**[MS-DOM2CE]:**

**Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification**



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*1 / 27*

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**Revision Summary**

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*2 / 27*

*[MS-DOM2CE] — v20120725*

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**Table of Contents**

|  |  |  |  |
| --- | --- | --- | --- |
| [**1 Introduction ............................................................................................................**](#page5)**.** | | | **5** |
| 1.1 | [Glossary ..............................................................................................................](#page5). | | 5 |
| 1.2 | [References ...........................................................................................................](#page5). | | 5 |
| 1.2.1 | | [Normative References ......................................................................................](#page5). | 5 |
| 1.2.2 | | [Informative References ....................................................................................](#page5). | 5 |
| 1.3 | [Extension Overview (Synopsis) ...............................................................................](#page6). | | 6 |
| [1.3.1 Organization of This Documentation ..................................................................](#page7). | | | 7 |
| 1.4 | [Relationship to Standards and Other Extensions .......................................................](#page7). | | 7 |
| 1.5 | [Applicability Statement ..........................................................................................](#page7). | | 7 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **2** | [**Extensions ...............................................................................................................**](#page9)**.** | | | **9** |
|  | [2.1 Extensions to the Element Interface ........................................................................](#page9). | | | 9 |
|  | 2.1.1 | [Attributes .....................................................................................................](#page10). | | 10 |
|  | 2.1.1.1 | | [canHaveChildren .....................................................................................](#page10). | 10 |
|  | 2.1.1.2 | | [canHaveHTML .........................................................................................](#page10). | 10 |
|  | 2.1.1.3 | | [parentElement ........................................................................................](#page11). | 11 |
|  | 2.1.1.4 | | [scopeName .............................................................................................](#page11). | 11 |
|  | 2.1.1.5 | | [sourceIndex ............................................................................................](#page11). | 11 |
|  | 2.1.1.6 | | [tagUrn ...................................................................................................](#page11). | 11 |
|  | 2.1.2 | [Methods .......................................................................................................](#page11). | | 11 |
|  | 2.1.2.1 | | [applyElement ..........................................................................................](#page11). | 11 |
|  | 2.1.2.2 | | [clearAttributes ........................................................................................](#page12). | 12 |
|  | 2.1.2.3 | | [contains .................................................................................................](#page12). | 12 |
|  | 2.1.2.4 | | [insertAdjacentElement .............................................................................](#page13). | 13 |
|  | 2.1.2.5 | | [mergeAttributes ......................................................................................](#page13). | 13 |
|  | 2.1.2.6 | | [removeNode ...........................................................................................](#page14). | 14 |
|  | 2.1.2.7 | | [replaceNode ............................................................................................](#page14). | 14 |
|  | 2.1.2.8 | | [swapNode ...............................................................................................](#page14). | 14 |
|  | 2.1.3 | [Collections ....................................................................................................](#page15). | | 15 |
|  | 2.1.3.1 | | [all ..........................................................................................................](#page15). | 15 |
|  | 2.1.3.2 | | [children ..................................................................................................](#page16). | 16 |
|  | [2.2 Extensions to the Comment Interface ....................................................................](#page17). | | | 17 |
|  | 2.2.1 | [Attributes .....................................................................................................](#page18). | | 18 |
|  | 2.2.1.1 | | [text .......................................................................................................](#page18). | 18 |
|  | 2.2.2 | [Methods .......................................................................................................](#page18). | | 18 |
|  | 2.2.2.1 | | [atomic ....................................................................................................](#page18). | 18 |
|  | [2.3 Extensions to the Document Interface ...................................................................](#page18). | | | 18 |
|  | 2.3.1 | [Methods .......................................................................................................](#page19). | | 19 |
|  | 2.3.1.1 | | [clear ......................................................................................................](#page19). | 19 |
|  | 2.3.1.2 | | [removeNode ...........................................................................................](#page19). | 19 |
|  | 2.3.1.3 | | [replaceNode ............................................................................................](#page19). | 19 |
|  | 2.3.1.4 | | [swapNode ...............................................................................................](#page20). | 20 |
|  | [2.4 Extensions to the Text Interface ...........................................................................](#page20). | | | 20 |
|  | 2.4.1 | [Methods .......................................................................................................](#page21). | | 21 |
|  | 2.4.1.1 | | [removeNode ...........................................................................................](#page21). | 21 |
|  | 2.4.1.2 | | [replaceNode ............................................................................................](#page21). | 21 |
|  | 2.4.1.3 | | [swapNode ...............................................................................................](#page21). | 21 |
| **3** | [**Security Considerations .........................................................................................**](#page23)**.** | | | **23** |



*3 / 27*

*[MS-DOM2CE] — v20120725*

*Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification*

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**[4 Appendix A: Product Behavio](#page24)r** **24**

[**5 Change Trackin**](#page25)**g** **25**

[**6 Inde**](#page27)**x** **27**



*4 / 27*

*[MS-DOM2CE] — v20120725*

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**1 Introduction**

This document describes extensions provided by Windows® Internet Explorer® for the *Document* *Object Model (DOM) Level 2 Core Specification Version 1.0* [[DOM Level 2 - Core](http://go.microsoft.com/fwlink/?LinkId=182703)],W3CRecommendation 13 November, 2000.

