes and the relationship between them.

Node Types

The following flowchart shows all the node types:



The most common types of nodes in XML are:

- **Document Node:** Complete XML document structure is a *document node*.
- **Element Node:** Every XML element is an *element node*. This is also the only type of node that can have attributes.
- **Attribute Node:** Each attribute is considered an *attribute node*. It contains information about an element node, but is not actually considered to be children of the element.
- **Text Node:** The document texts are considered as *text node*. It can consist of more information or just white space.

Some less common types of nodes are:

- **CData Node:** This node contains information that should not be analyzed by the parser. Instead, it should just be passed on as plain text.
- **Comment Node:** This node includes information about the data, and is usually ignored by the application.
- **Processing Instructions Node:** This node contains information specifically aimed at the application.
- **Document Fragments Node**
- **Entities Node**
- **Entity reference nodes**
- **Notations Node**

4. XML DOM — Node Tree

In this chapter, we will study about the XML DOM *Node Tree.* In an XML document, the information is maintained in hierarchical structure; this hierarchical structure is referred to as the *Node Tree*. This hierarchy allows a developer to navigate around the tree looking for specific information, thus nodes are allowed to access. The content of these nodes can then be updated.

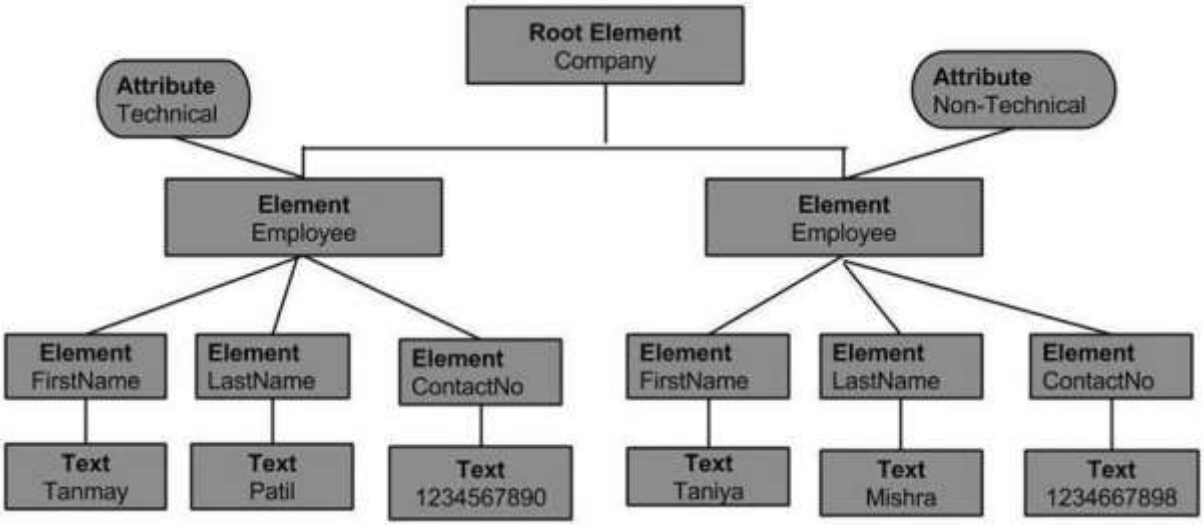
The structure of the node tree begins with the root element and spreads out to the child elements till the lowest level.

Example

Following example demonstrates a simple XML document, whose node tree is structure is shown in the diagram below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
   </Employee>
</Company>
```

As can be seen in the above example whose pictorial representation (of its DOM) is as shown below:



- The topmost node of a tree is called the **root**. The **root** node is <Company> which in turn contains the two nodes of <Employee>. These nodes are referred to as child nodes.
- The child node <Employee> of root node <Company>, in turn consists of its own child node (<FirstName>, <LastName>, <ContactNo>).
- The two child nodes, <Employee> have attribute values Technical and Non-Technical, are referred as *attribute nodes.*
- The text within every node is called the *text node*.

5. XML DOM – Methods

DOM as an API contains interfaces that represent different types of information that can be found in an XML document, such as elements and text. These interfaces include the methods and properties necessary to work with these objects. Properties define the characteristic of the node whereas methods give the way to manipulate the nodes.

Following table lists the DOM classes and interfaces:

Interface	Description
DOMImplementation	It provides a number of methods for performing operations that are independent of any particular instance of the document object model.
DocumentFragment	It is the "lightweight" or "minimal" document object, and it (as the superclass of Document) anchors the XML/HTML tree in a full-fledged document.
Document	It represents the XML document's top-level node, which provides access to all the nodes in the document, including the root element.
Node	It represents XML node.
NodeList	It represents a read-only list of *Node* objects.
NamedNodeMap	It represents collections of nodes that can be accessed by name.
Data	It extends *Node* with a set of attributes and methods for accessing character data in the DOM.
Attribute	It represents an attribute in an Element object.
Element	It represents the element node. Derives from Node.
Text	It represents the text node. Derives from CharacterData.
Comment	It represents the comment node. Derives from CharacterData.
ProcessingInstruction	It represents a "processing instruction". It is used in XML as a way to keep processor-specific information in the text of the document.
CDATA Section	It represents the CDATA Section. Derives from Text.

Entity	It represents an entity. Derives from Node.
EntityReference	This represent an entity reference in the tree. Derives from Node.

We will be discussing methods and properties of each of the above Interfaces in their respective chapters.

6. XML DOM — Loading

In this chapter, we will study about XML *Loading* and *Parsing*.

In order to describe the interfaces provided by the API, the W3C uses an abstract language called the Interface Definition Language (IDL). The advantage of using IDL is that the developer learns how to use the DOM with his or her favorite language and can switch easily to a different language.

The disadvantage is that, since it is abstract, the IDL cannot be used directly by Web developers. Due to the differences between programming languages, they need to have mapping — or binding — between the abstract interfaces and their concrete languages. DOM has been mapped to programming languages such as Javascript, JScript, Java, C, C++, PLSQL, Python, and Perl.

In the following sections and chapters, we will be using Javascript as our programming language to load XML file.

Parser

A *parser* is a software application that is designed to analyze a document, in our case XML document and do something specific with the information. Some of the DOM based parsers are listed in the following table:

Parser	Description
JAXP	Sun Microsystem's Java API for XML Parsing (JAXP)
XML4J	IBM's XML Parser for Java (XML4J)
msxml	Microsoft's XML parser (msxml) version 2.0 is built-into Internet Explorer 5.5
4DOM	4DOM is a parser for the Python programming language
XML::DOM	XML::DOM is a Perl module to manipulate XML documents using Perl
Xerces	Apache's Xerces Java Parser

In a tree-based API like DOM, the parser traverses the XML file and creates the corresponding DOM objects. Then you can traverse the DOM structure back and forth.

Loading and Parsing XML

While loading an XML document, the XML content can come in two forms:

- Directly as XML file
- As XML string

Content as XML file

Following example demonstrates how to load XML (node.xml) data using Ajax and Javascript when the XML content is received as an XML file. Here, the Ajax function gets the content of an xml file and stores it in XML DOM. Once the DOM object is created, it is then parsed.

```
<!DOCTYPE html>
<html>
   <body>
      <div>
         <b>FirstName:</b> <span id="FirstName"></span><br>
         <b>LastName:</b> <span id="LastName"></span><br>
         <b>ContactNo:</b> <span id="ContactNo"></span><br>
         <b>Email:</b> <span id="Email"></span>
      </div>
      <script>
     //if browser supports XMLHttpRequest
         if (window.XMLHttpRequest)
         {// Create an instance of XMLHttpRequest object. code for IE7+,
Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }
         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
      // sets and sends the request for calling "node.xml"
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();

      // sets and returns the content as XML DOM
         xmlDoc=xmlhttp.responseXML;

      //parsing the DOM object
```

```
         document.getElementById("FirstName").innerHTML=
         xmlDoc.getElementsByTagName("FirstName")[0].childNodes[0].nodeValue;
         document.getElementById("LastName").innerHTML=
         xmlDoc.getElementsByTagName("LastName")[0].childNodes[0].nodeValue;
         document.getElementById("ContactNo").innerHTML=

         xmlDoc.getElementsByTagName("ContactNo")[0].childNodes[0].nodeValue;
         document.getElementById("Email").innerHTML=
         xmlDoc.getElementsByTagName("Email")[0].childNodes[0].nodeValue;
      </script>
   </body>
</html>
```

node.xml

```
<Company>
     <Employee category="Technical" id="firstelement">
        <FirstName>Tanmay</FirstName>
        <LastName>Patil</LastName>
        <ContactNo>1234567890</ContactNo>
        <Email>tanmaypatil@xyz.com</Email>
     </Employee>

     <Employee category="Non-Technical">
        <FirstName>Taniya</FirstName>
        <LastName>Mishra</LastName>
        <ContactNo>1234667898</ContactNo>
        <Email>taniyamishra@xyz.com</Email>
     </Employee>

     <Employee category="Management">
        <FirstName>Tanisha</FirstName>
        <LastName>Sharma</LastName>
        <ContactNo>1234562350</ContactNo>
        <Email>tanishasharma@xyz.com</Email>
     </Employee>
</Company>
```

Most of the details of the code are in the script code.

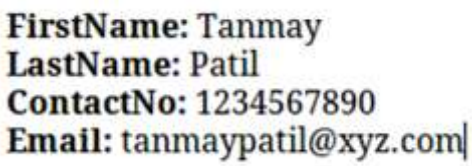
- Internet Explorer uses the *ActiveXObject("Microsoft.XMLHTTP")* to create an instance of XMLHttpRequest object, other browsers use the *XMLHttpRequest()* method.

- The *responseXML* transforms the XML content directly in XML DOM.

- Once the XML content is transformed into JavaScript XML DOM, you can access any XML element by using the JS DOM methods and properties. We have used the DOM properties such as *childNodes*, *nodeValue* and DOM methods such as getElementsById(ID), getElementsByTagName(tags_name).

Execution

Save this file as loadingexample.html and open it in your browser. You will receive the following output:



Content as XML string

Following example demonstrates how to load XML data using Ajax and Javascript when XML content is received as XML file. Here, the Ajax function gets the content of an xml file and stores it in XML DOM. Once the DOM object is created, it is then parsed.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
     // loads the xml string in a dom object
         function loadXMLString(t)
         {
        // for non IE browsers
           if (window.DOMParser)
           {
            // create an instance for xml dom object
               parser=new DOMParser();
               xmlDoc=parser.parseFromString(t,"text/xml");
           }
```

```
        // code for IE
           else
           {
           // create an instance for xml dom object
              xmlDoc=new ActiveXObject("Microsoft.XMLDOM");
              xmlDoc.async=false;

              xmlDoc.loadXML(t);
           }
           return xmlDoc;
         }
      </script>
   </head>
   <body>
      <script>
     // a variable with the string
         var text="<Employee>";
         text=text+"<FirstName>Tanmay</FirstName>";
         text=text+"<LastName>Patil</LastName>";
         text=text+"<ContactNo>1234567890</ContactNo>";
         text=text+"<Email>tanmaypatil@xyz.com</Email>";
         text=text+"</Employee>";

     // calls the loadXMLString() with "text" function and store the xml dom in
a variable
         var xmlDoc=loadXMLString(text);

      //parsing the DOM object
         y=xmlDoc.documentElement.childNodes;
         for (i=0;i<y.length;i++)
         {

            document.write(y[i].childNodes[0].nodeValue);
            document.write("<br>");
         }
      </script>
   </body>
</html>
```

Most of the details of the code are in the script code.

- Internet Explorer uses the *ActiveXObject("Microsoft.XMLDOM")* to load XML data into a DOM object, other browsers use the *DOMParser()* function and *parseFromString(text, 'text/xml')* method.

- The variable *text* shall contain a string with XML content.

- Once the XML content is transformed into JavaScript XML DOM, you can access any XML element by using JS DOM methods and properties. We have used DOM properties such as *childNodes*, *nodeValue*.

Execution

Save this file as loadingexample.html and open it in your browser. You will see the following output:

Now that we saw how the XML content transforms into JavaScript XML DOM, you can now access any XML element by using the XML DOM methods.

7. XML DOM — Traversing

In this chapter, we will discuss XML DOM Traversing. We studied in the previous chapter how to load XML document and parse the thus obtained DOM object. This parsed DOM object can be traversed. Traversing is a process in which looping is done in a systematic manner by going across each and every element step by step in a node tree.

Example

The following example (traverse_example.htm) demonstrates DOM traversing. Here we traverse through each child node of <Employee> element.

```
<!DOCTYPE html>
<html>
<style>
table,th,td
{
border:1px solid black;
border-collapse:collapse
}
</style>
   <body>
     <div id="ajax_xml">
      </div>
      <script>
     //if browser supports XMLHttpRequest
         if (window.XMLHttpRequest)
         {// Create an instance of XMLHttpRequest object. code for IE7+,
Firefox, Chrome, Opera, Safari
            var xmlhttp = new XMLHttpRequest();
         }
         else
         {// code for IE6, IE5
            var xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }

         // sets and sends the request for calling "node.xml"
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
```

```
      // sets and returns the content as XML DOM
         var xml_dom=xmlhttp.responseXML;
     // this variable stores the code of the html table
     var html_tab = '<table id="id_tabel" align="center"><tr><th>Employee
Category</th><th>FirstName</th><th>LastName</th><th>ContactNo</th><th>Email</th
></tr>';
     var arr_employees = xml_dom.getElementsByTagName("Employee");
     // traverses the "arr_employees" array
     for(var i=0; i<arr_employees.length; i++) {
     var employee_cat = arr_employees[i].getAttribute('category');
// gets the value of 'category' element of current "Element" tag

     // gets the value of first child-node of 'FirstName' element of current
"Employee" tag
     var employee_firstName =
arr_employees[i].getElementsByTagName('FirstName')[0].childNodes[0].nodeValue;

     // gets the value of first child-node of 'LastName' element of current
"Employee" tag
     var employee_lastName =
arr_employees[i].getElementsByTagName('LastName')[0].childNodes[0].nodeValue;

     // gets the value of first child-node of 'ContactNo' element of current
"Employee" tag
     var employee_contactno =
arr_employees[i].getElementsByTagName('ContactNo')[0].childNodes[0].nodeValue;

     // gets the value of first child-node of 'Email' element of current
"Employee" tag
     var employee_email =
arr_employees[i].getElementsByTagName('Email')[0].childNodes[0].nodeValue;

     // adds the values in the html table
     html_tab += '<tr><td>'+ employee_cat+ '</td><td>'+ employee_firstName+
'</td><td>'+ employee_lastName+ '</td><td>'+ employee_contactno+ '</td><td>'+
employee_email+ '</td></tr>';
     }
        html_tab += '</table>';
     // adds the html table in a html tag, with id="ajax_xml"
     document.getElementById('ajax_xml').innerHTML = html_tab;
      </script>
```

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

- This code loads node.xml.
- The XML content is transformed into JavaScript XML DOM object.
- The array of elements (with tag Element) using the method getElementsByTagName() is obtained.
- Next, we traverse through this array and display the child node values in a table.

Execution

Save this file as *traverse_example.html* on the server path (this file and node.xml should be on the same path in your server). You will receive the following output:

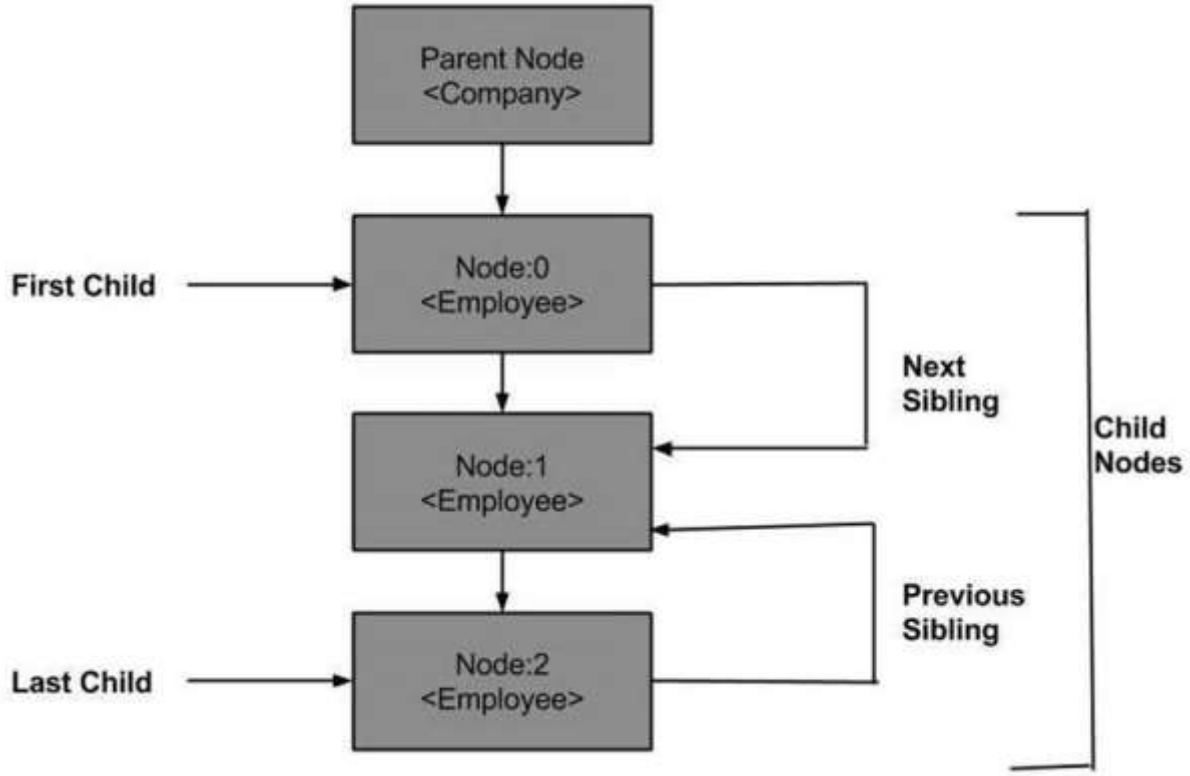
Employee Category	FirstName	LastName	ContactNo	Email
Technical	Tanmay	Patil	1234567890	tanmaypatil@xyz.com
Non-Technical	Taniya	Mishra	1234667898	taniyamishra@xyz.com
Management	Tanisha	Sharma	1234562350	tanishasharma@xyz.com

8. XML DOM — Navigation

Until now we studied DOM structure, how to load and parse XML DOM object and traverse through the DOM objects. Here we will see how we can navigate between nodes in a DOM object. The XML DOM consist of various properties of the nodes which help us navigate through the nodes, such as:

- parentNode
- childNodes
- firstChild
- lastChild
- nextSibling
- previousSibling

Following is a diagram of a node tree showing its relationship with the other nodes.



