REC-DOM-Level-1-19981001

Document Object Model (DOM) Level 1 Specification

Version 1.0

W3C Recommendation *1 October, 1998*

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The authors of this document are the DOM Working Group members, different chapters may have different editors.

Comments on this document should be sent to the public mailing list www-dom@w3.org.

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Errata

The list of known errors in this document is found at http://www.w3.org/DOM/updates/REC-DOM-Level-1-19981001-errata.html.

Available Languages

The English version of this specification is the only normative version. However, for translations in other languages see http://www.w3.org/DOM/updates/REC-DOM-Level-1-translations.html.

Abstract

This specification defines the Document Object Model Level 1, a platform- and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure and style of documents. The Document Object Model provides a standard set of objects for representing HTML and XML documents, a standard model of how these objects can be combined, and a standard interface for accessing and manipulating them. Vendors can support the DOM as an interface to their proprietary data structures and APIs, and content authors can write to the standard DOM interfaces rather than product-specific APIs, thus increasing interoperability on the Web.

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The goal of the DOM specification is to define a programmatic interface for XML and HTML. The DOM Level 1 specification is separated into two parts: Core and HTML. The Core DOM Level 1 section provides a low-level set of fundamental interfaces that can represent any structured document, as well as defining extended interfaces for representing an XML document. These extended XML interfaces need not be implemented by a DOM implementation that only provides access to HTML documents; all of the fundamental interfaces in the Core section must be implemented. A compliant DOM implementation that implements the extended XML interfaces is required to also implement the fundamental Core interfaces, but not the HTML interfaces. The HTML Level 1 section provides additional, higher-level interfaces that are used with the fundamental interfaces defined in the Core Level 1 section to provide a more convenient view of an HTML document. A compliant implementation of the HTML DOM implements all of the fundamental Core interfaces as well as the HTML interfaces.

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What is the Document Object Model?

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Introduction

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. In the DOM specification, the term "document" is used in the broad sense - increasingly, XML is being used as a way of representing many different kinds of information that may be stored in diverse systems, and much of this would traditionally be seen as data rather than as documents. Nevertheless, XML presents this data as documents, and the DOM may be used to manage this data.

With the Document Object Model, programmers can build documents, navigate their structure, and add, modify, or delete elements and content. Anything found in an HTML or XML document can be accessed, changed, deleted, or added using the Document Object Model, with a few exceptions - in particular, the DOM interfaces for the XML internal and external subsets have not yet been specified.

As a W3C specification, one important objective for the Document Object Model is to provide a standard programming interface that can be used in a wide variety of environments and applications. The DOM is designed to be used with any programming language. In order to provide a precise, language-independent specification of the DOM interfaces, we have chosen to define the specifications in OMG IDL, as defined in the CORBA 2.2 specification. In addition to the OMG IDL specification, we provide language bindings for Java and ECMAScript (an industry-standard scripting language based on JavaScript and JScript).
Note: *OMG IDL is used only as a language-independent and implementation-neutral way to specify interfaces. Various other IDLs could have been used. In general, IDLs are designed for specific computing environments. The Document Object Model can be implemented in any computing environment, and does not require the object binding runtimes generally associated with such IDLs.*

What the Document Object Model is

The DOM is a programming API for documents. It closely resembles the structure of the documents it models. For instance, consider this table, taken from an HTML document:

```
<TABLE>
<TBODY>
<TR>
<TD>Shady Grove</TD>
<TD>Aeolian</TD>
</TR>
<TR>
<TD>Over the River, Charlie</TD>
<TD>Dorian</TD>
</TR>
</TBODY>
</TABLE>
```

The DOM represents this table like this:

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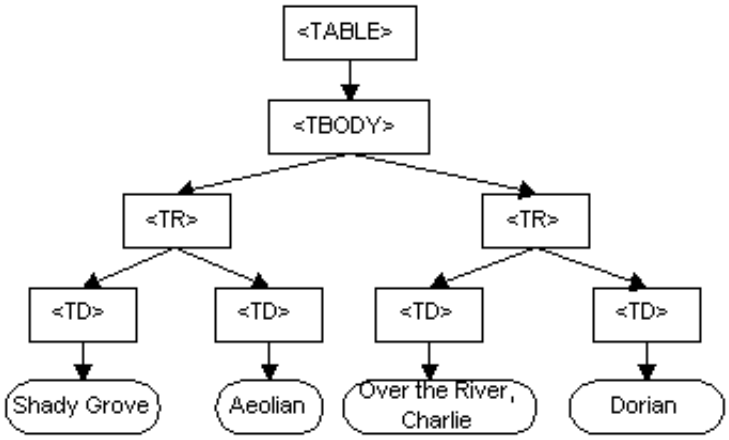

DOM representation of the example table

In the DOM, documents have a logical structure which is very much like a tree; to be more precise, it is like a "forest" or "grove", which can contain more than one tree. However, the DOM does not specify that documents must be *implemented* as a tree or a grove, nor does it specify how the relationships among objects be implemented. The DOM is a logical model that may be implemented in any convenient manner. In this specification, we use the term *structure model* to describe the tree-like representation of a document; we specifically avoid terms like "tree" or "grove" in order to avoid implying a particular implementation. One important property of DOM structure models is *structural isomorphism*: if any two Document Object Model implementations are used to create a representation of the same document, they will create the same structure model, with precisely the same objects and relationships.

The name "Document Object Model" was chosen because it is an "object model" in the traditional object oriented design sense: documents are modeled using objects, and the model encompasses not only the structure of a document, but also the behavior of a document and the objects of which it is composed. In other words, the nodes in the above diagram do not represent a data structure, they represent objects, which have functions and identity. As an object model, the DOM identifies:

- the interfaces and objects used to represent and manipulate a document
- the semantics of these interfaces and objects - including both behavior and attributes
- the relationships and collaborations among these interfaces and objects

The structure of SGML documents has traditionally been represented by an abstract data model, not by an object model. In an abstract data model, the model is centered around the data. In object oriented programming languages, the data itself is encapsulated in objects that hide the data, protecting it from direct external manipulation. The functions associated with these objects determine how the objects may be manipulated, and they are part of the object model.

The Document Object Model currently consists of two parts, DOM Core and DOM HTML. The DOM Core represents the functionality used for XML documents, and also serves as the basis for DOM HTML. A compliant implementation of the DOM must implement all of the fundamental interfaces in the Core chapter with the semantics as defined. Further, it must implement at least one of the HTML DOM and the

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extended (XML) interfaces with the semantics as defined.

What the Document Object Model is not

This section is designed to give a more precise understanding of the DOM by distinguishing it from other systems that may seem to be like it.

- Although the Document Object Model was strongly influenced by "Dynamic HTML", in Level 1, it does not implement all of "Dynamic HTML". In particular, events have not yet been defined. Level 1 is designed to lay a firm foundation for this kind of functionality by providing a robust, flexible model of the document itself.
- The Document Object Model is not a binary specification. DOM programs written in the same language will be source code compatible across platforms, but the DOM does not define any form of binary interoperability.
- The Document Object Model is not a way of persisting objects to XML or HTML. Instead of specifying how objects may be represented in XML, the DOM specifies how XML and HTML documents are represented as objects, so that they may be used in object oriented programs.
- The Document Object Model is not a set of data structures, it is an object model that specifies interfaces. Although this document contains diagrams showing parent/child relationships, these are logical relationships defined by the programming interfaces, not representations of any particular internal data structures.
- The Document Object Model does not define "the true inner semantics" of XML or HTML. The semantics of those languages are defined by W3C Recommendations for these languages. The DOM is a programming model designed to respect these semantics. The DOM does not have any ramifications for the way you write XML and HTML documents; any document that can be written in these languages can be represented in the DOM.
- The Document Object Model, despite its name, is not a competitor to the Component Object Model (COM). COM, like CORBA, is a language independent way to specify interfaces and objects; the DOM is a set of interfaces and objects designed for managing HTML and XML documents. The DOM may be implemented using language-independent systems like COM or CORBA; it may also be implemented using language-specific bindings like the Java or ECMAScript bindings specified in this document.

Where the Document Object Model came from

The DOM originated as a specification to allow JavaScript scripts and Java programs to be portable among Web browsers. "Dynamic HTML" was the immediate ancestor of the Document Object Model, and it was originally thought of largely in terms of browsers. However, when the DOM Working Group was formed at W3C, it was also joined by vendors in other domains, including HTML or XML editors and document repositories. Several of these vendors had worked with SGML before XML was developed; as a result, the DOM has been influenced by SGML Groves and the HyTime standard. Some of these vendors had also developed their own object models for documents in order to provide an API for SGML/XML editors or document repositories, and these object models have also influenced the DOM.

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Entities and the DOM Core

In the fundamental DOM interfaces, there are no objects representing entities. Numeric character references, and references to the pre-defined entities in HTML and XML, are replaced by the single character that makes up the entity's replacement. For example, in:

```
<p>This is a dog &amp; a cat</p>
```

the "&" will be replaced by the character "&", and the text in the P element will form a single continuous sequence of characters. Since numeric character references and pre-defined entities are not recognized as such in CDATA sections, or the SCRIPT and STYLE elements in HTML, they are not replaced by the single character they appear to refer to. If the example above were enclosed in a CDATA section, the "&" would not be replaced by "&"; neither would the <p> be recognized as a start tag. The representation of general entities, both internal and external, are defined within the extended (XML) interfaces of the Level 1 specification.

Note: When a DOM representation of a document is serialized as XML or HTML text, applications will need to check each character in text data to see if it needs to be escaped using a numeric or pre-defined entity. Failing to do so could result in invalid HTML or XML. Also, implementations should be aware of the fact that serialization into a character encoding ("charset") that does not fully cover ISO 10646 may fail if there are characters in markup or CDATA sections that are not present in the encoding.

DOM Interfaces and DOM Implementations

The DOM specifies interfaces which may be used to manage XML or HTML documents. It is important to realize that these interfaces are an abstraction - much like "abstract base classes" in C++, they are a means of specifying a way to access and manipulate an application's internal representation of a document. Interfaces do not imply a particular concrete implementation. Each DOM application is free to maintain documents in any convenient representation, as long as the interfaces shown in this specification are supported. Some DOM implementations will be existing programs that use the DOM interfaces to access software written long before the DOM specification existed. Therefore, the DOM is designed to avoid implementation dependencies; in particular,

1. Attributes defined in the IDL do not imply concrete objects which must have specific data members - in the language bindings, they are translated to a pair of get()/set() functions, not to a data member. (Read-only functions have only a get() function in the language bindings).
2. DOM applications may provide additional interfaces and objects not found in this specification and still be considered DOM compliant.
3. Because we specify interfaces and not the actual objects that are to be created, the DOM can not know what constructors to call for an implementation. In general, DOM users call the createXXX() methods on the Document class to create document structures, and DOM implementations create their own internal representations of these structures in their implementations of the createXXX() functions.

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Limitations of Level 1

The DOM Level 1 specification is intentionally limited to those methods needed to represent and manipulate document structure and content. The plan is for future Levels of the DOM specification to provide:

1. A structure model for the internal subset and the external subset.
2. Validation against a schema.
3. Control for rendering documents via style sheets.
4. Access control.
5. Thread-safety.
6. Events.

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1. Document Object Model (Core) Level 1

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1.1. Overview of the DOM Core Interfaces

This section defines a minimal set of objects and interfaces for accessing and manipulating document objects. The functionality specified in this section (the *Core* functionality) should be sufficient to allow software developers and web script authors to access and manipulate parsed HTML and XML content inside conforming products. The DOM Core API also allows population of a `Document` [p.22] object using only DOM API calls; creating the skeleton `Document` [p.22] and saving it persistently is left to the product that implements the DOM API.

1.1.1. The DOM Structure Model

The DOM presents documents as a hierarchy of `Node` [p.25] objects that also implement other, more specialized interfaces. Some types of nodes may have child nodes of various types, and others are leaf nodes that cannot have anything below them in the document structure. The node types, and which node types they may have as children, are as follows:

- `Document` [p.22] -- `Element` [p.38] (maximum of one), `ProcessingInstruction` [p.46] , `Comment` [p.43] , `DocumentType` [p.44]
- `DocumentFragment` [p.21] -- `Element` [p.38] , `ProcessingInstruction` [p.46] , `Comment` [p.43] , `Text` [p.42] , `CDATASection` [p.43] , `EntityReference` [p.46]
- `DocumentType` [p.44] -- no children
- `EntityReference` [p.46] -- `Element` [p.38] , `ProcessingInstruction` [p.46] , `Comment` [p.43] , `Text` [p.42] , `CDATASection` [p.43] , `EntityReference` [p.46]
- `Element` [p.38] -- `Element` [p.38] , `Text` [p.42] , `Comment` [p.43] , `ProcessingInstruction` [p.46] , `CDATASection` [p.43] , `EntityReference` [p.46]
- `Attr` [p.37] -- `Text` [p.42] , `EntityReference` [p.46]
- `ProcessingInstruction` [p.46] -- no children
- `Comment` [p.43] -- no children
- `Text` [p.42] -- no children
- `CDATASection` [p.43] -- no children
- `Entity` [p.45] -- `Element` [p.38] , `ProcessingInstruction` [p.46] , `Comment` [p.43] , `Text` [p.42] , `CDATASection` [p.43] , `EntityReference` [p.46]
- `Notation` [p.44] -- no children

The DOM also specifies a `NodeList` [p.32] interface to handle ordered lists of `Node` [p.25] s, such as the children of a `Node` [p.25] , or the elements returned by the `Element.getElementsByTagName` method, and also a `NamedNodeMap` [p.32] interface to handle unordered sets of nodes referenced by their name attribute, such as the attributes of an `Element` [p.38] . `NodeList` [p.32] s and `NamedNodeMap` [p.32] s in the DOM are "live", that is, changes to the underlying document structure are reflected in all relevant `NodeList` [p.32] s and `NamedNodeMap` [p.32] s. For example, if a DOM user gets a `NodeList` [p.32] object containing the children of an `Element` [p.38] , then subsequently adds more children to that element (or removes children, or modifies them), those changes are automatically reflected in the `NodeList` [p.32] without further action on the user’s part. Likewise changes to a `Node` [p.25] in the tree are reflected in all references to that `Node` [p.25] in `NodeList` [p.32] s and `NamedNodeMap` [p.32] s.

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1.1.2. Memory Management

Most of the APIs defined by this specification are *interfaces* rather than classes. That means that an actual implementation need only expose methods with the defined names and specified operation, not actually implement classes that correspond directly to the interfaces. This allows the DOM APIs to be implemented as a thin veneer on top of legacy applications with their own data structures, or on top of newer applications with different class hierarchies. This also means that ordinary constructors (in the Java or C++ sense) cannot be used to create DOM objects, since the underlying objects to be constructed may have little relationship to the DOM interfaces. The conventional solution to this in object-oriented design is to define *factory* methods that create instances of objects that implement the various interfaces. In the DOM Level 1, objects implementing some interface "X" are created by a "createX()" method on the `Document` [p.22] interface; this is because all DOM objects live in the context of a specific Document.

The DOM Level 1 API does *not* define a standard way to create `DOMImplementation` [p.20] or `Document` [p.22] objects; actual DOM implementations must provide some proprietary way of bootstrapping these DOM interfaces, and then all other objects can be built from the Create methods on `Document` [p.22] (or by various other convenience methods).

The Core DOM APIs are designed to be compatible with a wide range of languages, including both general-user scripting languages and the more challenging languages used mostly by professional programmers. Thus, the DOM APIs need to operate across a variety of memory management philosophies, from language platforms that do not expose memory management to the user at all, through those (notably Java) that provide explicit constructors but provide an automatic garbage collection mechanism to automatically reclaim unused memory, to those (especially C/C++) that generally require the programmer to explicitly allocate object memory, track where it is used, and explicitly free it for re-use. To ensure a consistent API across these platforms, the DOM does not address memory management issues at all, but instead leaves these for the implementation. Neither of the explicit language bindings devised by the DOM Working Group (for ECMAScript and Java) require any memory management methods, but DOM bindings for other languages (especially C or C++) probably will require such support. These extensions will be the responsibility of those adapting the DOM API to a specific language, not the DOM WG.

1.1.3. Naming Conventions

While it would be nice to have attribute and method names that are short, informative, internally consistent, and familiar to users of similar APIs, the names also should not clash with the names in legacy APIs supported by DOM implementations. Furthermore, both OMG IDL and `ECMAScript` have significant limitations in their ability to disambiguate names from different namespaces that makes it difficult to avoid naming conflicts with short, familiar names. So, DOM names tend to be long and quite descriptive in order to be unique across all environments.

The Working Group has also attempted to be internally consistent in its use of various terms, even though these may not be common distinctions in other APIs. For example, we use the method name "remove" when the method changes the structural model, and the method name "delete" when the method gets rid of something inside the structure model. The thing that is deleted is not returned. The thing that is removed may be returned, when it makes sense to return it.

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1.1.4. Inheritance vs Flattened Views of the API

The DOM Core APIs present two somewhat different sets of interfaces to an XML/HTML document; one presenting an "object oriented" approach with a hierarchy of inheritance, and a "simplified" view that allows all manipulation to be done via the `Node` [p.25] interface without requiring casts (in Java and other C-like languages) or query interface calls in COM environments. These operations are fairly expensive in Java and COM, and the DOM may be used in performance-critical environments, so we allow significant functionality using just the `Node` [p.25] interface. Because many other users will find the inheritance hierarchy easier to understand than the "everything is a `Node` [p.25] " approach to the DOM, we also support the full higher-level interfaces for those who prefer a more object-oriented API.

In practice, this means that there is a certain amount of redundancy in the API. The Working Group considers the "inheritance" approach the primary view of the API, and the full set of functionality on `Node` [p.25] to be "extra" functionality that users may employ, but that does not eliminate the need for methods on other interfaces that an object-oriented analysis would dictate. (Of course, when the O-O analysis yields an attribute or method that is identical to one on the `Node` [p.25] interface, we don't specify a completely redundant one). Thus, even though there is a generic `nodeName` attribute on the `Node` [p.25] interface, there is still a `tagName` attribute on the `Element` [p.38] interface; these two attributes must contain the same value, but the Working Group considers it worthwhile to support both, given the different constituencies the DOM API must satisfy.

1.1.5. The `DOMString` type

To ensure interoperability, the DOM specifies the `DOMString` type as follows:

- A `DOMString` is a sequence of 16-bit quantities. This may be expressed in IDL terms as:

```
typedef sequence<unsigned short> DOMString;
```

- Applications must encode `DOMString` using UTF-16 (defined in Appendix C.3 of [UNICODE] and Amendment 1 of [ISO-10646]).The UTF-16 encoding was chosen because of its widespread industry practice. Please note that for both HTML and XML, the document character set (and therefore the notation of numeric character references) is based on UCS-4. A single numeric character reference in a source document may therefore in some cases correspond to two array positions in a `DOMString` (a high surrogate and a low surrogate). ***Note:*** *Even though the DOM defines the name of the string type to be `DOMString`, bindings may used different names. For, example for Java, `DOMString` is bound to the `String` type because it also uses UTF-16 as its encoding.*

Note: *As of August 1998, the OMG IDL specification included a `wstring` type. However, that definition did not meet the interoperability criteria of the DOM API since it relied on encoding negotiation to decide the width of a character.*

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1.1.6. Case sensitivity in the DOM

The DOM has many interfaces that imply string matching. HTML processors generally assume an uppercase (less often, lowercase) normalization of names for such things as elements, while XML is explicitly case sensitive. For the purposes of the DOM, string matching takes place on a character code by character code basis, on the 16 bit value of a `DOMString`. As such, the DOM assumes that any normalizations will take place in the processor, *before* the DOM structures are built.

This then raises the issue of exactly what normalizations occur. The W3C I18N working group is in the process of defining exactly which normalizations are necessary for applications implementing the DOM.

1.2. Fundamental Interfaces

The interfaces within this section are considered *fundamental*, and must be fully implemented by all conforming implementations of the DOM, including all HTML DOM implementations.

Exception *DOMException*

DOM operations only raise exceptions in "exceptional" circumstances, i.e., when an operation is impossible to perform (either for logical reasons, because data is lost, or because the implementation has become unstable). In general, DOM methods return specific error values in ordinary processing situation, such as out-of-bound errors when using `NodeList` [p.32] .

Implementations may raise other exceptions under other circumstances. For example, implementations may raise an implementation-dependent exception if a `null` argument is passed.

Some languages and object systems do not support the concept of exceptions. For such systems, error conditions may be indicated using native error reporting mechanisms. For some bindings, for example, methods may return error codes similar to those listed in the corresponding method descriptions.