Sections 1.7 and 2 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. All other sections and examples in this specification are informative.

1. **Glossary**

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used asdescribed in  [[RFC2119](http://go.microsoft.com/fwlink/?LinkId=90317)]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1. **References**

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the technical documents, which are updated frequently. References to other documents include a publishing year when one is available.

1. **Normative References**

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact  [dochelp@microsoft.co](mailto:dochelp@microsoft.com)m. We will assist you in finding the relevant information. Please check the archive site,  [http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C962](http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624)4, as an additional source.

[DOM Level 2 - Core] W3C, "Document Object Model (DOM) Level 2 Core Specification Version 1.0", W3C Recommendation 13 November, 2000,  [http://www.w3.org/TR/DOM-Level-2-Core](http://go.microsoft.com/fwlink/?LinkId=182703)/

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997,  [http://www.rfc-editor.org/rfc/rfc2119.tx](http://go.microsoft.com/fwlink/?LinkId=90317)t

1. **Informative References**

[CSS-Level2-2009] Bos, B., Celik, T., Hickson, I., and Wium Lie, H., Eds., "Cascading Style Sheets Level 2 Revision 1 (CSS 2.1) Specification", W3C Candidate Recommendation 08 September 2009,  [http://www.w3.org/TR/2009/CR-CSS2-20090908](http://go.microsoft.com/fwlink/?LinkId=182880)/

[DOM Level 2 - HTML] W3C, "Document Object Model (DOM) Level 2 HTML Specification Version 1.0", W3C Recommendation, January 2003,  [http://www.w3.org/TR/2003/REC-DOM-Level-2-HTML](http://go.microsoft.com/fwlink/?LinkId=182708)-20030109/

[DOM Level 2 - Style] W3C, "Document Object Model (DOM) Level 2 Style Specification Version 1.0", W3C Recommendation, November 2000,  [http://www.w3.org/TR/2000/REC-DOM-Level-2-Style](http://go.microsoft.com/fwlink/?LinkId=182710)-20001113/

[HTML] World Wide Web Consortium, "HTML 4.01 Specification", December 1999,  [http://www.w3.org/TR/html4](http://go.microsoft.com/fwlink/?LinkId=89880)/

[MS-CSS21E] Microsoft Corporation, " [Internet Explorer Extensions to the Cascading Style Sheet](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-CSS21E%5d.pdf)s  [(CSS) 2.1 Specificatio](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-CSS21E%5d.pdf)n".



*5 / 27*

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[MS-DOM2CEX] Microsoft Corporation, " [Microsoft XML Extensions to the Document Object Mode](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2CEX%5d.pdf)l  [(DOM) Level 2 Core Specificatio](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2CEX%5d.pdf)n".

[MS-DOM2E] Microsoft Corporation, " [Internet Explorer Document Object Model (DOM) Level](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2E%5d.pdf) 2  [Events Standards Support Documen](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2E%5d.pdf)t".

[MS-DOM2EE] Microsoft Corporation, " [Internet Explorer Extensions to the DOM Level 2 Event](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2EE%5d.pdf)s  [Specificatio](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2EE%5d.pdf)n".

[MS-HTML401E] Microsoft Corporation, " [Internet Explorer Extensions to the HTML 4.0](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-HTML401E%5d.pdf)1  [Specificatio](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-HTML401E%5d.pdf)n".

1. **Extension Overview (Synopsis)**

The extensions described in this document were selected for their applicability to  [[DOM Level 2](http://go.microsoft.com/fwlink/?LinkId=182703) -  [Core]](http://go.microsoft.com/fwlink/?LinkId=182703).