DOM – Parent Node

This property specifies the parent node as a node object.

Example

The following example (navigate_example.htm) parses an XML document (node.xml) into an XML DOM object. Then the DOM object is navigated to the parent node through the child node:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         var y=xmlDoc.getElementsByTagName("Employee")[0];
         document.write(y.parentNode.nodeName);
      </script>
   </body>
</html>
```

As you can see in the above example, the child node *Employee* navigates to its parent node.

Execution

Save this file as *navigate_example.html* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the parent node of *Employee*, i.e., *Company*.

First Child

This property is of type *Node* and represents the first child name present in the NodeList.

Example

The following example (first_node_example.htm) parses an XML document (node.xml) into an XML DOM object, then navigates to the first child node present in the DOM object.

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         function get_firstChild(p)
         {
            a=p.firstChild;

            while (a.nodeType!=1)
            {
               a=a.nextSibling;
            }
            return a;
         }
         var firstchild =
get_firstChild(xmlDoc.getElementsByTagName("Employee")[0]);
         document.write(firstchild.nodeName);
      </script>
   </body>
</html>
```

- Function *get_firstChild(p)* is used to avoid the empty nodes. It helps to get the firstChild element from the node list.
- **x=get_firstChild(xmlDoc.getElementsByTagName("Employee")[0])** fetches the first child node for the tag name *Employee*.

Execution

Save this file as *first_node_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the first child node of *Employee* i.e. *FirstName*.

Last Child

This property is of type *Node* and represents the last child name present in the NodeList.

Example

The following example (last_node_example.htm) parses an XML document (node.xml) into an XML DOM object, then navigates to the last child node present in the xml DOM object.

```
<!DOCTYPE html>
  <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         function get_lastChild(p)
         {
             a=p.lastChild;

             while (a.nodeType!=1)
             {
                a=a.previousSibling;
             }
```

```
            return a;
         }
         var
lastchild=get_lastChild(xmlDoc.getElementsByTagName("Employee")[0]);
         document.write(lastchild.nodeName);
      </script>
   </body>
</html>
```

Execution

Save this file as *last_node_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the last child node of *Employee*, i.e., *Email*.

Next Sibling

This property is of type *Node* and represents the next child, i.e., the next sibling of the specified child element present in the NodeList.

Example

The following example (nextSibling_example.htm) parses an XML document (node.xml) into an XML DOM object which navigates immediately to the next node present in the xml document.

```
<!DOCTYPE html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         function get_nextSibling(p)
```

```
         {
            a=p.nextSibling;

            while (a.nodeType!=1)
            {
               a=a.nextSibling;
            }
            return a;
         }
         var
nextsibling=get_nextSibling(xmlDoc.getElementsByTagName("FirstName")[0]);
         document.write(nextsibling.nodeName);
      </script>
   </body>
</html>
```

Execution

Save this file as *nextSibling_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the next sibling node of *FirstName*, i.e., *LastName*.

Previous Sibling

This property is of type *Node* and represents the previous child, i.e., the previous sibling of the specified child element present in the NodeList.

Example

The following example (previoussibling_example.htm) parses an XML document (node.xml) into an XML DOM object, then navigates the before node of the last child node present in the xml document.

```
<!DOCTYPE html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
```

```
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         function get_previousSibling(p)
         {
            a=p.previousSibling;

            while (a.nodeType!=1)
            {
               a=a.previousSibling;
            }
            return a;
         }


prevsibling=get_previousSibling(xmlDoc.getElementsByTagName("Email")[0]);
         document.write(prevsibling.nodeName);
      </script>
   </body>
</html>
```

Execution

Save this file as *previoussibling_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the previous sibling node of *Email*, i.e., *ContactNo*.

9. XML DOM — Accessing

In this chapter, we will study about how to access the XML DOM nodes which are considered as the informational units of the XML document. The node structure of the XML DOM allows the developer to navigate around the tree looking for specific information and simultaneously access the information.

Accessing Nodes

Following are the three ways in which you can access the nodes:

- By using the **getElementsByTagName ()** method
- By looping through or traversing through nodes tree
- By navigating the node tree, using the node relationships

getElementsByTagName ()

This method allows accessing the information of a node by specifying the node name. It also allows accessing the information of the Node List and Node List Length.

Syntax

The getElementByTagName() method has the following syntax:

```
node.getElementByTagName("tagname");
```

Where,

- *node*: is the document node.
- *tagname*: holds the name of the node whose value you want to get.

Example

Following is a simple program which illustrates the usage of method getElementByTagName.

```
<!DOCTYPE html>
<html>
   <body>
      <div>
         <b>FirstName:</b> <span id="FirstName"></span><br>
         <b>LastName:</b> <span id="LastName"></span><br>
         <b>Category:</b> <span id="Employee"></span><br>
```

```
      </div>
      <script>
         if (window.XMLHttpRequest)
         {// code for IE7+, Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }
         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         document.getElementById("FirstName").innerHTML=
         xmlDoc.getElementsByTagName("FirstName")[0].childNodes[0].nodeValue;
         document.getElementById("LastName").innerHTML=
         xmlDoc.getElementsByTagName("LastName")[0].childNodes[0].nodeValue;
         document.getElementById("Employee").innerHTML=
         xmlDoc.getElementsByTagName("Employee")[0].attributes[0].nodeValue;

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

- In the above example, we are accessing the information of the nodes *FirstName*, *LastName* and *Employee*.
- *xmlDoc.getElementsByTagName("FirstName")[0].childNodes[0].nodeValue;* This line accesses the value for the child node *FirstName* using the getElementByTagName() method.
- *xmlDoc.getElementsByTagName("Employee")[0].attributes[0].nodeValue;* This line accesses the attribute value of the node *Employee* getElementByTagName() method.

Traversing through Nodes

This is covered in the chapter DOM Traversing with examples.

Navigating Through Nodes

This is covered in the chapter DOM Navigation with examples.

XML DOM Operations

10. XML DOM — Get Node

In this chapter, we will study about how to get the *node* value of a XML DOM object. XML documents have a hierarchy of informational units called nodes. Node object has a property *nodeValue*, which returns the value of the element.

In the following sections, we will discuss:

- Getting node value of an element
- Getting attribute value of a node

The *node.xml* used in all the following examples is as below:

```
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Get Node Value

The method *getElementsByTagName()* returns a *NodeList* of all the *Elements* in document order with a given tag name.

Example

The following example (getnode_example.htm) parses an XML document (node.xml) into an XML DOM object and extracts the node value of the child node *Firstname* (index at 0):

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         x = xmlDoc.getElementsByTagName('FirstName')[0]
         y = x.childNodes[0];
         document.write(y.nodeValue);
      </script>
   </body>
</html>
```

Execution

Save this file as *getnode_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the node value as *Tanmay*.

Get Attribute Value

Attributes are part of the XML node elements. A node element can have multiple unique attributes. Attribute gives more information about XML node elements. To be more precise, they define properties of the node elements. An XML attribute is always a name-value pair. This value of the attribute is called the *attribute node*.

The *getAttribute()* method retrieves an attribute value by element name.

Example

The following example (get_attribute_example.htm) parses an XML document (node.xml) into an XML DOM object and extracts the attribute value of the category *Employee* (index at 2):

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         x = xmlDoc.getElementsByTagName('Employee')[2];
         document.write(x.getAttribute('category'));
      </script>
   </body>
</html>
```

Execution

Save this file as *get_attribute_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the attribute value as *Management*.

11. XML DOM — Set Node

In this chapter, we will study about how to change the values of nodes in an XML DOM object. Node value can be changed as follows:

```
var value = node.nodeValue;
```

If *node* is an *Attribute* then the *value* variable will be the value of the attribute; if *node* is a *Text* node it will be the text content; if *node* is an *Element* it will be *null*.

Following sections will demonstrate the node value setting for each node type (attribute, text node and element).

The *node.xml* used in all the following examples is as below:

```
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Change value of Text Node

When we say the change value of Node element we mean to edit the text content of an element (which is also called the *text node*). Following example demonstrates how to change the text node of an element.

Example

The following example (set_text_node_example.htm) parses an XML document (node.xml) into an XML DOM object and change the value of an element's text node. In this case, *Email* of each *Employee* to *support@xyz.com* and print the values.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
                xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
                xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
          }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName("Email");
     for(i =0 ;i<x.length;i++){

      x[i].childNodes[0].nodeValue = "support@xyz.com";
      document.write(i+') ');
      document.write(x[i].childNodes[0].nodeValue);
      document.write('<br>');
     }
```

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

Execution

Save this file as *set_text_node_example.htm* on the server path (this file and node.xml should be on the same path in your server). You will receive the following output:

```
0) support@xyz.com
1) support@xyz.com
2) support@xyz.com
```

Change Value of Attribute Node

The following example demonstrates how to change the attribute node of an element.

Example

The following example (set_attribute_example.htm) parses an XML document (node.xml) into an XML DOM object and changes the value of an element's attribute node. In this case, the *Category* of each *Employee* to *admin-0, admin-1, admin-2* respectively and print the values.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
                xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
                xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
        }
```

```
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName("Employee");
      for(i = 0 ;i<x.length;i++){

       newcategory = x[i].getAttributeNode('category');
       newcategory.nodeValue = "admin-"+i;
       document.write(i+') ');
       document.write(x[i].getAttributeNode('category').nodeValue);
       document.write('<br>');
      }

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

Execution

Save this file as *set_node_attribute_example.htm* on the server path (this file and node.xml should be on the same path in your server). The result would be as below:

```
0) admin-0
1) admin-1
2) admin-2
```

12. XML DOM — Create Node

In this chapter, we will discuss how to create new nodes using a couple of methods of the document object. These methods provide a scope to create new *element node, text node, comment node, CDATA section node and attribute node*. If the newly created node already exists in the element object, it is replaced by the new one. Following sections demonstrate this with examples.

Create new *Element* node

The method *createElement()* creates a new element node. If the newly created element node exists in the element object, it is replaced by the new one.

Syntax

Syntax to use the *createElement()* method is as follows:

```
var_name = xmldoc.createElement("tagname");
```

Where,

- *var_name*: is the user-defined variable name which holds the name of new element.
- *("tagname")*: is the name of new element node to be created.

Example

The following example (createnewelement_example.htm) parses an XML document (node.xml) into an XML DOM object and creates a new element node *PhoneNo* in the XML document.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
```

```
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         new_element = xmlDoc.createElement("PhoneNo");

         x = xmlDoc.getElementsByTagName("FirstName")[0];
         x.appendChild(new_element);

         document.write(x.getElementsByTagName("PhoneNo")[0].nodeName);
      </script>
   </body>
</html>
```

- *new_element = xmlDoc.createElement("PhoneNo");* creates the new element node <PhoneNo>
- *x.appendChild(new_element);* *x* holds the name of the specified child node <FirstName> to which the new element node is appended.

Execution

Save this file as *createnewelement_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the attribute value as *PhoneNo*.

Create new *Text* node

The method *createTextNode()* creates a new text node.

Syntax

Syntax to use *createTextNode()* is as follows:

```
var_name=xmldoc.createTextNode("tagname");
```

Where,

- *var_name*: it is the user-defined variable name which holds the name of the new text node.
- *("tagname")*: within the parenthesis is the name of new text node to be created.

Example

The following example (createtextnode_example.htm) parses an XML document (node.xml) into an XML DOM object and creates a new text node *Im new text node* in the XML document.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         create_e = xmlDoc.createElement("PhoneNo");
         create_t = xmlDoc.createTextNode("Im new text node");
         create_e.appendChild(create_t);

         x = xmlDoc.getElementsByTagName("Employee")[0];
```

```
         x.appendChild(create_e);



        document.write(" PhoneNO: ");

document.write(x.getElementsByTagName("PhoneNo")[0].childNodes[0].nodeValue);
      </script>
    </body>
</html>
```

Details of the above code are as below:

- *create_e = xmlDoc.createElement("PhoneNo");* creates a new element *<PhoneNo>*.
- *create_t = xmlDoc.createTextNode("Im new text node");* creates a new text node *"Im new text node"*.
- *x.appendChild(create_e);* the text node, *"Im new text node"* is appended to the element, *<PhoneNo>*.
- *document.write(x.getElementsByTagName("PhoneNo")[0].childNodes[0].nodeValue);* writes the new text node value to the element <PhoneNo>.

Execution

Save this file as *createtextnode_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the attribute value as i.e. *PhoneNO: Im new text node*.

Create new *Comment* node

The method *createComment()* creates a new comment node. Comment node is included in the program for the easy understanding of the code functionality.

Syntax

Syntax to use *createComment()* is as follows:

```
var_name = xmldoc.createComment("tagname");
```

Where:

- *var_name*: is the user-defined variable name which holds the name of new comment node.
- *("tagname")*: is the name of the new comment node to be created.

Example

The following example (createcommentnode_example.htm) parses an XML document (node.xml) into an XML DOM object and creates a new comment node, *"Company is the parent node"* in the XML document.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         create_comment = xmlDoc.createComment("Company is the parent node");

         x = xmlDoc.getElementsByTagName("Company")[0];

         x.appendChild(create_comment);

         document.write(x.lastChild.nodeValue);
      </script>
   </body>
</html>
```

In the above example:

- *create_comment=xmlDoc.createComment("Company is the parent node")* — **creates a specified comment line**.

- *x.appendChild(create_comment)* — In this line, *'x'* holds the name of the element <Company> to which the comment line is appended.

Execution

Save this file as *createcommentnode_example.htm* on the server path (this file and the node.xml should be on the same path in your server). In the output, we get the attribute value as *Company is the parent node* .

Create New *CDATA Section* Node

The method *createCDATASection()* creates a new CDATA section node. If the newly created CDATA section node exists in the element object, it is replaced by the new one.

Syntax

Syntax to use *createCDATASection()* is as follows:

```
var_name = xmldoc.createCDATASection("tagname");
```

Where,

- *var_name*: is the user-defined variable name which holds the name of the new CDATA section node.
- *("tagname")*: is the name of new CDATA section node to be created.

Example

The following example (createcdatanode_example.htm) parses an XML document (node.xml) into an XML DOM object and creates a new CDATA section node, *"Create CDATA Example"* in the XML document.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
```

```
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         create_CDATA = xmlDoc.createCDATASection("Create CDATA Example");

         x = xmlDoc.getElementsByTagName("Employee")[0];
         x.appendChild(create_CDATA);
         document.write(x.lastChild.nodeValue);
      </script>
   </body>
</html>
```

In the above example:

- *create_CDATA=xmlDoc.createCDATASection("Create CDATA Example")* — creates a new CDATA section node, *"Create CDATA Example"*
- *x.appendChild(create_CDATA)* — here, *x* holds the specified element <Employee> indexed at 0 to which the CDATA node value is appended.

Execution

Save this file as *createcdatanode_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the attribute value as *Create CDATA Example.*

Create new *Attribute* node

To create a new attribute node, the method *setAttributeNode()* is used. If the newly created attribute node exists in the element object, it is replaced by the new one.

Syntax

Syntax to use *setAttributeNode()* is as follows:

```
var_name = xmldoc.createAttribute("tagname");
```

Where,

- *var_name*: is the user-defined variable name which holds the name of new attribute node.

- *("tagname")*: is the name of new attribute node to be created.

Example

The following example (createattributenode_example.htm) parses an XML document (node.xml) into an XML DOM object and creates a new attribute node *section* in the XML document.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         create_a = xmlDoc.createAttribute("section");
         create_a.nodeValue = "A";

         x = xmlDoc.getElementsByTagName("Employee");
         x[0].setAttributeNode(create_a);
         document.write("New Attribute: ");
         document.write(x[0].getAttribute("section"));

      </script>
```

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

In the above example:

- *create_a=xmlDoc.createAttribute("Category")* — creates an attribute with the name <section>.
- *create_a.nodeValue="Management"* — creates the value *"A"* for the attribute <section>.
- *x[0].setAttributeNode(create_a)* — this attribute value is set to the node element <Employee> indexed at 0.

13. XML DOM – Add Node

In this chapter, we will discuss the nodes to the existing element. It provides a means to:

- append new child nodes before or after the existing child nodes
- insert data within the text node
- add attribute node

Following methods can be used to add/append the nodes to an element in a DOM:

- appendChild()
- insertBefore()
- insertData()

appendChild()

The method appendChild() adds the new child node after the existing child node.

Syntax

Syntax of appendChild() method is as follows:

```
Node appendChild(Node newChild) throws DOMException
```

Where,

- *newChild* — Is the node to add.
- This method returns the *Node* added.

Example

The following example (appendchildnode_example.htm) parses an XML document (node.xml) into an XML DOM object and appends new child *PhoneNo* to the element <FirstName>.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
```

```
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");
         create_e = xmlDoc.createElement("PhoneNo");
         x = xmlDoc.getElementsByTagName("FirstName")[0];
         x.appendChild(create_e);

         document.write(x.getElementsByTagName("PhoneNo")[0].nodeName);
      </script>
   </body>
</html>
```

In the above example:

- using the method createElement(), a new element *PhoneNo* is created.
- The new element *PhoneNo* is added to the element *FirstName* using the method appendChild().

Execution

Save this file as *appendchildnode_example.htm* on the server path (this file and node.xml should be on the same path in your server). In the output, we get the attribute value as *PhoneNo*.

insertBefore()

The method *insertBefore()*, inserts the new child nodes before the specified child nodes.