IDL Definition

```
exception DOMException {
  unsigned short   code;
};

// ExceptionCode
const unsigned short      INDEX_SIZE_ERR     = 1;
const unsigned short      DOMSTRING_SIZE_ERR = 2;
const unsigned short      HIERARCHY_REQUEST_ERR = 3;
const unsigned short      WRONG_DOCUMENT_ERR = 4;
const unsigned short      INVALID_CHARACTER_ERR = 5;
const unsigned short      NO_DATA_ALLOWED_ERR = 6;
const unsigned short      NO_MODIFICATION_ALLOWED_ERR = 7;
const unsigned short      NOT_FOUND_ERR      = 8;
const unsigned short      NOT_SUPPORTED_ERR  = 9;
const unsigned short      INUSE_ATTRIBUTE_ERR = 10;
```


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Definition group *ExceptionCode*

An integer indicating the type of error generated.
Defined Constants

INDEX_SIZE_ERR	If index or size is negative, or greater than the allowed value
DOMSTRING_SIZE_ERR	If the specified range of text does not fit into a DOMString
HIERARCHY_REQUEST_ERR	If any node is inserted somewhere it doesn't belong
WRONG_DOCUMENT_ERR	If a node is used in a different document than the one that created it (that doesn't support it)
INVALID_CHARACTER_ERR	If an invalid character is specified, such as in a name.
NO_DATA_ALLOWED_ERR	If data is specified for a node which does not support data
NO_MODIFICATION_ALLOWED_ERR	If an attempt is made to modify an object where modifications are not allowed
NOT_FOUND_ERR	If an attempt was made to reference a node in a context where it does not exist
NOT_SUPPORTED_ERR	If the implementation does not support the type of object requested
INUSE_ATTRIBUTE_ERR	If an attempt is made to add an attribute that is already inuse elsewhere

Interface *DOMImplementation*

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

The DOM Level 1 does not specify a way of creating a document instance, and hence document creation is an operation specific to an implementation. Future Levels of the DOM specification are expected to provide methods for creating documents directly.
IDL Definition

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```
interface DOMImplementation {
  boolean                   hasFeature(in DOMString feature,
                                       in DOMString version);
};
```

Methods

`hasFeature`

Test if the DOM implementation implements a specific feature.

Parameters

`feature`	The package name of the feature to test. In Level 1, the legal values are "HTML" and "XML" (case-insensitive).
`version`	This is the version number of the package name to test. In Level 1, this is the string "1.0". If the version is not specified, supporting any version of the feature will cause the method to return `true`.

Return Value

`true` if the feature is implemented in the specified version, `false` otherwise.

This method raises no exceptions.

Interface *DocumentFragment*

`DocumentFragment` is a "lightweight" or "minimal" `Document` [p.22] object. It is very common to want to be able to extract a portion of a document's tree or to create a new fragment of a document. Imagine implementing a user command like cut or rearranging a document by moving fragments around. It is desirable to have an object which can hold such fragments and it is quite natural to use a Node for this purpose. While it is true that a `Document` [p.22] object could fulfil this role, a `Document` [p.22] object can potentially be a heavyweight object, depending on the underlying implementation. What is really needed for this is a very lightweight object. `DocumentFragment` is such an object.

Furthermore, various operations -- such as inserting nodes as children of another `Node` [p.25] -- may take `DocumentFragment` objects as arguments; this results in all the child nodes of the `DocumentFragment` being moved to the child list of this node.

The children of a `DocumentFragment` node are zero or more nodes representing the tops of any sub-trees defining the structure of the document. `DocumentFragment` nodes do not need to be well-formed XML documents (although they do need to follow the rules imposed upon well-formed XML parsed entities, which can have multiple top nodes). For example, a `DocumentFragment` might have only one child and that child node could be a `Text` [p.42] node. Such a structure model represents neither an HTML document nor a well-formed XML document.

When a `DocumentFragment` is inserted into a `Document` [p.22] (or indeed any other `Node` [p.25] that may take children) the children of the `DocumentFragment` and not the `DocumentFragment` itself are inserted into the `Node` [p.25] . This makes the `DocumentFragment` very useful when the user wishes to create nodes that are siblings; the

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`DocumentFragment` acts as the parent of these nodes so that the user can use the standard methods from the `Node` [p.25] interface, such as `insertBefore()` and `appendChild()`.

IDL Definition

```
interface DocumentFragment : Node {
};
```

Interface *Document*

The `Document` interface represents the entire HTML or XML document. Conceptually, it is the root of the document tree, and provides the primary access to the document's data.

Since elements, text nodes, comments, processing instructions, etc. cannot exist outside the context of a `Document`, the `Document` interface also contains the factory methods needed to create these objects. The `Node` [p.25] objects created have a `ownerDocument` attribute which associates them with the `Document` within whose context they were created.

IDL Definition

```
interface Document : Node {
  readonly attribute  DocumentType         doctype;
  readonly attribute  DOMImplementation    implementation;
  readonly attribute  Element              documentElement;
  Element                  createElement(in DOMString tagName)
                                          raises(DOMException);
  DocumentFragment         createDocumentFragment();
  Text                     createTextNode(in DOMString data);
  Comment                  createComment(in DOMString data);
  CDATASection             createCDATASection(in DOMString data)
                                                raises(DOMException);
  ProcessingInstruction    createProcessingInstruction(in DOMString target,
                                                       in DOMString data)
                                                       raises(DOMException);
  Attr                     createAttribute(in DOMString name)
                                           raises(DOMException);
  EntityReference          createEntityReference(in DOMString name)
                                                 raises(DOMException);
  NodeList                 getElementsByTagName(in DOMString tagname);
};
```

Attributes

`doctype`
: The Document Type Declaration (see `DocumentType` [p.44]) associated with this document. For HTML documents as well as XML documents without a document type declaration this returns `null`. The DOM Level 1 does not support editing the Document Type Declaration, therefore `docType` cannot be altered in any way.

`implementation`
: The `DOMImplementation` [p.20] object that handles this document. A DOM application may use objects from multiple implementations.

`documentElement`
: This is a convenience attribute that allows direct access to the child node that is the root element of the document. For HTML documents, this is the element with the tagName "HTML".

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Methods

`createElement`

Creates an element of the type specified. Note that the instance returned implements the Element interface, so attributes can be specified directly on the returned object.

Parameters

`tagName`	The name of the element type to instantiate. For XML, this is case-sensitive. For HTML, the `tagName` parameter may be provided in any case, but it must be mapped to the canonical uppercase form by the DOM implementation.

Return Value

A new `Element` [p.38] object.

Exceptions

`DOMException` [p.19]

INVALID_CHARACTER_ERR: Raised if the specified name contains an invalid character.

`createDocumentFragment`

Creates an empty `DocumentFragment` [p.21] object.

Return Value

A new `DocumentFragment` [p.21] .

This method has no parameters.

This method raises no exceptions.

`createTextNode`

Creates a `Text` [p.42] node given the specified string.

Parameters

`data`	The data for the node.

Return Value

The new `Text` [p.42] object.

This method raises no exceptions.

`createComment`

Creates a `Comment` [p.43] node given the specified string.

Parameters

`data`	The data for the node.

Return Value

The new `Comment` [p.43] object.

This method raises no exceptions.

`createCDATASection`

Creates a `CDATASection` [p.43] node whose value is the specified string.

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Parameters

`data` The data for the `CDATASection` [p.43] contents.

Return Value

The new `CDATASection` [p.43] object.

Exceptions

`DOMException` [p.19]

NOT_SUPPORTED_ERR: Raised if this document is an HTML document.

`createProcessingInstruction`

Creates a `ProcessingInstruction` [p.46] node given the specified name and data strings.

Parameters

`target` The target part of the processing instruction.

`data` The data for the node.

Return Value

The new `ProcessingInstruction` [p.46] object.

Exceptions

`DOMException` [p.19]

INVALID_CHARACTER_ERR: Raised if an invalid character is specified.

NOT_SUPPORTED_ERR: Raised if this document is an HTML document.

`createAttribute`

Creates an `Attr` [p.37] of the given name. Note that the `Attr` [p.37] instance can then be set on an `Element` [p.38] using the `setAttribute` method.

Parameters

`name` The name of the attribute.

Return Value

A new `Attr` [p.37] object.

Exceptions

`DOMException` [p.19]

INVALID_CHARACTER_ERR: Raised if the specified name contains an invalid character.

`createEntityReference`

Creates an EntityReference object.

Parameters

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`name` The name of the entity to reference.

Return Value
The new `EntityReference` [p.46] object.
Exceptions
`DOMException` [p.19]

INVALID_CHARACTER_ERR: Raised if the specified name contains an invalid character.

NOT_SUPPORTED_ERR: Raised if this document is an HTML document.

`getElementsByTagName`
Returns a `NodeList` [p.32] of all the `Element` [p.38] s with a given tag name in the order in which they would be encountered in a preorder traversal of the `Document` tree.
Parameters

`tagname` The name of the tag to match on. The special value "*" matches all tags.

Return Value
A new `NodeList` [p.32] object containing all the matched `Element` [p.38] s.
This method raises no exceptions.

Interface *Node*

The `Node` interface is the primary datatype for the entire Document Object Model. It represents a single node in the document tree. While all objects implementing the `Node` interface expose methods for dealing with children, not all objects implementing the `Node` interface may have children. For example, `Text` [p.42] nodes may not have children, and adding children to such nodes results in a `DOMException` [p.19] being raised.

The attributes `nodeName`, `nodeValue` and `attributes` are included as a mechanism to get at node information without casting down to the specific derived interface. In cases where there is no obvious mapping of these attributes for a specific `nodeType` (e.g., `nodeValue` for an Element or `attributes` for a Comment), this returns `null`. Note that the specialized interfaces may contain additional and more convenient mechanisms to get and set the relevant information.
IDL Definition

```
interface Node {
  // NodeType
  const unsigned short      ELEMENT_NODE       = 1;
  const unsigned short      ATTRIBUTE_NODE     = 2;
  const unsigned short      TEXT_NODE          = 3;
  const unsigned short      CDATA_SECTION_NODE = 4;
  const unsigned short      ENTITY_REFERENCE_NODE = 5;
  const unsigned short      ENTITY_NODE        = 6;
  const unsigned short      PROCESSING_INSTRUCTION_NODE = 7;
  const unsigned short      COMMENT_NODE       = 8;
  const unsigned short      DOCUMENT_NODE      = 9;
```


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```
  const unsigned short      DOCUMENT_TYPE_NODE = 10;
  const unsigned short      DOCUMENT_FRAGMENT_NODE = 11;
  const unsigned short      NOTATION_NODE      = 12;

  readonly attribute  DOMString            nodeName;
           attribute  DOMString            nodeValue;
                                                 // raises(DOMException) on setting
                                                 // raises(DOMException) on retrieval
  readonly attribute  unsigned short       nodeType;
  readonly attribute  Node                 parentNode;
  readonly attribute  NodeList             childNodes;
  readonly attribute  Node                 firstChild;
  readonly attribute  Node                 lastChild;
  readonly attribute  Node                 previousSibling;
  readonly attribute  Node                 nextSibling;
  readonly attribute  NamedNodeMap         attributes;
  readonly attribute  Document             ownerDocument;
  Node                      insertBefore(in Node newChild,
                                         in Node refChild)
                                         raises(DOMException);
  Node                      replaceChild(in Node newChild,
                                         in Node oldChild)
                                         raises(DOMException);
  Node                      removeChild(in Node oldChild)
                                        raises(DOMException);
  Node                      appendChild(in Node newChild)
                                        raises(DOMException);
  boolean                   hasChildNodes();
  Node                      cloneNode(in boolean deep);
};
```

Definition group *NodeType*

An integer indicating which type of node this is.

Defined Constants

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ELEMENT_NODE	The node is a `Element` [p.38] .
ATTRIBUTE_NODE	The node is an `Attr` [p.37] .
TEXT_NODE	The node is a `Text` [p.42] node.
CDATA_SECTION_NODE	The node is a `CDATASection` [p.43] .
ENTITY_REFERENCE_NODE	The node is an `EntityReference` [p.46] .
ENTITY_NODE	The node is an `Entity` [p.45] .
PROCESSING_INSTRUCTION_NODE	The node is a `ProcessingInstruction` [p.46] .
COMMENT_NODE	The node is a `Comment` [p.43] .
DOCUMENT_NODE	The node is a `Document` [p.22] .
DOCUMENT_TYPE_NODE	The node is a `DocumentType` [p.44] .
DOCUMENT_FRAGMENT_NODE	The node is a `DocumentFragment` [p.21] .
NOTATION_NODE	The node is a `Notation` [p.44] .

The values of `nodeName`, `nodeValue`, and `attributes` vary according to the node type as follows:

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	nodeName	**nodeValue**	**attributes**
Element	tagName	null	NamedNodeMap
Attr	name of attribute	value of attribute	null
Text	#text	content of the text node	null
CDATASection	#cdata-section	content of the CDATA Section	null
EntityReference	name of entity referenced	null	null
Entity	entity name	null	null
ProcessingInstruction	target	entire content excluding the target	null
Comment	#comment	content of the comment	null
Document	#document	null	null
DocumentType	document type name	null	null
DocumentFragment	#document-fragment	null	null
Notation	notation name	null	null

Attributes

`nodeName`

The name of this node, depending on its type; see the table above.

`nodeValue`

The value of this node, depending on its type; see the table above.

Exceptions on setting

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised when the node is readonly.

Exceptions on retrieval

`DOMException` [p.19]

DOMSTRING_SIZE_ERR: Raised when it would return more characters than fit in a `DOMString` variable on the implementation platform.

`nodeType`

A code representing the type of the underlying object, as defined above.

`parentNode`

The parent of this node. All nodes, except `Document` [p.22] , `DocumentFragment` [p.21] , and `Attr` [p.37] may have a parent. However, if a node has just been created and not yet added to the tree, or if it has been removed from the tree, this is `null`.

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`childNodes`
A `NodeList` [p.32] that contains all children of this node. If there are no children, this is a `NodeList` [p.32] containing no nodes. The content of the returned `NodeList` [p.32] is "live" in the sense that, for instance, changes to the children of the node object that it was created from are immediately reflected in the nodes returned by the `NodeList` [p.32] accessors; it is not a static snapshot of the content of the node. This is true for every `NodeList` [p.32] , including the ones returned by the `getElementsByTagName` method.

`firstChild`
The first child of this node. If there is no such node, this returns `null`.

`lastChild`
The last child of this node. If there is no such node, this returns `null`.

`previousSibling`
The node immediately preceding this node. If there is no such node, this returns `null`.

`nextSibling`
The node immediately following this node. If there is no such node, this returns `null`.

`attributes`
A `NamedNodeMap` [p.32] containing the attributes of this node (if it is an `Element` [p.38]) or `null` otherwise.

`ownerDocument`
The `Document` [p.22] object associated with this node. This is also the `Document` [p.22] object used to create new nodes. When this node is a `Document` [p.22] this is `null`.

Methods

`insertBefore`
Inserts the node `newChild` before the existing child node `refChild`. If `refChild` is `null`, insert `newChild` at the end of the list of children.

If `newChild` is a `DocumentFragment` [p.21] object, all of its children are inserted, in the same order, before `refChild`. If the `newChild` is already in the tree, it is first removed.

Parameters

`newChild`	The node to insert.
`refChild`	The reference node, i.e., the node before which the new node must be inserted.

Return Value
The node being inserted.

Exceptions
`DOMException` [p.19]

HIERARCHY_REQUEST_ERR: Raised if this node is of a type that does not allow children of the type of the `newChild` node, or if the node to insert is one of this node's ancestors.

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WRONG_DOCUMENT_ERR: Raised if `newChild` was created from a different document than the one that created this node.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

NOT_FOUND_ERR: Raised if `refChild` is not a child of this node.

`replaceChild`

Replaces the child node `oldChild` with `newChild` in the list of children, and returns the `oldChild` node. If the `newChild` is already in the tree, it is first removed.

Parameters

`newChild`	The new node to put in the child list.
`oldChild`	The node being replaced in the list.

Return Value

The node replaced.

Exceptions

`DOMException` [p.19]

HIERARCHY_REQUEST_ERR: Raised if this node is of a type that does not allow children of the type of the `newChild` node, or it the node to put in is one of this node's ancestors.

WRONG_DOCUMENT_ERR: Raised if `newChild` was created from a different document than the one that created this node.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

NOT_FOUND_ERR: Raised if `oldChild` is not a child of this node.

`removeChild`

Removes the child node indicated by `oldChild` from the list of children, and returns it.

Parameters

`oldChild`	The node being removed.

Return Value

The node removed.

Exceptions

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

NOT_FOUND_ERR: Raised if `oldChild` is not a child of this node.

`appendChild`

Adds the node `newChild` to the end of the list of children of this node. If the `newChild` is already in the tree, it is first removed.

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Parameters

`newChild` The node to add.

If it is a `DocumentFragment` [p.21] object, the entire contents of the document fragment are moved into the child list of this node

Return Value

The node added.

Exceptions

`DOMException` [p.19]

HIERARCHY_REQUEST_ERR: Raised if this node is of a type that does not allow children of the type of the `newChild` node, or if the node to append is one of this node's ancestors.

WRONG_DOCUMENT_ERR: Raised if `newChild` was created from a different document than the one that created this node.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

`hasChildNodes`

This is a convenience method to allow easy determination of whether a node has any children.

Return Value

`true` if the node has any children, `false` if the node has no children.

This method has no parameters.

This method raises no exceptions.

`cloneNode`

Returns a duplicate of this node, i.e., serves as a generic copy constructor for nodes. The duplicate node has no parent (`parentNode` returns `null`.).

Cloning an `Element` [p.38] copies all attributes and their values, including those generated by the XML processor to represent defaulted attributes, but this method does not copy any text it contains unless it is a deep clone, since the text is contained in a child `Text` [p.42] node. Cloning any other type of node simply returns a copy of this node.

Parameters

`deep` If `true`, recursively clone the subtree under the specified node; if `false`, clone only the node itself (and its attributes, if it is an `Element` [p.38]).

Return Value

The duplicate node.

This method raises no exceptions.

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Interface *NodeList*

The `NodeList` interface provides the abstraction of an ordered collection of nodes, without defining or constraining how this collection is implemented.

The items in the `NodeList` are accessible via an integral index, starting from 0.

IDL Definition

```
interface NodeList {
  Node                      item(in unsigned long index);
  readonly attribute  unsigned long        length;
};
```

Methods

`item`

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`.

Parameters

`index`	Index into the collection.

Return Value

The node at the `index`th position in the `NodeList`, or `null` if that is not a valid index.

This method raises no exceptions.

Attributes

`length`

The number of nodes in the list. The range of valid child node indices is 0 to `length-1` inclusive.

Interface *NamedNodeMap*

Objects implementing the `NamedNodeMap` interface are used to represent collections of nodes that can be accessed by name. Note that `NamedNodeMap` does not inherit from `NodeList` [p.32] ; `NamedNodeMap`s are not maintained in any particular order. Objects contained in an object implementing `NamedNodeMap` may also be accessed by an ordinal index, but this is simply to allow convenient enumeration of the contents of a `NamedNodeMap`, and does not imply that the DOM specifies an order to these Nodes.

IDL Definition

```
interface NamedNodeMap {
  Node                      getNamedItem(in DOMString name);
  Node                      setNamedItem(in Node arg)
                                              raises(DOMException);
  Node                      removeNamedItem(in DOMString name)
                                                raises(DOMException);
  Node                      item(in unsigned long index);
  readonly attribute  unsigned long        length;
};
```


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Methods

`getNamedItem`

Retrieves a node specified by name.

Parameters

`name` Name of a node to retrieve.

Return Value

A `Node` [p.25] (of any type) with the specified name, or `null` if the specified name did not identify any node in the map.

This method raises no exceptions.

`setNamedItem`

Adds a node using its `nodeName` attribute.

As the `nodeName` attribute is used to derive the name which the node must be stored under, multiple nodes of certain types (those that have a "special" string value) cannot be stored as the names would clash. This is seen as preferable to allowing nodes to be aliased.

Parameters

`arg` A node to store in a named node map. The node will later be accessible using the value of the `nodeName` attribute of the node. If a node with that name is already present in the map, it is replaced by the new one.

Return Value

If the new `Node` [p.25] replaces an existing node with the same name the previously existing `Node` [p.25] is returned, otherwise `null` is returned.

Exceptions

`DOMException` [p.19]

WRONG_DOCUMENT_ERR: Raised if `arg` was created from a different document than the one that created the `NamedNodeMap`.

NO_MODIFICATION_ALLOWED_ERR: Raised if this `NamedNodeMap` is readonly.

INUSE_ATTRIBUTE_ERR: Raised if `arg` is an `Attr` [p.37] that is already an attribute of another `Element` [p.38] object. The DOM user must explicitly clone `Attr` [p.37] nodes to re-use them in other elements.

`removeNamedItem`

Removes a node specified by name. If the removed node is an `Attr` [p.37] with a default value it is immediately replaced.

Parameters

`name` The name of a node to remove.

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Return Value

The node removed from the map or `null` if no node with such a name exists.

Exceptions

`DOMException` [p.19]

NOT_FOUND_ERR: Raised if there is no node named `name` in the map.

`item`

Returns the `index`th item in the map. If `index` is greater than or equal to the number of nodes in the map, this returns `null`.

Parameters

`index`	Index into the map.

Return Value

The node at the `index`th position in the `NamedNodeMap`, or `null` if that is not a valid index.

This method raises no exceptions.

Attributes

`length`

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

Interface *CharacterData*

The `CharacterData` interface extends Node with a set of attributes and methods for accessing character data in the DOM. For clarity this set is defined here rather than on each object that uses these attributes and methods. No DOM objects correspond directly to `CharacterData`, though `Text` [p.42] and others do inherit the interface from it. All `offset`s in this interface start from 0.

IDL Definition

```
interface CharacterData : Node {
           attribute  DOMString            data;
                                  // raises(DOMException) on setting
                                  // raises(DOMException) on retrieval
  readonly attribute  unsigned long        length;
  DOMString                substringData(in unsigned long offset,
                                         in unsigned long count)
                                         raises(DOMException);
  void                     appendData(in DOMString arg)
                                     raises(DOMException);
  void                     insertData(in unsigned long offset,
                                     in DOMString arg)
                                     raises(DOMException);
  void                     deleteData(in unsigned long offset,
                                     in unsigned long count)
                                     raises(DOMException);
  void                     replaceData(in unsigned long offset,
```


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```
                                        in unsigned long count,
                                        in DOMString arg)
                                        raises(DOMException);
};
```

Attributes

`data`

The character data of the node that implements this interface. The DOM implementation may not put arbitrary limits on the amount of data that may be stored in a `CharacterData` node. However, implementation limits may mean that the entirety of a node's data may not fit into a single `DOMString`. In such cases, the user may call `substringData` to retrieve the data in appropriately sized pieces.

Exceptions on setting

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised when the node is readonly.

Exceptions on retrieval

`DOMException` [p.19]

DOMSTRING_SIZE_ERR: Raised when it would return more characters than fit in a `DOMString` variable on the implementation platform.

`length`

The number of characters that are available through `data` and the `substringData` method below. This may have the value zero, i.e., `CharacterData` nodes may be empty.

Methods

`substringData`

Extracts a range of data from the node.

Parameters

`offset`	Start offset of substring to extract.
`count`	The number of characters to extract.

Return Value

The specified substring. If the sum of `offset` and `count` exceeds the `length`, then all characters to the end of the data are returned.

Exceptions

`DOMException` [p.19]

INDEX_SIZE_ERR: Raised if the specified offset is negative or greater than the number of characters in `data`, or if the specified `count` is negative.

DOMSTRING_SIZE_ERR: Raised if the specified range of text does not fit into a `DOMString`.

`appendData`

Append the string to the end of the character data of the node. Upon success, `data` provides access to the concatenation of `data` and the `DOMString` specified.

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Parameters

`arg` The `DOMString` to append.

Exceptions

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

This method returns nothing.

`insertData`

Insert a string at the specified character offset.

Parameters

`offset` The character offset at which to insert.

`arg` The `DOMString` to insert.

Exceptions

`DOMException` [p.19]

INDEX_SIZE_ERR: Raised if the specified offset is negative or greater than the number of characters in `data`.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

This method returns nothing.

`deleteData`

Remove a range of characters from the node. Upon success, `data` and `length` reflect the change.

Parameters

`offset` The offset from which to remove characters.

`count` The number of characters to delete. If the sum of `offset` and `count` exceeds `length` then all characters from `offset` to the end of the data are deleted.

Exceptions

`DOMException` [p.19]

INDEX_SIZE_ERR: Raised if the specified offset is negative or greater than the number of characters in `data`, or if the specified `count` is negative.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

This method returns nothing.

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`replaceData`

Replace the characters starting at the specified character offset with the specified string.

Parameters

`offset`	The offset from which to start replacing.
`count`	The number of characters to replace. If the sum of `offset` and `count` exceeds `length`, then all characters to the end of the data are replaced (i.e., the effect is the same as a `remove` method call with the same range, followed by an `append` method invocation).
`arg`	The `DOMString` with which the range must be replaced.

Exceptions

`DOMException` [p.19]

INDEX_SIZE_ERR: Raised if the specified offset is negative or greater than the number of characters in `data`, or if the specified `count` is negative.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

This method returns nothing.

Interface *Attr*

The `Attr` interface represents an attribute in an `Element` [p.38] object. Typically the allowable values for the attribute are defined in a document type definition.

`Attr` objects inherit the `Node` [p.25] interface, but since they are not actually child nodes of the element they describe, the DOM does not consider them part of the document tree. Thus, the `Node` [p.25] attributes `parentNode`, `previousSibling`, and `nextSibling` have a null value for `Attr` objects. The DOM takes the view that attributes are properties of elements rather than having a separate identity from the elements they are associated with; this should make it more efficient to implement such features as default attributes associated with all elements of a given type. Furthermore, `Attr` nodes may not be immediate children of a `DocumentFragment` [p.21] . However, they can be associated with `Element` [p.38] nodes contained within a `DocumentFragment` [p.21] . In short, users and implementors of the DOM need to be aware that `Attr` nodes have some things in common with other objects inheriting the `Node` [p.25] interface, but they also are quite distinct.

The attribute’s effective value is determined as follows: if this attribute has been explicitly assigned any value, that value is the attribute’s effective value; otherwise, if there is a declaration for this attribute, and that declaration includes a default value, then that default value is the attribute’s effective value; otherwise, the attribute does not exist on this element in the structure model until it has been explicitly added. Note that the `nodeValue` attribute on the `Attr` instance can also be used to retrieve the string version of the attribute’s value(s).

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In XML, where the value of an attribute can contain entity references, the child nodes of the `Attr` node provide a representation in which entity references are not expanded. These child nodes may be either `Text` [p.42] or `EntityReference` [p.46] nodes. Because the attribute type may be unknown, there are no tokenized attribute values.

IDL Definition