The additional Document Object Model interfaces, attributes, methods and collections are organized based on section 1.2, Fundamental Interfaces, of  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) as follows:

**Element**

**Attributes**

[canHaveChildre](#page10)n

[canHaveHTM](#page10)L

[parentElemen](#page11)t

[scopeNam](#page11)e

[sourceInde](#page11)x

[tagUr](#page11)n

**Methods**

[applyElemen](#page11)t

[clearAttribute](#page12)s

[contain](#page12)s

[insertAdjacentElemen](#page13)t

[mergeAttribute](#page13)s

[removeNod](#page14)e

[replaceNod](#page14)e

[swapNod](#page14)e

**Collections**

[al](#page15)l

[childre](#page16)n



*6 / 27*

*[MS-DOM2CE] — v20120725*

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**Comment**

**Attributes**

[tex](#page18)t

**Methods**

[atomi](#page18)c

**Document**

**Methods**

[clea](#page19)r

[removeNod](#page19)e

[replaceNod](#page19)e

[swapNod](#page20)e

**Text**

**Methods**

[removeNod](#page21)e

[replaceNod](#page21)e

[swapNod](#page21)e

1. **Organization of This Documentation**

This document is organized as follows:

**Interfaces**: The extensions are listed according to interface at the highest level.

**Attributes, Methods, Collections**: The interface members are described at the next levels.

1. **Relationship to Standards and Other Extensions**

The following documents provide information on additional extensions.

[%5bMS-CSS21E%5d.pdf](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-CSS21E%5d.pdf)  [[MS-CSS21E](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-CSS21E%5d.pdf)]: Extensions to the  [[CSS-Level2-2009]](http://go.microsoft.com/fwlink/?LinkId=182880) and  [[DOM Level 2 - Style]](http://go.microsoft.com/fwlink/?LinkId=182710) specifications.

[%5bMS-HTML401E%5d.pdf](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-HTML401E%5d.pdf)  [[MS-HTML401E](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-HTML401E%5d.pdf)]: Extensions to the  [[HTML]](http://go.microsoft.com/fwlink/?LinkId=89880) and the  [[DOM Level 2 - HTML]](http://go.microsoft.com/fwlink/?LinkId=182708) specifications.

[%5bMS-DOM2CEX%5d.pdf](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2CEX%5d.pdf)  [[MS-DOM2CEX](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2CEX%5d.pdf)]: Extensions to the  [[HTML]](http://go.microsoft.com/fwlink/?LinkId=89880) and the  [[DOM Level 2 - HTML]](http://go.microsoft.com/fwlink/?LinkId=182708) specifications for Microsoft XML Core Services.

[%5bMS-DOM2EE%5d.pdf](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2EE%5d.pdf)  [[MS-DOM2EE](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2EE%5d.pdf)]: Extensions to the  [[MS-DOM2E]](file:///C:\Users\albert\Desktop\fronteers\ie-standards-docs\x\ms-domc2ce-ie-extensions-to-the-document-object-model-dom-level-2-core-specification\%5bMS-DOM2E%5d.pdf) specifications.

1. **Applicability Statement**

This document specifies a set of extensions to the  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) specification. The extensions in this document provide access to some features that are unique to Windows® Internet



*7 / 27*

*[MS-DOM2CE] — v20120725*

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Explorer® 7, Windows® Internet Explorer® 8, Windows® Internet Explorer® 9, and Windows® Internet Explorer® 10.



*8 / 27*

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**2 Extensions**

This section specifies additional attributes and methods to elements from  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) that are available in Windows® Internet Explorer®.

The extensions to  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) are as follows:

Extensions to the  [Element](#page9) Interface

Extensions to the  [Comment](#page17) Interface

Extensions to the  [Document](#page18) Interface

Extensions to the  [Text](#page20) Interface

1. **Extensions to the Element Interface**

Extensions have been added to the **Element** interface of the Document Object Model (DOM) Level 2 Core Specification  [[DOM Level 2 - Core].](http://go.microsoft.com/fwlink/?LinkId=182703) The extensions of the **Element** interface are:

**Attributes**

The **Elements** interface is extended by the following attributes. For details, see  [Attributes](#page10).

[page10](#page10)  [canHaveChildre](#page10)n

[page10](#page10)  [canHaveHTM](#page10)L

[page11](#page11)  [parentElemen](#page11)t

[page11](#page11)  [scopeNam](#page11)e

[page11](#page11)  [sourceInde](#page11)x

[page11](#page11)  [tagUr](#page11)n

**Methods**

The **Elements** interface is extended by the following methods. For details, see  [Methods](#page11).

[page11](#page11)  [applyElemen](#page11)t

[page12](#page12)  [clearAttribute](#page12)s

[page12](#page12)  [contain](#page12)s

[page13](#page13)  [insertAdjacentElemen](#page13)t

[page13](#page13)  [mergeAttribute](#page13)s

[page14](#page14)  [removeNod](#page14)e

[page14](#page14)  [replaceNod](#page14)e

[page14](#page14)  [swapNod](#page14)e

**Collections**

The **Elements** interface is extended by the following collections. For details, see  [Collections](#page15).