Syntax

Syntax of insertBefore() method is as follows:

```
Node insertBefore(Node newChild, Node refChild) throws DOMException
```

Where,

- *newChild* — Is the node to insert
- *refChild* — Is the reference node, i.e., the node before which the new node must be inserted.
- This method returns the *Node* being inserted.

Example

The following example (insertnodebefore_example.htm) parses an XML document ("node.xml") into an XML DOM object and inserts new child *Email* before the specified element <Email>.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         create_e = xmlDoc.createElement("Email");

         x = xmlDoc.documentElement;
         y = xmlDoc.getElementsByTagName("Email");
```

```
         document.write("No of Email elements before inserting was: " +
y.length);
         document.write("<br>");
         x.insertBefore(create_e,y[3]);

         y=xmlDoc.getElementsByTagName("Email");
         document.write("No of Email elements after inserting is: " +
y.length);
      </script>
   </body>
</html>
```

In the above example:

- using the method createElement(), a new element *Email* is created.
- The new element *Email* is added before the element *Email* using the method insertBefore().
- *y.length* gives the total number of elements added before and after the new element.

Execution

Save this file as *insertnodebefore_example.htm* on the server path (this file and node.xml should be on the same path in your server). We will receive the following output:

```
No of Email elements before inserting was: 3
No of Email elements after inserting is: 4
```

insertData()

The method insertData(), inserts a string at the specified 16-bit unit offset.

Syntax

The insertData() has the following syntax:

```
void insertData(int offset, java.lang.String arg) throws DOMException
```

Where:

- *offset* — is the character offset at which to insert.
- *arg* — is the key word to insert the data. It encloses the two parameters offset and string within the parenthesis separated by comma.

Example

The following example (addtext_example.htm) parses an XML document (node.xml) into an XML DOM object and inserts new data *MiddleName* at the specified position to the element <FirstName>.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
  </head>
  <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName("FirstName")[0].childNodes[0];
         document.write(x.nodeValue);
         x.insertData(6,"MiddleName");
         document.write("<br>");
         document.write(x.nodeValue);

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

- ***x.insertData(6,"MiddleName");*** — Here, *x* holds the name of the specified child name, i.e., <FirstName>. We then insert to this text node, the data*"MiddleName"* starting from position 6.

Execution

Save this file as *addtext_example.htm* on the server path (this file and node.xml should be on the same path in your server). We will receive the following in the output:

```
Tanmay
TanmayMiddleName
```

14. XML DOM — Replace Node

In this chapter we will study about the replace node operation in an XML DOM object. As we know everything in the DOM is maintained in a hierarchical informational unit known as node and the replacing node provides another way to update these specified nodes or a text node.

Following are the two methods to replace the nodes.

- replaceChild()
- replaceData()

replaceChild()

The method *replaceChild()* replaces the specified node with the new node.

Syntax

The insertData() has the following syntax:

```
Node replaceChild(Node newChild, Node oldChild) throws DOMException
```

Where,

- *newChild* — is the new node to put in the child list.
- *oldChild* — is the node being replaced in the list.
- This method returns the node replaced.

Example

The following example (replacenode_example.htm) parses an XML document (node.xml) into an XML DOM object and replaces the specified node <FirstName> with the new node <Name>.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
```

```
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
     <script>
     xmlDoc=loadXMLDoc("/dom/node.xml");

     x = xmlDoc.documentElement;

     z=xmlDoc.getElementsByTagName("FirstName");
     document.write("<b>Content of FirstName element before replace
operation</b><br>");
     for (i=0;i<z.length;i++)
     {
            document.write(z[i].childNodes[0].nodeValue);
            document.write("<br>");
     }
     //create a Employee element, FirstName element and a text node
     newNode = xmlDoc.createElement("Employee");
     newTitle = xmlDoc.createElement("Name");
     newText = xmlDoc.createTextNode("MS Dhoni");

     //add the text node to the title node,
     newTitle.appendChild(newText);
     //add the title node to the book node
     newNode.appendChild(newTitle);

     y = xmlDoc.getElementsByTagName("Employee")[0]
     //replace the first book node with the new node
     x.replaceChild(newNode,y);

     z = xmlDoc.getElementsByTagName("FirstName");
```

```
      document.write("<b>Content of FirstName element after replace
operation</b><br>");
      for (i = 0;i<z.length;i++)
      {
            document.write(z[i].childNodes[0].nodeValue);
            document.write("<br>");
      }
      </script>
   </body>
</html>
```

Execution

Save this file as *replacenode_example.htm* on the server path (this file and node.xml should be on the same path in your server).

We will get the output as shown below:

```
Content of FirstName element before replace operation
Tanmay
Taniya
Tanisha

Content of FirstName element after replace operation
Taniya
Tanisha
```

replaceData()

The method replaceData() replaces the characters starting at the specified 16-bit unit offset with the specified string.

Syntax

The replaceData() has the following syntax:

```
void replaceData(int offset, int count, java.lang.String arg) throws
DOMException
```

Where,

- *offset* — is the offset from which to start replacing.
- *count* — is the number of 16-bit units to replace. If the sum of offset and count exceeds length, then all the 16-bit units to the end of the data are replaced.
- *arg* — the *DOMString* with which the range must be replaced.

Example

The following example (replacedata_example.htm) parses an XML document (node.xml) into an XML DOM object and replaces it.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName("ContactNo")[0].childNodes[0];
         document.write("<b>ContactNo before replace operation:</b>
"+x.nodeValue);
         x.replaceData(1,5,"9999999");
         document.write("<br>");
         document.write("<b>ContactNo after replace operation:</b>
"+x.nodeValue);

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

In the above example:

x.replaceData(2,3,"999");: Here *x* holds the text of the specified element <ContactNo> whose text is replaced by the new text*"9999999"*, starting from the position *1* till the length of *5*.

Execution

Save this file as *replacedata_example.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
ContactNo before replace operation: 1234567890


ContactNo after replace operation: 199999997890
```

15. XML DOM — Remove Node

In this chapter, we will study about the XML DOM *Remove Node* operation. The remove node operation removes the specified node from the document. This operation can be implemented to remove the nodes like text node, element node or an attribute node.

Following are the methods that are used for remove node operation:

- removeChild()
- removeAttribute()

removeChild()

The method *removeChild()* removes the child node indicated by *oldChild* from the list of children, and returns it. Removing a child node is equivalent to removing a text node. Hence, removing a child node removes the text node associated with it.

Syntax

The syntax to use *removeChild()* is as follows:

```
Node removeChild(Node oldChild) throws DOMException
```

Where,

- *oldChild* — is the node being removed.
- This method returns the node removed.

Example — Remove Current Node

The following example (removecurrentnode_example.htm) parses an XML document (node.xml) into an XML DOM object and removes the specified node <ContactNo> from the parent node.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
```

```
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         document.write("<b>Before remove operation, total ContactNo elements:
</b>");
         document.write(xmlDoc.getElementsByTagName("ContactNo").length);
         document.write("<br>");

         x = xmlDoc.getElementsByTagName("ContactNo")[0];
         x.parentNode.removeChild(x);

         document.write("<b>After remove operation, total ContactNo elements:
</b>");
         document.write(xmlDoc.getElementsByTagName("ContactNo").length);
      </script>
   </body>
</html>
```

In the above example:

- *x = xmlDoc.getElementsByTagName("ContactNo")[0]* gets the element <ContactNo> indexed at 0.
- *x.parentNode.removeChild(x)* — removes the element <ContactNo> indexed at 0 from the parent node.

Execution

Save this file as *removecurrentnode_example.htm* on the server path (this file and node.xml should be on the same path in your server). We get the following result:

```
Before remove operation, total ContactNo elements: 3
After remove operation, total ContactNo elements: 2
```

Example — Remove Text Node

The following example (removetextNode_example.htm) parses an XML document ("node.xml") into an XML DOM object and removes the specified child node <FirstName>.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
                xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName("FirstName")[0];

         document.write("<b>Text node of child node before removal is:</b> ");
         document.write(x.childNodes.length);
         document.write("<br>");

         y = x.childNodes[0];
         x.removeChild(y);
         document.write("<b>Text node of child node after removal is:</b> ");
         document.write(x.childNodes.length);
```

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

In the above example:

- *x=xmlDoc.getElementsByTagName("FirstName")[0]* — gets the first element <FirstName> to the *x* indexed at 0.
- *y=x.childNodes[0]* — in this line *y* holds the child node to be remove.
- *x.removeChild(y)* — removes the specified child node.

Execution

Save this file as *removetextNode_example.htm* on the server path (this file and node.xml should be on the same path in your server). We get the following result:

```
Text node of child node before removal is: 1
Text node of child node after removal is: 0
```

removeAttribute()

The method removeAttribute() removes an attribute of an element by name.

Syntax

Syntax to use *removeAttribute()* is as follows:

```
void removeAttribute(java.lang.String name) throws DOMException
```

Where,

- *name* — is the name of the attribute to remove.

Example

The following example (removeelementattribute_example.htm) parses an XML document ("node.xml") into an XML DOM object and removes the specified attribute node.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
```

```
            }
            else // code for IE5 and IE6
            {
                xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>

      <script>
         xmlDoc=loadXMLDoc("/dom/node.xml");
         x=xmlDoc.getElementsByTagName('Employee');

         document.write(x[1].getAttribute('category'));
         document.write("<br>");

         x[1].removeAttribute('category');

         document.write(x[1].getAttribute('category'));

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

In the above example:

- *document.write(x[1].getAttribute('category'))* — value of attribute*category* indexed at 1st position is invoked.
- *x[1].removeAttribute('category');* removes the attribute value.

Execution

Save this file as *removeelementattribute_example.htm* on the server path (this file and node.xml should be on the same path in your server). We get the following result:

```
Non-Technical
null
```

16. XML DOM — Clone Node

In this chapter, we will discuss the *Clone Node* operation on XML DOM object. Clone node operation is used to create a duplicate copy of the specified node. *cloneNode()* is used for this operation.

cloneNode()

This method returns a duplicate of this node, i.e., serves as a generic copy constructor for nodes. The duplicate node has no parent (parentNode is null) and no user data.

Syntax

The *cloneNode()* method has the following syntax:

```
Node cloneNode(boolean deep)
```

- *deep* - If true, recursively clones the subtree under the specified node; if false, clone only the node itself (and its attributes, if it is an Element).
- This method returns the duplicate node.

Example

The following example (clonenode_example.htm) parses an XML document (node.xml) into an XML DOM object and creates a deep copy of the first *Employee* element.

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
```

```
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee')[0];
         clone_node = x.cloneNode(true);
         xmlDoc.documentElement.appendChild(clone_node);

         firstname = xmlDoc.getElementsByTagName("FirstName");
         lastname = xmlDoc.getElementsByTagName("LastName");
      contact = xmlDoc.getElementsByTagName("ContactNo");
      email = xmlDoc.getElementsByTagName("Email");
         for (i = 0;i < firstname.length;i++)
         {
            document.write(firstname[i].childNodes[0].nodeValue+'
'+lastname[i].childNodes[0].nodeValue+',
'+contact[i].childNodes[0].nodeValue+',  '+email[i].childNodes[0].nodeValue);
            document.write("<br>");
         }
      </script>
   </body>
</html>
```

As you can see in the above example, we have set the *cloneNode()* param to *true*. Hence each of the child element under the *Employee* element is copied or cloned.

Execution

Save this file as *clonenode_example.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Tanmay Patil, 1234567890, tanmaypatil@xyz.com
Taniya Mishra, 1234667898, taniyamishra@xyz.com
Tanisha Sharma, 1234562350, tanishasharma@xyz.com
Tanmay Patil, 1234567890, tanmaypatil@xyz.com
```

You will notice that the first *Employee* element is cloned completely.

XML DOM Objects

17. XML DOM — Node Object

Node interface is the primary datatype for the entire Document Object Model. The node is used to represent a single XML element in the entire document tree.

A node can be any type that is an attribute node, a text node or any other node. The attributes *nodeName, nodeValue* and *attributes* are included as a mechanism to get at node information without casting down to the specific derived interface.

Attributes

The following table lists the attributes of the *Node* object:

Attribute	Type	Description
attributes	NamedNodeMap	This is of type *NamedNodeMap* containing the attributes of this node (if it is an Element) or null otherwise. *This has been removed. Refer* ***specs***
baseURI	DOMString	It is used to specify absolute base URI of the node.
childNodes	NodeList	It is a *NodeList* that contains all children of this node. If there are no children, this is a *NodeList* containing no nodes.
firstChild	Node	It specifies the first child of a node.
lastChild	Node	It specifies the last child of a node.
localName	DOMString	It is used to specify the name of the local part of a node. *This has been removed. Refer* ***specs***.
namespaceURI	DOMString	It specifies the namespace URI of a node. *This has been removed. Refer* ***specs***
nextSibling	Node	It returns the node immediately following this node. If there is no such node, this returns null.

nodeName	DOMString	The name of this node, depending on its type.
nodeType	unsigned short	It is a code representing the type of the underlying object.
nodeValue	DOMString	It is used to specify the value of a node depending on their types.
ownerDocument	Document	It specifies the *Document* object associated with the node.
parentNode	Node	This property specifies the parent node of a node.
prefix	DOMString	This property returns the namespace prefix of a node. *This has been removed. Refer* ***specs***
previousSibling	Node	This specifies the node immediately preceding the current node.
textContent	DOMString	This specifies the textual content of a node.

baseURI

Attribute *baseURI* is used to specify the absolute base URI of the node.

Syntax

Following is the syntax for the usage of the *baseURI* attribute.

```
nodeObject.baseURI
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
```

```
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *baseURI* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
```

```
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee')[0];
         document.write("Base URI: "+x.baseURI);

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

Execution

Save this file as *nodeattribute_baseuri.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Base URI: http://www.tutorialspoint.com/dom/node.xml
```

childNodes

Attribute *childNodes* is used to describe the child node from the NodeList for a node.

Syntax

Following is the syntax for the usage of the *childNodes* attribute.

```
nodeObject.childNodes
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
```

```
      <Email>taniyamishra@xyz.com</Email>
   </Employee>

   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *childNodes* attribute:

```
<!DOCTYPE html>
   <html>
      <head>
         <script>
            function loadXMLDoc(filename)
            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();
               return xhttp.responseXML;
            }
         </script>
      </head>
      <body>
         <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.childNodes;
```

```
         for (i = 0;i < x.length;i ++)
         {
            document.write("Nodename: " + x[i].nodeName);

            document.write(" (nodetype: " + x[i].nodeType + ")<br>");
         }
      </script>
   </body>
</html>
```

Execution

Save this file as *nodeattribute_childnodes.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Nodename: Company (nodetype: 1)
```

firstChild

Attribute *firstChild* specifies the first child of a node.

Syntax

Following is the syntax for the usage of the *firstChild* attribute.

```
nodeObject.firstChild
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
```

```
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *firstChild* attribute:

```
<!DOCTYPE html>
   <html>
      <body>
         <script>
            if (window.XMLHttpRequest)
            {
               xmlhttp = new XMLHttpRequest();
            }
            else
            {
               xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xmlhttp.open("GET","/dom/node.xml",false);
            xmlhttp.send();

            xmlDoc = xmlhttp.responseXML;

            function get_firstChild(p)
            {
                  a = p.firstChild;
                  while (a.nodeType!=1)
                {
                    a = a.nextSibling;
                }
                return a;
            }
```

```
            x = get_firstChild(xmlDoc.getElementsByTagName("Employee")[0]);
            document.write("First child is : ");
            document.write(x.nodeName);

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

Execution

Save this file as *nodeattribute_firstchild.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
First child is : FirstName
```

lastChild

The attribute *lastChild* specifies the last child of a node.

Syntax

Following is the syntax for the usage of the *lastChild* attribute.

```
nodeObject.lastChild
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
```

```
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>

      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *lastChild* attribute:

```
<!DOCTYPE html>
<html>
  <body>
     <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         function get_lastChild(p)
         {
            a = p.lastChild;
            while (a.nodeType != 1)
            {
               a = a.previousSibling;
            }
            return a;
         }
```

```
         x = get_lastChild(xmlDoc.getElementsByTagName("Employee")[0]);
         document.write("Last child is : ");
         document.write(x.nodeName);
      </script>

   </body>
</html>
```

Execution

Save this file as *nodeattribute_lastChild.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Last child is : Email
```

localName

The attribute *localName* is used to specify the name of the local part of a node.

Syntax

Following is the syntax for the usage of the *localName* attribute.

```
nodeObject.localName
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
```

```
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *localName* attribute:

```
<!DOCTYPE html>
   <html>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
      <body>
         <script>
            xmlDoc = loadXMLDoc("/dom/node.xml");
            x = xmlDoc.getElementsByTagName('LastName');
            document.write("Local name: " + x.item(0).localName);
         </script>
    </body>
</html>
```

Execution

Save this file as *nodeattribute_localname.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Local name: LastName
```

nextSibling

Attribute *nextSibling* returns the node immediately following this node. If there is no such node, this returns null.

Syntax

Following is the syntax for the usage of the *nextSibling* attribute.

```
nodeObject.nextSibling
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
```

```
</Company>
```

Following example demonstrates the usage of the *nextSibling* attribute:

```
<!DOCTYPE html>
   <html>
      <head>
         <script>
            function loadXMLDoc(filename)
            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();
               return xhttp.responseXML;
            }
         </script>
      </head>
      <body>
         <script>
            function get_nextsibling(n1)

            {
               c1 = n1.nextSibling;
               while (c1.nodeType!=1)
               {
                  c1 = c1.nextSibling;
               }
               return c1;
            }

            xmlDoc = loadXMLDoc("/dom/node.xml");
```

```
            c1 = xmlDoc.getElementsByTagName("FirstName")[0];
            document.write(c1.nodeName);
            document.write(" and value = ");
            document.write(c1.childNodes[0].nodeValue);

            c2 = get_nextsibling(c1);

           document.write("Name of Next sibling is: ");
           document.write(c2.nodeName);
           document.write(" and value = ");
           document.write(c2.childNodes[0].nodeValue);
      </script>
   </body>
</html>
```

Execution

Save this file as *nodeattribute_nextsibling.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
FirstName and value = Tanmay
Name of Next sibling is: LastName and value = Patil
```

nodeName

Attribute *nodeName* gives the name of the node, depending on its type.

Syntax

Following is the syntax for the usage of the *nodeName* attribute.