```
interface Attr : Node {
  readonly attribute  DOMString            name;
  readonly attribute  boolean              specified;
           attribute  DOMString            value;
};
```

Attributes

`name`

Returns the name of this attribute.

`specified`

If this attribute was explicitly given a value in the original document, this is `true`; otherwise, it is `false`. Note that the implementation is in charge of this attribute, not the user. If the user changes the value of the attribute (even if it ends up having the same value as the default value) then the `specified` flag is automatically flipped to `true`. To re-specify the attribute as the default value from the DTD, the user must delete the attribute. The implementation will then make a new attribute available with `specified` set to `false` and the default value (if one exists).

In summary:

- If the attribute has an assigned value in the document then `specified` is `true`, and the value is the assigned value.
- If the attribute has no assigned value in the document and has a default value in the DTD, then `specified` is `false`, and the value is the default value in the DTD.
- If the attribute has no assigned value in the document and has a value of #IMPLIED in the DTD, then the attribute does not appear in the structure model of the document.

`value`

On retrieval, the value of the attribute is returned as a string. Character and general entity references are replaced with their values.

On setting, this creates a `Text` [p.42] node with the unparsed contents of the string.

Interface *Element*

By far the vast majority of objects (apart from text) that authors encounter when traversing a document are `Element` nodes. Assume the following XML document:

```
<elementExample id="demo">
  <subelement1/>
  <subelement2><subsubelement/></subelement2>
</elementExample>
```


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When represented using DOM, the top node is an `Element` node for "elementExample", which contains two child `Element` nodes, one for "subelement1" and one for "subelement2". "subelement1" contains no child nodes.

Elements may have attributes associated with them; since the `Element` interface inherits from `Node` [p.25] , the generic `Node` [p.25] interface method `getAttributes` may be used to retrieve the set of all attributes for an element. There are methods on the `Element` interface to retrieve either an `Attr` [p.37] object by name or an attribute value by name. In XML, where an attribute value may contain entity references, an `Attr` [p.37] object should be retrieved to examine the possibly fairly complex sub-tree representing the attribute value. On the other hand, in HTML, where all attributes have simple string values, methods to directly access an attribute value can safely be used as a convenience.

IDL Definition

```
interface Element : Node {
  readonly attribute  DOMString            tagName;
  DOMString                 getAttribute(in DOMString name);
  void                      setAttribute(in DOMString name,
                                         in DOMString value)
                                         raises(DOMException);
  void                      removeAttribute(in DOMString name)
                                            raises(DOMException);
  Attr                      getAttributeNode(in DOMString name);
  Attr                      setAttributeNode(in Attr newAttr)
                                             raises(DOMException);
  Attr                      removeAttributeNode(in Attr oldAttr)
                                                raises(DOMException);
  NodeList                  getElementsByTagName(in DOMString name);
  void                      normalize();
};
```

Attributes

`tagName`

The name of the element. For example, in:

```
<elementExample id="demo">
        ...
</elementExample> ,
```

`tagName` has the value `"elementExample"`. Note that this is case-preserving in XML, as are all of the operations of the DOM. The HTML DOM returns the `tagName` of an HTML element in the canonical uppercase form, regardless of the case in the source HTML document.

Methods

`getAttribute`

Retrieves an attribute value by name.

Parameters

`name`	The name of the attribute to retrieve.

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Return Value

The `Attr` [p.37] value as a string, or the empty string if that attribute does not have a specified or default value.

This method raises no exceptions.

`setAttribute`

Adds a new attribute. If an attribute with that name is already present in the element, its value is changed to be that of the value parameter. This value is a simple string, it is not parsed as it is being set. So any markup (such as syntax to be recognized as an entity reference) is treated as literal text, and needs to be appropriately escaped by the implementation when it is written out. In order to assign an attribute value that contains entity references, the user must create an `Attr` [p.37] node plus any `Text` [p.42] and `EntityReference` [p.46] nodes, build the appropriate subtree, and use `setAttributeNode` to assign it as the value of an attribute.

Parameters

`name`	The name of the attribute to create or alter.
`value`	Value to set in string form.

Exceptions

`DOMException` [p.19]

INVALID_CHARACTER_ERR: Raised if the specified name contains an invalid character.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

This method returns nothing.

`removeAttribute`

Removes an attribute by name. If the removed attribute has a default value it is immediately replaced.

Parameters

`name`	The name of the attribute to remove.

Exceptions

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

This method returns nothing.

`getAttributeNode`

Retrieves an `Attr` [p.37] node by name.

Parameters

`name`	The name of the attribute to retrieve.

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Return Value

The `Attr` [p.37] node with the specified attribute name or `null` if there is no such attribute.

This method raises no exceptions.

`setAttributeNode`

Adds a new attribute. If an attribute with that name is already present in the element, it is replaced by the new one.

Parameters

`newAttr`	The `Attr` [p.37] node to add to the attribute list.

Return Value

If the `newAttr` attribute replaces an existing attribute with the same name, the previously existing `Attr` [p.37] node is returned, otherwise `null` is returned.

Exceptions

`DOMException` [p.19]

WRONG_DOCUMENT_ERR: Raised if `newAttr` was created from a different document than the one that created the element.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

INUSE_ATTRIBUTE_ERR: Raised if `newAttr` is already an attribute of another `Element` object. The DOM user must explicitly clone `Attr` [p.37] nodes to re-use them in other elements.

`removeAttributeNode`

Removes the specified attribute.

Parameters

`oldAttr`	The `Attr` [p.37] node to remove from the attribute list. If the removed `Attr` [p.37] has a default value it is immediately replaced.

Return Value

The `Attr` [p.37] node that was removed.

Exceptions

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

NOT_FOUND_ERR: Raised if `oldAttr` is not an attribute of the element.

`getElementsByTagName`

Returns a `NodeList` [p.32] of all descendant elements with a given tag name, in the order in which they would be encountered in a preorder traversal of the `Element` tree.

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Parameters

`name` The name of the tag to match on. The special value "*" matches all tags.

Return Value

A list of matching `Element` nodes.

This method raises no exceptions.

`normalize`

Puts all `Text` [p.42] nodes in the full depth of the sub-tree underneath this `Element` into a "normal" form where only markup (e.g., tags, comments, processing instructions, CDATA sections, and entity references) separates `Text` [p.42] nodes, i.e., there are no adjacent `Text` [p.42] nodes. This can be used to ensure that the DOM view of a document is the same as if it were saved and re-loaded, and is useful when operations (such as XPointer lookups) that depend on a particular document tree structure are to be used.

This method has no parameters.

This method returns nothing.

This method raises no exceptions.

Interface *Text*

The `Text` interface represents the textual content (termed character data in XML) of an `Element` [p.38] or `Attr` [p.37] . If there is no markup inside an element's content, the text is contained in a single object implementing the `Text` interface that is the only child of the element. If there is markup, it is parsed into a list of elements and `Text` nodes that form the list of children of the element.

When a document is first made available via the DOM, there is only one `Text` node for each block of text. Users may create adjacent `Text` nodes that represent the contents of a given element without any intervening markup, but should be aware that there is no way to represent the separations between these nodes in XML or HTML, so they will not (in general) persist between DOM editing sessions. The `normalize()` method on `Element` [p.38] merges any such adjacent `Text` objects into a single node for each block of text; this is recommended before employing operations that depend on a particular document structure, such as navigation with `XPointers.`

IDL Definition

```
interface Text : CharacterData {
  Text                      splitText(in unsigned long offset)
                                      raises(DOMException);
};
```

Methods

`splitText`

Breaks this `Text` node into two Text nodes at the specified offset, keeping both in the tree as siblings. This node then only contains all the content up to the `offset` point. And a new `Text` node, which is inserted as the next sibling of this node, contains all the content at and after the `offset` point.

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Parameters

`offset` The offset at which to split, starting from 0.

Return Value
The new `Text` node.
Exceptions
`DOMException` [p.19]

INDEX_SIZE_ERR: Raised if the specified offset is negative or greater than the number of characters in `data`.

NO_MODIFICATION_ALLOWED_ERR: Raised if this node is readonly.

Interface *Comment*

This represents the content of a comment, i.e., all the characters between the starting '`<!--`' and ending '`-->`'. Note that this is the definition of a comment in XML, and, in practice, HTML, although some HTML tools may implement the full SGML comment structure.
IDL Definition

```
interface Comment : CharacterData {
};
```

1.3. Extended Interfaces

The interfaces defined here form part of the DOM Level 1 Core specification, but objects that expose these interfaces will never be encountered in a DOM implementation that deals only with HTML. As such, HTML-only DOM implementations do not need to have objects that implement these interfaces.

Interface *CDATASection*

CDATA sections are used to escape blocks of text containing characters that would otherwise be regarded as markup. The only delimiter that is recognized in a CDATA section is the "]]>" string that ends the CDATA section. CDATA sections can not be nested. The primary purpose is for including material such as XML fragments, without needing to escape all the delimiters.

The `DOMString` attribute of the `Text` [p.42] node holds the text that is contained by the CDATA section. Note that this *may* contain characters that need to be escaped outside of CDATA sections and that, depending on the character encoding ("charset") chosen for serialization, it may be impossible to write out some characters as part of a CDATA section.

The `CDATASection` interface inherits the `CharacterData` [p.34] interface through the `Text` [p.42] interface. Adjacent `CDATASections` nodes are not merged by use of the Element.normalize() method.

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IDL Definition

```
interface CDATASection : Text {
};
```

Interface *DocumentType*

Each `Document` [p.22] has a `doctype` attribute whose value is either `null` or a `DocumentType` object. The `DocumentType` interface in the DOM Level 1 Core provides an interface to the list of entities that are defined for the document, and little else because the effect of namespaces and the various XML scheme efforts on DTD representation are not clearly understood as of this writing.

The DOM Level 1 doesn't support editing `DocumentType` nodes.

IDL Definition

```
interface DocumentType : Node {
  readonly attribute  DOMString           name;
  readonly attribute  NamedNodeMap        entities;
  readonly attribute  NamedNodeMap        notations;
};
```

Attributes

`name`

The name of DTD; i.e., the name immediately following the `DOCTYPE` keyword.

`entities`

A `NamedNodeMap` [p.32] containing the general entities, both external and internal, declared in the DTD. Duplicates are discarded. For example in:

```
<!DOCTYPE ex SYSTEM "ex.dtd" [
  <!ENTITY foo "foo">
  <!ENTITY bar "bar">
  <!ENTITY % baz "baz">
]>
<ex/>
```

the interface provides access to `foo` and `bar` but not `baz`. Every node in this map also implements the `Entity` [p.45] interface.

The DOM Level 1 does not support editing entities, therefore `entities` cannot be altered in any way.

`notations`

A `NamedNodeMap` [p.32] containing the notations declared in the DTD. Duplicates are discarded. Every node in this map also implements the `Notation` [p.44] interface.

The DOM Level 1 does not support editing notations, therefore `notations` cannot be altered in any way.

Interface *Notation*

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This interface represents a notation declared in the DTD. A notation either declares, by name, the format of an unparsed entity (see section 4.7 of the XML 1.0 specification), or is used for formal declaration of Processing Instruction targets (see section 2.6 of the XML 1.0 specification). The `nodeName` attribute inherited from `Node` [p.25] is set to the declared name of the notation.

The DOM Level 1 does not support editing `Notation` nodes; they are therefore readonly.

A `Notation` node does not have any parent.

IDL Definition

```
interface Notation : Node {
  readonly attribute  DOMString            publicId;
  readonly attribute  DOMString            systemId;
};
```

Attributes

`publicId`
: The public identifier of this notation. If the public identifier was not specified, this is `null`.

`systemId`
: The system identifier of this notation. If the system identifier was not specified, this is `null`.

Interface *Entity*

This interface represents an entity, either parsed or unparsed, in an XML document. Note that this models the entity itself *not* the entity declaration. `Entity` declaration modeling has been left for a later Level of the DOM specification.

The `nodeName` attribute that is inherited from `Node` [p.25] contains the name of the entity.

An XML processor may choose to completely expand entities before the structure model is passed to the DOM; in this case there will be no `EntityReference` [p.46] nodes in the document tree.

XML does not mandate that a non-validating XML processor read and process entity declarations made in the external subset or declared in external parameter entities. This means that parsed entities declared in the external subset need not be expanded by some classes of applications, and that the replacement value of the entity may not be available. When the replacement value is available, the corresponding `Entity` node's child list represents the structure of that replacement text. Otherwise, the child list is empty.

The resolution of the children of the `Entity` (the replacement value) may be lazily evaluated; actions by the user (such as calling the `childNodes` method on the `Entity` Node) are assumed to trigger the evaluation.

The DOM Level 1 does not support editing `Entity` nodes; if a user wants to make changes to the contents of an `Entity`, every related `EntityReference` [p.46] node has to be replaced in the structure model by a clone of the `Entity`'s contents, and then the desired changes must be made to each of those clones instead. All the descendants of an `Entity` node are readonly.

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An `Entity` node does not have any parent.

IDL Definition

```
interface Entity : Node {
  readonly attribute  DOMString            publicId;
  readonly attribute  DOMString            systemId;
  readonly attribute  DOMString            notationName;
};
```

Attributes

`publicId`
: The public identifier associated with the entity, if specified. If the public identifier was not specified, this is `null`.

`systemId`
: The system identifier associated with the entity, if specified. If the system identifier was not specified, this is `null`.

`notationName`
: For unparsed entities, the name of the notation for the entity. For parsed entities, this is `null`.

Interface *EntityReference*

`EntityReference` objects may be inserted into the structure model when an entity reference is in the source document, or when the user wishes to insert an entity reference. Note that character references and references to predefined entities are considered to be expanded by the HTML or XML processor so that characters are represented by their Unicode equivalent rather than by an entity reference. Moreover, the XML processor may completely expand references to entities while building the structure model, instead of providing `EntityReference` objects. If it does provide such objects, then for a given `EntityReference` node, it may be that there is no `Entity` [p.45] node representing the referenced entity; but if such an `Entity` [p.45] exists, then the child list of the `EntityReference` node is the same as that of the `Entity` [p.45] node. As with the `Entity` [p.45] node, all descendants of the `EntityReference` are readonly.

The resolution of the children of the `EntityReference` (the replacement value of the referenced `Entity` [p.45]) may be lazily evaluated; actions by the user (such as calling the `childNodes` method on the `EntityReference` node) are assumed to trigger the evaluation.

IDL Definition

```
interface EntityReference : Node {
};
```

Interface *ProcessingInstruction*

The `ProcessingInstruction` interface represents a "processing instruction", used in XML as a way to keep processor-specific information in the text of the document.

IDL Definition

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```
interface ProcessingInstruction : Node {
  readonly attribute  DOMString            target;
           attribute  DOMString            data;
                                      // raises(DOMException) on setting
};
```

Attributes

`target`

The target of this processing instruction. XML defines this as being the first token following the markup that begins the processing instruction.

`data`

The content of this processing instruction. This is from the first non white space character after the target to the character immediately preceding the `?>`.

Exceptions on setting

`DOMException` [p.19]

NO_MODIFICATION_ALLOWED_ERR: Raised when the node is readonly.

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2. Document Object Model (HTML) Level 1

Editors

Mike Champion, ArborText
Vidur Apparao, Netscape
Scott Isaacs, Microsoft (until January 1998)
Chris Wilson, Microsoft (after January 1998)
Ian Jacobs, W3C

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2.1. Introduction

This section extends the Level 1 Core API to describe objects and methods specific to HTML documents. In general, the functionality needed to manipulate hierarchical document structures, elements, and attributes will be found in the core section; functionality that depends on the specific elements defined in HTML will be found in this section.

The goals of the HTML-specific DOM API are:

- to specialize and add functionality that relates specifically to HTML documents and elements.
- to address issues of backwards compatibility with the "DOM Level 0".
- to provide convenience mechanisms, where appropriate, for common and frequent operations on HTML documents.

The term "DOM Level 0" refers to a mix (not formally specified) of HTML document functionalities offered by Netscape Navigator version 3.0 and Microsoft Internet Explorer version 3.0. In some cases, attributes or methods have been included for reasons of backward compatibility with "DOM Level 0".

The key differences between the core DOM and the HTML application of DOM is that the HTML Document Object Model exposes a number of convenience methods and properties that are consistent with the existing models and are more appropriate to script writers. In many cases, these enhancements are not applicable to a general DOM because they rely on the presence of a predefined DTD. For DOM Level 1, the transitional and frameset DTDs for HTML 4.0 are assumed. Interoperability between implementations is only guaranteed for elements and attributes that are specified in these DTDs.

More specifically, this document includes the following specializations for HTML:

- An HTMLDocument interface, derived from the core Document interface. HTMLDocument specifies the operations and queries that can be made on a HTML document.
- An HTMLElement interface, derived from the core Element interface. HTMLElement specifies the operations and queries that can be made on any HTML element. Methods on HTMLElement include those that allow for the retrieval and modification of attributes that apply to all HTML elements.
- Specializations for all HTML elements that have attributes that extend beyond those specified in the HTMLElement interface. For all such attributes, the derived interface for the element contains explicit methods for setting and getting the values.

The DOM Level 1 does not include mechanisms to access and modify style specified through CSS 1. Furthermore, it does not define an event model for HTML documents. This functionality is planned to be specified in a future Level of this specification.

2.2. HTML Application of Core DOM

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2.2.1. Naming Conventions

The HTML DOM follows a naming convention for properties, methods, events, collections, and data types. All names are defined as one or more English words concatenated together to form a single string.
Properties and Methods

The property or method name starts with the initial keyword in lowercase, and each subsequent word starts with a capital letter. For example, a property that returns document meta information such as the date the file was created might be named "fileDateCreated". In the ECMAScript binding, properties are exposed as properties of a given object. In Java, properties are exposed with get and set methods.
Non-HTML 4.0 interfaces and attributes

While most of the interfaces defined below can be mapped directly to elements defined in the HTML 4.0 Recommendation, some of them cannot. Similarly, not all attributes listed below have counterparts in the HTML 4.0 specification (and some do, but have been renamed to avoid conflicts with scripting languages). Interfaces and attribute definitions that have links to the HTML 4.0 specification have corresponding element and attribute definitions there; all others are added by this specification, either for convenience or backwards compatibility with "DOM Level 0" implementations.

2.3. Miscellaneous Object Definitions

Interface *HTMLCollection*

An `HTMLCollection` is a list of nodes. An individual node may be accessed by either ordinal index or the node's `name` or `id` attributes. *Note:* Collections in the HTML DOM are assumed to be *live* meaning that they are automatically updated when the underlying document is changed.

IDL Definition

```
interface HTMLCollection {
  readonly attribute  unsigned long        length;
  Node                      item(in unsigned long index);
  Node                      namedItem(in DOMString name);
};
```

Attributes

`length`

This attribute specifies the length or *size* of the list.

Methods

`item`

This method retrieves a node specified by ordinal index. Nodes are numbered in tree order (depth-first traversal order).

Parameters

`index`	The index of the node to be fetched. The index origin is 0.

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Return Value

The `Node` [p.25] at the corresponding position upon success. A value of `null` is returned if the index is out of range.

This method raises no exceptions.

`namedItem`

This method retrieves a `Node` [p.25] using a name. It first searches for a `Node` [p.25] with a matching `id` attribute. If it doesn't find one, it then searches for a `Node` [p.25] with a matching `name` attribute, but only on those elements that are allowed a name attribute.

Parameters

`name`	The name of the `Node` [p.25] to be fetched.

Return Value

The `Node` [p.25] with a `name` or `id` attribute whose value corresponds to the specified string. Upon failure (e.g., no node with this name exists), returns `null`.

This method raises no exceptions.

2.4. Objects related to HTML documents

Interface *HTMLDocument*

An `HTMLDocument` is the root of the HTML hierarchy and holds the entire content. Beside providing access to the hierarchy, it also provides some convenience methods for accessing certain sets of information from the document.

The following properties have been deprecated in favor of the corresponding ones for the BODY element:

- alinkColor
- background
- bgColor
- fgColor
- linkColor
- vlinkColor

IDL Definition

```
interface HTMLDocument : Document {
           attribute  DOMString            title;
  readonly attribute  DOMString            referrer;
  readonly attribute  DOMString            domain;
  readonly attribute  DOMString            URL;
           attribute  HTMLElement          body;
  readonly attribute  HTMLCollection       images;
  readonly attribute  HTMLCollection       applets;
  readonly attribute  HTMLCollection       links;
  readonly attribute  HTMLCollection       forms;
  readonly attribute  HTMLCollection       anchors;
           attribute  DOMString            cookie;
```


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```
  void                    open();
  void                    close();
  void                    write(in DOMString text);
  void                    writeln(in DOMString text);
  Element                 getElementById(in DOMString elementId);
  NodeList                getElementsByName(in DOMString elementName);
};
```

Attributes

`title`
: The title of a document as specified by the `TITLE` element in the head of the document.

`referrer`
: Returns the URI of the page that linked to this page. The value is an empty string if the user navigated to the page directly (not through a link, but, for example, via a bookmark).

`domain`
: The domain name of the server that served the document, or a null string if the server cannot be identified by a domain name.

`URL`
: The complete URI of the document.

`body`
: The element that contains the content for the document. In documents with `BODY` contents, returns the `BODY` element, and in frameset documents, this returns the outermost `FRAMESET` element.

`images`
: A collection of all the `IMG` elements in a document. The behavior is limited to `IMG` elements for backwards compatibility.

`applets`
: A collection of all the `OBJECT` elements that include applets and `APPLET` (*deprecated*) elements in a document.

`links`
: A collection of all `AREA` elements and anchor (`A`) elements in a document with a value for the `href` attribute.

`forms`
: A collection of all the forms of a document.

`anchors`
: A collection of all the anchor (`A`) elements in a document with a value for the `name` attribute.*Note.* For reasons of backwards compatibility, the returned set of anchors only contains those anchors created with the `name` attribute, not those created with the `id` attribute.

`cookie`
: The cookies associated with this document. If there are none, the value is an empty string. Otherwise, the value is a string: a semicolon-delimited list of "name, value" pairs for all the cookies associated with the page. For example, `name=value;expires=date`.

Methods

`open`
: *Note.* This method and the ones following allow a user to add to or replace the structure model of a document using strings of unparsed HTML. At the time of writing alternate methods for providing similar functionality for both HTML and XML documents were

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being considered. The following methods may be deprecated at some point in the future in favor of a more general-purpose mechanism.

Open a document stream for writing. If a document exists in the target, this method clears it.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`close`

Closes a document stream opened by `open()` and forces rendering.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`write`

Write a string of text to a document stream opened by `open()`. The text is parsed into the document's structure model.

Parameters

`text`	The string to be parsed into some structure in the document structure model.

This method returns nothing.
This method raises no exceptions.

`writeln`

Write a string of text followed by a newline character to a document stream opened by `open()`. The text is parsed into the document's structure model.

Parameters

`text`	The string to be parsed into some structure in the document structure model.

This method returns nothing.
This method raises no exceptions.

`getElementById`

Returns the Element whose `id` is given by elementId. If no such element exists, returns `null`. Behavior is not defined if more than one element has this `id`.

Parameters

`elementId`	The unique `id` value for an element.

Return Value

The matching element.

This method raises no exceptions.

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`getElementsByName`

Returns the (possibly empty) collection of elements whose `name` value is given by `elementName`.

Parameters

`elementName` The `name` attribute value for an element.

Return Value

The matching elements.

This method raises no exceptions.

2.5. HTML Elements

2.5.1. Property Attributes

HTML attributes are exposed as properties on the element object. The name of the exposed property always uses the naming conventions, and is independent of the case of the attribute in the source document. The data type of the property is determined by the type of the attribute as determined by the HTML 4.0 transitional and frameset DTDs. The attributes have the semantics (including case-sensitivity) given in the HTML 4.0 specification.

The attributes are exposed as properties for compatibility with "DOM Level 0". This usage is deprecated because it can not be generalized to all possible attribute names, as is required both for XML and potentially for future versions of HTML. We recommend the use of generic methods on the core Element interface for setting, getting and removing attributes.

DTD Data Type	Object Model Data Type
CDATA	DOMString
Value list (e.g., (left | right | center))	DOMString
one-value Value list (e.g., (border))	boolean
Number	long int

The return value of an attribute that has a data type that is a value list is always capitalized, independent of the case of the value in the source document. For example, if the value of the align attribute on a P element is "left" then it is returned as "Left". For attributes with the `CDATA` data type, the case of the return value is that given in the source document.

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2.5.2. Naming Exceptions

To avoid name-space conflicts, an attribute with the same name as a keyword in one of our chosen binding languages is prefixed. For HTML, the prefix used is "html". For example, the `for` attribute of the `LABEL` element collides with loop construct naming conventions and is renamed `htmlFor`.

2.5.3. Exposing Element Type Names (tagName)

The element type names exposed through a property are in uppercase. For example, the body element type name is exposed through the "tagName" property as "BODY".

2.5.4. The HTMLElement interface

Interface *HTMLElement*

All HTML element interfaces derive from this class. Elements that only expose the HTML core attributes are represented by the base `HTMLElement` interface. These elements are as follows:

- HEAD
- special: SUB, SUP, SPAN, BDO
- font: TT, I, B, U, S, STRIKE, BIG, SMALL
- phrase: EM, STRONG, DFN, CODE, SAMP, KBD, VAR, CITE, ACRONYM, ABBR
- list: DD, DT
- NOFRAMES, NOSCRIPT
- ADDRESS, CENTER

Note. The `style` attribute for this interface is reserved for future usage.

IDL Definition