*9 / 27*

*[MS-DOM2CE] — v20120725*

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[page15](#page15)  [al](#page15)l

[page16](#page16)  [childre](#page16)n

The following IDL definition documents the **Element** interface:

|  |  |  |
| --- | --- | --- |
| interface Element : Node { | |  |
| // Extension of DOM Level 2: | |  |
| readonly attribute boolean | | canHaveChildren; |
| readonly attribute boolean | | canHaveHTML; |
| readonly attribute boolean | | parentElement; |
| readonly attribute long | | sourceIndex; |
| // Extension of DOM Level 2: | |  |
| Element | applyElement |  |
| void | clearAttributes; | |
| boolean | contains; |  |
| Node | insertAdjacentElement | |
| Node | mergeAttributes |  |
| boolean | removeNode; |  |
| Node | replaceNode (in Node newNode) | |
|  |  | raises(DOMException); |
| Node | swapNode; |  |
| }; |  |  |

1. **Attributes**

The **Elements** interface as specified in the  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) is extended by the addition of the following attributes:

[page10](#page10)  [canHaveChildre](#page10)n

[page10](#page10)  [canHaveHTM](#page10)L

[page11](#page11)  [parentElemen](#page11)t

[page11](#page11)  [sourceInde](#page11)x

1. **canHaveChildren**

**canHaveChildren** of typeboolean, **read-only**

Gets a Boolean value indicating whether the object can contain child objects. Objects do not have to contain children for the **canHaveChildren** attribute to return true. The **canHaveChildren** attribute is useful in determining whether objects can be appended as children. The property has no default value.

1. **canHaveHTML**

**canHaveHTML** of typeboolean

Retrieves the Boolean value indicating whether the object can contain rich HTML markup. The property is read-only for all objects except the **defaults** object, which is read-write. The property has no default value.



*10 / 27*

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1. **parentElement**

**parentElement** of typeElement, **read-only**

Retrieves the parent object in the object hierarchy. The highest object returns null as its parent. The property has no default value.

1. **scopeName**

*Quirks Mode, IE7 Mode, IE8 Mode, and IE9 Mode (All Versions)*

**scopeName** of typeString, **read-only**

Gets the namespace defined for the element. The property has a default value of HTML.

1. **sourceIndex**

**sourceIndex** of typelong, **read-only**

Retrieves the ordinal position of the object, in source order, as the object appears in the document's **all** collection. The property has no default value.

1. **tagUrn**

*Quirks Mode, IE7 Mode, IE8 Mode, and IE9 Mode (All Versions)*

**tagUrn** of typeString

Sets or gets the Uniform Resource Name (URN) specified in the namespace declaration. The property has a default value of null.

1. **Methods**

The **Element** interface is extended by the addition of the following methods:

[page11](#page11)  [applyElemen](#page11)t

[page12](#page12)  [clearAttribute](#page12)s

[page12](#page12)  [contain](#page12)s

[page13](#page13)  [insertAdjacentElemen](#page13)t

[page13](#page13)  [mergeAttribute](#page13)s

[page14](#page14)  [removeNod](#page14)e

[page14](#page14)  [replaceNod](#page14)e

[page14](#page14)  [swapNod](#page14)e

1. **applyElement**

applyElement



*11 / 27*

*[MS-DOM2CE] — v20120725*

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The **applyElement** method makes the element either a child or parent of another element. The **applyElement** method is accessible at run time. If elements are removed at run time before theclosing tag is parsed, areas of the document might not render.

**Parameters**

**oNewElement** of typeElement

An object that becomes the child or parent of the current element.

**sWhere** of typeString

Optional. If **outside**, the specified element becomes parent of the current element. The default parameter is **outside**. If **inside**, the specified element becomes a child of the current element, but contains all the child elements of the current element.

**Return Value**

**Element** The applied element, **oNewElement**.

**JScript Error**

**E\_INVALIDARG**: Raised if **oNewElement** is null, **oNewElement** is outside the root node, or if **oNewElement** is not owned by the current document.

1. **clearAttributes**

clearAttributes

The **clearAttributes** method removes attributes and values from the object. It clears persistent HTML attributes only; the **ID** attribute, styles, and script-only properties are not affected.

**Parameters**

None.

**Return Value**

None.

**No Jscript Error**

1. **contains**

contains

The **contains** method checks whether the specified element is contained within the object.

**Parameters**

oElement

Element object that specifies the element to check.

**Return Value**

Boolean. Returns one of the following possible values:



*12 / 27*

*[MS-DOM2CE] — v20120725*

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True - The element is contained within the object.

False - The element is not contained within the object.