```
nodeObject.nodeName
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
```

```
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *nodeName* attribute:

```
<!DOCTYPE html>
   <html>
      <head>
         <script>
            function loadXMLDoc(filename)
            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();
               return xhttp.responseXML;
            }
         </script>
      </head>
```

```
      <body>
         <script>
            xmlDoc = loadXMLDoc("/dom/node.xml");

            document.write("Nodename: " + xmlDoc.nodeName);
            document.write(" (nodetype: " + xmlDoc.nodeType + ") <br>");

            x=xmlDoc.documentElement;

            document.write("Nodename: " + x.nodeName);
            document.write(" (nodetype: " + x.nodeType + ") <br>");

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

Execution

Save this file as *nodeattribute_nodename.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Nodename: #document (nodetype: 9)
Nodename: Company (nodetype: 1)
```

nodeType

Attribute *nodeType* is a code representing the type of the underlying object.

Syntax

Following is the syntax for the usage of the *nodeType* attribute.

```
nodeObject.nodeType
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
```

```
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *nodeType* attribute:

```
<!DOCTYPE html>
   <html>
      <head>
         <script>
            function loadXMLDoc(filename)

            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();
               return xhttp.responseXML;
```

```
            }
         </script>
      </head>
      <body>
         <script>
            xmlDoc = loadXMLDoc("/dom/node.xml");

            document.write("Nodename: " + xmlDoc.nodeName);
            document.write(" (nodetype: " + xmlDoc.nodeType + ") <br>");

            x=xmlDoc.documentElement;

            document.write("Nodename: " + x.nodeName);
            document.write(" (nodetype: " + x.nodeType + ") <br>");

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

Execution

Save this file as *nodeattribute_nodetype.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Nodename: #document (nodetype: 9)
Nodename: Company (nodetype: 1)
```

nodeValue

Attribute *nodeValue* is used to specify the value of a node depending on their types.

Syntax

Following is the syntax for the usage of the *nodeValue* attribute.

```
nodeObject.nodeValue
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
```

```
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *nodeValue* attribute:

```
<!DOCTYPE html>
<html>
   <body>
     <div>
        <b>FirstName:</b><span id="FirstName"></span><br>
        <b>LastName:</b> <span id="LastName"></span><br>

      </div>
     <script>
         if (window.XMLHttpRequest)
         {// code for IE7+, Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }
         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
```

```
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         document.getElementById("FirstName").innerHTML=
         xmlDoc.getElementsByTagName("FirstName")[0].childNodes[0].nodeValue;

         document.getElementById("LastName").innerHTML=

         xmlDoc.getElementsByTagName("LastName")[0].childNodes[0].nodeValue;

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

Execution

Save this file as *nodeattribute_nodevalue.htm* on the server path (this file and node.xml should be on the same path in your server).We will get the output as shown below:

```
FirstName: Tanmay
LastName: Patil
```

ownerDocument

Attribute *ownerDocument* specifies the Document object associated with the node.

Syntax

Following is the syntax for the usage of the *ownerDocument* attribute.

```
nodeObject.ownerDocument
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
```

```
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *ownerDocument* attribute:

```
<!DOCTYPE html>
<html>
  <head>
     <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
```

```
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName("Employee")[0].ownerDocument;

         document.write("Nodename: " + x.nodeName);

         document.write(" (nodetype: " + x.nodeType + ")");

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

Execution

Save this file as *nodeattribute_ownerdocument.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Nodename: #document (nodetype: 9)
```

parentNode

Attribute *parentNode* specifies the parent node of a node.

Syntax

Following is the syntax for the usage of the *parentNode* attribute.

```
nodeObject.parentNode
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
```

```
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *parentNode* attribute:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;
         document.write("Parent node of Employee is: ");
         x = xmlDoc.getElementsByTagName("Employee")[0];
         document.write(x.parentNode.nodeName);
      </script>
   </body>
```

```
</html>
```

Execution

Save this file as *nodeattribute_parentnode.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Parent node is : Company
```

previousSibling

Attribute *previousSibling* specifies the node immediately preceding the current node.

Syntax

Following is the syntax for the usage of the *previousSibling* attribute.

```
nodeObject.previousSibling
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
```

```
   </Employee>
</Company>
```

Following example demonstrates the usage of *previousSibling* attribute:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         function get_previousSibling(p)
         {
            a = p.previousSibling;
            while (a.nodeType != 1)
            {
               a = a.previousSibling;
            }

            return a;
        }

        x = get_previousSibling(xmlDoc.getElementsByTagName("Email")[0]);
        document.write("Previous sibling of Email is : ");
        document.write(x.nodeName);
      </script>
   </body>
</html>
```

Execution

Save this file as *nodeattribute_previoussibling.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Previous sibling of Email is : ContactNo
```

textContent

Attribute *textContent* specifies the textual content of a node.

Syntax

Following is the syntax for usage of the *textContent* attribute.

```
nodeObject.textContent
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
```

```
</Company>
```

Following example demonstrates the usage of *textContent* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
   </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Email');
         document.write("Text Content of Email node is : ");
         document.write(x.item(0).textContent);

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

Execution

Save this file as *nodeattribute_textcontent.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Text Content of Email node is : tanmaypatil@xyz.com
```

Node Types

We have listed the node types as below:

- ELEMENT_NODE
- ATTRIBUTE_NODE
- ENTITY_NODE
- ENTITY_REFERENCE_NODE
- DOCUMENT_FRAGMENT_NODE
- TEXT_NODE
- CDATA_SECTION_NODE
- COMMENT_NODE
- PROCESSING_INSTRUCTION_NODE
- DOCUMENT_NODE
- DOCUMENT_TYPE_NODE
- NOTATION_NODE

Methods

Below table lists the different Node Object methods:

getUserData

Method	Description
appendChild(Node newChild)	This method adds a node after the last child node of the specified element node. It returns the added node.
cloneNode(boolean deep)	This method is used to create a duplicate node, when overridden in a derived class. It returns the duplicated node.

compareDocumentPosition(Node other)	This method is used to compare the position of the current node against a specified node according to the document order. Returns *unsigned short*, how the node is positioned relatively to the reference node.
getFeature(DOMString feature, DOMString version)	Returns the DOM Object which implements the specialized APIs of the specified feature and version, if any, or null if there is no object. *This has been removed. Refer* ***specs***.
getUserData(DOMString key)	Retrieves the object associated to a key on this node. The object must first have been set to this node by calling the **setUserData** with the same key. Returns the **DOMUserData** associated to the given key on this node, or null if there was none. *This has been removed. Refer* ***specs***.
hasAttributes()	Returns whether this node (if it is an element) has any attributes or not. Returns *true if* any attribute is present in the specified node else returns *false*. *This has been removed. Refer* ***specs***.
hasChildNodes()	Returns whether this node has any children or not. This method returns *true* if the current node has child nodes otherwise *false*.
insertBefore(Node newChild, Node refChild)	This method is used to insert a new node as a child of this node, directly before an existing child of this node. It returns the node being inserted.
isDefaultNamespace(DOMString namespaceURI)	This method accepts a namespace URI as an argument and returns a *Boolean* with a value of *true* if the namespace is the default namespace on the given node or *false* if not.

isEqualNode(Node arg)	This method tests whether two nodes are equal. Returns *true* if the nodes are equal, *false* otherwise.
isSameNode(Node other)	This method returns whether current node is the same node as the given one. Returns *true* if the nodes are the same, *false* otherwise. *This has been removed. Refer* ***specs***.
isSupported(DOMString feature, DOMString version)	This method returns whether the specified DOM module is supported by the current node. Returns *true* if the specified feature is supported on this node, *false* otherwise. *This has been removed. Refer specs*.
lookupNamespaceURI(DOMString prefix)	This method gets the URI of the namespace associated with the namespace prefix.
lookupPrefix(DOMString namespaceURI)	This method returns the closest prefix defined in the current namespace for the namespace URI. Returns an associated namespace prefix if found or null if none is found.
normalize()	Normalization adds all the text nodes including attribute nodes which define a normal form where structure of the nodes which contain elements, comments, processing instructions, CDATA sections, and entity references separates the text nodes, i.e., neither adjacent Text nodes nor empty Text nodes.
removeChild(Node oldChild)	This method is used to remove a specified child node from the current node. This returns the node removed.
replaceChild(Node newChild, Node oldChild)	This method is used to replace the old child node with a new node. This returns the node replaced.

setUserData(DOMString key, DOMUserData data, UserDataHandler handler)	This method associates an object to a key on this node. The object can later be retrieved from this node by calling the *getUserData* with the same key. This returns the *DOMUserData* previously associated to the given key on this node. *This has been removed. Refer* ***specs***.

appendChild

The Method *appendChild* adds a node after the last child node of the specified element node. It returns the added node.

Syntax

Following is the syntax for the usage of the *appendChild* attribute.

```
nodeObject.appendChild(newChild)
```

Parameter	Description
newChild	It is the new node to be added/appended. It is of type *Node*.

This method returns the *Node* added.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
```

```
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *appendChild* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
          }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         create_e = xmlDoc.createElement("PhoneNo");

         x = xmlDoc.getElementsByTagName("FirstName")[0];
```

```
         x.appendChild(create_e);
         document.write("Appended child is : ")
         document.write(x.getElementsByTagName("PhoneNo")[0].nodeName);
      </script>

   </body>
</html>
```

Execution

Save this file as *nodemethod_appendchild.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Appended child is : PhoneNo
```

cloneNode

Method *cloneNode* is used to create a duplicate node, when overridden in a derived class. It returns the duplicated node.

Syntax

Following is the syntax for the usage of the *cloneNode* method.

```
nodeObject.cloneNode(boolean deep)
```

Parameter	Description
deep	If *true*, recursively clones the subtree under the specified node; if *false*, clone only the node itself (and its attributes, if it is an Element).

This method returns the duplicate *Node*.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
```

```
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of *cloneNode* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
```

```
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee')[0];
         clone_node = x.cloneNode(true);
         xmlDoc.documentElement.appendChild(clone_node);
         document.write("Following list has cloned node: ");
         document.write("<br>");
         y = xmlDoc.getElementsByTagName("LastName");
         for (i = 0; i < y.length; i ++)
         {
            document.write(y[i].childNodes[0].nodeValue);
            document.write("<br>");
         }
      </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_clonenode.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Following list has cloned node:

Patil
Mishra
Sharma
Patil
```

You will notice that the first LastName *Patil* is cloned.

compareDocumentPosition

Method *compareDocumentPosition* is used to compare the position of the current node against a specified node according to the document order. Returns unsigned short, how the node is positioned relatively to the reference node.

Syntax

Following is the syntax for the usage of the *compareDocumentPosition* method.

```
nodeObject.compareDocumentPosition(Node other)
```

Parameter	Description
other	It is the reference node to which the current node is compared. It is of type *Node*.

This method returns how the node is positioned relatively to the reference node.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>

   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *compareDocumentPosition* method:

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

```
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
          }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         f1 = xmlDoc.getElementsByTagName('LastName')[1];
         f2 = xmlDoc.getElementsByTagName('LastName')[2];
         document.write("Result after comparing the position : ")

         document.write(f1.compareDocumentPosition(f2));

      </script>

   </body>
</html>
```

Execution

Save this file as *nodemethod_comparedocumentposition.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Result after comparing the position : 4
```

hasChildNodes

The method *hasChildNodes* returns whether this node has any children. This method returns true if the current node has child nodes otherwise false.

Syntax

Following is the syntax for the usage of the *hasChildNodes* method.

```
nodeObject.hasChildNodes()
```

This method returns boolean *true* value if the node has any child, false otherwise.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *hasChildNodes* method:

```
<!DOCTYPE html>
```

```
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
          }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         y = xmlDoc.getElementsByTagName("Employee")[0];
         document.write("Checks for the existence of child node : ");
         document.write(y.hasChildNodes());
      </script>

   </body>
</html>
```

Execution

Save this file as *nodemethod_haschildnodes.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Checks for the existence of child node : true
```

insertBefore

Method *insertBefore* inserts a new node as a child of this node, directly before an existing child of this node. It returns the node being inserted.

Syntax

Following is the syntax for the usage of the *insertBefore* method.

```
nodeObject.insertBefore(Node newChild, Node refChild)
```

Parameter	Description
newChild	It is the new node to be added. It is of type *Node*.
refChild	It is used as a reference node before which a new node is added. It is of type *Node*.

This method returns the node being inserted.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
```

```
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *insertBefore* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
        }
      </script>
   </head>
   <body>

      <script>
         xmlDoc=loadXMLDoc("/dom/node.xml");

             create_e = xmlDoc.createElement("Email");

             f1 = xmlDoc.documentElement;
             f2 = xmlDoc.getElementsByTagName("Email");
```

```
            document.write("No of Email elements before insert operation: " +
f2.length);
            document.write(" <br>");
            f1.insertBefore(create_e,f2[3]);

            f2 = xmlDoc.getElementsByTagName("Email");
            document.write("No of Email elements after insert operation: " +
f2.length);
      </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_insertbefore.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
No of Email elements before insert operation: 3
No of Email elements after insert operation: 4
```

isDefaultNamespace

The method *isDefaultNamespace* accepts a namespace URI as an argument and returns a *Boolean* with a value of *true* if the namespace is the default namespace on the given node or *false* if not.

Syntax

Following is the syntax for the usage of the *isDefaultNamespace* method.

```
result = nodeobject.isDefaultNamespace(namespaceURI)
```

Parameter	Description
namespaceURI	It is a *String* representing the namespace against which the element will be checked.

This method returns *boolean* true or false.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
```

```
   <Employee Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName>Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName>Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *isDefaultNamespace* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6

            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();

            return xhttp.responseXML;
         }
      </script>
```

```
   </head>
   <body>

 <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         x = xmlDoc.getElementsByTagName('Employee');
            document.write("<b>Namespace URI of Employee node is:</b>
"+x.item(0).attributes[0].namespaceURI);
         var uri = "http://www.tutorials.com/technical/";
         y = xmlDoc.getElementsByTagNameNS(uri,'FirstName')[0];
            document.write("<br><b>isDefaultNamespace:</b> ");
         document.write(y.isDefaultNamespace(uri));
    </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_isDefaultNamespace.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Namespace URI of Employee node is: http://www.w3.org/2000/xmlns/
isDefaultNamespace: false
```

isEqualNode

Method *isEqualNode* tests whether two nodes are equal. Returns true if the nodes are equal, false otherwise.

Syntax

Following is the syntax for the usage of the *isEqualNode* method.

```
nodeObject.isEqualNode(Node arg)
```

Parameter	Description
arg	It is the node with which equality condition is evaluated. It is of type*Node*.

This method returns the boolean *true* if the nodes are equal, false if otherwise.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *isEqualNode* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
```

```
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
        }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         e1 = xmlDoc.getElementsByTagName("Employee")[1];
         e2 = xmlDoc.getElementsByTagName("Employee")[2];
         document.write("Checks the equality result : ")
         document.write(e1.isEqualNode(e2));

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

Execution

Save this file as *nodemethod_isequalnode.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Checks the equality result : false
```

lookupNamespaceURI

Method *lookupNamespaceURI* gets the URI of the namespace associated with the namespace prefix, starting from the current node.

Syntax

Following is the syntax for the usage of the *lookupNamespaceURI* method.

```
nodeObject.lookupNamespaceURI(DOMString prefix)
```

Parameter	Description
prefix	Based on this parameter namespace uri is return if present any. It is of type *DOMString*.

This method returns the associated namespace URI or null if none is found.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
<Employee xmlns:e="http://www.tutorials.com/technical/" category="technical">
   <e:FirstName>Tanmay</e:FirstName>
   <e:LastName>Patil</e:LastName>
   <e:ContactNo>1234567890</e:ContactNo>
   <e:Email>tanmaypatil@xyz.com</e:Email>
</Employee>
<Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
   <n:FirstName>Taniya</n:FirstName>
   <n:LastName>Mishra</n:LastName>
   <n:ContactNo>1234667898</n:ContactNo>
   <n:Email>taniymishra@xyz.com</n:Email>
</Employee>
</Company>
```

Following example demonstrates the usage of the *lookupNamespaceURI* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
```

```
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");

         y = xmlDoc.getElementsByTagName("Employee")[0];
         document.write("lookupNameSpaceURI is : ")
         document.write(y.lookupNamespaceURI("e"));
      </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_namespaceuri.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
lookupNameSpaceURI is : http://www.tutorials.com/technical/
```

lookupPrefix

Method *lookupPrefix* returns the closest prefix defined in the current namespace for the namespace URI. Returns an associated namespace prefix if found or null if none is found.

Syntax

Following is the syntax for the usage of the *lookupPrefix* method.

```
nodeObject.lookupPrefix(DOMString namespaceURI)
```

Parameter	Description
namespaceURI	Based on this parameter prefix is returned. It is of type*DOMString*.

This method returns the associated namespace prefix or null if none is found.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
<Employee xmlns:e="http://www.tutorials.com/technical/" category="technical">
   <e:FirstName>Tanmay</e:FirstName>
   <e:LastName>Patil</e:LastName>
   <e:ContactNo>1234567890</e:ContactNo>
   <e:Email>tanmaypatil@xyz.com</e:Email>
</Employee>
<Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
   <n:FirstName>Taniya</n:FirstName>
   <n:LastName>Mishra</n:LastName>
   <n:ContactNo>1234667898</n:ContactNo>
   <n:Email>taniymishra@xyz.com</n:Email>
</Employee>
</Company>
```

Following example demonstrates the usage of the *lookupPrefix* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
```

```
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");

         y=xmlDoc.getElementsByTagName("Employee")[0];
         document.write("lookupPrefix is : ")
         document.write(y.lookupPrefix("http://www.tutorials.com/technical/"));
      </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_lookupprefix.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
lookupPrefix is : e
```

normalize

Method *normalize* adds all the text nodes including attribute nodes which define a normal form where the structure of the nodes which contains elements, comments, processing instructions, CDATA sections, and entity references separates the text nodes, i.e., neither adjacent Text nodes nor empty Text nodes.