```
interface HTMLElement : Element {
           attribute  DOMString            id;
           attribute  DOMString            title;
           attribute  DOMString            lang;
           attribute  DOMString            dir;
           attribute  DOMString            className;
};
```

Attributes

`id`
: The element’s identifier. See the id attribute definition in HTML 4.0.

`title`
: The element’s advisory title. See the title attribute definition in HTML 4.0.

`lang`
: Language code defined in RFC 1766. See the lang attribute definition in HTML 4.0.

`dir`
: Specifies the base direction of directionally neutral text and the directionality of tables. See the dir attribute definition in HTML 4.0.

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`className`
The class attribute of the element. This attribute has been renamed due to conflicts with the "class" keyword exposed by many languages. See the class attribute definition in HTML 4.0.

2.5.5. Object definitions

Interface *HTMLHtmlElement*

Root of an HTML document. See the HTML element definition in HTML 4.0.

IDL Definition

```
interface HTMLHtmlElement : HTMLElement {
           attribute  DOMString            version;
};
```

Attributes

`version`
Version information about the document's DTD. See the version attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLHeadElement*

Document head information. See the HEAD element definition in HTML 4.0.

IDL Definition

```
interface HTMLHeadElement : HTMLElement {
           attribute  DOMString            profile;
};
```

Attributes

`profile`
URI designating a metadata profile. See the profile attribute definition in HTML 4.0.

Interface *HTMLLinkElement*

The `LINK` element specifies a link to an external resource, and defines this document's relationship to that resource (or vice versa). See the LINK element definition in HTML 4.0.

IDL Definition

```
interface HTMLLinkElement : HTMLElement {
           attribute  boolean              disabled;
           attribute  DOMString            charset;
           attribute  DOMString            href;
           attribute  DOMString            hreflang;
           attribute  DOMString            media;
           attribute  DOMString            rel;
           attribute  DOMString            rev;
           attribute  DOMString            target;
           attribute  DOMString            type;
};
```


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Attributes

`disabled`
: Enables/disables the link. This is currently only used for style sheet links, and may be used to activate or deactivate style sheets.

`charset`
: The character encoding of the resource being linked to. See the charset attribute definition in HTML 4.0.

`href`
: The URI of the linked resource. See the href attribute definition in HTML 4.0.

`hreflang`
: Language code of the linked resource. See the hreflang attribute definition in HTML 4.0.

`media`
: Designed for use with one or more target media. See the media attribute definition in HTML 4.0.

`rel`
: Forward link type. See the rel attribute definition in HTML 4.0.

`rev`
: Reverse link type. See the rev attribute definition in HTML 4.0.

`target`
: Frame to render the resource in. See the target attribute definition in HTML 4.0.

`type`
: Advisory content type. See the type attribute definition in HTML 4.0.

Interface *HTMLTitleElement*

The document title. See the TITLE element definition in HTML 4.0.

IDL Definition

```
interface HTMLTitleElement : HTMLElement {
           attribute  DOMString            text;
};
```

Attributes

`text`
: The specified title as a string.

Interface *HTMLMetaElement*

This contains generic meta-information about the document. See the META element definition in HTML 4.0.

IDL Definition

```
interface HTMLMetaElement : HTMLElement {
           attribute  DOMString            content;
           attribute  DOMString            httpEquiv;
           attribute  DOMString            name;
           attribute  DOMString            scheme;
};
```


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Attributes

`content`
: Associated information. See the content attribute definition in HTML 4.0.

`httpEquiv`
: HTTP response header name. See the http-equiv attribute definition in HTML 4.0.

`name`
: Meta information name. See the name attribute definition in HTML 4.0.

`scheme`
: Select form of content. See the scheme attribute definition in HTML 4.0.

Interface *HTMLBaseElement*

Document base URI. See the BASE element definition in HTML 4.0.

IDL Definition

```
interface HTMLBaseElement : HTMLElement {
           attribute  DOMString            href;
           attribute  DOMString            target;
};
```

Attributes

`href`
: The base URI See the href attribute definition in HTML 4.0.

`target`
: The default target frame. See the target attribute definition in HTML 4.0.

Interface *HTMLIsIndexElement*

This element is used for single-line text input. See the ISINDEX element definition in HTML 4.0. This element is deprecated in HTML 4.0.

IDL Definition

```
interface HTMLIsIndexElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            prompt;
};
```

Attributes

`form`
: Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`prompt`
: The prompt message. See the prompt attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLStyleElement*

Style information. A more detailed style sheet object model is planned to be defined in a separate document. See the STYLE element definition in HTML 4.0.

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IDL Definition

```
interface HTMLStyleElement : HTMLElement {
           attribute  boolean              disabled;
           attribute  DOMString            media;
           attribute  DOMString            type;
};
```

Attributes

`disabled`
: Enables/disables the style sheet.

`media`
: Designed for use with one or more target media. See the media attribute definition in HTML 4.0.

`type`
: The style sheet language (Internet media type). See the type attribute definition in HTML 4.0.

Interface *HTMLBodyElement*

The HTML document body. This element is always present in the DOM API, even if the tags are not present in the source document. See the BODY element definition in HTML 4.0.

IDL Definition

```
interface HTMLBodyElement : HTMLElement {
           attribute  DOMString            aLink;
           attribute  DOMString            background;
           attribute  DOMString            bgColor;
           attribute  DOMString            link;
           attribute  DOMString            text;
           attribute  DOMString            vLink;
};
```

Attributes

`aLink`
: Color of active links (after mouse-button down, but before mouse-button up). See the alink attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`background`
: URI of the background texture tile image. See the background attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`bgColor`
: Document background color. See the bgcolor attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`link`
: Color of links that are not active and unvisited. See the link attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`text`
: Document text color. See the text attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

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`vLink`
: Color of links that have been visited by the user. See the vlink attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLFormElement*

The `FORM` element encompasses behavior similar to a collection and an element. It provides direct access to the contained input elements as well as the attributes of the form element. See the FORM element definition in HTML 4.0.

IDL Definition

```
interface HTMLFormElement : HTMLElement {
  readonly attribute  HTMLCollection       elements;
  readonly attribute  long                 length;
           attribute  DOMString            name;
           attribute  DOMString            acceptCharset;
           attribute  DOMString            action;
           attribute  DOMString            enctype;
           attribute  DOMString            method;
           attribute  DOMString            target;
  void                      submit();
  void                      reset();
};
```

Attributes

`elements`
: Returns a collection of all control elements in the form.

`length`
: The number of form controls in the form.

`name`
: Names the form.

`acceptCharset`
: List of character sets supported by the server. See the accept-charset attribute definition in HTML 4.0.

`action`
: Server-side form handler. See the action attribute definition in HTML 4.0.

`enctype`
: The content type of the submitted form, generally "application/x-www-form-urlencoded". See the enctype attribute definition in HTML 4.0.

`method`
: HTTP method used to submit form. See the method attribute definition in HTML 4.0.

`target`
: Frame to render the resource in. See the target attribute definition in HTML 4.0.

Methods

`submit`
: Submits the form. It performs the same action as a submit button.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

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`reset`
: Restores a form element's default values. It performs the same action as a reset button.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

Interface *HTMLSelectElement*

The select element allows the selection of an option. The contained options can be directly accessed through the select element as a collection. See the SELECT element definition in HTML 4.0.

IDL Definition

```
interface HTMLSelectElement : HTMLElement {
  readonly attribute  DOMString            type;
           attribute  long                 selectedIndex;
           attribute  DOMString            value;
  readonly attribute  long                 length;
  readonly attribute  HTMLFormElement      form;
  readonly attribute  HTMLCollection       options;
           attribute  boolean              disabled;
           attribute  boolean              multiple;
           attribute  DOMString            name;
           attribute  long                 size;
           attribute  long                 tabIndex;
  void                      add(in HTMLElement element,
                                in HTMLElement before);
  void                      remove(in long index);
  void                      blur();
  void                      focus();
};
```

Attributes

`type`
: The type of control created.

`selectedIndex`
: The ordinal index of the selected option. The value -1 is returned if no element is selected. If multiple options are selected, the index of the first selected option is returned.

`value`
: The current form control value.

`length`
: The number of options in this `SELECT`.

`form`
: Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`options`
: The collection of `OPTION` elements contained by this element.

`disabled`
: The control is unavailable in this context. See the disabled attribute definition in HTML 4.0.

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`multiple`
: If true, multiple `OPTION` elements may be selected in this `SELECT`. See the multiple attribute definition in HTML 4.0.

`name`
: Form control or object name when submitted with a form. See the name attribute definition in HTML 4.0.

`size`
: Number of visible rows. See the size attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element's position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

Methods

`add`
: Add a new element to the collection of `OPTION` elements for this `SELECT`.

Parameters

`element`	The element to add.
`before`	The element to insert before, or NULL for the head of the list.

This method returns nothing.
This method raises no exceptions.

`remove`
: Remove an element from the collection of `OPTION` elements for this `SELECT`. Does nothing if no element has the given index.

Parameters

`index`	The index of the item to remove.

This method returns nothing.
This method raises no exceptions.

`blur`
: Removes keyboard focus from this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`focus`
: Gives keyboard focus to this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

Interface *HTMLOptGroupElement*

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Group options together in logical subdivisions. See the OPTGROUP element definition in HTML 4.0.

IDL Definition

```
interface HTMLOptGroupElement : HTMLElement {
           attribute  boolean              disabled;
           attribute  DOMString            label;
};
```

Attributes

`disabled`
: The control is unavailable in this context. See the disabled attribute definition in HTML 4.0.

`label`
: Assigns a label to this option group. See the label attribute definition in HTML 4.0.

Interface *HTMLOptionElement*

A selectable choice. See the OPTION element definition in HTML 4.0.

IDL Definition

```
interface HTMLOptionElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  boolean              defaultSelected;
  readonly attribute  DOMString            text;
           attribute  long                 index;
           attribute  boolean              disabled;
           attribute  DOMString            label;
  readonly attribute  boolean              selected;
           attribute  DOMString            value;
};
```

Attributes

`form`
: Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`defaultSelected`
: Stores the initial value of the `selected` attribute.

`text`
: The text contained within the option element.

`index`
: The index of this `OPTION` in its parent `SELECT`.

`disabled`
: The control is unavailable in this context. See the disabled attribute definition in HTML 4.0.

`label`
: Option label for use in hierarchical menus. See the label attribute definition in HTML 4.0.

`selected`
: Means that this option is initially selected. See the selected attribute definition in HTML 4.0.

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`value`
The current form control value. See the value attribute definition in HTML 4.0.

Interface *HTMLInputElement*

Form control. *Note.* Depending upon the environment the page is being viewed, the value property may be read-only for the file upload input type. For the "password" input type, the actual value returned may be masked to prevent unauthorized use. See the INPUT element definition in HTML 4.0.

IDL Definition

```
interface HTMLInputElement : HTMLElement {
           attribute  DOMString            defaultValue;
           attribute  boolean              defaultChecked;
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accept;
           attribute  DOMString            accessKey;
           attribute  DOMString            align;
           attribute  DOMString            alt;
           attribute  boolean              checked;
           attribute  boolean              disabled;
           attribute  long                 maxLength;
           attribute  DOMString            name;
           attribute  boolean              readOnly;
           attribute  DOMString            size;
           attribute  DOMString            src;
           attribute  long                 tabIndex;
  readonly attribute  DOMString            type;
           attribute  DOMString            useMap;
           attribute  DOMString            value;
  void                      blur();
  void                      focus();
  void                      select();
  void                      click();
};
```

Attributes

`defaultValue`
Stores the initial control value (i.e., the initial value of `value`).

`defaultChecked`
When `type` has the value "Radio" or "Checkbox", stores the initial value of the `checked` attribute.

`form`
Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`accept`
A comma-separated list of content types that a server processing this form will handle correctly. See the accept attribute definition in HTML 4.0.

`accessKey`
A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

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`align`
: Aligns this object (vertically or horizontally) with respect to its surrounding text. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`alt`
: Alternate text for user agents not rendering the normal content of this element. See the alt attribute definition in HTML 4.0.

`checked`
: Describes whether a radio or check box is checked, when `type` has the value "Radio" or "Checkbox". The value is TRUE if explicitly set. Represents the current state of the checkbox or radio button. See the checked attribute definition in HTML 4.0.

`disabled`
: The control is unavailable in this context. See the disabled attribute definition in HTML 4.0.

`maxLength`
: Maximum number of characters for text fields, when `type` has the value "Text" or "Password". See the maxlength attribute definition in HTML 4.0.

`name`
: Form control or object name when submitted with a form. See the name attribute definition in HTML 4.0.

`readOnly`
: This control is read-only. When `type` has the value "text" or "password" only. See the readonly attribute definition in HTML 4.0.

`size`
: Size information. The precise meaning is specific to each type of field. See the size attribute definition in HTML 4.0.

`src`
: When the `type` attribute has the value "Image", this attribute specifies the location of the image to be used to decorate the graphical submit button. See the src attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element’s position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

`type`
: The type of control created. See the type attribute definition in HTML 4.0.

`useMap`
: Use client-side image map. See the usemap attribute definition in HTML 4.0.

`value`
: The current form control value. Used for radio buttons and check boxes. See the value attribute definition in HTML 4.0.

Methods

`blur`
: Removes keyboard focus from this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

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`focus`
: Gives keyboard focus to this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`select`
: Select the contents of the text area. For `INPUT` elements whose `type` attribute has one of the following values: "Text", "File", or "Password".
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`click`
: Simulate a mouse-click. For `INPUT` elements whose `type` attribute has one of the following values: "Button", "Checkbox", "Radio", "Reset", or "Submit".
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

Interface *HTMLTextAreaElement*

Multi-line text field. See the TEXTAREA element definition in HTML 4.0.

IDL Definition

```
interface HTMLTextAreaElement : HTMLElement {
           attribute  DOMString            defaultValue;
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  long                 cols;
           attribute  boolean              disabled;
           attribute  DOMString            name;
           attribute  boolean              readOnly;
           attribute  long                 rows;
           attribute  long                 tabIndex;
  readonly attribute  DOMString            type;
           attribute  DOMString            value;
  void                      blur();
  void                      focus();
  void                      select();
};
```

Attributes

`defaultValue`
: Stores the initial control value (i.e., the initial value of `value`).

`form`
: Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`accessKey`
: A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

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`cols`
: Width of control (in characters). See the cols attribute definition in HTML 4.0.

`disabled`
: The control is unavailable in this context. See the disabled attribute definition in HTML 4.0.

`name`
: Form control or object name when submitted with a form. See the name attribute definition in HTML 4.0.

`readOnly`
: This control is read-only. See the readonly attribute definition in HTML 4.0.

`rows`
: Number of text rows. See the rows attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element's position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

`type`
: The type of this form control.

`value`
: The current textual content of the multi-line text field. If the entirety of the data can not fit into a single wstring, the implementation may truncate the data.

Methods

`blur`
: Removes keyboard focus from this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`focus`
: Gives keyboard focus to this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`select`
: Select the contents of the `TEXTAREA`.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

Interface *HTMLButtonElement*

Push button. See the BUTTON element definition in HTML 4.0.

IDL Definition

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```
interface HTMLButtonElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  boolean              disabled;
           attribute  DOMString            name;
           attribute  long                 tabIndex;
  readonly attribute  DOMString            type;
           attribute  DOMString            value;
};
```

Attributes

`form`
: Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`accessKey`
: A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

`disabled`
: The control is unavailable in this context. See the disabled attribute definition in HTML 4.0.

`name`
: Form control or object name when submitted with a form. See the name attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element's position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

`type`
: The type of button. See the type attribute definition in HTML 4.0.

`value`
: The current form control value. See the value attribute definition in HTML 4.0.

Interface *HTMLLabelElement*

Form field label text. See the LABEL element definition in HTML 4.0.

IDL Definition

```
interface HTMLLabelElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  DOMString            htmlFor;
};
```

Attributes

`form`
: Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`accessKey`
: A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

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`htmlFor`
This attribute links this label with another form control by `id` attribute. See the for attribute definition in HTML 4.0.

Interface *HTMLFieldSetElement*

Organizes form controls into logical groups. See the FIELDSET element definition in HTML 4.0.

IDL Definition

```
interface HTMLFieldSetElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
};
```

Attributes

`form`
Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

Interface *HTMLLegendElement*

Provides a caption for a `FIELDSET` grouping. See the LEGEND element definition in HTML 4.0.

IDL Definition

```
interface HTMLLegendElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  DOMString            align;
};
```

Attributes

`form`
Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`accessKey`
A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

`align`
Text alignment relative to `FIELDSET`. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLUListElement*

Unordered list. See the UL element definition in HTML 4.0.

IDL Definition

```
interface HTMLUListElement : HTMLElement {
           attribute  boolean              compact;
           attribute  DOMString            type;
};
```


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Attributes

`compact`
: Reduce spacing between list items. See the compact attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`type`
: Bullet style. See the type attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLOListElement*

Ordered list. See the OL element definition in HTML 4.0.

IDL Definition

```
interface HTMLOListElement : HTMLElement {
           attribute  boolean              compact;
           attribute  long                 start;
           attribute  DOMString            type;
};
```

Attributes

`compact`
: Reduce spacing between list items. See the compact attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`start`
: Starting sequence number. See the start attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`type`
: Numbering style. See the type attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLDListElement*

Definition list. See the DL element definition in HTML 4.0.

IDL Definition

```
interface HTMLDListElement : HTMLElement {
           attribute  boolean              compact;
};
```

Attributes

`compact`
: Reduce spacing between list items. See the compact attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLDirectoryElement*

Directory list. See the DIR element definition in HTML 4.0. This element is deprecated in HTML 4.0.

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IDL Definition

```
interface HTMLDirectoryElement : HTMLElement {
          attribute  boolean             compact;
};
```

Attributes

`compact`

Reduce spacing between list items. See the compact attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLMenuElement*

Menu list. See the MENU element definition in HTML 4.0. This element is deprecated in HTML 4.0.

IDL Definition

```
interface HTMLMenuElement : HTMLElement {
          attribute  boolean             compact;
};
```

Attributes

`compact`

Reduce spacing between list items. See the compact attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLLIElement*

List item. See the LI element definition in HTML 4.0.

IDL Definition

```
interface HTMLLIElement : HTMLElement {
          attribute  DOMString           type;
          attribute  long                value;
};
```

Attributes

`type`

List item bullet style. See the type attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`value`

Reset sequence number when used in `OL` See the value attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLBlockquoteElement*

??? See the BLOCKQUOTE element definition in HTML 4.0.

IDL Definition

```
interface HTMLBlockquoteElement : HTMLElement {
          attribute  DOMString           cite;
};
```


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Attributes

`cite`

A URI designating a document that describes the reason for the change. See the cite attribute definition in HTML 4.0.

Interface *HTMLDivElement*

Generic block container. See the DIV element definition in HTML 4.0.

IDL Definition

```
interface HTMLDivElement : HTMLElement {
           attribute  DOMString            align;
};
```

Attributes

`align`

Horizontal text alignment. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLParagraphElement*

Paragraphs. See the P element definition in HTML 4.0.

IDL Definition

```
interface HTMLParagraphElement : HTMLElement {
           attribute  DOMString            align;
};
```

Attributes

`align`

Horizontal text alignment. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLHeadingElement*

For the `H1` to `H6` elements. See the H1 element definition in HTML 4.0.

IDL Definition

```
interface HTMLHeadingElement : HTMLElement {
           attribute  DOMString            align;
};
```

Attributes

`align`

Horizontal text alignment. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLQuoteElement*

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For the `Q` and `BLOCKQUOTE` elements. See the Q element definition in HTML 4.0.

IDL Definition

```
interface HTMLQuoteElement : HTMLElement {
          attribute  DOMString           cite;
};
```

Attributes

`cite`

A URI designating a document that designates a source document or message. See the cite attribute definition in HTML 4.0.

Interface *HTMLPreElement*

Preformatted text. See the PRE element definition in HTML 4.0.

IDL Definition

```
interface HTMLPreElement : HTMLElement {
          attribute  long                width;
};
```

Attributes

`width`

Fixed width for content. See the width attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLBRElement*

Force a line break. See the BR element definition in HTML 4.0.

IDL Definition

```
interface HTMLBRElement : HTMLElement {
          attribute  DOMString           clear;
};
```

Attributes

`clear`

Control flow of text around floats. See the clear attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLBaseFontElement*

Base font. See the BASEFONT element definition in HTML 4.0. This element is deprecated in HTML 4.0.

IDL Definition

```
interface HTMLBaseFontElement : HTMLElement {
          attribute  DOMString           color;
          attribute  DOMString           face;
          attribute  DOMString           size;
};
```


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Attributes

`color`
: Font color. See the color attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`face`
: Font face identifier. See the face attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`size`
: Font size. See the size attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLFontElement*

Local change to font. See the FONT element definition in HTML 4.0. This element is deprecated in HTML 4.0.

IDL Definition

```
interface HTMLFontElement : HTMLElement {
           attribute  DOMString            color;
           attribute  DOMString            face;
           attribute  DOMString            size;
};
```

Attributes

`color`
: Font color. See the color attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`face`
: Font face identifier. See the face attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`size`
: Font size. See the size attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLHRElement*

Create a horizontal rule. See the HR element definition in HTML 4.0.

IDL Definition

```
interface HTMLHRElement : HTMLElement {
           attribute  DOMString            align;
           attribute  boolean              noShade;
           attribute  DOMString            size;
           attribute  DOMString            width;
};
```

Attributes

`align`
: Align the rule on the page. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

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`noShade`
: Indicates to the user agent that there should be no shading in the rendering of this element. See the noshade attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`size`
: The height of the rule. See the size attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`width`
: The width of the rule. See the width attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLModElement*

Notice of modification to part of a document. See the INS and DEL element definitions in HTML 4.0.

IDL Definition

```
interface HTMLModElement : HTMLElement {
           attribute  DOMString            cite;
           attribute  DOMString            dateTime;
};
```

Attributes

`cite`
: A URI designating a document that describes the reason for the change. See the cite attribute definition in HTML 4.0.

`dateTime`
: The date and time of the change. See the datetime attribute definition in HTML 4.0.