**JScript Error**

The error **'null' is null or not an object** is raised if **elements** defined in the script are not present.

1. **insertAdjacentElement**

insertAdjacentElement

The **insertAdjacentElement** method inserts an element at the specified location. Text cannot be inserted while a document is loading; the onload event must be completed before attempting to call the **insertAdjacentElement** method.

**Parameters**

sWhere

A String that specifies where to insert the HTML element, using one of the following values:

beforeBegin - Inserts **oElement** immediately before the object.

afterBegin - Inserts **oElement** after the start of the object, but before all other content in the object.

beforeEnd - Inserts **oElement** immediately before the end of the object, but after all other content in the object.

afterEnd - Inserts **oElement** immediately after the end of the object.

oElement

Object that specifies the element to be inserted adjacent to the object that invoked the **insertAdjacentElement** method.

**Return Value**

Returns an element object.

**No JScript Error**

1. **mergeAttributes**

mergeAttributes

The **mergeAttributes** method copies all read/write HTML attributes, events, and styles from one element to another specified element.

**Parameters**

oSource

Pointer to an **Object** that specifies the attributes copied to the object that invokes the attributes of the **mergeAttributes** method.

bPreserve



*13 / 27*

*[MS-DOM2CE] — v20120725*

*Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification*

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*Release: July 25, 2012*

Optional. Pointer to a Boolean value that specifies one of the following values:

True - Default. The **id** and **name** attributes of the element to which attributes are being merged is preserved.

False - The **id** and **name** attributes of the element to which attributes are being merged are not preserved.

**Return Value**

No return value.

1. **removeNode**

removeNode

The **removeNode** method removes the specified object from the document hierarchy. The **removeNode** method is accessible at run time. If elements are removed at run time, before theclosing tag is parsed, areas of the document might not render.

**Parameters**

bRemoveChildren

Optional. A Boolean parameter that specifies one of the following values:

False - Default. The **childNodes** collection of the object is not removed.

True - The **childNodes** collection of the object is removed.

**Return Value**

Returns a reference to the removed object.

1. **replaceNode**

replaceNode

The **replaceNode** method replaces the object with another element. When a node is replaced, all values that are associated with the replaced object are removed. The **replaceNode** method is accessible at run time. If elements are removed at run time before the closing tag is parsed, areas of the document might not render.

**Parameters**

oNewNode

An object that specifies the new element to replace the object.

**Return Value**

Returns a reference to the removed object.

1. **swapNode**

swapNode



*14 / 27*

*[MS-DOM2CE] — v20120725*

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The **swapNode** method exchanges the location of two objects in the document hierarchy. This method is accessible at run time. If elements are removed at run time, before the closing tag is parsed, areas of the document might not render.

**Parameters**

oNode

Element that specifies the existing element.

**Return Values**

Returns a reference to the object that invoked the method.

1. **Collections**

The following collections are extensions to the **Elements** interface as specified in the  [[DOM Level 2](http://go.microsoft.com/fwlink/?LinkId=182703) -  [Core](http://go.microsoft.com/fwlink/?LinkId=182703)]:

[page15](#page15)  [al](#page15)l

[page16](#page16)  [childre](#page16)n

1. **all**

all

Returns a reference to the collection of elements contained by the object.

The **all** collection includes one element object for each valid HTML tag. If a valid tag has a matching end tag, both tags are represented by the same element object.

The collection returned by the document's **all** collection always includes a reference to the **html**, **head**, and **title** objects regardless of whether the tags are present in the document. If the BODYtag is not present, but other HTML tags are, a **body** object is added to the **all** collection.

If the document contains invalid or unknown tags, the collection includes one element object for each. Unlike valid end tags, unknown end tags are represented by their own element objects. The order of the element objects is the HTML source order. Although the collection indicates the order of tags, it does not indicate hierarchy.

The **name** property only applies to some elements such as **form** elements. If the vIndex is set to a string matching the value of a **name** property in an element that the **name** property does not apply, then that element is not added to the collection.

**Syntax**

[ collAll = ] object.**all**

[ oObject = ] object.**all**(vIndex [, iSubIndex])

**Possible Values**

**collAll** Array of elements contained by the object.

**oObject** Reference to an individual item in the array of elements contained by the object.



*15 / 27*

*[MS-DOM2CE] — v20120725*

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**vIndex** Required. Integer or string that specifies the element or collection to retrieve. If thisparameter is an integer, the method returns the element in the collection at the specified position, where the first element has value 0, the second has 1, and so on. If this parameter is a string and there is more than one element with the **name** or **id** property equal to the string, the method returns a collection of matching elements.