Syntax

Following is the syntax for the usage of the *normalize* method.

```
nodeobject.normalize();
```

This method has no parameters and no return value.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *normalize* method:

```
<!DOCTYPE html>
<html>
<head>
   <script>
      function loadXMLDoc(filename)
      {
         if (window.XMLHttpRequest)
         {
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
```

```
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
 <script>
   xmlDoc = loadXMLDoc("/dom/node.xml");
   x = xmlDoc.createElement('Employee');
   x.appendChild( document.createTextNode("EmployeeA ") );
   x.appendChild( document.createTextNode("EmployeeB ") );

   document.write("<b>Before normalize</b><br>");
   document.write("<b>Child node length: </b>"+x.childNodes.length+"<br>");
   document.write("<b>First child node:
</b>"+x.childNodes[0].textContent+"<br>");
   document.write("<b>Second child node:
</b>"+x.childNodes[1].textContent+"<br>");

   x.normalize();
   document.write("<b>After normalize</b><br>");
   document.write("<b>Child node length: </b>"+x.childNodes.length+"<br>");
   document.write("<b>First child node:
</b>"+x.childNodes[0].textContent+"<br>");
</script>
</body>
</html>
```

Execution

Save this file as *nodemethod_normalise.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Before normalize
Child node length: 2
First child node: EmployeeA
Second child node: EmployeeB
After normalize
```

```
Child node length: 1
First child node: EmployeeA EmployeeB
```

removeChild

Method *removeChild* is used to remove a specified child node from the current node. Returns the node removed.

Syntax

Following is the syntax for the usage of the *removeChild* method.

```
nodeObject.removeChild(Node oldChild)
```

Parameter	Description
oldChild	Specifies child to be removed. It is of type *Node*.

This method returns the node removed.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
```

```
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *removeChild* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
        }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         f1 = xmlDoc.documentElement;
         f2 = f1.childNodes[5];
         removedNode = f2.removeChild(f2.childNodes[5]);
         document.write("Removed node is : " + removedNode.nodeName);
      </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_removechild.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Removed node is : ContactNo
```

replaceChild

Method *replaceChild* is used to replace the old child node with a new node. This returns the node replaced.

Syntax

Following is the syntax for the usage of the *replaceChild* method.

```
nodeObject.replaceChild(Node newChild, Node oldChild)
```

Parameter	Description
newChild	It is the new child to be replaced with the old child. It is of type*Node*.
oldChild	This parameter is replaced by the new child. It is of type *Node*.

This method returns the node replaced.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
```

```
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>


      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the replaceChild method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
          }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");


         x = xmlDoc.documentElement;


         create_e1 = xmlDoc.createElement("Employee");
         create_e2 = xmlDoc.createElement("Email");
```

```
         create_t = xmlDoc.createTextNode("tanu@xyz.com");

         create_e2.appendChild(create_t);
         create_e1.appendChild(create_e2);

         y = xmlDoc.getElementsByTagName("Employee")[0]
         x.replaceChild(create_e1,y);

         z = xmlDoc.getElementsByTagName("Email")[0];
         document.write("After Replacement  : ")
         document.write(z.childNodes[0].nodeValue);

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

Execution

Save this file as *nodemethod_replacechild.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
After Replacement : tanu@xyz.com
```

18. XML DOM — NodeList Object

The NodeList object specifies the abstraction of an ordered collection of nodes. The items in the NodeList are accessible via an integral index, starting from 0.

Attributes

The following table lists the attributes of the NodeList object:

Attribute	Type	Description
length	unsigned long	It gives the number of nodes in the node list.

Object Attribute - length

Attribute *length* gives the number of nodes in the node list.

Syntax

Following is the syntax for the usage of the *length* attribute.

```
nodelistObject.length
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
```

```
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

The following example parses an XML document (node.xml) into an XML DOM object and extracts the length information using the length attribute.

```
<!DOCTYPE html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         y = xmlDoc.getElementsByTagName('FirstName');
         document.write("Length of node list: " + y.length);

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

Execution

Save this file as *nodeattribute_length.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Length of node list: 3
```

Methods

The following is the only method of the NodeList object.

Method	Description
item()	It returns the *index*th item in the collection. If index is greater than or equal to the number of nodes in the list, this returns null.

Object Method — item

Method *item* returns the *index*th item in the collection.

Syntax

Following is the syntax for the usage of the *item* attribute.

```
Node item(long index)
```

Where *index* is the index into the collection.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
```

```
</Company>
```

The following example (nodelist_methods.htm) parses an XML document (node.xml) into an XML DOM object and displays each item in the node list:

```
<!DOCTYPE html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         y=xmlDoc.getElementsByTagName("Employee");

         for (i=0; i<y.length; i++)
         {
            document.write(y.item(i).nodeName);
            document.write("<br>");
         }
      </script>
   </body>
</html>
```

Execution

Save this file as *nodemethod_item.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Employee
Employee
Employee
```

19. XML DOM — NamedNodeMap Object

The *NamedNodeMap* object is used to represent collections of nodes that can be accessed by name.

Attributes

The following table lists the Property of the NamedNodeMap Object.

Attribute	Type	Description
length	unsigned long	It gives the number of nodes in this map. The range of valid child node indices is 0 to length-1 inclusive.

NamedNodeMap Object Property- length

Property *length* gives the number of nodes in this map. The range of the valid child node indices is 0 to length-1 inclusive.

Syntax

Following is the syntax for the usage of the *length* property.

```
nodemapObject.length
```

Example

node.xml contents are as below:

```
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
```

```
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *length* property:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {// code for IE7+, Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }
         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         x = xmlDoc.getElementsByTagName("Employee");
         document.write("Length is : ");
         document.write(x.item(0).attributes.length);
      </script>
   </body>
</html>
```

Execution

Save this file as *namednodemapproperty_length.htm* on the server path (this file and node_methods.xml should be on the same path in your server). We will get the output as shown below:

```
Length is : 1
```

Methods

The following table lists the methods of the *NamedNodeMap* object.

Methods	Description
getNamedItem ()	Retrieves the node specified by name.
getNamedItemNS ()	Retrieves a node specified by local name and namespace URI.
item ()	Returns the *index*th item in the map. If index is greater than or equal to the number of nodes in this map, this returns null.
removeNamedItem ()	Removes a node specified by name.
removeNamedItemNS ()	Removes a node specified by local name and namespace URI.
setNamedItem ()	Adds a node using its *nodeName attribute. If a node with that name is already present in this map, it is replaced by the new one.*
setNamedItemNS ()	Adds a node using its *namespaceURI* and *localName*. If a node with that namespace URI and that local name is already present in this map, it is replaced by the new one. Replacing a node by itself has no effect.

NamedNodeMap Object Method- getNamedItem

Method *getNamedItem ()* retrieves the node specified by name.

Syntax

Following is the syntax for the usage of the *getNamedItem()* method.

```
nodemapObject.getNamedItem(name)
```

Parameter	Description
name	This specifies the name of the node to retrieve. It is of type*DOMString*.

This method returns the *Node* specified by name.

Example

node.xml contents are as below:

```
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *getNamedItem()* method:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {// code for IE7+, Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }
```

```
         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         xmlDoc = xmlDoc.getElementsByTagName('Employee')[0].attributes;
         document.write("Name of attribute category for node Employee is: ");
         document.write(xmlDoc.getNamedItem('category').nodeValue);
      </script>
   </body>
</html>
```

Execution

Save this file as *namednodemapmethod_getnameditem.htm* on the server path (this file and node_methods.xml should be on the same path in your server). We will get the output as shown below:

```
Name of attribute category for node Employee is: Technical
```

NamedNodeMap Object Method- getNamedItemNS

Method *getNamedItemNS ()* retrives node specified by local name and namespace URI.

Syntax

Following is the syntax for the usage of the *getNamedItemNS()* method.

```
nodemapObject.getNamedItemNS(namespaceURI, localName);
```

Parameter	Description
namespaceURI	It is the namespaceURI of the node to retrieve. It is of type*DOMString*.
localName	It is the local name of the node to retrieve. It is of type*DOMString*.

This method returns namespaceURI and the local name of the specified node or null if they do not have any value.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
<Employee  xmlns:e="http://www.tutorials.com/technical/" category="technical">
   <e:FirstName e:language="English">Tanmay</e:FirstName>
   <e:LastName>Patil</e:LastName>
   <e:ContactNo>1234567890</e:ContactNo>
   <e:Email>tanmaypatil@xyz.com</e:Email>
</Employee>
<Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
   <n:FirstName>Taniya</n:FirstName>
   <n:LastName>Mishra</n:LastName>
   <n:ContactNo>1234667898</n:ContactNo>
   <n:Email>taniymishra@xyz.com</n:Email>
</Employee>
</Company>
```

Following example demonstrates the usage of the *getNamedItemNS()* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
```

```
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");

         xmlDoc = xmlDoc.getElementsByTagName('e:FirstName')[0].attributes;
         document.write("Named Item Attribute node is :- ");

document.write(xmlDoc.getNamedItemNS("http://www.tutorials.com/technical/",'lan
guage').nodeName);
         document.write("<br>");

         document.write("Named Item Attribute value is :- ");

document.write(xmlDoc.getNamedItemNS("http://www.tutorials.com/technical/",'lan
guage').nodeValue);

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

Execution

Save this file as *namednodemapmethod_getnameditemns.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Named Item Attribute node is :- e:language
Named Item Attribute value is :- English
```

NamedNodeMap Object Method- item ()

Method *item ()* returns the indexth item in the map. If index is greater than or equal to the number of nodes in this map, this returns null.

Syntax

Following is the syntax for the usage of the *item()* method.

```
nodemapObject.item(index)
```

Parameter	Description
index	It specifies the position of the item into the map. It is of type*unsigned long*.

This method returns the indexth item in the map.

Example

node.xml contents are as below:

```
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *item()* method:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
```

```
         {// code for IE7+, Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }
         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         x=xmlDoc.getElementsByTagName('Employee');

         item_name = x.item(0).attributes.getNamedItem("category");
         document.write("Get the specified item value : ")
         document.write( item_name.value );
      </script>
   </body>
</html>
```

Execution

Save this file as *namednodemapmethod_item.htm* on the server path (this file and node_methods.xml should be on the same path in your server). We will get the output as shown below:

```
Get the specified item value : Technical
```

NamedNodeMap Object Method- removeNamedItem

Method *removeNamedItem()* removes a node specified by name.

Syntax

Following is the syntax for the usage of the *removeNamedItem()* method.

```
nodemapObject.removeNamedItem(name)
```

Parameter	Description
name	This specifies the name of the node to remove. It is of type*DOMString*.

This method returns the removed node.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *removeNamedItem()* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
                xhttp=new XMLHttpRequest();
            }
```

```
            else // code for IE5 and IE6
            {
                xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         y = xmlDoc.getElementsByTagName('Employee')[0].attributes;
         document.write("Name of the attribute removed from 'category' : ")
         document.write(y.removeNamedItem('category').nodeValue);

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

Execution

Save this file as *namednodemapmethod_removenameditem.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Name of the attribute removed from 'category' : Technical
```

NamedNodeMap Object Method- removeNamedItemNS

Method *removeNamedItemNS()* removes a node specified by the local name and the namespace URI.

Syntax

Following is the syntax for the usage of the *removeNamedItemNS()* method.

```
nodemapObject.removeNamedItem(namespaceURI, localName)
```

Parameter	Description
namespaceURI	It is the namespaceURI of the node to remove. It is of type*DOMString*.
localName	It is the local name of the node to remove. It is of type*DOMString*.

This method removes specified namespaceURI and the local name of the node or null if they do not have any value.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
<Employee xmlns:e="http://www.tutorials.com/technical/" category="technical">
   <e:FirstName e:language="English">Tanmay</e:FirstName>
   <e:LastName>Patil</e:LastName>
   <e:ContactNo>1234567890</e:ContactNo>
   <e:Email>tanmaypatil@xyz.com</e:Email>
</Employee>
<Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
   <n:FirstName>Taniya</n:FirstName>
   <n:LastName>Mishra</n:LastName>
   <n:ContactNo>1234667898</n:ContactNo>
   <n:Email>taniymishra@xyz.com</n:Email>
</Employee>
</Company>
```

Following example demonstrates the usage of the *removeNamedItemNS()* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
                xhttp=new XMLHttpRequest();
            }
```

```
            else // code for IE5 and IE6
            {
                xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");

         xmlDoc = xmlDoc.getElementsByTagName('e:FirstName')[0].attributes;
         document.write("Removed Item Attribute node is :- ");

document.write(xmlDoc.removeNamedItemNS("http://www.tutorials.com/technical/",'
language').nodeName);

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

Execution

Save this file as *namednodemapmethod_removenameditemns.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Removed Item Attribute node is :- e:language
```

NamedNodeMap Object Method- setNamedItem

Method *setNamedItem()* adds a node using its nodeName attribute. If a node with that name is already present in this map, it is replaced by the new one.

Syntax

Following is the syntax for the usage of the *setNamedItem()* method.

```
nodemapObject.setNamedItem(arg)
```

Parameter	Description
arg	This stores the node in the map. This node value can be accessed later using the *nodeName* attribute. It is of type *node*.

This method returns the new updated value of the node if the existing node is replaced, otherwise null is returned.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *setNamedItem()* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
                xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
                xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         c = xmlDoc.createAttribute("category");
         c.value = "TutorialsPoint";
         y = xmlDoc.getElementsByTagName('Employee')[0].attributes;
         y.setNamedItem(c);
         document.write("Set named Item value is : ")
         document.write(y.getNamedItem('category').nodeValue);

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

Execution

Save this file as *namednodemapmethod_setnameditem.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Set named Item value is : TutorialsPoint
```

NamedNodeMap Object Method- setNamedItemNS

Method *setNamedItemNS()* adds a node using its *nodeName* attribute. If a node with that name is already present in this map, it is replaced by the new one.

Syntax

Following is the syntax for the usage of the *setNamedItemNS()* method.

```
nodemapObject.setNamedItemNS(arg)
```

Parameter	Description
arg	This stores the node in the map. This node can be accessed later using the values of its *namespaceURI* and *localName*attribute. It is of type *node*.

This method replaces the old node and returns the new node value.

Example

node_ns.xml contents are as below:

```
<?xml version ="1.0"?>

<Company>

<Employee  xmlns:e = "http://www.tutorials.com/technical/"
category="technical">

   <e:FirstName e:language="English">Tanmay</e:FirstName>

   <e:LastName>Patil</e:LastName>

   <e:ContactNo>1234567890</e:ContactNo>

   <e:Email>tanmaypatil@xyz.com</e:Email>

</Employee>

<Employee xmlns:n ="http://www.tutorials.com/non-technical/" category="non-
technical">

   <n:FirstName>Taniya</n:FirstName>

   <n:LastName>Mishra</n:LastName>

   <n:ContactNo>1234667898</n:ContactNo>
```

```
   <n:Email>taniymishra@xyz.com</n:Email>
</Employee>
</Company>
```

Following example demonstrates the usage of the *setNamedItemNS()* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
                xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
                xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");

         c =
xmlDoc.createAttributeNS("http://www.tutorials.com/technical/",'language');
         c.value = "CEO";
         y = xmlDoc.getElementsByTagName('e:FirstName')[0].attributes;
         y.setNamedItemNS(c);
         document.write("Set named Item NS value is : ")

document.write(y.getNamedItemNS("http://www.tutorials.com/technical/",'language
').nodeValue);
```

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

Execution

Save this file as *namednodemapmethod_setnameditemns.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Set named Item NS value is : CEO
```

20. XML DOM — DOMImplementation Object

The *DOMImplementation* object provides a number of methods for performing operations that are independent of any particular instance of the document object model.

Methods

Following table lists the methods of the *DOMImplementation* object:

Methods	Description
createDocument(namespaceURI, qualifiedName, doctype)	It creates a DOM Document object of the specified type with its document element.
createDocumentType(qualifiedName, publicId, systemId)	It creates an empty *DocumentType*node.
getFeature(feature, version)	This method returns a specialized object which implements the specialized APIs of the specified feature and version. *This has been removed. Refer* ***specs***.
hasFeature(feature, version)	This method tests if the DOM implementation implements a specific feature and version.

DOMImplementation Object Method- createdocument

The method *createDocument ()* is used to create a DOM Document object of the specified type with its document element.

Syntax

Following is the syntax of the *createDocument ()* method.

```
Document doc = document.implementation.createDocument(namespaceURI,
qualifiedNameStr, documentType);
```

- *namespaceURI* is the namespace URI of the document element to be created or null.
- *qualifiedName* is the qualified name of the document element to be created or null.
- *doctype* is the type of document to be created or null.

- This method returns a new *Document* object with its document element.

Example

Following example demonstrates the usage of the *createDocument ()* method:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
        var doc = document.implementation.createDocument
('http://www.w3.org/1999/xhtml', 'html', null);
      var body = document.createElementNS('http://www.w3.org/1999/xhtml',
'body');
      body.setAttribute('id', 'Company');
      doc.documentElement.appendChild(body);
      document.write(doc.getElementById('Company')); // [object HTMLBodyElement]
       </script>
   </body>
</html>
```

Execution

Save this file as *domimplementation_createdocument.htm* on the server path (this file and node.xml should be on the same path in your server).We will get the output as shown below:

```
[object HTMLBodyElement]
```

DOMImplementation Object Method- createdocument

Method *createDocumentType ()* is used to create an empty DocumentType node. Entity declarations and notations are not made available.

Syntax

Following is the syntax of the *createDocument()* method.

```
Document doc = document.implementation.createDocumentType(qualifiedName,
publicId, systemId);
```

- *qualifiedName* is the qualified name of the document type to be created.
- *publicId* is the external subset public identifier.
- *systemId* external subset system identifier.

- This method returns a new *DocumentType* node with*Node.ownerDocument* set to null.

Example

Following example demonstrates the usage of the *createDocumentType ()* method:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
        var dt = document.implementation.createDocumentType('svg:svg', '-
//W3C//DTD SVG 1.1//EN', 'http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd');
      var d =
document.implementation.createDocument('http://www.w3.org/2000/svg', 'svg:svg',
dt);
      document.write(d.doctype.publicId); // -//W3C//DTD SVG 1.1//EN
      </script>
   </body>
</html>
```

Execution

Save this file as *domimplementation_createdocumenttype.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
-//W3C//DTD SVG 1.1//EN
```

DOMImplementation Object Method- hasFeature

Method *hasFeature ()* tests if the DOM implementation implements a specific feature and version as defined in DOM Features.

Syntax

Following is the syntax of *hasFeature ()* method.