Interface *HTMLAnchorElement*

The anchor element. See the A element definition in HTML 4.0.

IDL Definition

```
interface HTMLAnchorElement : HTMLElement {
           attribute  DOMString            accessKey;
           attribute  DOMString            charset;
           attribute  DOMString            coords;
           attribute  DOMString            href;
           attribute  DOMString            hreflang;
           attribute  DOMString            name;
           attribute  DOMString            rel;
           attribute  DOMString            rev;
           attribute  DOMString            shape;
           attribute  long                 tabIndex;
           attribute  DOMString            target;
           attribute  DOMString            type;
  void                      blur();
  void                      focus();
};
```


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Attributes

`accessKey`
: A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

`charset`
: The character encoding of the linked resource. See the charset attribute definition in HTML 4.0.

`coords`
: Comma-separated list of lengths, defining an active region geometry. See also `shape` for the shape of the region. See the coords attribute definition in HTML 4.0.

`href`
: The URI of the linked resource. See the href attribute definition in HTML 4.0.

`hreflang`
: Language code of the linked resource. See the hreflang attribute definition in HTML 4.0.

`name`
: Anchor name. See the name attribute definition in HTML 4.0.

`rel`
: Forward link type. See the rel attribute definition in HTML 4.0.

`rev`
: Reverse link type. See the rev attribute definition in HTML 4.0.

`shape`
: The shape of the active area. The coordinates are given by `coords`. See the shape attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element's position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

`target`
: Frame to render the resource in. See the target attribute definition in HTML 4.0.

`type`
: Advisory content type. See the type attribute definition in HTML 4.0.

Methods

`blur`
: Removes keyboard focus from this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`focus`
: Gives keyboard focus to this element.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

Interface *HTMLImageElement*

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Embedded image. See the IMG element definition in HTML 4.0.

IDL Definition

```
interface HTMLImageElement : HTMLElement {
           attribute  DOMString            lowSrc;
           attribute  DOMString            name;
           attribute  DOMString            align;
           attribute  DOMString            alt;
           attribute  DOMString            border;
           attribute  DOMString            height;
           attribute  DOMString            hspace;
           attribute  boolean              isMap;
           attribute  DOMString            longDesc;
           attribute  DOMString            src;
           attribute  DOMString            useMap;
           attribute  DOMString            vspace;
           attribute  DOMString            width;
};
```

Attributes

`lowSrc`
: URI designating the source of this image, for low-resolution output.

`name`
: The name of the element (for backwards compatibility).

`align`
: Aligns this object (vertically or horizontally) with respect to its surrounding text. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`alt`
: Alternate text for user agents not rendering the normal content of this element. See the alt attribute definition in HTML 4.0.

`border`
: Width of border around image. See the border attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`height`
: Override height. See the height attribute definition in HTML 4.0.

`hspace`
: Horizontal space to the left and right of this image. See the hspace attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`isMap`
: Use server-side image map. See the ismap attribute definition in HTML 4.0.

`longDesc`
: URI designating a long description of this image or frame. See the longdesc attribute definition in HTML 4.0.

`src`
: URI designating the source of this image. See the src attribute definition in HTML 4.0.

`useMap`
: Use client-side image map. See the usemap attribute definition in HTML 4.0.

`vspace`
: Vertical space above and below this image. See the vspace attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

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`width`
Override width. See the width attribute definition in HTML 4.0.

Interface *HTMLObjectElement*

Generic embedded object. *Note.* In principle, all properties on the object element are read-write but in some environments some properties may be read-only once the underlying object is instantiated. See the OBJECT element definition in HTML 4.0.

IDL Definition

```
interface HTMLObjectElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            code;
           attribute  DOMString            align;
           attribute  DOMString            archive;
           attribute  DOMString            border;
           attribute  DOMString            codeBase;
           attribute  DOMString            codeType;
           attribute  DOMString            data;
           attribute  boolean              declare;
           attribute  DOMString            height;
           attribute  DOMString            hspace;
           attribute  DOMString            name;
           attribute  DOMString            standby;
           attribute  long                 tabIndex;
           attribute  DOMString            type;
           attribute  DOMString            useMap;
           attribute  DOMString            vspace;
           attribute  DOMString            width;
};
```

Attributes

`form`
Returns the `FORM` element containing this control. Returns null if this control is not within the context of a form.

`code`
Applet class file. See the `code` attribute for HTMLAppletElement.

`align`
Aligns this object (vertically or horizontally) with respect to its surrounding text. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`archive`
Space-separated list of archives. See the archive attribute definition in HTML 4.0.

`border`
Width of border around the object. See the border attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`codeBase`
Base URI for `classid`, `data`, and `archive` attributes. See the codebase attribute definition in HTML 4.0.

`codeType`
Content type for data downloaded via `classid` attribute. See the codetype attribute definition in HTML 4.0.

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`data`
: A URI specifying the location of the object's data. See the data attribute definition in HTML 4.0.

`declare`
: Declare (for future reference), but do not instantiate, this object. See the declare attribute definition in HTML 4.0.

`height`
: Override height. See the height attribute definition in HTML 4.0.

`hspace`
: Horizontal space to the left and right of this image, applet, or object. See the hspace attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`name`
: Form control or object name when submitted with a form. See the name attribute definition in HTML 4.0.

`standby`
: Message to render while loading the object. See the standby attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element's position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

`type`
: Content type for data downloaded via `data` attribute. See the type attribute definition in HTML 4.0.

`useMap`
: Use client-side image map. See the usemap attribute definition in HTML 4.0.

`vspace`
: Vertical space above and below this image, applet, or object. See the vspace attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`width`
: Override width. See the width attribute definition in HTML 4.0.

Interface *HTMLParamElement*

Parameters fed to the `OBJECT` element. See the PARAM element definition in HTML 4.0.

IDL Definition

```
interface HTMLParamElement : HTMLElement {
           attribute  DOMString            name;
           attribute  DOMString            type;
           attribute  DOMString            value;
           attribute  DOMString            valueType;
};
```

Attributes

`name`
: The name of a run-time parameter. See the name attribute definition in HTML 4.0.

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`type`
: Content type for the `value` attribute when `valuetype` has the value "ref". See the type attribute definition in HTML 4.0.

`value`
: The value of a run-time parameter. See the value attribute definition in HTML 4.0.

`valueType`
: Information about the meaning of the `value` attribute value. See the valuetype attribute definition in HTML 4.0.

Interface *HTMLAppletElement*

An embedded Java applet. See the APPLET element definition in HTML 4.0. This element is deprecated in HTML 4.0.

IDL Definition

```
interface HTMLAppletElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            alt;
           attribute  DOMString            archive;
           attribute  DOMString            code;
           attribute  DOMString            codeBase;
           attribute  DOMString            height;
           attribute  DOMString            hspace;
           attribute  DOMString            name;
           attribute  DOMString            object;
           attribute  DOMString            vspace;
           attribute  DOMString            width;
};
```

Attributes

`align`
: Aligns this object (vertically or horizontally) with respect to its surrounding text. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`alt`
: Alternate text for user agents not rendering the normal content of this element. See the alt attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`archive`
: Comma-separated archive list. See the archive attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`code`
: Applet class file. See the code attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`codeBase`
: Optional base URI for applet. See the codebase attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`height`
: Override height. See the height attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

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`hspace`
: Horizontal space to the left and right of this image, applet, or object. See the hspace attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`name`
: The name of the applet. See the name attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`object`
: Serialized applet file. See the object attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`vspace`
: Vertical space above and below this image, applet, or object. See the vspace attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`width`
: Override width. See the width attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLMapElement*

Client-side image map. See the MAP element definition in HTML 4.0.

IDL Definition

```
interface HTMLMapElement : HTMLElement {
  readonly attribute  HTMLCollection       areas;
           attribute  DOMString            name;
};
```

Attributes

`areas`
: The list of areas defined for the image map.

`name`
: Names the map (for use with `usemap`). See the name attribute definition in HTML 4.0.

Interface *HTMLAreaElement*

Client-side image map area definition. See the AREA element definition in HTML 4.0.

IDL Definition

```
interface HTMLAreaElement : HTMLElement {
           attribute  DOMString            accessKey;
           attribute  DOMString            alt;
           attribute  DOMString            coords;
           attribute  DOMString            href;
           attribute  boolean              noHref;
           attribute  DOMString            shape;
           attribute  long                 tabIndex;
           attribute  DOMString            target;
};
```

Attributes

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`accessKey`
: A single character access key to give access to the form control. See the accesskey attribute definition in HTML 4.0.

`alt`
: Alternate text for user agents not rendering the normal content of this element. See the alt attribute definition in HTML 4.0.

`coords`
: Comma-separated list of lengths, defining an active region geometry. See also `shape` for the shape of the region. See the coords attribute definition in HTML 4.0.

`href`
: The URI of the linked resource. See the href attribute definition in HTML 4.0.

`noHref`
: Specifies that this area is inactive, i.e., has no associated action. See the nohref attribute definition in HTML 4.0.

`shape`
: The shape of the active area. The coordinates are given by `coords`. See the shape attribute definition in HTML 4.0.

`tabIndex`
: Index that represents the element's position in the tabbing order. See the tabindex attribute definition in HTML 4.0.

`target`
: Frame to render the resource in. See the target attribute definition in HTML 4.0.

Interface *HTMLScriptElement*

Script statements. See the SCRIPT element definition in HTML 4.0.

IDL Definition

```
interface HTMLScriptElement : HTMLElement {
           attribute  DOMString            text;
           attribute  DOMString            htmlFor;
           attribute  DOMString            event;
           attribute  DOMString            charset;
           attribute  boolean              defer;
           attribute  DOMString            src;
           attribute  DOMString            type;
};
```

Attributes

`text`
: The script content of the element.

`htmlFor`
: *Reserved for future use.*

`event`
: *Reserved for future use.*

`charset`
: The character encoding of the linked resource. See the charset attribute definition in HTML 4.0.

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`defer`
: Indicates that the user agent can defer processing of the script. See the defer attribute definition in HTML 4.0.

`src`
: URI designating an external script. See the src attribute definition in HTML 4.0.

`type`
: The content type of the script language. See the type attribute definition in HTML 4.0.

Interface *HTMLTableElement*

The create* and delete* methods on the table allow authors to construct and modify tables. HTML 4.0 specifies that only one of each of the `CAPTION`, `THEAD`, and `TFOOT` elements may exist in a table. Therefore, if one exists, and the createTHead() or createTFoot() method is called, the method returns the existing THead or TFoot element. See the TABLE element definition in HTML 4.0.

IDL Definition

```
interface HTMLTableElement : HTMLElement {
           attribute  HTMLTableCaptionElement caption;
           attribute  HTMLTableSectionElement tHead;
           attribute  HTMLTableSectionElement tFoot;
  readonly attribute  HTMLCollection       rows;
  readonly attribute  HTMLCollection       tBodies;
           attribute  DOMString            align;
           attribute  DOMString            bgColor;
           attribute  DOMString            border;
           attribute  DOMString            cellPadding;
           attribute  DOMString            cellSpacing;
           attribute  DOMString            frame;
           attribute  DOMString            rules;
           attribute  DOMString            summary;
           attribute  DOMString            width;
  HTMLElement               createTHead();
  void                      deleteTHead();
  HTMLElement               createTFoot();
  void                      deleteTFoot();
  HTMLElement               createCaption();
  void                      deleteCaption();
  HTMLElement               insertRow(in long index);
  void                      deleteRow(in long index);
};
```

Attributes

`caption`
: Returns the table's `CAPTION`, or void if none exists.

`tHead`
: Returns the table's `THEAD`, or `null` if none exists.

`tFoot`
: Returns the table's `TFOOT`, or `null` if none exists.

`rows`
: Returns a collection of all the rows in the table, including all in `THEAD`, `TFOOT`, all `TBODY` elements.

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`tBodies`
: Returns a collection of the defined table bodies.

`align`
: Specifies the table's position with respect to the rest of the document. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`bgColor`
: Cell background color. See the bgcolor attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`border`
: The width of the border around the table. See the border attribute definition in HTML 4.0.

`cellPadding`
: Specifies the horizontal and vertical space between cell content and cell borders. See the cellpadding attribute definition in HTML 4.0.

`cellSpacing`
: Specifies the horizontal and vertical separation between cells. See the cellspacing attribute definition in HTML 4.0.

`frame`
: Specifies which external table borders to render. See the frame attribute definition in HTML 4.0.

`rules`
: Specifies which internal table borders to render. See the rules attribute definition in HTML 4.0.

`summary`
: Supplementary description about the purpose or structure of a table. See the summary attribute definition in HTML 4.0.

`width`
: Specifies the desired table width. See the width attribute definition in HTML 4.0.

Methods

`createTHead`
: Create a table header row or return an existing one.

Return Value

A new table header element (`THEAD`).

This method has no parameters.

This method raises no exceptions.

`deleteTHead`
: Delete the header from the table, if one exists.

This method has no parameters.

This method returns nothing.

This method raises no exceptions.

`createTFoot`
: Create a table footer row or return an existing one.

Return Value

A footer element (`TFOOT`).

This method has no parameters.

This method raises no exceptions.

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`deleteTFoot`
Delete the footer from the table, if one exists.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`createCaption`
Create a new table caption object or return an existing one.
Return Value
A `CAPTION` element.
This method has no parameters.
This method raises no exceptions.

`deleteCaption`
Delete the table caption, if one exists.
This method has no parameters.
This method returns nothing.
This method raises no exceptions.

`insertRow`
Insert a new empty row in the table. *Note.* A table row cannot be empty according to HTML 4.0 Recommendation.
Parameters

`index`	The row number where to insert a new row.

Return Value
The newly created row.
This method raises no exceptions.

`deleteRow`
Delete a table row.
Parameters

`index`	The index of the row to be deleted.

This method returns nothing.
This method raises no exceptions.

Interface *HTMLTableCaptionElement*

Table caption See the CAPTION element definition in HTML 4.0.
IDL Definition

```
interface HTMLTableCaptionElement : HTMLElement {
           attribute  DOMString            align;
};
```

Attributes

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`align`
: Caption alignment with respect to the table. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLTableColElement*

Regroups the `COL` and `COLGROUP` elements. See the COL element definition in HTML 4.0.

IDL Definition

```
interface HTMLTableColElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            ch;
           attribute  DOMString            chOff;
           attribute  long                 span;
           attribute  DOMString            vAlign;
           attribute  DOMString            width;
};
```

Attributes

`align`
: Horizontal alignment of cell data in column. See the align attribute definition in HTML 4.0.

`ch`
: Alignment character for cells in a column. See the char attribute definition in HTML 4.0.

`chOff`
: Offset of alignment character. See the charoff attribute definition in HTML 4.0.

`span`
: Indicates the number of columns in a group or affected by a grouping. See the span attribute definition in HTML 4.0.

`vAlign`
: Vertical alignment of cell data in column. See the valign attribute definition in HTML 4.0.

`width`
: Default column width. See the width attribute definition in HTML 4.0.

Interface *HTMLTableSectionElement*

The `THEAD`, `TFOOT`, and `TBODY` elements.

IDL Definition

```
interface HTMLTableSectionElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            ch;
           attribute  DOMString            chOff;
           attribute  DOMString            vAlign;
  readonly attribute  HTMLCollection       rows;
  HTMLElement               insertRow(in long index);
  void                      deleteRow(in long index);
};
```


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Attributes

`align`
: Horizontal alignment of data in cells. See the `align` attribute for HTMLTheadElement for details.

`ch`
: Alignment character for cells in a column. See the char attribute definition in HTML 4.0.

`chOff`
: Offset of alignment character. See the charoff attribute definition in HTML 4.0.

`vAlign`
: Vertical alignment of data in cells. See the `valign` attribute for HTMLTheadElement for details.

`rows`
: The collection of rows in this table section.

Methods

`insertRow`
: Insert a row into this section.

Parameters

`index`	The row number where to insert a new row.

Return Value

The newly created row.

This method raises no exceptions.

`deleteRow`
: Delete a row from this section.

Parameters

`index`	The index of the row to be deleted.

This method returns nothing.

This method raises no exceptions.

Interface *HTMLTableRowElement*

A row in a table. See the TR element definition in HTML 4.0.

IDL Definition

```
interface HTMLTableRowElement : HTMLElement {
           attribute  long                rowIndex;
           attribute  long                sectionRowIndex;
           attribute  HTMLCollection      cells;
           attribute  DOMString           align;
           attribute  DOMString           bgColor;
           attribute  DOMString           ch;
           attribute  DOMString           chOff;
```


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```
            attribute  DOMString            vAlign;
  HTMLElement               insertCell(in long index);
  void                      deleteCell(in long index);
};
```

Attributes

`rowIndex`
: The index of this row, relative to the entire table.

`sectionRowIndex`
: The index of this row, relative to the current section (`THEAD`, `TFOOT`, or `TBODY`).

`cells`
: The collection of cells in this row.

`align`
: Horizontal alignment of data within cells of this row. See the align attribute definition in HTML 4.0.

`bgColor`
: Background color for rows. See the bgcolor attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`ch`
: Alignment character for cells in a column. See the char attribute definition in HTML 4.0.

`chOff`
: Offset of alignment character. See the charoff attribute definition in HTML 4.0.

`vAlign`
: Vertical alignment of data within cells of this row. See the valign attribute definition in HTML 4.0.

Methods

`insertCell`
: Insert an empty `TD` cell into this row.

Parameters

`index`	The place to insert the cell.

Return Value

The newly created cell.

This method raises no exceptions.

`deleteCell`
: Delete a cell from the current row.

Parameters

`index`	The index of the cell to delete.

This method returns nothing.

This method raises no exceptions.

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Interface *HTMLTableCellElement*

The object used to represent the `TH` and `TD` elements. See the TD element definition in HTML 4.0.

IDL Definition

```
interface HTMLTableCellElement : HTMLElement {
           attribute  long                cellIndex;
           attribute  DOMString           abbr;
           attribute  DOMString           align;
           attribute  DOMString           axis;
           attribute  DOMString           bgColor;
           attribute  DOMString           ch;
           attribute  DOMString           chOff;
           attribute  long                colSpan;
           attribute  DOMString           headers;
           attribute  DOMString           height;
           attribute  boolean             noWrap;
           attribute  long                rowSpan;
           attribute  DOMString           scope;
           attribute  DOMString           vAlign;
           attribute  DOMString           width;
};
```

Attributes

`cellIndex`
: The index of this cell in the row.

`abbr`
: Abbreviation for header cells. See the abbr attribute definition in HTML 4.0.

`align`
: Horizontal alignment of data in cell. See the align attribute definition in HTML 4.0.

`axis`
: Names group of related headers. See the axis attribute definition in HTML 4.0.

`bgColor`
: Cell background color. See the bgcolor attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`ch`
: Alignment character for cells in a column. See the char attribute definition in HTML 4.0.

`chOff`
: Offset of alignment character. See the charoff attribute definition in HTML 4.0.

`colSpan`
: Number of columns spanned by cell. See the colspan attribute definition in HTML 4.0.

`headers`
: List of `id` attribute values for header cells. See the headers attribute definition in HTML 4.0.

`height`
: Cell height. See the height attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`noWrap`
: Suppress word wrapping. See the nowrap attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

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`rowSpan`
: Number of rows spanned by cell. See the rowspan attribute definition in HTML 4.0.

`scope`
: Scope covered by header cells. See the scope attribute definition in HTML 4.0.

`vAlign`
: Vertical alignment of data in cell. See the valign attribute definition in HTML 4.0.

`width`
: Cell width. See the width attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

Interface *HTMLFrameSetElement*

Create a grid of frames. See the FRAMESET element definition in HTML 4.0.

IDL Definition

```
interface HTMLFrameSetElement : HTMLElement {
           attribute  DOMString            cols;
           attribute  DOMString            rows;
};
```

Attributes

`cols`
: The number of columns of frames in the frameset. See the cols attribute definition in HTML 4.0.

`rows`
: The number of rows of frames in the frameset. See the rows attribute definition in HTML 4.0.

Interface *HTMLFrameElement*

Create a frame. See the FRAME element definition in HTML 4.0.

IDL Definition

```
interface HTMLFrameElement : HTMLElement {
           attribute  DOMString            frameBorder;
           attribute  DOMString            longDesc;
           attribute  DOMString            marginHeight;
           attribute  DOMString            marginWidth;
           attribute  DOMString            name;
           attribute  boolean              noResize;
           attribute  DOMString            scrolling;
           attribute  DOMString            src;
};
```

Attributes

`frameBorder`
: Request frame borders. See the frameborder attribute definition in HTML 4.0.

`longDesc`
: URI designating a long description of this image or frame. See the longdesc attribute definition in HTML 4.0.

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`marginHeight`
: Frame margin height, in pixels. See the marginheight attribute definition in HTML 4.0.

`marginWidth`
: Frame margin width, in pixels. See the marginwidth attribute definition in HTML 4.0.

`name`
: The frame name (object of the `target` attribute). See the name attribute definition in HTML 4.0.

`noResize`
: When true, forbid user from resizing frame. See the noresize attribute definition in HTML 4.0.

`scrolling`
: Specify whether or not the frame should have scrollbars. See the scrolling attribute definition in HTML 4.0.

`src`
: A URI designating the initial frame contents. See the src attribute definition in HTML 4.0.

Interface *HTMLIFrameElement*

Inline subwindows. See the IFRAME element definition in HTML 4.0.

IDL Definition