**iSubIndex** Optional. Position of an element to retrieve. This parameter is used whenvIndexis astring. The method uses the string to construct a collection of all elements that have a **name** or **id** property equal to the string, and then retrieves from this collection the element at the position specified by iSubIndex.

**Members Table**

The following table lists the members exposed by the **all** object.

Attributes

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Attribute** |  |  |  |  | **Description** |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | length | |  |  |  |  | Sets or retrieves the number of objects in a collection. |  |  |
|  |  | |  |  |  |  |  |  |  |
| Methods | | |  |  |  |  |  |  |  |
|  |  | |  |  |  | | |  |  |
|  |  | **Method** |  |  | **Description** | | |  |  |
|  |  |  |  |  |  | | |  |  |
|  | item | |  |  | Retrieves an object from various collections, including the **all** collection. | | |  |  |
|  |  | |  |  |  | | |  |  |
|  | namedItem | |  |  | Retrieves an object or a collection from a specified collection. | | |  |  |
|  |  | |  |  |  | | |  |  |
|  | tags | |  |  | Retrieves a collection of objects that have the specified HTML tag name. | | |  |  |
|  |  | |  |  |  | | |  |  |
|  | urns | |  |  | Retrieves a collection of all objects to which a specified behavior is attached. | | |  |  |
|  |  |  |  |  |  |  |  |  |  |

1. **children**

children

Retrieves a collection of DHTML Objects that are direct descendants of the object.

Similar to the objects contained in the **all** collection, the objects contained in the **children** collection are undefined if the child elements are overlapping tags.

The **children** collection can contain HTML elements.

**Syntax**

[ collAll = ] object.**children**

[ oObject = ] object.**children**(vIndex [, iSubIndex])

**Possible Values**

**collAll** Array of elements contained by the object.

**oObject** Reference to an individual item in the array of elements contained by the object.



*16 / 27*

*[MS-DOM2CE] — v20120725*

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**vIndex** Required. Integer or string that specifies the element or collection to retrieve. If thisparameter is an integer, the method returns the element in the collection at the specified position, where the first element has value 0, the second has 1, and so on. If this parameter is a string and there is more than one element with the **name** or **id** property equal to the string, the method returns a collection of matching elements.

**iSubIndex** Optional. Position of an element to retrieve. This parameter is used when **vIndex** is astring. The method uses the string to construct a collection of all elements that have a **name** or **id** property equal to the string, and then retrieves from this collection the element at the position specified by **iSubIndex**.

**Members Table**

The following table lists the members exposed by the **children** object.

Attributes

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Attribute** | | |  |  | **Description** |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | constructor | | | |  |  | Returns a reference to the constructor of an object. |  |  |
|  |  | |  |  |  |  |  |  |  |
|  | length | | | |  |  | Sets or retrieves the number of objects in a collection. |  |  |
|  |  | |  |  |  |  |  |  |  |
| Methods | | | | |  |  |  |  |  |
|  |  | |  |  |  | | |  |  |
|  |  | **Method** |  |  | **Description** | | |  |  |
|  |  |  |  |  |  | | |  |  |
|  | item | | |  | Retrieves an object from various collections, including the **all** collection. | | |  |  |
|  |  | | |  |  | | |  |  |
|  | tags | | |  | Retrieves a collection of objects that have the specified HTML tag name. | | |  |  |
|  |  | | |  |  | | |  |  |
|  | urns | | |  | Retrieves a collection of all objects to which a specified behavior is attached. | | |  |  |
|  |  |  |  |  |  |  |  |  |  |

1. **Extensions to the Comment Interface**

The following methods of the **Comment** Interface are prototype extensions to the Comment interface of the Document Object Model (DOM) Level 2 Core Specification  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703).

**Attributes**

The **Comment** interface is extended by the  [text](#page18) attribute. For details, see  [Attribute](#page18)s.

**Methods**

The **Comment** interface is extended by the  [atomic](#page18) attribute. For details, see  [Method](#page18)s.

The following IDL Definition documents the **Comment** interface:

interface Comment : CharacterData {

* Extension of DOM Level 2: read-write attribute text;
* Extension of DOM Level 2:

Comment atomic

};



*17 / 27*

*[MS-DOM2CE] — v20120725*

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1. **Attributes**

The **Comment** interface as specified in the  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) is extended by the addition of the  [text](#page18) attribute.

1. **text**

**text** of typeDOMString

The **text** attribute retrieves or sets the text of the object as a string.

1. **Methods**

The **Comment** interface as specified in the  [[DOM Level 2 - Core]](http://go.microsoft.com/fwlink/?LinkId=182703) is extended by the addition of the  [atomic](#page18) method.