```
flag = document.implementation.hasFeature(feature, version);
```

Parameter	Description
feature	It is a *DOMString* representing the feature name.
version	It is a *DOMString* representing the version of the specification defining the feature.

Example

Following example demonstrates the usage of the *hasFeature ()* method:

```
<!DOCTYPE html>
<html>

<body>
 <script>
    document.write(document.implementation.hasFeature('Core', '3.0'));
</script>
</body>
</html>
```

Execution

Save this file as *domimplementation_hasfeature.htm* on the server path. We will get the output as shown below:

```
true
```

21. XML DOM — DocumentType Object

The *DocumentType* objects are the key to access the document's data and in the document, the doctype attribute can have either the null value or the DocumentType Object value. These DocumentType objects act as an interface to the entities described for an XML document.

Attributes

The following table lists the attributes of the *DocumentType* object:

Attribute	Type	Description
name	DOMString	It returns the name of the DTD which is written immediately next to the keyword !DOCTYPE.
entities	NamedNodeMap	It returns a NamedNodeMap object containing the general entities, both external and internal, declared in the DTD.
notations	NamedNodeMap	It returns a NamedNodeMap containing the notations declared in the DTD.
internalSubset	DOMString	It returns an internal subset as a string, or null if there is none. *This has been removed. Refer **specs***.
publicId	DOMString	It returns the public identifier of the external subset.
systemId	DOMString	It returns the system identifier of the external subset. This may be an absolute URI or not.

DocumentType Object Attribute - name

The attribute *name()* returns the name of the DTD which is written immediately next to the keyword !DOCTYPE.

Syntax

Following is the syntax for the usage of the *name* attribute.

```
documentObj.doctype.name
```

Example

address_internal_dtd.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE address [
<!ELEMENT address    (name,company,phone)>
<!ELEMENT name    (#PCDATA)>
<!ELEMENT company   (#PCDATA)>
<!ELEMENT phone (#PCDATA)>
]>
<address>
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
</address>
```

Following example demonstrates the usage of the *name* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
```

```
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/address_internal_dtd.xml");
         document.write("The name next to the keyword doctype is:"+
xmlDoc.doctype.name);
      </script>
   </body>
</html>
```

Execution

Save this file as *documenttype_name.html* on the server path (this file and address_internal_dtd.xml should be on the same path in your server). We will get the output as shown below:

```
The name next to the keyword doctype is: address
```

DocumentType Object Attribute - entities

The attribute *entities* return a NamedNodeMap object containing the general entities, both external and internal, declared in the DTD.

Syntax

Following is the syntax for the usage of the *entities* attribute.

```
documentObj.doctype.entities
```

Example

address_internal_dtd.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE address [
<!ELEMENT address    (name,company,phone)>
<!ELEMENT name    (#PCDATA)>
<!ELEMENT company   (#PCDATA)>
<!ELEMENT phone (#PCDATA)>
]>
<address>
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
```

```
</address>
```

Following example demonstrates the usage of the *entities* attribute:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/address_internal_dtd.xml");

         x = xmlDoc.doctype.entities;

         document.write("Nodename is: " + xmlDoc.nodeName);
         document.write("<br>");
         document.write(" nodetype is: " + xmlDoc.nodeType + "<br>");

         y = xmlDoc.documentElement;
         document.write("Nodename is: " + y.nodeName);
         document.write("<br>");
         document.write(" nodetype is: " + y.nodeType + "<br>");
      </script>
```

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

Execution

Save this file as *documenttype_entities.html* on the server path (this file and address_internal_dtd.xml should be on the same path in your server). We will get the output as shown below:

```
Nodename is: #document
nodetype is: 9
Nodename is: address
nodetype is: 1
```

DocumentType Object Attribute - notation

The attribute *notations* containing the notations declared in the DTD.

Example

notation.xml contents are as below:

```
<?xml version = "1.0"?>
<!DOCTYPE address [
   <!ELEMENT address (#PCDATA)>
   <!NOTATION name PUBLIC "Tanmay">
   <!ATTLIST address category NOTATION (name) #REQUIRED>
]>
<address name = "Tanmay">Hello world!!!!!!</address>
```

Following example demonstrates the usage of the *notations* attribute:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
```

```
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/notation.xml");
         var notations = xmlDoc.doctype.notations;
        document.write("notations: "+notations);
        document.write("Item "+notations.getNamedItem('Tanmay'));
      </script>
   </body>
</html>
```

Execution

Save this file as *documenttype_notations.html* on the server path (this file and notation.xml should be on the same path in your server).We will get the output as shown below:

```
notations: undefined
```

This collection is very sparsely supported by browsers, but there's no other way to retrieve this data.

DocumentType Object Attribute - publicId

The attribute *publicId* returns the public identifier of the external subset.

Syntax

Following is the syntax for usage of the *publicId* attribute.

```
document.doctype.publicId;
```

Example

notation.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<address id="firstelement">
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
</address>
```

Following example demonstrates the usage of the *publicId* attribute:

```
<!DOCTYPE html>
<html>
<head>
   <script>
      function loadXMLDoc(filename)
      {
         if (window.XMLHttpRequest)
         {
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>
      xmlDoc = loadXMLDoc("/dom/notation_xhtml.xml");
      document.write("<b>publicid :</b> "+xmlDoc.doctype.publicId);
   </script>
```

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

Execution

Save this file as *documenttype_publicid.html* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
publicid : -//W3C//DTD XHTML 1.1//EN
```

DocumentType Object Attribute - systemId

The attribute *systemId* returns the system identifier of the external subset. This may be an absolute URI or not.

Syntax

Following is the syntax for the usage of the *systemId* attribute.

```
document.doctype.systemId;
```

Example

notation.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<address id="firstelement">
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
</address>
```

Following example demonstrates the usage of the *systemId* attribute:

```
<!DOCTYPE html>
<html>
<head>
   <script>
      function loadXMLDoc(filename)
      {
         if (window.XMLHttpRequest)
         {
```

```
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
 <script>
   xmlDoc = loadXMLDoc("/dom/notation_xhtml.xml");
   document.write("<b>SystemId :</b> "+xmlDoc.doctype.systemId);
</script>
</body>
</html>
```

Execution

Save this file as *documenttype_systemId.html* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
SystemId : http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd
```

22. DOM — ProcessingInstruction Object

ProcessingInstruction gives that application-specific information which is generally included in the prolog section of the XML document.

Processing instructions (PIs) can be used to pass information to applications. PIs can appear anywhere in the document outside the markup. They can appear in the prolog, including the document type definition (DTD), in textual content, or after the document.

A PI starts with a special tag **<?** and ends with **?>**. Processing of the contents ends immediately after the string **?>** is encountered.

Attributes

The following table lists the attributes of the *ProcessingInstruction* object:

Attribute	Type	Description
data	DOMString	It is a character that describes the information for the application to process immediately preceding the ?>.
target	DOMString	This identifies the application to which the instruction or the data is directed.

ProcessingInstruction Object Attribute- data

The attribute *data* is a character that describes the information for the application to process immediately preceding the ?>.

Syntax

Following is the syntax for the usage of the *data* attribute.

```
ProcessingInstruction.target
```

Parameter	Description
data	It is a character that describes the information for the application to process immediately preceding the ?>.

Example

Following example demonstrates the usage of the *data* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
     // loads the xml string in a dom object
         function loadXMLString(t)
         {
        // for non IE browsers
           if (window.DOMParser)
           {
            // create an instance for xml dom object
                parser=new DOMParser();
                xmlDoc=parser.parseFromString(t,"text/xml");
           }
        // code for IE
           else
           {
           // create an instance for xml dom object
              xmlDoc=new ActiveXObject("Microsoft.XMLDOM");
              xmlDoc.async=false;
              xmlDoc.loadXML(t);
           }
           return xmlDoc;
         }
     function get_firstChild(p)
            {
           a = p.firstChild;
              return a;
            }
      </script>
   </head>
   <body>
      <script>
     var xml="<Employee>";
         xml=xml+"<FirstName>";
      xml=xml+"<?piTarget piData more piData?>";
```

```
      xml=xml+"</FirstName>";

         xml=xml+"</Employee>";

     // calls the loadXMLString() with "text" function and store the xml dom in
a variable
         var xmlDoc=loadXMLString(xml);

     var x = get_firstChild(xmlDoc.getElementsByTagName("FirstName")[0]);
        document.write("First child is : ");
        document.write(x.nodeName);

     //the following should be "piData more piData"
     alert(x.data);

     //the following should be "piTarget"
     alert(x.target);
      </script>
   </body>
</html>
```

Execution

Save this file as *dom_processinginstruction_data.htm* on the server path. We will get the output as shown below:

ProcessingInstruction Object Attribute- target

Attribute *target* identifies the application to which the instruction or data is directed.

Syntax

Following is the syntax for the usage of the *target* attribute.

```
ProcessingInstruction.target
```

Parameter	Description
target	Identifies the application to which the instruction or the data is directed.

Example

Following example demonstrates the usage of the *target* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
     // loads the xml string in a dom object
         function loadXMLString(t)
         {
        // for non IE browsers
           if (window.DOMParser)
           {
            // create an instance for xml dom object
                parser=new DOMParser();
                xmlDoc=parser.parseFromString(t,"text/xml");
           }
        // code for IE
           else
           {
           // create an instance for xml dom object
              xmlDoc=new ActiveXObject("Microsoft.XMLDOM");
              xmlDoc.async=false;
              xmlDoc.loadXML(t);
           }
           return xmlDoc;
         }
```

```
      function get_firstChild(p)
            {
           a = p.firstChild;
              return a;
            }
       </script>
   </head>
   <body>
      <script>
      var xml="<Employee>";
          xml=xml+"<FirstName>";
       xml=xml+"<?piTarget piData more piData?>";
       xml=xml+"</FirstName>";

          xml=xml+"</Employee>";

      // calls the loadXMLString() with "text" function and store the xml dom in
a variable
         var xmlDoc=loadXMLString(xml);

      var x = get_firstChild(xmlDoc.getElementsByTagName("FirstName")[0]);
         document.write("First child is : ");
         document.write(x.nodeName);

      //the following should be "piData more piData"
      alert(x.data);

      //the following should be "piTarget"
      alert(x.target);
       </script>
   </body>
</html>
```

Execution

Save this file as *dom_processinginstruction_target.htm* on the server path. We will get the output as shown below:

23. DOM — Entity Object

Entity interface represents a known entity, either parsed or unparsed, in an XML document. The *nodeName* attribute that is inherited from *Node* contains the name of the entity.

An Entity object does not have any parent node, and all its successor nodes are read-only.

Attributes

The following table lists the attributes of the *Entity* object:

Attribute	Type	Description
inputEncoding	DOMString	This specifies the encoding used by the external parsed entity. Its value is *null* if it is an entity from the internal subset or if it is not known.
notationName	DOMString	For an unparsed entities, it gives the name of the notation and its value is *null* for the parsed entities.
publicId	DOMString	It gives the name of the public identifier associated with the entity.
systemId	DOMString	It gives the name of the system identifier associated with the entity.
xmlEncoding	DOMString	It gives the xml encoding included as a part of the text declaration for the external parsed entity, null otherwise.
xmlVersion	DOMString	It gives the xml version included as a part of the text declaration for the external parsed entity, null otherwise.

Entity Object Attribute- inputEncoding

Attribute *inputEncoding* specifies the encoding used by the external parsed entity. Its value is null if it is an entity from the internal subset or if it is not known.

Syntax

Following is the syntax for the usage of the *inputEncoding* attribute.

```
entityObj.inputEncoding
```

Example

note.xml contents are as below:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<Company>
   <Employee category="Technical" id="firstelement">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *inputEncoding* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
```

```
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>
      xmlDoc = loadXMLDoc("/dom/node.xml");
     document.write("inputEncoding is : ")
     document.write(xmlDoc.inputEncoding);
   </script>
</body>
</html>
```

Execution

Save this file as *entityattribute_inputencoding.htm* on the server path (this file and note.xml should be on the same path in your server). We will get the output as shown below:

```
inputEncoding is : UTF-8
```

Entity Object Attribute- notationName

Attribute *notationName* gives the name of the notation and value for an unparsed entity. For the parsed entities its value is null.

Syntax

Following is the syntax for the usage of the *notationName* attribute.

```
----------
```

Example

notation.xml contents are as below:

```
<?xml version="1.0"?>
<!DOCTYPE address [
  <!ELEMENT address (#PCDATA)>
  <!NOTATION name PUBLIC "Tanmay">
  <!ATTLIST address category NOTATION (name) #REQUIRED>
]>
<address name="Tanmay">Hello world!!!!!!</address>
```

Following example demonstrates the usage of the *notationName* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
        }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/notation.xml");

         x = xmlDoc.getElementsByTagName('address');
         document.write("Name of the attribute notation is : ")
```

```
         document.write(x.item(0).attributes[0].nodeName);

         document.write("<br>")

         document.write("Value of the attribute notation is : ");


         document.write(x.item(0).attributes[0].nodeValue);
      </script>


   </body>
</html>
```

Execution

Save this file as *entityattribute_notations.htm* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
Name of the attribute notation is : name
Value of the attribute notation is : Tanmay
```

Entity Object Attribute - publicId

The attribute *publicId* returns the public identifier of the associated entity or returns null.

Syntax

Following is the syntax for the usage of the *publicId* attribute.

```
document.doctype.publicId;
```

Example

notation.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<address id="firstelement">
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
</address>
```

Following example demonstrates the usage of the *publicId* attribute:

```
<!DOCTYPE html>
<html>
<head>
   <script>
      function loadXMLDoc(filename)
      {
         if (window.XMLHttpRequest)
         {
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>
      xmlDoc = loadXMLDoc("/dom/notation_xhtml.xml");
      document.write("<b>publicid :</b> "+xmlDoc.doctype.publicId);
   </script>
</body>
</html>
```

Execution

Save this file as *entity_publicid.html* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
publicid : -//W3C//DTD XHTML 1.1//EN
```

Entity Object Attribute - systemId

The attribute *systemId* returns the system identifier of the associated entity or returns null.

Syntax

Following is the syntax for the usage of the *systemId* attribute.

```
document.doctype.systemId;
```

Example

notation.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<address id="firstelement">
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
</address>
```

Following example demonstrates the usage of the *systemId* attribute:

```
<!DOCTYPE html>
<html>
<head>
   <script>
      function loadXMLDoc(filename)
      {
         if (window.XMLHttpRequest)
         {
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
```

```
      }
   </script>
</head>
<body>
 <script>
   xmlDoc = loadXMLDoc("/dom/notation_xhtml.xml");
   document.write("<b>SystemId :</b> "+xmlDoc.doctype.systemId);
</script>
</body>
</html>
```

Execution

Save this file as *entity_systemId.html* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
SystemId : http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd
```

Entity Object Attribute- xmlEncoding

Attribute *xmlEncoding* gives the xml encoding included as a part of the text declaration for the external parsed entity, null otherwise.

```
Syntax
```

Following is the syntax for the usage of the *xmlEncoding* attribute.

```
entityObj.xmlEncoding
```

Example

node.xml contents are as below:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
```

```
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *xmlEncoding* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");
```

```
      document.write("xmlEncoding is : ")
         document.write(xmlDoc.xmlEncoding);
      </script>
   </body>
</html>
```

Execution

Save this file as *entityattribute_xmlencoding.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
xmlEncoding is : undefined
```

Entity Object Attribute - xmlVersion

Attribute *xmlVersion* gives the xml version included as a part of the text declaration for the external parsed entity, null otherwise.

Syntax

Following is the syntax for the usage of the *xmlVersion* attribute.

```
entotyObj.xmlVersion
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
```

```
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *xmlVersion* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
          }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");
      document.write("xmlVersion is : ")
         document.write(xmlDoc.xmlVersion);
      </script>
   </body>
</html>
```

Execution

Save this file as *entityattribute_xmlversion.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
xmlVersion is : undefined
```

24. XML DOM — Entity Reference Object

The *EntityReference* objects are the general entity references which are inserted into the XML document providing scope to replace the text. The EntityReference Object does not work for the pre-defined entities since they are considered to be expanded by the HTML or the XML processor.

This interface does not have properties or methods of its own but inherits from*Node*.

25. XML DOM — Notation Object

In this chapter, we will study about the XML DOM *Notation object*. The notation object property provides a scope to recognize the format of elements with a notation attribute, a particular processing instruction or a non-XML data. The Node Object properties and methods can be performed on the Notation Object since that is also considered as a Node.

This object inherits methods and properties from *Node*. Its *nodeName* is the notation name. Has no parent.

Attributes

The following table lists the attributes of the *Notation* object:

Attribute	Type	Description
publicID	DOMString	It gives the name of the public identifier associated with the notation.
systemID	DOMString	It gives the name of the system identifier associated with the notation.

Notation Object Attribute - publicID

The public identifier of a *Notation*; or null if no public identifier is specified.

Syntax

Following is the syntax for the usage of the *publicID* attribute.

```
var pubid = document.doctype.publicId;
```

Example

notation_xhtml.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<address>
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
```

```
</address>
```

Following example demonstrates the usage of the *publicID* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/notation_xhtml.xml");
         document.write("The publicId asscoiated with the notation is:"+
xmlDoc.doctype.publicId);
      </script>
   </body>
</html>
```

Execution

Save this file as *notationattribute_publicid.html* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
The publicId asscoiated with the notation is: -//W3C//DTD XHTML 1.1//EN
```

Notation Object Attribute - systemId

The system identifier of a *Notation*, or null if no system identifier is specified.

Syntax

Following is the syntax for the usage of the *systemId* attribute.