```
interface HTMLIFrameElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            frameBorder;
           attribute  DOMString            height;
           attribute  DOMString            longDesc;
           attribute  DOMString            marginHeight;
           attribute  DOMString            marginWidth;
           attribute  DOMString            name;
           attribute  DOMString            scrolling;
           attribute  DOMString            src;
           attribute  DOMString            width;
};
```

Attributes

`align`
: Aligns this object (vertically or horizontally) with respect to its surrounding text. See the align attribute definition in HTML 4.0. This attribute is deprecated in HTML 4.0.

`frameBorder`
: Request frame borders. See the frameborder attribute definition in HTML 4.0.

`height`
: Frame height. See the height attribute definition in HTML 4.0.

`longDesc`
: URI designating a long description of this image or frame. See the longdesc attribute definition in HTML 4.0.

`marginHeight`
: Frame margin height, in pixels. See the marginheight attribute definition in HTML 4.0.

`marginWidth`
: Frame margin width, in pixels. See the marginwidth attribute definition in HTML 4.0.

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`name`
: The frame name (object of the `target` attribute). See the name attribute definition in HTML 4.0.

`scrolling`
: Specify whether or not the frame should have scrollbars. See the scrolling attribute definition in HTML 4.0.

`src`
: A URI designating the initial frame contents. See the src attribute definition in HTML 4.0.

`width`
: Frame width. See the width attribute definition in HTML 4.0.

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Appendix A: Contributors

Members of the DOM Working Group and Interest Group contributing to this specification were:

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Appendix B: Glossary

Editors
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Several of the following term definitions have been borrowed or modified from similar definitions in other W3C or standards documents. See the links within the definitions for more information.

ancestor
An *ancestor* node of any node A is any node above A in a tree model of a document, where "above" means "toward the root."

API
An *API* is an application programming interface, a set of functions or methods used to access some functionality.

child
A *child* is an immediate descendant node of a node.

client application
A [client] application is any software that uses the Document Object Model programming interfaces provided by the hosting implementation to accomplish useful work. Some examples of client applications are scripts within an HTML or XML document.

COM
COM is Microsoft's Component Object Model, a technology for building applications from binary software components.

content model
The *content model* is a simple grammar governing the allowed types of the child elements and the order in which they appear. See [XML]

context
A *context* specifies an access pattern (or path): a set of interfaces which give you a way to interact with a model. For example, imagine a model with different colored arcs connecting data nodes. A context might be a sheet of colored acetate that is placed over the model allowing you a partial view of the total information in the model.

convenience
A *convenience method* is an operation on an object that could be accomplished by a program consisting of more basic operations on the object. Convenience methods are usually provided to make the API easier and simpler to use or to allow specific programs to create more optimized implementations for common operations. A similar definition holds for a *convenience property*.

cooked model
A model for a document that represents the document after it has been manipulated in some way. For example, any combination of any of the following transformations would create a cooked model:

1. Expansion of internal text entities.
2. Expansion of external entities.
3. Model augmentation with style-specified generated text.
4. Execution of style-specified reordering.
5. Execution of scripts.

A browser might only be able to provide access to a cooked model, while an editor might provide access to a cooked or the initial structure model (also known as the *uncooked model*) for a document.

CORBA
CORBA is the *Common Object Request Broker Architecture* from the OMG . This architecture is a collection of objects and libraries that allow the creation of applications containing objects that make and receive requests and responses in a distributed environment.

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cursor

A *cursor* is an object representation of a node. It may possess information about context and the path traversed to reach the node.

data model

A *data model* is a collection of descriptions of data structures and their contained fields, together with the operations or functions that manipulate them.

deprecation

When new releases of specifications are released, some older features may be marked as being *deprecated*. This means that new work should not use the features and that although they are supported in the current release, they may not be supported or available in future releases.

descendant

A *descendant* node of any node A is any node below A in a tree model of a document, where "above" means "toward the root."

ECMAScript

The programming language defined by the ECMA-262 standard. As stated in the standard, the originating technology for ECMAScript was JavaScript. Note that in the ECMAScript binding, the word "property" is used in the same sense as the IDL term "attribute."

element

Each document contains one or more elements, the boundaries of which are either delimited by start-tags and end-tags, or, for empty elements by an empty-element tag. Each element has a type, identified by name, and may have a set of attributes. Each attribute has a name and a value. [XML]

event propagation, also known as event bubbling

This is the idea that an event can affect one object and a set of related objects. Any of the potentially affected objects can block the event or substitute a different one (upward event propagation). The event is broadcast from the node at which it originates to every parent node.

equivalence

Two nodes are *equivalent* if they have the same node type and same node name. Also, if the nodes contain data, that must be the same. Finally, if the nodes have attributes then collection of attribute names must be the same and the attributes corresponding by name must be equivalent as nodes. Two nodes are *deeply equivalent* if they are *equivalent*, the child node lists are equivalent are equivalent as NodeList objects, and the pairs of equivalent attributes must in fact be deeply equivalent. Two NodeList objects are *equivalent* if they have the same length, and the nodes corresponding by index are deeply equivalent. Two NamedNodeMap objects are *equivalent* if they are have the same length, they have same collection of names, and the nodes corresponding by name in the maps are deeply equivalent. Two DocumentType nodes are *equivalent* if they are equivalent as nodes, have the same names, and have equivalent entities and attributes NamedNodeMap objects.

hosting implementation

A [hosting] implementation is a software module that provides an implementation of the DOM interfaces so that a client application can use them. Some examples of hosting implementations are browsers, editors and document repositories.

HTML

The HyperText Markup Language (*HTML*) is a simple markup language used to create hypertext documents that are portable from one platform to another. HTML documents are SGML documents with generic semantics that are appropriate for representing information from a wide range of applications. [HTML 3.2] [HTML4.0]

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IDL

An Interface Definition Language (*IDL*) is used to define the interfaces for accessing and operating upon objects. Examples of IDLs are the Object Management Group's IDL , Microsoft's IDL , and Sun's Java IDL .

implementor

Companies, organizations, and individuals that claim to support the Document Object Model as an API for their products.

inheritance

In object-oriented programming, the ability to create new classes (or interfaces) that contain all the methods and properties of another class (or interface), plus additional methods and properties. If class (or interface) D inherits from class (or interface) B, then D is said to be *derived* from B. B is said to be a *base* class (or interface) for D. Some programming languages allow for multiple inheritance, that is, inheritance from more than one class or interface.

initial structure model

Also known as the *raw structure model* or the *uncooked model*, this represents the document before it has been modified by entity expansions, generated text, style-specified reordering, or the execution of scripts. In some implementations, this might correspond to the "initial parse tree" for the document, if it ever exists. Note that a given implementation might not be able to provide access to the initial structure model for a document, though an editor probably would.

interface

An *interface* is a declaration of a set of methods with no information given about their implementation. In object systems that support interfaces and inheritance, interfaces can usually inherit from one another.

language binding

A programming *language binding* for an IDL specification is an implementation of the interfaces in the specification for the given language. For example, a Java language binding for the Document Object Model IDL specification would implement the concrete Java classes that provide the functionality exposed by the interfaces.

method

A *method* is an operation or function that is associated with an object and is allowed to manipulate the object's data.

model

A *model* is the actual data representation for the information at hand. Examples are the structural model and the style model representing the parse structure and the style information associated with a document. The model might be a tree, or a directed graph, or something else.

object model

An *object model* is a collection of descriptions of classes or interfaces, together with their member data, member functions, and class-static operations.

parent

A *parent* is an immediate ancestor node of a node.

root node

The *root node* is the unique node that is not a child of any other node. All other nodes are children or other descendents of the root node. [XML]

sibling

Two nodes are *siblings* if they have the same parent node.

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string comparison
When string matching is required, it is to occur as though the comparison was between 2 sequences of code points from the Unicode 2.0 standard.

tag valid document
A document is *tag valid* if all begin and end tags are properly balanced and nested.

type valid document
A document is *type valid* if it conforms to an explicit DTD.

uncooked model
See initial structure model.

well-formed document
A document is *well-formed* if it is tag valid and entities are limited to single elements (i.e., single sub-trees).

XML
Extensible Markup Language (*XML*) is an extremely simple dialect of SGML which is completely described in this document. The goal is to enable generic SGML to be served, received, and processed on the Web in the way that is now possible with HTML. XML has been designed for ease of implementation and for interoperability with both SGML and HTML. [XML]

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Appendix C: IDL Definitions

This appendix contains the complete OMG IDL for the Level 1 Document Object Model definitions. The definitions are divided into Core and HTML.

The IDL files are also available as: http://www.w3.org/TR/1998/REC-DOM-Level-1-19981001/idl.zip

C.1: Document Object Model Level 1 Core

This section contains the OMG IDL definitions for the interfaces in the Core Document Object Model specification, including the extended (XML) interfaces.

```
exception DOMException {
  unsigned short   code;
};

// ExceptionCode
const unsigned short      INDEX_SIZE_ERR     = 1;
const unsigned short      DOMSTRING_SIZE_ERR = 2;
const unsigned short      HIERARCHY_REQUEST_ERR = 3;
const unsigned short      WRONG_DOCUMENT_ERR = 4;
const unsigned short      INVALID_CHARACTER_ERR = 5;
const unsigned short      NO_DATA_ALLOWED_ERR = 6;
const unsigned short      NO_MODIFICATION_ALLOWED_ERR = 7;
const unsigned short      NOT_FOUND_ERR      = 8;
const unsigned short      NOT_SUPPORTED_ERR  = 9;
const unsigned short      INUSE_ATTRIBUTE_ERR = 10;
```


```
// ExceptionCode
const unsigned short      INDEX_SIZE_ERR     = 1;
const unsigned short      DOMSTRING_SIZE_ERR = 2;
const unsigned short      HIERARCHY_REQUEST_ERR = 3;
const unsigned short      WRONG_DOCUMENT_ERR = 4;
const unsigned short      INVALID_CHARACTER_ERR = 5;
const unsigned short      NO_DATA_ALLOWED_ERR = 6;
const unsigned short      NO_MODIFICATION_ALLOWED_ERR = 7;
const unsigned short      NOT_FOUND_ERR      = 8;
const unsigned short      NOT_SUPPORTED_ERR  = 9;
const unsigned short      INUSE_ATTRIBUTE_ERR = 10;
```


```
interface DOMImplementation {
  boolean                   hasFeature(in DOMString feature,
                                       in DOMString version);
};

interface DocumentFragment : Node {
};

interface Document : Node {
  readonly attribute  DocumentType         doctype;
  readonly attribute  DOMImplementation    implementation;
  readonly attribute  Element              documentElement;
  Element                   createElement(in DOMString tagName)
```


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```
                                        raises(DOMException);
  DocumentFragment          createDocumentFragment();
  Text                      createTextNode(in DOMString data);
  Comment                   createComment(in DOMString data);
  CDATASection              createCDATASection(in DOMString data)
                                          raises(DOMException);
  ProcessingInstruction     createProcessingInstruction(in DOMString target,
                                                        in DOMString data)
                                                        raises(DOMException);
  Attr                      createAttribute(in DOMString name)
                                         raises(DOMException);
  EntityReference           createEntityReference(in DOMString name)
                                              raises(DOMException);
  NodeList                  getElementsByTagName(in DOMString tagname);
};

interface Node {
  // NodeType
  const unsigned short      ELEMENT_NODE       = 1;
  const unsigned short      ATTRIBUTE_NODE     = 2;
  const unsigned short      TEXT_NODE          = 3;
  const unsigned short      CDATA_SECTION_NODE = 4;
  const unsigned short      ENTITY_REFERENCE_NODE = 5;
  const unsigned short      ENTITY_NODE        = 6;
  const unsigned short      PROCESSING_INSTRUCTION_NODE = 7;
  const unsigned short      COMMENT_NODE       = 8;
  const unsigned short      DOCUMENT_NODE      = 9;
  const unsigned short      DOCUMENT_TYPE_NODE = 10;
  const unsigned short      DOCUMENT_FRAGMENT_NODE = 11;
  const unsigned short      NOTATION_NODE      = 12;

  readonly attribute  DOMString            nodeName;
           attribute  DOMString            nodeValue;
                                                 // raises(DOMException) on setting
                                                 // raises(DOMException) on retrieval
  readonly attribute  unsigned short       nodeType;
  readonly attribute  Node                 parentNode;
  readonly attribute  NodeList             childNodes;
  readonly attribute  Node                 firstChild;
  readonly attribute  Node                 lastChild;
  readonly attribute  Node                 previousSibling;
  readonly attribute  Node                 nextSibling;
  readonly attribute  NamedNodeMap         attributes;
  readonly attribute  Document             ownerDocument;
  Node                      insertBefore(in Node newChild,
                                         in Node refChild)
                                         raises(DOMException);
  Node                      replaceChild(in Node newChild,
                                         in Node oldChild)
                                         raises(DOMException);
  Node                      removeChild(in Node oldChild)
                                        raises(DOMException);
  Node                      appendChild(in Node newChild)
                                        raises(DOMException);
  boolean                   hasChildNodes();
  Node                      cloneNode(in boolean deep);
};
```


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```
interface NodeList {
  Node                      item(in unsigned long index);
  readonly attribute  unsigned long        length;
};

interface NamedNodeMap {
  Node                      getNamedItem(in DOMString name);
  Node                      setNamedItem(in Node arg)
                                          raises(DOMException);
  Node                      removeNamedItem(in DOMString name)
                                            raises(DOMException);
  Node                      item(in unsigned long index);
  readonly attribute  unsigned long        length;
};

interface CharacterData : Node {
           attribute  DOMString            data;
                                // raises(DOMException) on setting
                                // raises(DOMException) on retrieval
  readonly attribute  unsigned long        length;
  DOMString                 substringData(in unsigned long offset,
                                          in unsigned long count)
                                          raises(DOMException);
  void                      appendData(in DOMString arg)
                                       raises(DOMException);
  void                      insertData(in unsigned long offset,
                                       in DOMString arg)
                                       raises(DOMException);
  void                      deleteData(in unsigned long offset,
                                       in unsigned long count)
                                       raises(DOMException);
  void                      replaceData(in unsigned long offset,
                                        in unsigned long count,
                                        in DOMString arg)
                                        raises(DOMException);
};

interface Attr : Node {
  readonly attribute  DOMString            name;
  readonly attribute  boolean              specified;
           attribute  DOMString            value;
};

interface Element : Node {
  readonly attribute  DOMString            tagName;
  DOMString                 getAttribute(in DOMString name);
  void                      setAttribute(in DOMString name,
                                         in DOMString value)
                                         raises(DOMException);
  void                      removeAttribute(in DOMString name)
                                            raises(DOMException);
  Attr                      getAttributeNode(in DOMString name);
  Attr                      setAttributeNode(in Attr newAttr)
                                             raises(DOMException);
  Attr                      removeAttributeNode(in Attr oldAttr)
                                                 raises(DOMException);
```


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```
  NodeList                  getElementsByTagName(in DOMString name);
  void                      normalize();
};

interface Text : CharacterData {
  Text                      splitText(in unsigned long offset)
                                      raises(DOMException);
};

interface Comment : CharacterData {
};

interface CDATASection : Text {
};

interface DocumentType : Node {
  readonly attribute  DOMString            name;
  readonly attribute  NamedNodeMap         entities;
  readonly attribute  NamedNodeMap         notations;
};

interface Notation : Node {
  readonly attribute  DOMString            publicId;
  readonly attribute  DOMString            systemId;
};

interface Entity : Node {
  readonly attribute  DOMString            publicId;
  readonly attribute  DOMString            systemId;
  readonly attribute  DOMString            notationName;
};

interface EntityReference : Node {
};

interface ProcessingInstruction : Node {
  readonly attribute  DOMString            target;
           attribute  DOMString            data;
                                      // raises(DOMException) on setting
};
```

C.2: Document Object Model Level 1 HTML

```
interface HTMLCollection {
  readonly attribute  unsigned long        length;
  Node                      item(in unsigned long index);
  Node                      namedItem(in DOMString name);
};

interface HTMLDocument : Document {
           attribute  DOMString            title;
  readonly attribute  DOMString            referrer;
  readonly attribute  DOMString            domain;
  readonly attribute  DOMString            URL;
           attribute  HTMLElement          body;
  readonly attribute  HTMLCollection       images;
```


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```
  readonly attribute  HTMLCollection       applets;
  readonly attribute  HTMLCollection       links;
  readonly attribute  HTMLCollection       forms;
  readonly attribute  HTMLCollection       anchors;
           attribute  DOMString            cookie;
  void                      open();
  void                      close();
  void                      write(in DOMString text);
  void                      writeln(in DOMString text);
  Element                   getElementById(in DOMString elementId);
  NodeList                  getElementsByName(in DOMString elementName);
};

interface HTMLElement : Element {
           attribute  DOMString            id;
           attribute  DOMString            title;
           attribute  DOMString            lang;
           attribute  DOMString            dir;
           attribute  DOMString            className;
};

interface HTMLHtmlElement : HTMLElement {
           attribute  DOMString            version;
};

interface HTMLHeadElement : HTMLElement {
           attribute  DOMString            profile;
};

interface HTMLLinkElement : HTMLElement {
           attribute  boolean              disabled;
           attribute  DOMString            charset;
           attribute  DOMString            href;
           attribute  DOMString            hreflang;
           attribute  DOMString            media;
           attribute  DOMString            rel;
           attribute  DOMString            rev;
           attribute  DOMString            target;
           attribute  DOMString            type;
};

interface HTMLTitleElement : HTMLElement {
           attribute  DOMString            text;
};

interface HTMLMetaElement : HTMLElement {
           attribute  DOMString            content;
           attribute  DOMString            httpEquiv;
           attribute  DOMString            name;
           attribute  DOMString            scheme;
};

interface HTMLBaseElement : HTMLElement {
           attribute  DOMString            href;
           attribute  DOMString            target;
};
```


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```
interface HTMLIsIndexElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            prompt;
};

interface HTMLStyleElement : HTMLElement {
           attribute  boolean              disabled;
           attribute  DOMString            media;
           attribute  DOMString            type;
};

interface HTMLBodyElement : HTMLElement {
           attribute  DOMString            aLink;
           attribute  DOMString            background;
           attribute  DOMString            bgColor;
           attribute  DOMString            link;
           attribute  DOMString            text;
           attribute  DOMString            vLink;
};

interface HTMLFormElement : HTMLElement {
  readonly attribute  HTMLCollection       elements;
  readonly attribute  long                 length;
           attribute  DOMString            name;
           attribute  DOMString            acceptCharset;
           attribute  DOMString            action;
           attribute  DOMString            enctype;
           attribute  DOMString            method;
           attribute  DOMString            target;
  void                      submit();
  void                      reset();
};

interface HTMLSelectElement : HTMLElement {
  readonly attribute  DOMString            type;
           attribute  long                 selectedIndex;
           attribute  DOMString            value;
  readonly attribute  long                 length;
  readonly attribute  HTMLFormElement      form;
  readonly attribute  HTMLCollection       options;
           attribute  boolean              disabled;
           attribute  boolean              multiple;
           attribute  DOMString            name;
           attribute  long                 size;
           attribute  long                 tabIndex;
  void                      add(in HTMLElement element,
                                in HTMLElement before);
  void                      remove(in long index);
  void                      blur();
  void                      focus();
};

interface HTMLOptGroupElement : HTMLElement {
           attribute  boolean              disabled;
           attribute  DOMString            label;
};
```


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```
interface HTMLOptionElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  boolean              defaultSelected;
  readonly attribute  DOMString            text;
           attribute  long                 index;
           attribute  boolean              disabled;
           attribute  DOMString            label;
  readonly attribute  boolean              selected;
           attribute  DOMString            value;
};

interface HTMLInputElement : HTMLElement {
           attribute  DOMString            defaultValue;
           attribute  boolean              defaultChecked;
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accept;
           attribute  DOMString            accessKey;
           attribute  DOMString            align;
           attribute  DOMString            alt;
           attribute  boolean              checked;
           attribute  boolean              disabled;
           attribute  long                 maxLength;
           attribute  DOMString            name;
           attribute  boolean              readOnly;
           attribute  DOMString            size;
           attribute  DOMString            src;
           attribute  long                 tabIndex;
  readonly attribute  DOMString            type;
           attribute  DOMString            useMap;
           attribute  DOMString            value;
  void                      blur();
  void                      focus();
  void                      select();
  void                      click();
};

interface HTMLTextAreaElement : HTMLElement {
           attribute  DOMString            defaultValue;
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  long                 cols;
           attribute  boolean              disabled;
           attribute  DOMString            name;
           attribute  boolean              readOnly;
           attribute  long                 rows;
           attribute  long                 tabIndex;
  readonly attribute  DOMString            type;
           attribute  DOMString            value;
  void                      blur();
  void                      focus();
  void                      select();
};

interface HTMLButtonElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  boolean              disabled;
```


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```
           attribute  DOMString            name;
           attribute  long                 tabIndex;
  readonly attribute  DOMString            type;
           attribute  DOMString            value;
};

interface HTMLLabelElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  DOMString            htmlFor;
};

interface HTMLFieldSetElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
};

interface HTMLLegendElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            accessKey;
           attribute  DOMString            align;
};

interface HTMLUListElement : HTMLElement {
           attribute  boolean              compact;
           attribute  DOMString            type;
};

interface HTMLOListElement : HTMLElement {
           attribute  boolean              compact;
           attribute  long                 start;
           attribute  DOMString            type;
};

interface HTMLDListElement : HTMLElement {
           attribute  boolean              compact;
};

interface HTMLDirectoryElement : HTMLElement {
           attribute  boolean              compact;
};

interface HTMLMenuElement : HTMLElement {
           attribute  boolean              compact;
};

interface HTMLLIElement : HTMLElement {
           attribute  DOMString            type;
           attribute  long                 value;
};

interface HTMLBlockquoteElement : HTMLElement {
           attribute  DOMString            cite;
};

interface HTMLDivElement : HTMLElement {
           attribute  DOMString            align;
};
```


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```
interface HTMLParagraphElement : HTMLElement {
           attribute  DOMString            align;
};

interface HTMLHeadingElement : HTMLElement {
           attribute  DOMString            align;
};

interface HTMLQuoteElement : HTMLElement {
           attribute  DOMString            cite;
};

interface HTMLPreElement : HTMLElement {
           attribute  long                 width;
};

interface HTMLBRElement : HTMLElement {
           attribute  DOMString            clear;
};

interface HTMLBaseFontElement : HTMLElement {
           attribute  DOMString            color;
           attribute  DOMString            face;
           attribute  DOMString            size;
};

interface HTMLFontElement : HTMLElement {
           attribute  DOMString            color;
           attribute  DOMString            face;
           attribute  DOMString            size;
};

interface HTMLHRElement : HTMLElement {
           attribute  DOMString            align;
           attribute  boolean              noShade;
           attribute  DOMString            size;
           attribute  DOMString            width;
};

interface HTMLModElement : HTMLElement {
           attribute  DOMString            cite;
           attribute  DOMString            dateTime;
};

interface HTMLAnchorElement : HTMLElement {
           attribute  DOMString            accessKey;
           attribute  DOMString            charset;
           attribute  DOMString            coords;
           attribute  DOMString            href;
           attribute  DOMString            hreflang;
           attribute  DOMString            name;
           attribute  DOMString            rel;
           attribute  DOMString            rev;
           attribute  DOMString            shape;
           attribute  long                 tabIndex;
           attribute  DOMString            target;
```


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```
           attribute  DOMString            type;
  void                      blur();
  void                      focus();
};

interface HTMLImageElement : HTMLElement {
           attribute  DOMString            lowSrc;
           attribute  DOMString            name;
           attribute  DOMString            align;
           attribute  DOMString            alt;
           attribute  DOMString            border;
           attribute  DOMString            height;
           attribute  DOMString            hspace;
           attribute  boolean              isMap;
           attribute  DOMString            longDesc;
           attribute  DOMString            src;
           attribute  DOMString            useMap;
           attribute  DOMString            vspace;
           attribute  DOMString            width;
};

interface HTMLObjectElement : HTMLElement {
  readonly attribute  HTMLFormElement      form;
           attribute  DOMString            code;
           attribute  DOMString            align;
           attribute  DOMString            archive;
           attribute  DOMString            border;
           attribute  DOMString            codeBase;
           attribute  DOMString            codeType;
           attribute  DOMString            data;
           attribute  boolean              declare;
           attribute  DOMString            height;
           attribute  DOMString            hspace;
           attribute  DOMString            name;
           attribute  DOMString            standby;
           attribute  long                 tabIndex;
           attribute  DOMString            type;
           attribute  DOMString            useMap;
           attribute  DOMString            vspace;
           attribute  DOMString            width;
};

interface HTMLParamElement : HTMLElement {
           attribute  DOMString            name;
           attribute  DOMString            type;
           attribute  DOMString            value;
           attribute  DOMString            valueType;
};

interface HTMLAppletElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            alt;
           attribute  DOMString            archive;
           attribute  DOMString            code;
           attribute  DOMString            codeBase;
           attribute  DOMString            height;
           attribute  DOMString            hspace;
```