1. **atomic**

atomic

The **atomic** method is functional but has been deprecated. The use of **atomic** indicates whether **comment** is a standalone tag or is used in a tag pair.

**Parameters**

None

**Return Values**

Returns one of the following possible values:

1 - if the comment is self-closing <!-- --> style.

* 1. - if the comment uses the deprecated <comment> tag.

1. **Extensions to the Document Interface**

The following methods are extensions to the **Document** interface of the Document Object Model (DOM) Level 2 Core Specification  [[DOM Level 2 - Core](http://go.microsoft.com/fwlink/?LinkId=182703)]:

[page19](#page19)  [clea](#page19)r

[page19](#page19)  [removeNod](#page19)e

[page19](#page19)  [replaceNod](#page19)e

[page20](#page20)  [swapNod](#page20)e

The following IDL definition documents the **Document** interface:

interface Element : Node { // Extension of DOM Level 2:

boolean clear;

boolean removeNode;

Node replaceNode (in Node newNode)

raises(DOMException);

Node swapNode;



*18 / 27*

*[MS-DOM2CE] — v20120725*

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*Release: July 25, 2012*

};

1. **Methods**

The following properties are extensions to the **Document** interface as specified in the  [[DOM Level](http://go.microsoft.com/fwlink/?LinkId=182703) 2  [- Core](http://go.microsoft.com/fwlink/?LinkId=182703)]:

[page19](#page19)  [clea](#page19)r

[page19](#page19)  [removeNod](#page19)e

[page19](#page19)  [replaceNod](#page19)e

[page20](#page20)  [swapNod](#page20)e

1. **clear**

clear

The **clear** method removes all key/value pairs from the DOM Storage area. Session storage is cleared immediately. Local storage key/value pairs are removed from memory, and disk storage quota is updated.

**Return Value**

None

**JScript Error**

None

1. **removeNode**

removeNode

The **removeNode** method removes the object from the document hierarchy.

**Parameters**

bRemoveChildren

Optional. A Boolean parameter that specifies one of the following values:

False - Default. **childNodes** collection of the object is not removed.

True - **childNodes** collection of the object is removed.

**Return Value**

Returns a reference to the removed object.

1. **replaceNode**

replaceNode

The **replaceNode** method replaces the object with another element. When a node is replaced, all values that are associated with the replaced object are removed. The **replaceNode** method is



*19 / 27*

*[MS-DOM2CE] — v20120725*

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accessible at run time. If elements are removed at run time before the closing tag is parsed, areas of the document might not render.

**Parameters**

oNewNode

An element that specifies the new element to replace the object.

**Return Value**

Returns a reference to the removed object.

1. **swapNode**

swapNode

The **swapNode** method exchanges the location of two objects in the document hierarchy. This method is accessible at run time. If elements are removed at run time, before the closing tag is parsed, areas of the document might not render.

**Parameters**

oNode

Element that specifies the existing element.

**Return Values**

Returns a reference to the object that invoked the method.

1. **Extensions to the Text Interface**

The following methods are extensions to the **Text** interface of the Document Object Model (DOM) Level 2 Core Specification  [[DOM Level 2 - Core](http://go.microsoft.com/fwlink/?LinkId=182703)]:

[page21](#page21)  [removeNod](#page21)e

[page21](#page21)  [replaceNod](#page21)e

[page21](#page21)  [swapNod](#page21)e

The following IDL definition documents the **Document** interface:

interface Element : Node { // Extension of DOM Level 2:

boolean removeNode;

Node replaceNode (in Node newNode)

raises(DOMException);

Node swapNode;

};



*20 / 27*

*[MS-DOM2CE] — v20120725*

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1. **Methods**

The following properties are extensions to the **Text** interface as specified in the  [[DOM Level 2](http://go.microsoft.com/fwlink/?LinkId=182703) -  [Core](http://go.microsoft.com/fwlink/?LinkId=182703)]:

[page21](#page21)  [removeNod](#page21)e

[page21](#page21)  [replaceNod](#page21)e

[page21](#page21)  [swapNod](#page21)e

1. **removeNode**

removeNode

The **removeNode** removes the object from the document hierarchy.

**Parameters**

bRemoveChildren

Optional. A Boolean parameter that specifies one of the following values:

False - Default. **childNodes** collection of the object is not removed.

True - **childNodes** collection of the object is removed.

**Return Value**

Returns a reference to the removed object.

1. **replaceNode**

replaceNode

The **replaceNode** method replaces the object with another element.

**Parameters**

oNewNode

An element that specifies the new element to replace the object.

**Return Value**

Returns a reference to the removed object.