```
var sysid = document.doctype.systemId;
```

Example

notation_xhtml.xml contents are as below:

```
<?xml version = "1.0" encoding = "UTF-8" standalone = "no"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<address>
<name>Tanmay Patil</name >
<company>TutorialsPoint</company>
<phone>(011) 123-4567</phone>
</address>
```

Following example demonstrates the usage of the *systemId* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
```

```
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/notation_xhtml.xml");
         document.write("The systemId asscoiated with the notation is:"+
xmlDoc.doctype.systemId);
      </script>
   </body>
</html>
```

Execution

Save this file as *notationattribute_systemsid.html* on the server path (this file and notation.xml should be on the same path in your server). We will get the output as shown below:

```
The systemId asscoiated with the notation
is:http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd
```

26. DOM — Element Object

The XML elements can be defined as building blocks of XML. Elements can behave as containers to hold text, elements, attributes, media objects or all of these. Whenever parser parses an XML document against the well-formedness, parser navigates through an element node. An element node contains the text within it which is called the text node.

Element object inherits the properties and the methods of the Node object as element object is also considered as a Node. Other than the node object properties and methods, it has the following properties and methods.

Properties

The following table lists the attributes of the *Element* object:

Attribute	Type	Description
tagName	DOMString	It gives the name of the tag for the specified element.
schemaTypeInfo	TypeInfo	It represents the type information associated with this element. *This has been removed. Refer* ***specs***.

Element Object Attribute - tagname

The attribute tagname gives the name of the tag for the specified element.

Syntax

Following is the syntax for the usage of the *tagname* attribute.

```
elementObj.tagName
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
```

```
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *tagname* attribute:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;

         x=xmlDoc.getElementsByTagName("Email")[0];
         document.write("Tagname is :"+ x.tagName);
      </script>
   </body>
```

```
</html>
```

Execution

Save this file as *elementattribute_tagname.html* on the server path (this file and node.xml should be on the same path in your server).We will get the output as shown below:

```
Tagname is : Email
```

Methods

Below table lists the Element Object methods:

Methods	Type	Description
getAttribute()	DOMString	Retrieves the value of the attribute if exists for the specified element.
getAttributeNS()	DOMString	Retrieves an attribute value by local name and namespace URI.
getAttributeNode()	Attr	Retrieves the name of the attribute node from the current element.
getAttributeNodeNS()	Attr	Retrieves an Attr node by local name and namespace URI.
getElementsByTagName()	NodeList	Returns a NodeList of all descendant Elements with a given tag name, in document order.
getElementsByTagNameNS()	NodeList	Returns a NodeList of all the descendant Elements with a given local name and namespace URI in document order.
hasAttribute()	boolean	Returns true when an attribute with a given name is specified on this element or has a default value, false otherwise.

hasAttributeNS()	boolean	Returns true when an attribute with a given local name and namespace URI is specified on this element or has a default value, false otherwise.
removeAttribute()	No Return Value	Removes an attribute by name.
removeAttributeNS	No Return Value	Removes an attribute by local name and namespace URI.
removeAttributeNode()	Attr	Specified attribute node is removed from the element.
setAttribute()	No Return Value	Sets a new attribute value to the existing element.
setAttributeNS()	No Return Value	Adds a new attribute. If an attribute with the same local name and namespace URI is already present on the element, its prefix is changed to be the prefix part of the qualifiedName, and its value is changed to be the value parameter.
setAttributeNode()	Attr	Sets a new attribute node to the existing element.
setAttributeNodeNS	Attr	Adds a new attribute. If an attribute with that local name and that namespace URI is already present in the element, it is replaced by the new one.
setIdAttribute	No Return Value	If the parameter isId is true, this method declares the specified attribute to be a user-determined ID attribute. *This has been removed. Refer* ***specs***.
setIdAttributeNS	No Return Value	If the parameter Id is true, this method declares the specified attribute to be a user-determined ID attribute. *This has been removed. Refer* ***specs***.

Element Object method - getAttribute

The getAttribute method gives the value of the attribute if it exists for a specified element.

Syntax

Following is the syntax for the usage of the *getAttribute* method.

```
elementObj.getAttribute(name)
```

Parameter	Description
Name	It holds the name of the attribute to retrieve.

This method returns the value of the attribute as a string if present, otherwise it will be specified as null.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *getAttribute* method:

```
<!DOCTYPE html>
<html>
   <body>
      <script>
         if (window.XMLHttpRequest)
         {
            xmlhttp = new XMLHttpRequest();
         }
         else
         {
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc=xmlhttp.responseXML;
         x=xmlDoc.getElementsByTagName('Employee')[2];
         document.write("The attribute is: ");
         document.write(x.getAttribute('category'));

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

Execution

Save this file as *elementattribute_getattribute.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
The attribute is: Management
```

Element Object Method - getAttributeNS

Method *getAttributeNS* retrieves an attribute value by local name and namespace URI.

Syntax

Following is the syntax for the usage of the *getAttributeNS* method.

```
elementObj.getAttributeNS(namespace, name)
```

Parameter	Description
namespace	The namespace in which to look for the specified attribute.
name	The name of the attribute to look for.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *getAttributeNS* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
```

```
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         x=xmlDoc.getElementsByTagName("FirstName")[0];
         ns="http://www.tutorials.com/technical/";
         document.write(x.getAttributeNS(ns,"lang"));
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_getAttributeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
en
```

Element Object method - getAttributeNode

The *getAttributeNode* method gives the name of the attribute node from the current element.

Syntax

Following is the syntax for the usage of the *getAttributeNode* method.

```
elementObj.getAttributeNode(name)
```

Parameter	Description
name	It holds the name of the attribute to retrieve.

This method returns the value of the attribute node as a string if present, otherwise if specified as null.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category = "Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category = "Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category = "Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *getAttributeNode* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
```

```
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee');
         document.write("Display all the attribute nodes ");
         document.write("<br>");
         for(i = 0;i < x.length;i++)
         {
             y = x.item(i).getAttributeNode("category");
             document.write(y.name);
             document.write(" = ");
             document.write(y.value);
             document.write("<br>");
          }
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_getattributenode.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Display all the attribute nodes
category = technical

category = non-technical

category = Management
```

Element Object Method - getAttributeNodeNS

The method *getAttributeNodeNS* retrieves an Attr node by the local name and the namespace URI.

Syntax

Following is the syntax for the usage of the *getAttributeNodeNS* method.

```
elementObj.getAttributeNodeNS(namespace,nodeName)
```

Parameter	Description
namespace	Is a string specifying the namespace of the attribute.
nodeName	Is a string specifying the name of the attribute.

It returns an Attr node for specified attribute.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *getAttributeNodeNS* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>

         function loadXMLDoc(filename)
            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();
               return xhttp.responseXML;
            }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         x=xmlDoc.getElementsByTagName("FirstName")[0];
         ns="http://www.tutorials.com/technical/";
         var attributenodens = x.getAttributeNodeNS(ns,"lang")
         document.write("nodename: "+attributenodens.nodeName);
         document.write("<br>nodevalue: "+attributenodens.nodeValue);
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_getAttributeNodeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
nodename: e:lang
nodevalue: en
```

Element Object Method - getElementByTagName

The method *getElementByTagName* gives the value of the specified element.

Syntax

Following is the syntax for the usage of the *getElementByTagName* method.

```
getElementsByTagName(name)
```

Parameter	Description
Name	It holds the name of the attribute to retrieve.

This method returns the name of the tag.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category = "Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *getElementByTagName* method:

```
<!DOCTYPE html>
<html>
   <body>
      <div>
         <b>FirstName:</b> <span id = "FirstName"></span>
         <b>LastName:</b> <span id = "LastName"></span>
         <b>Category:</b> <span id = "Employee"></span>
      </div>
      <script>
         if (window.XMLHttpRequest)
         {// code for IE7+, Firefox, Chrome, Opera, Safari
            xmlhttp = new XMLHttpRequest();
         }

         else
         {// code for IE6, IE5
            xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xmlhttp.open("GET","/dom/node.xml",false);
         xmlhttp.send();
         xmlDoc = xmlhttp.responseXML;

         document.getElementById("FirstName").innerHTML=
         xmlDoc.getElementsByTagName("FirstName")[0].childNodes[0].nodeValue;
         document.getElementById("LastName").innerHTML=
         xmlDoc.getElementsByTagName("LastName")[0].childNodes[0].nodeValue;
         document.getElementById("Employee").innerHTML=
         xmlDoc.getElementsByTagName("Employee")[0].attributes[0].nodeValue;

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

Execution

Save this file as *elementattribute_getelementbytagname.htm* on the server path (this file and node_methods.xml should be on the same path in your server). We will get the output as shown below:

```
FirstName: Tanmay
LastName: Patil
Category: technical
```

Element Object Method- getElementsByTagNameNS

Method *getElementsByTagNameNS* returns a NodeList of all the descendant Elements with a given local name and the namespace URI in document order.

Syntax

Following is the syntax for the usage of the *getElementsByTagNameNS* method.

```
elementObj.getElementsByTagNameNS(namespaceURI, localName)
```

Parameter	Description
namespaceURI	Is the namespace URI of elements to look for.
localName	Is either the local name of elements to look for or the special value "*", which matches all elements.

It returns a new *NodeList* object containing all the matched Elements.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
```

```
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *setAttributeNodeNS* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         ns="http://www.tutorials.com/technical/";
         x = xmlDoc.getElementsByTagNameNS(ns, 'FirstName');
          document.write(x[0].nodeName); // returns: e:FirstName
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_getElementsByTagNameNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
e:FirstName
```

Element Object Method- hasAttribute

The Method *hasAttribute* returns *true* when an attribute with a given name is specified on this element or has a default value, *false* if otherwise.

Syntax

Following is the syntax for the usage of the *hasAttribute* method.

```
elementObj.hasAttributeNS(attName)
```

Parameter	Description
attName	It is a string representing the name of the attribute.

It returns a Boolean *true* or *false*.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
```

```
</Company>
```

Following example demonstrates the usage of the *hasAttribute* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         x = xmlDoc.getElementsByTagName("Employee")[0];
         document.write("value for hasattribute is:
"+x.hasAttribute("category"));
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_hasAttribute.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
value for hasattribute is: true
```

Element Object Method- hasAttribute

The method *hasAttribute* returns *true* when an attribute with a given name is specified on this element or has a default value, *false* if otherwise.

Syntax

Following is the syntax for the usage of the *hasAttribute* method.

```
elementObj.hasAttributeNS(namespace,localName)
```

Parameter	Description
namespace	Is a string specifying the namespace of the attribute.
localName	Is the name of the attribute.

It returns a Boolean *true* or *false*.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
```

```
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *hasAttributeNS* method:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();

            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         ns="http://www.tutorials.com/technical/";
         x = xmlDoc.getElementsByTagName("FirstName")[0];
         document.write("value for hasattribute is:
"+x.hasAttributeNS(ns,"lang"));
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_hasAttributeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
value for hasattribute is: true
```

Element Object Method - removeAttribute

The method *removeAttribute* specifies that the attribute value is removed from the element.

Syntax

Following is the syntax for the usage of the *removeAttribute* method.

```
elementObj.removeAttribute(name)
```

Parameter	Description
name	It holds the name of the attribute to retrieve.

This method removes the specified name of the tag.

Example

node.xml contents are as below:

```
<?xml version = "1.0"?>
<Company>
   <Employee category = "Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category = "Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category = "Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
```

```
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *removeAttribute* method:

```
<!DOCTYPE html>
   <html>
      <head>
         <script>
            function loadXMLDoc(filename)
            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();

               return xhttp.responseXML;
            }
         </script>
      </head>
      <body>
         <script>
            xmlDoc = loadXMLDoc("/dom/node.xml");
            x = xmlDoc.getElementsByTagName('Employee');

            document.write("Before removing the attribute: ");
            document.write(x[1].getAttribute('category'));
            document.write("<br>");

            x[1].removeAttribute('category');
```

```
            document.write("After removing the attribute: ");
            document.write(x[1].getAttribute('category'));
         </script>
      </body>
</html>
```

Execution

Save this file as *elementattribute_removeattribute.htm* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Before removing the attribute: non-technical
After removing the attribute: null
```

Element Object Method- removeAttributeNS

The method *removeAttributeNS* removes an attribute by the local name and the namespace URI.

Syntax

Following is the syntax for the usage of the *removeAttributeNS* method.

```
elementObj.removeAttributeNS(namespace,attrName)
```

Parameter	Description
namespace	Is a string specifying the namespace of the attribute.
attrName	Is a string that names the attribute to be removed from the current node.

It returns an Attr node for the specified attribute.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
```

```
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *removeAttributeNS* method:

```
<!DOCTYPE html>
   <html>
      <head>
         <script>
            function loadXMLDoc(filename)
            {
               if (window.XMLHttpRequest)
               {
                  xhttp = new XMLHttpRequest();
               }
               else // code for IE5 and IE6
               {
                  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
               }
               xhttp.open("GET",filename,false);
               xhttp.send();
               return xhttp.responseXML;
            }
         </script>
      </head>
      <body>
         <script>
            xmlDoc = loadXMLDoc("/dom/node_ns.xml");
            x=xmlDoc.getElementsByTagName("FirstName")[0];
            ns="http://www.tutorials.com/technical/";
```

```
            document.write("Before removing the attributeNS: ");
            document.write(x.getAttributeNS(ns,"lang"));
            x.removeAttributeNS(ns,"lang");
            document.write("<br>After removing the attributeNS: ");
            document.write(x.getAttributeNS(ns,"lang"));
         </script>
      </body>
</html>
```

Execution

Save this file as *elementattribute_removeAttributeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Before removing the attributeNS: en
After removing the attributeNS: null
```

Element Object method - removeAttributeNode

The *removeAttributeNode* method specifies attribute node that is removed from the element.

Syntax

Following is the syntax for the usage of the *removeAttributeNode* method.

```
elementObj.removeAttributeNode(oldAttr)
```

Parameter	Description
oldAttr	It removes the specified attribute value from the attribute list.

This method removes the attribute node.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category = "Technical">
      <FirstName>Tanmay</FirstName>
```

```
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category = "Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category = "Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *removeAttributeNode* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
```

```
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x=xmlDoc.getElementsByTagName('Employee');
         for (i = 0;i < x.length;i++)
         {
            while (x[i].attributes.length > 0)
            {
               y = x[i].attributes[0];
               z = x[i].removeAttributeNode(y);

               document.write("Removed : " + z.nodeName)
               document.write(": " + z.nodeValue)
               document.write("<br>")
             }
          }
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_removeAttributeNode.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Removed : category: technical
Removed : category: non-technical
Removed : category: Management
```

Element Object method - setAttribute

The *setAttribute* method sets a new attribute value to the existing element.

Syntax

Following is the syntax for usage of the *setAttribute* method.

```
elementObj.setAttribute(name)
```

Parameter	Description
name	It holds the name of the attribute to retrieve.

This method returns the updated value of the attribute.

Example

node.xml contents are as below:

```
<?xml version = "1.0"?>
<Company>
   <Employee category = "Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category = "Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category = "Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>

      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *setAttribute* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
```

```
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee');
         for(i = 0;i < x.length;i++)
         {
            x.item(i).setAttribute("category","HR");
         }

      document.write("Values of all attribute after using setattribute method: ");
         for (i = 0;i < x.length;i++)
         {

            document.write(x[i].getAttribute('category'));
            document.write("<br>");
         }
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_setAttribute.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Values of all attribute after using setattribute method:
HR
HR
HR
```

Element Object Method - setAttributeNS

Method *setAttributeNS* adds a new attribute. If an attribute with the same local name and the namespace URI is already present on the element, its prefix is changed to be the prefix part of the qualifiedName, and its value is changed to be the value parameter.

Syntax

Following is the syntax for the usage of the *setAttributeNS* method.

```
elementObj.setAttributeNS(namespace,name,value)
```

Parameter	Description
namespace	Is a string specifying the namespace of the attribute.
name	Is a string identifying the attribute to be set.
value	Is the desired string value of the new attribute.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
```

```
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *setAttributeNS* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>

      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         x = xmlDoc.getElementsByTagName('FirstName')[0];
         ns="http://www.tutorials.com/technical/";
         document.write("<b>Before using setattributeNS method: </b> ");
         document.write(x.getAttributeNS(ns,"lang"));
         x.setAttributeNS(ns,"lang","DE");
         document.write("<br><b>After using setattributeNS method: </b> ");
         document.write(x.getAttributeNS(ns,"lang"));
      </script>
   </body>
```

```
</html>
```

Execution

Save this file as *elementattribute_setAttributeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Before using setattributeNS method: en
After using setattributeNS method: DE
```

Element Object method - setAttributeNode

The *setAttributeNode* method sets a new attribute node to the existing element.

Syntax

Following is the syntax for the usage of the *setAttributeNode* method.

```
elementObj.setAttributeNode(newAttr)
```

Parameter	Description
newAttr	A new attribute node is added in the attribute list.

This method adds a new attribute node.

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category = "Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category = "Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
```

```
   </Employee>
   <Employee category = "Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *setAttributeNode* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");
         x = xmlDoc.createAttribute("City");
         x.nodeValue = "fourth";

         y = xmlDoc.getElementsByTagName("Email");
         y[0].setAttributeNode(x);
```

```
         document.write("City attribute is been set at the place: ");
         document.write(y[0].getAttribute("City"));
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_setAttributeNode.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Display all the attribute nodes
category = technical
category = non-technical
category = Management
```

Element Object Method - setAttributeNodeNS

Method *setAttributeNodeNS* adds a new attribute. If an attribute with that local name and that namespace URI is already present in the element, it is replaced by the new one.

Syntax

Following is the syntax for the usage of the *setAttributeNodeNS* method.