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```
           attribute  DOMString            name;
           attribute  DOMString            object;
           attribute  DOMString            vspace;
           attribute  DOMString            width;
};

interface HTMLMapElement : HTMLElement {
  readonly attribute  HTMLCollection       areas;
           attribute  DOMString            name;
};

interface HTMLAreaElement : HTMLElement {
           attribute  DOMString            accessKey;
           attribute  DOMString            alt;
           attribute  DOMString            coords;
           attribute  DOMString            href;
           attribute  boolean              noHref;
           attribute  DOMString            shape;
           attribute  long                 tabIndex;
           attribute  DOMString            target;
};

interface HTMLScriptElement : HTMLElement {
           attribute  DOMString            text;
           attribute  DOMString            htmlFor;
           attribute  DOMString            event;
           attribute  DOMString            charset;
           attribute  boolean              defer;
           attribute  DOMString            src;
           attribute  DOMString            type;
};

interface HTMLTableElement : HTMLElement {
           attribute  HTMLTableCaptionElement caption;
           attribute  HTMLTableSectionElement tHead;
           attribute  HTMLTableSectionElement tFoot;
  readonly attribute  HTMLCollection       rows;
  readonly attribute  HTMLCollection       tBodies;
           attribute  DOMString            align;
           attribute  DOMString            bgColor;
           attribute  DOMString            border;
           attribute  DOMString            cellPadding;
           attribute  DOMString            cellSpacing;
           attribute  DOMString            frame;
           attribute  DOMString            rules;
           attribute  DOMString            summary;
           attribute  DOMString            width;
  HTMLElement               createTHead();
  void                      deleteTHead();
  HTMLElement               createTFoot();
  void                      deleteTFoot();
  HTMLElement               createCaption();
  void                      deleteCaption();
  HTMLElement               insertRow(in long index);
  void                      deleteRow(in long index);
};
```


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```
interface HTMLTableCaptionElement : HTMLElement {
           attribute  DOMString            align;
};

interface HTMLTableColElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            ch;
           attribute  DOMString            chOff;
           attribute  long                 span;
           attribute  DOMString            vAlign;
           attribute  DOMString            width;
};

interface HTMLTableSectionElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            ch;
           attribute  DOMString            chOff;
           attribute  DOMString            vAlign;
  readonly attribute  HTMLCollection       rows;
  HTMLElement               insertRow(in long index);
  void                      deleteRow(in long index);
};

interface HTMLTableRowElement : HTMLElement {
           attribute  long                 rowIndex;
           attribute  long                 sectionRowIndex;
           attribute  HTMLCollection       cells;
           attribute  DOMString            align;
           attribute  DOMString            bgColor;
           attribute  DOMString            ch;
           attribute  DOMString            chOff;
           attribute  DOMString            vAlign;
  HTMLElement               insertCell(in long index);
  void                      deleteCell(in long index);
};

interface HTMLTableCellElement : HTMLElement {
           attribute  long                 cellIndex;
           attribute  DOMString            abbr;
           attribute  DOMString            align;
           attribute  DOMString            axis;
           attribute  DOMString            bgColor;
           attribute  DOMString            ch;
           attribute  DOMString            chOff;
           attribute  long                 colSpan;
           attribute  DOMString            headers;
           attribute  DOMString            height;
           attribute  boolean              noWrap;
           attribute  long                 rowSpan;
           attribute  DOMString            scope;
           attribute  DOMString            vAlign;
           attribute  DOMString            width;
};

interface HTMLFrameSetElement : HTMLElement {
           attribute  DOMString            cols;
           attribute  DOMString            rows;
```


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```
};

interface HTMLFrameElement : HTMLElement {
           attribute  DOMString            frameBorder;
           attribute  DOMString            longDesc;
           attribute  DOMString            marginHeight;
           attribute  DOMString            marginWidth;
           attribute  DOMString            name;
           attribute  boolean              noResize;
           attribute  DOMString            scrolling;
           attribute  DOMString            src;
};

interface HTMLIFrameElement : HTMLElement {
           attribute  DOMString            align;
           attribute  DOMString            frameBorder;
           attribute  DOMString            height;
           attribute  DOMString            longDesc;
           attribute  DOMString            marginHeight;
           attribute  DOMString            marginWidth;
           attribute  DOMString            name;
           attribute  DOMString            scrolling;
           attribute  DOMString            src;
           attribute  DOMString            width;
};
```


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Appendix D: Java Language Binding

This appendix contains the complete Java binding for the Level 1 Document Object Model. The definitions are divided into Core and HTML.

The Java files are also available as
http://www.w3.org/TR/1998/REC-DOM-Level-1-19981001/java-binding.zip

D.1: Document Object Model Level 1 Core

```
public abstract class DOMException extends RuntimeException {
  public DOMException(short code, String message) {
     super(message);
     this.code = code;
  }
  public short   code;
  // ExceptionCode
  public static final short           INDEX_SIZE_ERR       = 1;
  public static final short           DOMSTRING_SIZE_ERR   = 2;
  public static final short           HIERARCHY_REQUEST_ERR = 3;
  public static final short           WRONG_DOCUMENT_ERR   = 4;
  public static final short           INVALID_CHARACTER_ERR = 5;
  public static final short           NO_DATA_ALLOWED_ERR  = 6;
  public static final short           NO_MODIFICATION_ALLOWED_ERR = 7;
  public static final short           NOT_FOUND_ERR        = 8;
  public static final short           NOT_SUPPORTED_ERR    = 9;
  public static final short           INUSE_ATTRIBUTE_ERR  = 10;

}

// ExceptionCode
public static final short           INDEX_SIZE_ERR       = 1;
public static final short           DOMSTRING_SIZE_ERR   = 2;
public static final short           HIERARCHY_REQUEST_ERR = 3;
public static final short           WRONG_DOCUMENT_ERR   = 4;
public static final short           INVALID_CHARACTER_ERR = 5;
public static final short           NO_DATA_ALLOWED_ERR  = 6;
public static final short           NO_MODIFICATION_ALLOWED_ERR = 7;
public static final short           NOT_FOUND_ERR        = 8;
public static final short           NOT_SUPPORTED_ERR    = 9;
public static final short           INUSE_ATTRIBUTE_ERR  = 10;

}

public interface DOMImplementation {
  public boolean            hasFeature(String feature,
                                       String version);
}

public interface DocumentFragment extends Node {
}

public interface Document extends Node {
  public DocumentType       getDoctype();
```


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```
  public DOMImplementation  getImplementation();
  public Element            getDocumentElement();
  public Element            createElement(String tagName)
                                          throws DOMException;
  public DocumentFragment   createDocumentFragment();
  public Text               createTextNode(String data);
  public Comment            createComment(String data);
  public CDATASection       createCDATASection(String data)
                                                 throws DOMException;
  public ProcessingInstruction createProcessingInstruction(String target,
                                                           String data)
                                                           throws DOMException;
  public Attr               createAttribute(String name)
                                           throws DOMException;
  public EntityReference    createEntityReference(String name)
                                                  throws DOMException;
  public NodeList           getElementsByTagName(String tagname);
}

public interface Node {
  // NodeType
  public static final short           ELEMENT_NODE         = 1;
  public static final short           ATTRIBUTE_NODE       = 2;
  public static final short           TEXT_NODE            = 3;
  public static final short           CDATA_SECTION_NODE   = 4;
  public static final short           ENTITY_REFERENCE_NODE = 5;
  public static final short           ENTITY_NODE          = 6;
  public static final short           PROCESSING_INSTRUCTION_NODE = 7;
  public static final short           COMMENT_NODE         = 8;
  public static final short           DOCUMENT_NODE        = 9;
  public static final short           DOCUMENT_TYPE_NODE   = 10;
  public static final short           DOCUMENT_FRAGMENT_NODE = 11;
  public static final short           NOTATION_NODE        = 12;

  public String             getNodeName();
  public String             getNodeValue()
                                            throws DOMException;
  public void               setNodeValue(String nodeValue)
                                            throws DOMException;
  public short              getNodeType();
  public Node               getParentNode();
  public NodeList           getChildNodes();
  public Node               getFirstChild();
  public Node               getLastChild();
  public Node               getPreviousSibling();
  public Node               getNextSibling();
  public NamedNodeMap       getAttributes();
  public Document           getOwnerDocument();
  public Node               insertBefore(Node newChild,
                                         Node refChild)
                                         throws DOMException;
  public Node               replaceChild(Node newChild,
                                         Node oldChild)
                                         throws DOMException;
  public Node               removeChild(Node oldChild)
                                        throws DOMException;
  public Node               appendChild(Node newChild)
```


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```
                                        throws DOMException;
  public boolean            hasChildNodes();
  public Node               cloneNode(boolean deep);
}

public interface NodeList {
  public Node               item(int index);
  public int                getLength();
}

public interface NamedNodeMap {
  public Node               getNamedItem(String name);
  public Node               setNamedItem(Node arg)
                                         throws DOMException;
  public Node               removeNamedItem(String name)
                                            throws DOMException;
  public Node               item(int index);
  public int                getLength();
}

public interface CharacterData extends Node {
  public String             getData()
                                 throws DOMException;
  public void               setData(String data)
                                 throws DOMException;
  public int                getLength();
  public String             substringData(int offset,
                                          int count)
                                          throws DOMException;
  public void               appendData(String arg)
                                       throws DOMException;
  public void               insertData(int offset,
                                       String arg)
                                       throws DOMException;
  public void               deleteData(int offset,
                                       int count)
                                       throws DOMException;
  public void               replaceData(int offset,
                                        int count,
                                        String arg)
                                        throws DOMException;
}

public interface Attr extends Node {
  public String             getName();
  public boolean            getSpecified();
  public String             getValue();
  public void               setValue(String value);
}

public interface Element extends Node {
  public String             getTagName();
  public String             getAttribute(String name);
  public void               setAttribute(String name,
                                         String value)
                                         throws DOMException;
  public void               removeAttribute(String name)
```


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```
                                        throws DOMException;
  public Attr               getAttributeNode(String name);
  public Attr               setAttributeNode(Attr newAttr)
                                         throws DOMException;
  public Attr               removeAttributeNode(Attr oldAttr)
                                            throws DOMException;
  public NodeList           getElementsByTagName(String name);
  public void               normalize();
}

public interface Text extends CharacterData {
  public Text               splitText(int offset)
                                      throws DOMException;
}

public interface Comment extends CharacterData {
}

public interface CDATASection extends Text {
}

public interface DocumentType extends Node {
  public String             getName();
  public NamedNodeMap       getEntities();
  public NamedNodeMap       getNotations();
}

public interface Notation extends Node {
  public String             getPublicId();
  public String             getSystemId();
}

public interface Entity extends Node {
  public String             getPublicId();
  public String             getSystemId();
  public String             getNotationName();
}

public interface EntityReference extends Node {
}

public interface ProcessingInstruction extends Node {
  public String             getTarget();
  public String             getData();
  public void               setData(String data)
                                      throws DOMException;
}
```

D.2: Document Object Model Level 1 HTML

```
public interface HTMLCollection {
  public int                getLength();
  public Node               item(int index);
  public Node               namedItem(String name);
}
```


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```
public interface HTMLDocument extends Document {
  public String             getTitle();
  public void               setTitle(String title);
  public String             getReferrer();
  public String             getDomain();
  public String             getURL();
  public HTMLElement        getBody();
  public void               setBody(HTMLElement body);
  public HTMLCollection     getImages();
  public HTMLCollection     getApplets();
  public HTMLCollection     getLinks();
  public HTMLCollection     getForms();
  public HTMLCollection     getAnchors();
  public String             getCookie();
  public void               setCookie(String cookie);
  public void               open();
  public void               close();
  public void               write(String text);
  public void               writeln(String text);
  public Element            getElementById(String elementId);
  public NodeList           getElementsByName(String elementName);
}

public interface HTMLElement extends Element {
  public String             getId();
  public void               setId(String id);
  public String             getTitle();
  public void               setTitle(String title);
  public String             getLang();
  public void               setLang(String lang);
  public String             getDir();
  public void               setDir(String dir);
  public String             getClassName();
  public void               setClassName(String className);
}

public interface HTMLHtmlElement extends HTMLElement {
  public String             getVersion();
  public void               setVersion(String version);
}

public interface HTMLHeadElement extends HTMLElement {
  public String             getProfile();
  public void               setProfile(String profile);
}

public interface HTMLLinkElement extends HTMLElement {
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public String             getCharset();
  public void               setCharset(String charset);
  public String             getHref();
  public void               setHref(String href);
  public String             getHreflang();
  public void               setHreflang(String hreflang);
  public String             getMedia();
  public void               setMedia(String media);
```


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```
  public String             getRel();
  public void               setRel(String rel);
  public String             getRev();
  public void               setRev(String rev);
  public String             getTarget();
  public void               setTarget(String target);
  public String             getType();
  public void               setType(String type);
}

public interface HTMLTitleElement extends HTMLElement {
  public String             getText();
  public void               setText(String text);
}

public interface HTMLMetaElement extends HTMLElement {
  public String             getContent();
  public void               setContent(String content);
  public String             getHttpEquiv();
  public void               setHttpEquiv(String httpEquiv);
  public String             getName();
  public void               setName(String name);
  public String             getScheme();
  public void               setScheme(String scheme);
}

public interface HTMLBaseElement extends HTMLElement {
  public String             getHref();
  public void               setHref(String href);
  public String             getTarget();
  public void               setTarget(String target);
}

public interface HTMLIsIndexElement extends HTMLElement {
  public HTMLFormElement    getForm();
  public String             getPrompt();
  public void               setPrompt(String prompt);
}

public interface HTMLStyleElement extends HTMLElement {
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public String             getMedia();
  public void               setMedia(String media);
  public String             getType();
  public void               setType(String type);
}

public interface HTMLBodyElement extends HTMLElement {
  public String             getALink();
  public void               setALink(String aLink);
  public String             getBackground();
  public void               setBackground(String background);
  public String             getBgColor();
  public void               setBgColor(String bgColor);
  public String             getLink();
  public void               setLink(String link);
```


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```
  public String             getText();
  public void               setText(String text);
  public String             getVLink();
  public void               setVLink(String vLink);
}

public interface HTMLFormElement extends HTMLElement {
  public HTMLCollection     getElements();
  public int                getLength();
  public String             getName();
  public void               setName(String name);
  public String             getAcceptCharset();
  public void               setAcceptCharset(String acceptCharset);
  public String             getAction();
  public void               setAction(String action);
  public String             getEnctype();
  public void               setEnctype(String enctype);
  public String             getMethod();
  public void               setMethod(String method);
  public String             getTarget();
  public void               setTarget(String target);
  public void               submit();
  public void               reset();
}

public interface HTMLSelectElement extends HTMLElement {
  public String             getType();
  public int                getSelectedIndex();
  public void               setSelectedIndex(int selectedIndex);
  public String             getValue();
  public void               setValue(String value);
  public int                getLength();
  public HTMLFormElement    getForm();
  public HTMLCollection     getOptions();
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public boolean            getMultiple();
  public void               setMultiple(boolean multiple);
  public String             getName();
  public void               setName(String name);
  public int                getSize();
  public void               setSize(int size);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public void               add(HTMLElement element,
                                HTMLElement before);
  public void               remove(int index);
  public void               blur();
  public void               focus();
}

public interface HTMLOptGroupElement extends HTMLElement {
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public String             getLabel();
  public void               setLabel(String label);
}
```


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```
public interface HTMLOptionElement extends HTMLElement {
  public HTMLFormElement    getForm();
  public boolean            getDefaultSelected();
  public void               setDefaultSelected(boolean defaultSelected);
  public String             getText();
  public int                getIndex();
  public void               setIndex(int index);
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public String             getLabel();
  public void               setLabel(String label);
  public boolean            getSelected();
  public String             getValue();
  public void               setValue(String value);
}

public interface HTMLInputElement extends HTMLElement {
  public String             getDefaultValue();
  public void               setDefaultValue(String defaultValue);
  public boolean            getDefaultChecked();
  public void               setDefaultChecked(boolean defaultChecked);
  public HTMLFormElement    getForm();
  public String             getAccept();
  public void               setAccept(String accept);
  public String             getAccessKey();
  public void               setAccessKey(String accessKey);
  public String             getAlign();
  public void               setAlign(String align);
  public String             getAlt();
  public void               setAlt(String alt);
  public boolean            getChecked();
  public void               setChecked(boolean checked);
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public int                getMaxLength();
  public void               setMaxLength(int maxLength);
  public String             getName();
  public void               setName(String name);
  public boolean            getReadOnly();
  public void               setReadOnly(boolean readOnly);
  public String             getSize();
  public void               setSize(String size);
  public String             getSrc();
  public void               setSrc(String src);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public String             getType();
  public String             getUseMap();
  public void               setUseMap(String useMap);
  public String             getValue();
  public void               setValue(String value);
  public void               blur();
  public void               focus();
  public void               select();
  public void               click();
}
```


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```
public interface HTMLTextAreaElement extends HTMLElement {
  public String             getDefaultValue();
  public void               setDefaultValue(String defaultValue);
  public HTMLFormElement    getForm();
  public String             getAccessKey();
  public void               setAccessKey(String accessKey);
  public int                getCols();
  public void               setCols(int cols);
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public String             getName();
  public void               setName(String name);
  public boolean            getReadOnly();
  public void               setReadOnly(boolean readOnly);
  public int                getRows();
  public void               setRows(int rows);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public String             getType();
  public String             getValue();
  public void               setValue(String value);
  public void               blur();
  public void               focus();
  public void               select();
}

public interface HTMLButtonElement extends HTMLElement {
  public HTMLFormElement    getForm();
  public String             getAccessKey();
  public void               setAccessKey(String accessKey);
  public boolean            getDisabled();
  public void               setDisabled(boolean disabled);
  public String             getName();
  public void               setName(String name);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public String             getType();
  public String             getValue();
  public void               setValue(String value);
}

public interface HTMLLabelElement extends HTMLElement {
  public HTMLFormElement    getForm();
  public String             getAccessKey();
  public void               setAccessKey(String accessKey);
  public String             getHtmlFor();
  public void               setHtmlFor(String htmlFor);
}

public interface HTMLFieldSetElement extends HTMLElement {
  public HTMLFormElement    getForm();
}

public interface HTMLLegendElement extends HTMLElement {
  public HTMLFormElement    getForm();
  public String             getAccessKey();
```


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```
  public void               setAccessKey(String accessKey);
  public String             getAlign();
  public void               setAlign(String align);
}

public interface HTMLUListElement extends HTMLElement {
  public boolean            getCompact();
  public void               setCompact(boolean compact);
  public String             getType();
  public void               setType(String type);
}

public interface HTMLOListElement extends HTMLElement {
  public boolean            getCompact();
  public void               setCompact(boolean compact);
  public int                getStart();
  public void               setStart(int start);
  public String             getType();
  public void               setType(String type);
}

public interface HTMLDListElement extends HTMLElement {
  public boolean            getCompact();
  public void               setCompact(boolean compact);
}

public interface HTMLDirectoryElement extends HTMLElement {
  public boolean            getCompact();
  public void               setCompact(boolean compact);
}

public interface HTMLMenuElement extends HTMLElement {
  public boolean            getCompact();
  public void               setCompact(boolean compact);
}

public interface HTMLLIElement extends HTMLElement {
  public String             getType();
  public void               setType(String type);
  public int                getValue();
  public void               setValue(int value);
}

public interface HTMLBlockquoteElement extends HTMLElement {
  public String             getCite();
  public void               setCite(String cite);
}

public interface HTMLDivElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
}

public interface HTMLParagraphElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
}
```


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```
public interface HTMLHeadingElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
}

public interface HTMLQuoteElement extends HTMLElement {
  public String             getCite();
  public void               setCite(String cite);
}

public interface HTMLPreElement extends HTMLElement {
  public int                getWidth();
  public void               setWidth(int width);
}

public interface HTMLBRElement extends HTMLElement {
  public String             getClear();
  public void               setClear(String clear);
}

public interface HTMLBaseFontElement extends HTMLElement {
  public String             getColor();
  public void               setColor(String color);
  public String             getFace();
  public void               setFace(String face);
  public String             getSize();
  public void               setSize(String size);
}

public interface HTMLFontElement extends HTMLElement {
  public String             getColor();
  public void               setColor(String color);
  public String             getFace();
  public void               setFace(String face);
  public String             getSize();
  public void               setSize(String size);
}

public interface HTMLHRElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
  public boolean            getNoShade();
  public void               setNoShade(boolean noShade);
  public String             getSize();
  public void               setSize(String size);
  public String             getWidth();
  public void               setWidth(String width);
}

public interface HTMLModElement extends HTMLElement {
  public String             getCite();
  public void               setCite(String cite);
  public String             getDateTime();
  public void               setDateTime(String dateTime);
}
```


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```
public interface HTMLAnchorElement extends HTMLElement {
  public String             getAccessKey();
  public void               setAccessKey(String accessKey);
  public String             getCharset();
  public void               setCharset(String charset);
  public String             getCoords();
  public void               setCoords(String coords);
  public String             getHref();
  public void               setHref(String href);
  public String             getHreflang();
  public void               setHreflang(String hreflang);
  public String             getName();
  public void               setName(String name);
  public String             getRel();
  public void               setRel(String rel);
  public String             getRev();
  public void               setRev(String rev);
  public String             getShape();
  public void               setShape(String shape);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public String             getTarget();
  public void               setTarget(String target);
  public String             getType();
  public void               setType(String type);
  public void               blur();
  public void               focus();
}

public interface HTMLImageElement extends HTMLElement {
  public String             getLowSrc();
  public void               setLowSrc(String lowSrc);
  public String             getName();
  public void               setName(String name);
  public String             getAlign();
  public void               setAlign(String align);
  public String             getAlt();
  public void               setAlt(String alt);
  public String             getBorder();
  public void               setBorder(String border);
  public String             getHeight();
  public void               setHeight(String height);
  public String             getHspace();
  public void               setHspace(String hspace);
  public boolean            getIsMap();
  public void               setIsMap(boolean isMap);
  public String             getLongDesc();
  public void               setLongDesc(String longDesc);
  public String             getSrc();
  public void               setSrc(String src);
  public String             getUseMap();
  public void               setUseMap(String useMap);
  public String             getVspace();
  public void               setVspace(String vspace);
  public String             getWidth();
  public void               setWidth(String width);
}
```


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```
public interface HTMLObjectElement extends HTMLElement {
  public HTMLFormElement    getForm();
  public String             getCode();
  public void               setCode(String code);
  public String             getAlign();
  public void               setAlign(String align);
  public String             getArchive();
  public void               setArchive(String archive);
  public String             getBorder();
  public void               setBorder(String border);
  public String             getCodeBase();
  public void               setCodeBase(String codeBase);
  public String             getCodeType();
  public void               setCodeType(String codeType);
  public String             getData();
  public void               setData(String data);
  public boolean            getDeclare();
  public void               setDeclare(boolean declare);
  public String             getHeight();
  public void               setHeight(String height);
  public String             getHspace();
  public void               setHspace(String hspace);
  public String             getName();
  public void               setName(String name);
  public String             getStandby();
  public void               setStandby(String standby);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public String             getType();
  public void               setType(String type);
  public String             getUseMap();
  public void               setUseMap(String useMap);
  public String             getVspace();
  public void               setVspace(String vspace);
  public String             getWidth();
  public void               setWidth(String width);
}

public interface HTMLParamElement extends HTMLElement {
  public String             getName();
  public void               setName(String name);
  public String             getType();
  public void               setType(String type);
  public String             getValue();
  public void               setValue(String value);
  public String             getValueType();
  public void               setValueType(String valueType);
}

public interface HTMLAppletElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
  public String             getAlt();
  public void               setAlt(String alt);
  public String             getArchive();
  public void               setArchive(String archive);
```


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```
  public String             getCode();
  public void               setCode(String code);
  public String             getCodeBase();
  public void               setCodeBase(String codeBase);
  public String             getHeight();
  public void               setHeight(String height);
  public String             getHspace();
  public void               setHspace(String hspace);
  public String             getName();
  public void               setName(String name);
  public String             getObject();
  public void               setObject(String object);
  public String             getVspace();
  public void               setVspace(String vspace);
  public String             getWidth();
  public void               setWidth(String width);
}

public interface HTMLMapElement extends HTMLElement {
  public HTMLCollection     getAreas();
  public String             getName();
  public void               setName(String name);
}

public interface HTMLAreaElement extends HTMLElement {
  public String             getAccessKey();
  public void               setAccessKey(String accessKey);
  public String             getAlt();
  public void               setAlt(String alt);
  public String             getCoords();
  public void               setCoords(String coords);
  public String             getHref();
  public void               setHref(String href);
  public boolean            getNoHref();
  public void               setNoHref(boolean noHref);
  public String             getShape();
  public void               setShape(String shape);
  public int                getTabIndex();
  public void               setTabIndex(int tabIndex);
  public String             getTarget();
  public void               setTarget(String target);
}

public interface HTMLScriptElement extends HTMLElement {
  public String             getText();
  public void               setText(String text);
  public String             getHtmlFor();
  public void               setHtmlFor(String htmlFor);
  public String             getEvent();
  public void               setEvent(String event);
  public String             getCharset();
  public void               setCharset(String charset);
  public boolean            getDefer();
  public void               setDefer(boolean defer);
  public String             getSrc();
  public void               setSrc(String src);
  public String             getType();
```