1. **swapNode**

swapNode

The **swapNode** method exchanges the location of two objects in the document hierarchy. This method is accessible at run time. If elements are removed at run time, before the closing tag is parsed, areas of the document might not render.

**Parameters**

oNode



*21 / 27*

*[MS-DOM2CE] — v20120725*

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Element that specifies the existing element.

**Return Values**

Returns a reference to the object that invoked the method.



*22 / 27*

*[MS-DOM2CE] — v20120725*

*Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification*

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**3 Security Considerations**

No security considerations.



*23 / 27*

*[MS-DOM2CE] — v20120725*

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**4 Appendix A: Product Behavior**

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

Windows® Internet Explorer® 7

Windows® Internet Explorer® 8

Windows® Internet Explorer® 9

Windows® Internet Explorer® 10

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.



*24 / 27*

*[MS-DOM2CE] — v20120725*

*Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification*

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**5 Change Tracking**

This section identifies changes that were made to the [MS-DOM2CE] protocol document between the February 2012 and July 2012 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

A document revision that incorporates changes to interoperability requirements or functionality.

An extensive rewrite, addition, or deletion of major portions of content.

The removal of a document from the documentation set.

Changes made for template compliance.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **Editorial** means that the language and formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

Major and minor changes can be described further using the following change types:

New content added.

Content updated.

Content removed.

New product behavior note added.

Product behavior note updated.

Product behavior note removed.

New protocol syntax added.

Protocol syntax updated.

Protocol syntax removed.

New content added due to protocol revision.

Content updated due to protocol revision.

Content removed due to protocol revision.

New protocol syntax added due to protocol revision.



*25 / 27*

*[MS-DOM2CE] — v20120725*

*Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification*

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Protocol syntax updated due to protocol revision.

Protocol syntax removed due to protocol revision.

New content added for template compliance.

Content updated for template compliance.

Content removed for template compliance.

Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated.**

Some important terms used in the change type descriptions are defined as follows:

**Protocol syntax** refers to data elements (such as packets, structures, enumerations, andmethods) as well as interfaces.

**Protocol revision** refers to changes made to a protocol that affect the bits that are sent overthe wire.

The changes made to this document are listed in the following table. For more information, please contact  [protocol@microsoft.com](mailto:protocol@microsoft.com).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **Major** |  |  |  |
|  | **Tracking number (if applicable)** |  | **change** |  |  |  |
|  |  |  |
| **Section** | **and description** |  | **(Y or N)** |  | **Change type** |  |
|  |  |  |  |  |  |  |
| 1 | Updated document to remove beta tagging. |  | N | | Content updated. |  |
| Introduction |  |  |  |  |  |  |
|  |  |  |  |  |  |  |



*26 / 27*

*[MS-DOM2CE] — v20120725*

*Internet Explorer Extensions to the Document Object Model (DOM) Level 2 Core Specification*

*Copyright © 2012 Microsoft Corporation.*

*Release: July 25, 2012*

**6 Index**

**A**

[Applicability](#page7) 7 Attributes

[canHaveChildren](#page10) 10  [canHaveHTML](#page10) 10  [parentElement](#page11) 11  [sourceIndex](#page11) 11  [text](#page18) 18

**C**

[Change tracking](#page25) 25 Collections

[all](#page15) 15  [children](#page16) 16

**G**

[Glossary](#page5) 5

**I**

[Implementer - security considerations](#page23) 23  [Informative references](#page5) 5

Interfaces  [Comment](#page17) 17  [Document](#page18) 18  [Element](#page9) 9  [Text](#page20) 20

[Introduction](#page5) 5

**M**

Methods  [applyElement](#page11) 11  [atomic](#page18) 18

[clear](#page19) 19  [clearAttributes](#page12) 12  [contains](#page12) 12

[insertAdjacentElement](#page13) 13  [mergeAttributes](#page13) 13

removeNode ( [section 2.1.2.6](#page14) 14,  [section 2.3.1.](#page19)2 19,  [section 2.4.1.1](#page21) 21)

replaceNode ( [section 2.1.2.7](#page14) 14,  [section 2.3.1.](#page19)3 19,  [section 2.4.1.2](#page21) 21)

swapNode ( [section 2.1.2.8](#page14) 14,  [section 2.3.1.](#page20)4 20,  [section 2.4.1.3](#page21) 21)

**N**

[Normative references](#page5) 5

**O**

[Overview (synopsis)](#page6) 6

**P**

[Product behavior](#page24) 24

**R**

[References](#page5) 5  [informative](#page5) 5  [normative](#page5) 5

**S**

[Security - implementer considerations](#page23) 23

**T**

[Tracking changes](#page25) 25



*27 / 27*

*[MS-DOM2CE] — v20120725*

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