```
elementObj.setAttributeNodeNS(newAttr)
```

Parameter	Description
newAttr	The *Attr* node to add to the attribute list.

It returns a replaced Attr node.

Example

node_ns.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee xmlns:e="http://www.tutorials.com/technical/"
category="technical">
      <e:FirstName   e:lang="en">Tanmay</e:FirstName>
```

```
      <e:LastName>Patil</e:LastName>
      <e:ContactNo>1234567890</e:ContactNo>
      <e:Email>tanmaypatil@xyz.com</e:Email>
   </Employee>
   <Employee xmlns:n="http://www.tutorials.com/non-technical/" category="non-
technical">
      <n:FirstName n:lang="en">Taniya</n:FirstName>
      <n:LastName>Mishra</n:LastName>
      <n:ContactNo>1234667898</n:ContactNo>
      <n:Email>taniyamishra@xyz.com</n:Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *setAttributeNodeNS* method:

```
<!DOCTYPE html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp = new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp = new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node_ns.xml");
         x1 = xmlDoc.getElementsByTagName('FirstName')[0];
         x2 = xmlDoc.getElementsByTagName('FirstName')[1];
```

```
         ns="http://www.tutorials.com/technical/";
         var nsattr = x1.getAttributeNodeNS(ns, "lang");
         x2.setAttributeNodeNS(nsattr.cloneNode(true));
         document.write(x2.attributes[1].value); // returns: 'en'
      </script>
   </body>
</html>
```

Execution

Save this file as *elementattribute_setAttributeNodeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
en
```

27. XML DOM — Attribute Object

Attr interface represents an attribute in an Element object. Typically, the allowable values for the attribute are defined in a schema associated with the document. *Attr* objects are not considered as part of the document tree since they are not actually child nodes of the element they describe. Thus for the child nodes *parentNode*, *previousSibling* and *nextSibling* the attribute value is *null*.

Attributes

The following table lists the attributes of *Attribute* object:

Attribute	Type	Description
name	DOMString	This gives the name of the attribute.
specified	boolean	It is a boolean value which returns true if the attribute value exists in the document.
value	DOMString	Returns the value of the attribute.
ownerElement	Element	It gives the node to which attribute is associated or null if attribute is not in use.
isId	boolean	It returns whether the attribute is known to be of type ID (i.e. to contain an identifier for its owner element) or not.

Attribute Object Attribute - name

The attribute *name* represents the name of the attribute.

Syntax

Following is the syntax for the usage of the *name* attribute.

```
attrObject.name
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *name* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
```

```
            xhttp=new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>
      xmlDoc = loadXMLDoc("/dom/node.xml");

      x = xmlDoc.getElementsByTagName('Employee');

      document.write("Name of the attribute is  : ");
      document.write(x.item(0).attributes[0].name);
      </script>
</body>
</html>
```

Execution

Save this file as *domattribute_name.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Name of the attribute is : category
```

Attribute Object Attribute - specified

The attribute *specified* is a boolean value which returns *true* if the attribute value exists in the document.

Syntax

Following is the syntax for the usage of the *specified* attribute.

```
attrObject.specified
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *name* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
```

```
            {
               xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>
   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee');

         document.write("True if attribute is present else false  : ");
         document.write(x.item(0).attributes[0].specified);
         </script>
   </body>
</html>
```

Execution

Save this file as *domattribute_specified.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
True if attribute is present else false : true
```

Attribute Object Attribute - value

The attribute *value* returns the value of the attribute.

Syntax

Following is the syntax for the usage of the *value* attribute.

```
attrObject.value
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *name* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
```

```
            xhttp=new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>

      xmlDoc = loadXMLDoc("/dom/node.xml");

      x = xmlDoc.getElementsByTagName('Employee');

      document.write("Value of attribute is : ");
      document.write(x.item(0).attributes[0].value);

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

Execution

Save this file as *domattribute_value.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Value of attribute is : Technical
```

Attribute Object Attribute - ownerElement

The attribute *ownerElement* gives the node to which attribute is associated or null if the attribute is not in use.

Syntax

Following is the syntax for the usage of the *value* attribute.

```
attrObject.ownerElement
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *name* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
```

```
            xhttp=new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>
      xmlDoc = loadXMLDoc("/dom/node.xml");

      x = xmlDoc.getElementsByTagName('Employee');

      document.write("Owner is : ");
      document.write(x.item(0).attributes[0].ownerElement);
      document.write("<br>");

      document.write("Owner Name of attribute node is : ");
   document.write(x.item(0).attributes[0].ownerElement.nodeName);

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

Execution

Save this file as *domattribute_ownerelement.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Owner is : [object Element]
Owner Name of attribute node is : Employee
```

Attribute Object Attribute - isId

The attribute *isId* returns whether the attribute is known to be of type ID (i.e., to contain an identifier for its owner element) or not.

Syntax

Following is the syntax for the usage of the *specified* attribute.

```
attrObject.isId
```

Example

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
         <FirstName>Tanisha</FirstName>
         <LastName>Sharma</LastName>
         <ContactNo>1234562350</ContactNo>
         <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *name* attribute:

```
<!DOCTYPE html>
<html>
   <head>
      <script>
```

```
         function loadXMLDoc(filename)
         {
            if (window.XMLHttpRequest)
            {
               xhttp=new XMLHttpRequest();
            }
            else // code for IE5 and IE6
            {
               xhttp=new ActiveXObject("Microsoft.XMLHTTP");
            }
            xhttp.open("GET",filename,false);
            xhttp.send();
            return xhttp.responseXML;
         }
      </script>
   </head>

   <body>
      <script>
         xmlDoc = loadXMLDoc("/dom/node.xml");

         x = xmlDoc.getElementsByTagName('Employee');

         document.write("Specifies if attribute have the ID specified for its
owner element or not  : ");
         document.write("<br>");
         document.write(x.item(0).attributes[0].isId);
         </script>
   </body>
</html>
```

Execution

Save this file as *domattribute_specified.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below:

```
Specifies if attribute have the ID specified for its owner element or not  :
undefined
```

28. XML DOM — CDATASection Object

In this chapter, we will study about the XML DOM *CDATASection Object*. The text present within an XML document is parsed or unparsed depending on what it is declared. If the text is declared as Parse Character Data (PCDATA), it is parsed by the parser to convert an XML document into an XML DOM Object. On the other hand, if the text is declared as the unparsed Character Data (CDATA) the text within is not parsed by the XML parser. These are not considered as the markup and will not expand the entities.

The purpose of using the CDATASection object is to escape the blocks of text containing characters that would otherwise be regarded as markup. **"]]>"**, this is the only delimiter recognized in a CDATA section that ends the CDATA section.

The CharacterData.data attribute holds the text that is contained by the CDATA section. This interface inherits the *CharatcterData* interface through the *Text*interface.

There are no methods and attributes defined for the CDATASection object. It only directly implements the *Text* interface.

29. XML DOM — Comment Object

In this chapter, we will study about the *Comment object*. Comments are added as notes or the lines for understanding the purpose of an XML code. Comments can be used to include related links, information and terms. These may appear anywhere in the XML code.

The comment interface inherits the *CharacterData* interface representing the content of the comment.

Syntax

XML comment has the following syntax:

```
<!-------Your comment----->
```

A comment starts with <!-- and ends with -->. You can add textual notes as comments between the characters. You must not nest one comment inside the other.

There are no methods and attributes defined for the Comment object. It inherits those of its parent, *CharacterData*, and indirectly those of *Node*.

30. XML DOM — XMLHttpRequest Object

XMLHttpRequest object establishes a medium between a web page's client-side and server-side that can be used by the many scripting languages like JavaScript, JScript, VBScript and other web browser to transfer and manipulate the XML data.

With the XMLHttpRequest object it is possible to update the part of a web page without reloading the whole page, request and receive the data from a server after the page has been loaded and send the data to the server.

Syntax

An XMLHttpRequest object can be instatiated as follows:

```
xmlhttp = new XMLHttpRequest();
```

To handle all browsers, including IE5 and IE6, check if the browser supports the XMLHttpRequest object as below:

```
if(window.XMLHttpRequest) // for Firefox, IE7+, Opera, Safari, ...
{
   xmlHttp = new XMLHttpRequest();
}
else if(window.ActiveXObject) // for Internet Explorer 5 or 6
{
  xmlHttp = new ActiveXObject("Microsoft.XMLHTTP");
}
```

Examples to load an XML file using the XMLHttpRequest object can be referredhere.

Methods

The following table lists the methods of the XMLHttpRequest object:

Methods	Description
abort()	Terminates the current request made.
getAllResponseHeaders()	Returns all the response headers as a string, or null if no response has been received.
getResponseHeader()	Returns the string containing the text of the specified header, or null if either the

	response has not yet been received or the header doesn't exist in the response.
open(method,url,async,uname,pswd)	It is used in conjugation with the Send method to send the request to the server. The Open method specifies the following parameters: *method*: specifies the type of request i.e. Get or Post. *url*: it is the location of the file. *async*: indicates how the request should be handled. It is boolean value. where, 'true' means the request is processed asynchronously without waiting for a Http response. 'false' means the request is processed synchronously after receiving the Http response. *uname*: is the username. *pswd*: is the password.
send(string)	It is used to send the request working in conjugation with the Open method.
setRequestHeader()	Header contains the label/value pair to which the request is sent.

Attributes

The following table lists the attributes of the XMLHttpRequest object:

Attribute	Description
onreadystatechange	It is an event based property which is set on at every state change.
readyState	This describes the present state of the XMLHttpRequest object. There are five possible states of the readyState property: **readyState=0 :** means request is yet to initialize. **readyState=1 :** request is set. **readyState=2 :** request is sent. **readyState=3 :** request is processing. **readyState=4 :** request is completed.

responseText	This property is used when the response from the server is a text file.
responseXML	This property is used when the response from the server is an XML file.
status	Gives the status of the Http request object as a number. For example, "404" or "200".
statusText	Gives the status of the Http request object as a string. For example, "Not Found" or "OK".

Examples

node.xml contents are as below:

```
<?xml version="1.0"?>
<Company>
   <Employee category="Technical">
      <FirstName>Tanmay</FirstName>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
   <Employee category="Non-Technical">
      <FirstName>Taniya</FirstName>
      <LastName>Mishra</LastName>
      <ContactNo>1234667898</ContactNo>
      <Email>taniyamishra@xyz.com</Email>
   </Employee>
   <Employee category="Management">
      <FirstName>Tanisha</FirstName>
      <LastName>Sharma</LastName>
      <ContactNo>1234562350</ContactNo>
      <Email>tanishasharma@xyz.com</Email>
   </Employee>
</Company>
```

Retrieve specific information of a resource file

Following example demonstrates how to retrive specific information of a resource file using the method *getResponseHeader()* and the property *readState*.

```
<!DOCTYPE html>
<html>
   <head>
      <meta http-equiv="content-type" content="text/html; charset=iso-8859-2"
/>
         <script>
            function loadXMLDoc()
            {
               var xmlHttp = null;
               if(window.XMLHttpRequest) // for Firefox, IE7+, Opera, Safari,
...
               {
                  xmlHttp = new XMLHttpRequest();
               }
               else if(window.ActiveXObject) // for Internet Explorer 5 or 6
               {
                  xmlHttp = new ActiveXObject("Microsoft.XMLHTTP");
               }

               return xmlHttp;
            }

            function makerequest(serverPage, myDiv)
            {
               var request =  loadXMLDoc();
               request.open("GET", serverPage);
               request.send(null);

               request.onreadystatechange = function()
               {
                  if (request.readyState == 4)
                  {
                     document.getElementById(myDiv).innerHTML =
request.getResponseHeader("Content-length");
                  }
               }
```

```
            }
      </script>
   </head>
   <body>
      <button type="button" onclick="makerequest('/dom/node.xml', 'ID')">Click
me to get the specific ResponseHeader</button>
      <div id="ID">Specific header information is returned.</div>
   </body>
</html>
```

Execution

Save this file as *elementattribute_removeAttributeNS.htm* on the server path (this file and node_ns.xml should be on the same path in your server). We will get the output as shown below:

```
Before removing the attributeNS: en
After removing the attributeNS: null
```

Retrieve header infomation of a resource file

Following example demonstrates how to retrieve the header information of a resource file, using the method **getAllResponseHeaders()** using the property ***readyState***.

```
<!DOCTYPE html>
<html>
   <head>
      <meta http-equiv="content-type" content="text/html; charset=iso-8859-2"
/>
         <script>
            function loadXMLDoc()
            {
               var xmlHttp = null;

                if(window.XMLHttpRequest) // for Firefox, IE7+, Opera, Safari,
...
                {
                   xmlHttp = new XMLHttpRequest();
                }
                else if(window.ActiveXObject) // for Internet Explorer 5 or 6
                {
                   xmlHttp = new ActiveXObject("Microsoft.XMLHTTP");
```

```
                }

                return xmlHttp;
            }

            function makerequest(serverPage, myDiv)
            {
               var request =  loadXMLDoc();
               request.open("GET", serverPage);
               request.send(null);
               request.onreadystatechange = function()
               {
                  if (request.readyState == 4)
                  {
                     document.getElementById(myDiv).innerHTML =
request.getAllResponseHeaders();
                  }
               }
            }
      </script>
   </head>
   <body>
      <button type="button" onclick="makerequest('/dom/node.xml', 'ID')">Click
me to load the AllResponseHeaders</button>
      <div id="ID"></div>
   </body>
</html>
```

Execution

Save this file as *http_allheader.html* on the server path (this file and node.xml should be on the same path in your server). We will get the output as shown below (depends on the browser):

```
Date: Sat, 27 Sep 2014 07:48:07 GMT Server: Apache Last-Modified: Wed, 03 Sep
2014 06:35:30 GMT Etag: "464bf9-2af-50223713b8a60" Accept-Ranges: bytes Vary:
Accept-Encoding,User-Agent Content-Encoding: gzip Content-Length: 256 Content-
Type: text/xml
```

31. XML DOM — DOMException Object

The *DOMException* represents an abnormal event happening when a method or a property is used.

Properties

Below table lists the properties of the DOMException object

Property	Description
name	Returns a DOMString that contains one of the string associated with an error constant (as seen the table below).

Error Types

Type	Description
IndexSizeError	The index is not in the allowed range. For example, this can be thrown by the Range object. (Legacy code value: 1 and legacy constant name: INDEX_SIZE_ERR)
HierarchyRequestError	The node tree hierarchy is not correct. (Legacy code value: 3 and legacy constant name: HIERARCHY_REQUEST_ERR)
WrongDocumentError	The object is in the wrong document. (Legacy code value: 4 and legacy constant name: WRONG_DOCUMENT_ERR)
InvalidCharacterError	The string contains invalid characters. (Legacy code value: 5 and legacy constant name: INVALID_CHARACTER_ERR)
NoModificationAllowedError	The object can not be modified. (Legacy code value: 7 and legacy constant name: NO_MODIFICATION_ALLOWED_ERR)
NotFoundError	The object cannot be found here. (Legacy code value: 8 and legacy constant name: NOT_FOUND_ERR)

NotSupportedError	The operation is not supported. (Legacy code value: 9 and legacy constant name: NOT_SUPPORTED_ERR)
InvalidStateError	The object is in an invalid state. (Legacy code value: 11 and legacy constant name: INVALID_STATE_ERR)
SyntaxError	The string did not match the expected pattern. (Legacy code value: 12 and legacy constant name: SYNTAX_ERR)
InvalidModificationError	The object cannot be modified in this way. (Legacy code value: 13 and legacy constant name: INVALID_MODIFICATION_ERR)
NamespaceError	The operation is not allowed by Namespaces in XML. (Legacy code value: 14 and legacy constant name: NAMESPACE_ERR)
InvalidAccessError	The object does not support the operation or argument. (Legacy code value: 15 and legacy constant name: INVALID_ACCESS_ERR)
TypeMismatchError	The type of the object does not match the expected type. (Legacy code value: 17 and legacy constant name: TYPE_MISMATCH_ERR) This value is deprecated, the JavaScript TypeError exception is now raised instead of a DOMException with this value.
SecurityError	The operation is insecure. (Legacy code value: 18 and legacy constant name: SECURITY_ERR)
NetworkError	A network error occurred. (Legacy code value: 19 and legacy constant name: NETWORK_ERR)
AbortError	The operation was aborted. (Legacy code value: 20 and legacy constant name: ABORT_ERR)
URLMismatchError	The given URL does not match another URL. (Legacy code value: 21 and legacy constant name: URL_MISMATCH_ERR)
QuotaExceededError	The quota has been exceeded. (Legacy code value: 22 and legacy constant name: QUOTA_EXCEEDED_ERR)

TimeoutError	The operation timed out. (Legacy code value: 23 and legacy constant name: TIMEOUT_ERR)
InvalidNodeTypeError	The node is incorrect or has an incorrect ancestor for this operation. (Legacy code value: 24 and legacy constant name: INVALID_NODE_TYPE_ERR)
DataCloneError	The object cannot be cloned. (Legacy code value: 25 and legacy constant name: DATA_CLONE_ERR)
EncodingError	The encoding operation, being an encoding or a decoding one, failed (No legacy code value and constant name).
NotReadableError	The input/output read operation failed (No legacy code value and constant name).

Example

Following example demonstrates how using a not well-formed XML document causes a DOMException.

error.xml contents are as below:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<Company id="companyid">
   <Employee category="Technical" id="firstelement" type="text/html">
      <FirstName>Tanmay</first>
      <LastName>Patil</LastName>
      <ContactNo>1234567890</ContactNo>
      <Email>tanmaypatil@xyz.com</Email>
   </Employee>
</Company>
```

Following example demonstrates the usage of the *name* attribute:

```
<html>
<head>
   <script>
      function loadXMLDoc(filename)
      {
         if (window.XMLHttpRequest)
         {
```

```
            xhttp = new XMLHttpRequest();
         }
         else // code for IE5 and IE6
         {
            xhttp = new ActiveXObject("Microsoft.XMLHTTP");
         }
         xhttp.open("GET",filename,false);
         xhttp.send();
         return xhttp.responseXML;
      }
   </script>
</head>
<body>
   <script>
      try{
         xmlDoc = loadXMLDoc("/dom/error.xml");
         var node  = xmlDoc.getElementsByTagName("to").item(0);
         var refnode = node.nextSibling;
         var newnode = xmlDoc.createTextNode('That is why you fail.');
         node.insertBefore(newnode, refnode);
      }
      catch(err){
         document.write(err.name);
      }
   </script>
</body>
</html>
```

Execution

Save this file as *domexcption_name.html* on the server path (this file and error.xml should be on the same path in your server). We will get the output as shown below:

```
TypeError
```