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```
  public void               setType(String type);
}

public interface HTMLTableElement extends HTMLElement {
  public HTMLTableCaptionElement getCaption();
  public void               setCaption(HTMLTableCaptionElement caption);
  public HTMLTableSectionElement getTHead();
  public void               setTHead(HTMLTableSectionElement tHead);
  public HTMLTableSectionElement getTFoot();
  public void               setTFoot(HTMLTableSectionElement tFoot);
  public HTMLCollection     getRows();
  public HTMLCollection     getTBodies();
  public String             getAlign();
  public void               setAlign(String align);
  public String             getBgColor();
  public void               setBgColor(String bgColor);
  public String             getBorder();
  public void               setBorder(String border);
  public String             getCellPadding();
  public void               setCellPadding(String cellPadding);
  public String             getCellSpacing();
  public void               setCellSpacing(String cellSpacing);
  public String             getFrame();
  public void               setFrame(String frame);
  public String             getRules();
  public void               setRules(String rules);
  public String             getSummary();
  public void               setSummary(String summary);
  public String             getWidth();
  public void               setWidth(String width);
  public HTMLElement        createTHead();
  public void               deleteTHead();
  public HTMLElement        createTFoot();
  public void               deleteTFoot();
  public HTMLElement        createCaption();
  public void               deleteCaption();
  public HTMLElement        insertRow(int index);
  public void               deleteRow(int index);
}

public interface HTMLTableCaptionElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
}

public interface HTMLTableColElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
  public String             getCh();
  public void               setCh(String ch);
  public String             getChOff();
  public void               setChOff(String chOff);
  public int                getSpan();
  public void               setSpan(int span);
  public String             getVAlign();
  public void               setVAlign(String vAlign);
  public String             getWidth();
```


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```
  public void               setWidth(String width);
}

public interface HTMLTableSectionElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
  public String             getCh();
  public void               setCh(String ch);
  public String             getChOff();
  public void               setChOff(String chOff);
  public String             getVAlign();
  public void               setVAlign(String vAlign);
  public HTMLCollection     getRows();
  public HTMLElement        insertRow(int index);
  public void               deleteRow(int index);
}

public interface HTMLTableRowElement extends HTMLElement {
  public int                getRowIndex();
  public void               setRowIndex(int rowIndex);
  public int                getSectionRowIndex();
  public void               setSectionRowIndex(int sectionRowIndex);
  public HTMLCollection     getCells();
  public void               setCells(HTMLCollection cells);
  public String             getAlign();
  public void               setAlign(String align);
  public String             getBgColor();
  public void               setBgColor(String bgColor);
  public String             getCh();
  public void               setCh(String ch);
  public String             getChOff();
  public void               setChOff(String chOff);
  public String             getVAlign();
  public void               setVAlign(String vAlign);
  public HTMLElement        insertCell(int index);
  public void               deleteCell(int index);
}

public interface HTMLTableCellElement extends HTMLElement {
  public int                getCellIndex();
  public void               setCellIndex(int cellIndex);
  public String             getAbbr();
  public void               setAbbr(String abbr);
  public String             getAlign();
  public void               setAlign(String align);
  public String             getAxis();
  public void               setAxis(String axis);
  public String             getBgColor();
  public void               setBgColor(String bgColor);
  public String             getCh();
  public void               setCh(String ch);
  public String             getChOff();
  public void               setChOff(String chOff);
  public int                getColSpan();
  public void               setColSpan(int colSpan);
  public String             getHeaders();
  public void               setHeaders(String headers);
```


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```
  public String             getHeight();
  public void               setHeight(String height);
  public boolean            getNoWrap();
  public void               setNoWrap(boolean noWrap);
  public int                getRowSpan();
  public void               setRowSpan(int rowSpan);
  public String             getScope();
  public void               setScope(String scope);
  public String             getVAlign();
  public void               setVAlign(String vAlign);
  public String             getWidth();
  public void               setWidth(String width);
}

public interface HTMLFrameSetElement extends HTMLElement {
  public String             getCols();
  public void               setCols(String cols);
  public String             getRows();
  public void               setRows(String rows);
}

public interface HTMLFrameElement extends HTMLElement {
  public String             getFrameBorder();
  public void               setFrameBorder(String frameBorder);
  public String             getLongDesc();
  public void               setLongDesc(String longDesc);
  public String             getMarginHeight();
  public void               setMarginHeight(String marginHeight);
  public String             getMarginWidth();
  public void               setMarginWidth(String marginWidth);
  public String             getName();
  public void               setName(String name);
  public boolean            getNoResize();
  public void               setNoResize(boolean noResize);
  public String             getScrolling();
  public void               setScrolling(String scrolling);
  public String             getSrc();
  public void               setSrc(String src);
}

public interface HTMLIFrameElement extends HTMLElement {
  public String             getAlign();
  public void               setAlign(String align);
  public String             getFrameBorder();
  public void               setFrameBorder(String frameBorder);
  public String             getHeight();
  public void               setHeight(String height);
  public String             getLongDesc();
  public void               setLongDesc(String longDesc);
  public String             getMarginHeight();
  public void               setMarginHeight(String marginHeight);
  public String             getMarginWidth();
  public void               setMarginWidth(String marginWidth);
  public String             getName();
  public void               setName(String name);
  public String             getScrolling();
  public void               setScrolling(String scrolling);
```


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```
  public String             getSrc();
  public void               setSrc(String src);
  public String             getWidth();
  public void               setWidth(String width);
}
```


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Appendix E: ECMA Script Language Binding

This appendix contains the complete ECMA Script binding for the Level 1 Document Object Model definitions. The definitions are divided into Core and HTML.

E.1: Document Object Model Level 1 Core

Object **DOMException**
Object **ExceptionCode**
Object **DOMImplementation**

The **DOMImplementation** object has the following methods:

hasFeature(feature, version)

This method returns a **boolean**. The **feature** parameter is of type **DOMString**. The **version** parameter is of type **DOMString**.

Object **DocumentFragment**

DocumentFragment has the all the properties and methods of **Node** as well as the properties and methods defined below.

Object **Document**

Document has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **Document** object has the following properties:

doctype

This property is of type **DocumentType**.

implementation

This property is of type **DOMImplementation**.

documentElement

This property is of type **Element**.

The **Document** object has the following methods:

createElement(tagName)

This method returns a **Element**. The **tagName** parameter is of type **DOMString**.

createDocumentFragment()

This method returns a **DocumentFragment**.

createTextNode(data)

This method returns a **Text**. The **data** parameter is of type **DOMString**.

createComment(data)

This method returns a **Comment**. The **data** parameter is of type **DOMString**.

createCDATASection(data)

This method returns a **CDATASection**. The **data** parameter is of type **DOMString**.

createProcessingInstruction(target, data)

This method returns a **ProcessingInstruction**. The **target** parameter is of type **DOMString**. The **data** parameter is of type **DOMString**.

createAttribute(name)

This method returns a **Attr**. The **name** parameter is of type **DOMString**.

createEntityReference(name)

This method returns a **EntityReference**. The **name** parameter is of type **DOMString**.

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getElementsByTagName(tagname)
This method returns a **NodeList**. The **tagname** parameter is of type **DOMString**.

Object **Node**

The **Node** object has the following properties:

nodeName
This property is of type **String**.

nodeValue
This property is of type **String**.

nodeType
This property is of type **short**.

parentNode
This property is of type **Node**.

childNodes
This property is of type **NodeList**.

firstChild
This property is of type **Node**.

lastChild
This property is of type **Node**.

previousSibling
This property is of type **Node**.

nextSibling
This property is of type **Node**.

attributes
This property is of type **NamedNodeMap**.

ownerDocument
This property is of type **Document**.

The **Node** object has the following methods:

insertBefore(newChild, refChild)
This method returns a **Node**. The **newChild** parameter is of type **Node**. The **refChild** parameter is of type **Node**.

replaceChild(newChild, oldChild)
This method returns a **Node**. The **newChild** parameter is of type **Node**. The **oldChild** parameter is of type **Node**.

removeChild(oldChild)
This method returns a **Node**. The **oldChild** parameter is of type **Node**.

appendChild(newChild)
This method returns a **Node**. The **newChild** parameter is of type **Node**.

hasChildNodes()
This method returns a **boolean**.

cloneNode(deep)
This method returns a **Node**. The **deep** parameter is of type **boolean**.

Object **NodeList**

The **NodeList** object has the following properties:

length
This property is of type **int**.

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The **NodeList** object has the following methods:

item(index)

This method returns a **Node**. The **index** parameter is of type **unsigned long**.

Object **NamedNodeMap**

The **NamedNodeMap** object has the following properties:

length

This property is of type **int**.

The **NamedNodeMap** object has the following methods:

getNamedItem(name)

This method returns a **Node**. The **name** parameter is of type **DOMString**.

setNamedItem(arg)

This method returns a **Node**. The **arg** parameter is of type **Node**.

removeNamedItem(name)

This method returns a **Node**. The **name** parameter is of type **DOMString**.

item(index)

This method returns a **Node**. The **index** parameter is of type **unsigned long**.

Object **CharacterData**

CharacterData has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **CharacterData** object has the following properties:

data

This property is of type **String**.

length

This property is of type **int**.

The **CharacterData** object has the following methods:

substringData(offset, count)

This method returns a **DOMString**. The **offset** parameter is of type **unsigned long**. The **count** parameter is of type **unsigned long**.

appendData(arg)

This method returns a **void**. The **arg** parameter is of type **DOMString**.

insertData(offset, arg)

This method returns a **void**. The **offset** parameter is of type **unsigned long**. The **arg** parameter is of type **DOMString**.

deleteData(offset, count)

This method returns a **void**. The **offset** parameter is of type **unsigned long**. The **count** parameter is of type **unsigned long**.

replaceData(offset, count, arg)

This method returns a **void**. The **offset** parameter is of type **unsigned long**. The **count** parameter is of type **unsigned long**. The **arg** parameter is of type **DOMString**.

Object **Attr**

Attr has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **Attr** object has the following properties:

name

This property is of type **String**.

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specified
This property is of type **boolean**.
value
This property is of type **String**.

Object **Element**

Element has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **Element** object has the following properties:

tagName
This property is of type **String**.

The **Element** object has the following methods:

getAttribute(name)
This method returns a **DOMString**. The **name** parameter is of type **DOMString**.
setAttribute(name, value)
This method returns a **void**. The **name** parameter is of type **DOMString**. The **value** parameter is of type **DOMString**.
removeAttribute(name)
This method returns a **void**. The **name** parameter is of type **DOMString**.
getAttributeNode(name)
This method returns a **Attr**. The **name** parameter is of type **DOMString**.
setAttributeNode(newAttr)
This method returns a **Attr**. The **newAttr** parameter is of type **Attr**.
removeAttributeNode(oldAttr)
This method returns a **Attr**. The **oldAttr** parameter is of type **Attr**.
getElementsByTagName(name)
This method returns a **NodeList**. The **name** parameter is of type **DOMString**.
normalize()
This method returns a **void**.

Object **Text**

Text has the all the properties and methods of **CharacterData** as well as the properties and methods defined below.

The **Text** object has the following methods:

splitText(offset)
This method returns a **Text**. The **offset** parameter is of type **unsigned long**.

Object **Comment**

Comment has the all the properties and methods of **CharacterData** as well as the properties and methods defined below.

Object **CDATASection**

CDATASection has the all the properties and methods of **Text** as well as the properties and methods defined below.

Object **DocumentType**

DocumentType has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **DocumentType** object has the following properties:

name
This property is of type **String**.

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entities
This property is of type **NamedNodeMap**.
notations
This property is of type **NamedNodeMap**.

Object **Notation**

Notation has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **Notation** object has the following properties:

publicId
This property is of type **String**.
systemId
This property is of type **String**.

Object **Entity**

Entity has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **Entity** object has the following properties:

publicId
This property is of type **String**.
systemId
This property is of type **String**.
notationName
This property is of type **String**.

Object **EntityReference**

EntityReference has the all the properties and methods of **Node** as well as the properties and methods defined below.

Object **ProcessingInstruction**

ProcessingInstruction has the all the properties and methods of **Node** as well as the properties and methods defined below.

The **ProcessingInstruction** object has the following properties:

target
This property is of type **String**.
data
This property is of type **String**.

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Object **HTMLCollection**

The **HTMLCollection** object has the following properties:

length
This property is of type **int**.

The **HTMLCollection** object has the following methods:

item(index)
This method returns a **Node**. The **index** parameter is of type **unsigned long**.
namedItem(name)
This method returns a **Node**. The **name** parameter is of type **DOMString**.

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Object **HTMLDocument**

HTMLDocument has the all the properties and methods of **Document** as well as the properties and methods defined below.

The **HTMLDocument** object has the following properties:

title

This property is of type **String**.

referrer

This property is of type **String**.

domain

This property is of type **String**.

URL

This property is of type **String**.

body

This property is of type **HTMLElement**.

images

This property is of type **HTMLCollection**.

applets

This property is of type **HTMLCollection**.

links

This property is of type **HTMLCollection**.

forms

This property is of type **HTMLCollection**.

anchors

This property is of type **HTMLCollection**.

cookie

This property is of type **String**.

The **HTMLDocument** object has the following methods:

open()

This method returns a **void**.

close()

This method returns a **void**.

write(text)

This method returns a **void**. The **text** parameter is of type **DOMString**.

writeln(text)

This method returns a **void**. The **text** parameter is of type **DOMString**.

getElementById(elementId)

This method returns a **Element**. The **elementId** parameter is of type **DOMString**.

getElementsByName(elementName)

This method returns a **NodeList**. The **elementName** parameter is of type **DOMString**.

Object **HTMLElement**

HTMLElement has the all the properties and methods of **Element** as well as the properties and methods defined below.

The **HTMLElement** object has the following properties:

id

This property is of type **String**.

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title
This property is of type **String**.
lang
This property is of type **String**.
dir
This property is of type **String**.
className
This property is of type **String**.

Object **HTMLHtmlElement**

HTMLHtmlElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLHtmlElement** object has the following properties:

version
This property is of type **String**.

Object **HTMLHeadElement**

HTMLHeadElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLHeadElement** object has the following properties:

profile
This property is of type **String**.

Object **HTMLLinkElement**

HTMLLinkElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLLinkElement** object has the following properties:

disabled
This property is of type **boolean**.
charset
This property is of type **String**.
href
This property is of type **String**.
hreflang
This property is of type **String**.
media
This property is of type **String**.
rel
This property is of type **String**.
rev
This property is of type **String**.
target
This property is of type **String**.
type
This property is of type **String**.

Object **HTMLTitleElement**

HTMLTitleElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

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The **HTMLTitleElement** object has the following properties:

text

This property is of type **String**.

Object **HTMLMetaElement**

HTMLMetaElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLMetaElement** object has the following properties:

content

This property is of type **String**.

httpEquiv

This property is of type **String**.

name

This property is of type **String**.

scheme

This property is of type **String**.

Object **HTMLBaseElement**

HTMLBaseElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLBaseElement** object has the following properties:

href

This property is of type **String**.

target

This property is of type **String**.

Object **HTMLIsIndexElement**

HTMLIsIndexElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLIsIndexElement** object has the following properties:

form

This property is of type **HTMLFormElement**.

prompt

This property is of type **String**.

Object **HTMLStyleElement**

HTMLStyleElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLStyleElement** object has the following properties:

disabled

This property is of type **boolean**.

media

This property is of type **String**.

type

This property is of type **String**.

Object **HTMLBodyElement**

HTMLBodyElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLBodyElement** object has the following properties:

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aLink
This property is of type **String**.
background
This property is of type **String**.
bgColor
This property is of type **String**.
link
This property is of type **String**.
text
This property is of type **String**.
vLink
This property is of type **String**.

Object **HTMLFormElement**

HTMLFormElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLFormElement** object has the following properties:

elements
This property is of type **HTMLCollection**.
length
This property is of type **long**.
name
This property is of type **String**.
acceptCharset
This property is of type **String**.
action
This property is of type **String**.
enctype
This property is of type **String**.
method
This property is of type **String**.
target
This property is of type **String**.

The **HTMLFormElement** object has the following methods:

submit()
This method returns a **void**.
reset()
This method returns a **void**.

Object **HTMLSelectElement**

HTMLSelectElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLSelectElement** object has the following properties:

type
This property is of type **String**.
selectedIndex
This property is of type **long**.

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value
This property is of type **String**.
length
This property is of type **long**.
form
This property is of type **HTMLFormElement**.
options
This property is of type **HTMLCollection**.
disabled
This property is of type **boolean**.
multiple
This property is of type **boolean**.
name
This property is of type **String**.
size
This property is of type **long**.
tabIndex
This property is of type **long**.

The **HTMLSelectElement** object has the following methods:

add(element, before)
This method returns a **void**. The **element** parameter is of type **HTMLElement**. The **before** parameter is of type **HTMLElement**.
remove(index)
This method returns a **void**. The **index** parameter is of type **long**.
blur()
This method returns a **void**.
focus()
This method returns a **void**.

Object **HTMLOptGroupElement**

HTMLOptGroupElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLOptGroupElement** object has the following properties:

disabled
This property is of type **boolean**.
label
This property is of type **String**.

Object **HTMLOptionElement**

HTMLOptionElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLOptionElement** object has the following properties:

form
This property is of type **HTMLFormElement**.
defaultSelected
This property is of type **boolean**.
text
This property is of type **String**.

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index
This property is of type **long**.
disabled
This property is of type **boolean**.
label
This property is of type **String**.
selected
This property is of type **boolean**.
value
This property is of type **String**.

Object **HTMLInputElement**

HTMLInputElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLInputElement** object has the following properties:

defaultValue
This property is of type **String**.
defaultChecked
This property is of type **boolean**.
form
This property is of type **HTMLFormElement**.
accept
This property is of type **String**.
accessKey
This property is of type **String**.
align
This property is of type **String**.
alt
This property is of type **String**.
checked
This property is of type **boolean**.
disabled
This property is of type **boolean**.
maxLength
This property is of type **long**.
name
This property is of type **String**.
readOnly
This property is of type **boolean**.
size
This property is of type **String**.
src
This property is of type **String**.
tabIndex
This property is of type **long**.
type
This property is of type **String**.

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useMap
This property is of type **String**.
value
This property is of type **String**.

The **HTMLInputElement** object has the following methods:
blur()
This method returns a **void**.
focus()
This method returns a **void**.
select()
This method returns a **void**.
click()
This method returns a **void**.

Object **HTMLTextAreaElement**

HTMLTextAreaElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTextAreaElement** object has the following properties:
defaultValue
This property is of type **String**.
form
This property is of type **HTMLFormElement**.
accessKey
This property is of type **String**.
cols
This property is of type **long**.
disabled
This property is of type **boolean**.
name
This property is of type **String**.
readOnly
This property is of type **boolean**.
rows
This property is of type **long**.
tabIndex
This property is of type **long**.
type
This property is of type **String**.
value
This property is of type **String**.

The **HTMLTextAreaElement** object has the following methods:
blur()
This method returns a **void**.
focus()
This method returns a **void**.
select()
This method returns a **void**.

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Object **HTMLButtonElement**

HTMLButtonElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLButtonElement** object has the following properties:

form

This property is of type **HTMLFormElement**.

accessKey

This property is of type **String**.

disabled

This property is of type **boolean**.

name

This property is of type **String**.

tabIndex

This property is of type **long**.

type

This property is of type **String**.

value

This property is of type **String**.

Object **HTMLLabelElement**

HTMLLabelElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLLabelElement** object has the following properties:

form

This property is of type **HTMLFormElement**.

accessKey

This property is of type **String**.

htmlFor

This property is of type **String**.

Object **HTMLFieldSetElement**

HTMLFieldSetElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLFieldSetElement** object has the following properties:

form

This property is of type **HTMLFormElement**.

Object **HTMLLegendElement**

HTMLLegendElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLLegendElement** object has the following properties:

form

This property is of type **HTMLFormElement**.

accessKey

This property is of type **String**.

align

This property is of type **String**.

Object **HTMLUListElement**

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HTMLUListElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLUListElement** object has the following properties:

compact

This property is of type **boolean**.

type

This property is of type **String**.

Object **HTMLOListElement**

HTMLOListElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLOListElement** object has the following properties:

compact

This property is of type **boolean**.

start

This property is of type **long**.

type

This property is of type **String**.

Object **HTMLDListElement**

HTMLDListElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLDListElement** object has the following properties:

compact

This property is of type **boolean**.

Object **HTMLDirectoryElement**

HTMLDirectoryElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLDirectoryElement** object has the following properties:

compact

This property is of type **boolean**.

Object **HTMLMenuElement**

HTMLMenuElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLMenuElement** object has the following properties:

compact

This property is of type **boolean**.

Object **HTMLLIElement**

HTMLLIElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLLIElement** object has the following properties:

type

This property is of type **String**.

value

This property is of type **long**.

Object **HTMLBlockquoteElement**

HTMLBlockquoteElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

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The **HTMLBlockquoteElement** object has the following properties:

cite

This property is of type **String**.

Object **HTMLDivElement**

HTMLDivElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLDivElement** object has the following properties:

align

This property is of type **String**.

Object **HTMLParagraphElement**

HTMLParagraphElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLParagraphElement** object has the following properties:

align

This property is of type **String**.

Object **HTMLHeadingElement**

HTMLHeadingElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLHeadingElement** object has the following properties:

align

This property is of type **String**.

Object **HTMLQuoteElement**

HTMLQuoteElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLQuoteElement** object has the following properties:

cite

This property is of type **String**.

Object **HTMLPreElement**

HTMLPreElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLPreElement** object has the following properties:

width

This property is of type **long**.

Object **HTMLBRElement**

HTMLBRElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLBRElement** object has the following properties:

clear

This property is of type **String**.

Object **HTMLBaseFontElement**

HTMLBaseFontElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLBaseFontElement** object has the following properties:

color

This property is of type **String**.

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face
This property is of type **String**.
size
This property is of type **String**.

Object **HTMLFontElement**

HTMLFontElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLFontElement** object has the following properties:

color
This property is of type **String**.
face
This property is of type **String**.
size
This property is of type **String**.

Object **HTMLHRElement**

HTMLHRElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLHRElement** object has the following properties:

align
This property is of type **String**.
noShade
This property is of type **boolean**.
size
This property is of type **String**.
width
This property is of type **String**.

Object **HTMLModElement**

HTMLModElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLModElement** object has the following properties:

cite
This property is of type **String**.
dateTime
This property is of type **String**.

Object **HTMLAnchorElement**

HTMLAnchorElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLAnchorElement** object has the following properties:

accessKey
This property is of type **String**.
charset
This property is of type **String**.
coords
This property is of type **String**.
href
This property is of type **String**.

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hreflang
This property is of type **String**.
name
This property is of type **String**.
rel
This property is of type **String**.
rev
This property is of type **String**.
shape
This property is of type **String**.
tabIndex
This property is of type **long**.
target
This property is of type **String**.
type
This property is of type **String**.

The **HTMLAnchorElement** object has the following methods:

blur()
This method returns a **void**.
focus()
This method returns a **void**.

Object **HTMLImageElement**

HTMLImageElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLImageElement** object has the following properties:

lowSrc
This property is of type **String**.
name
This property is of type **String**.
align
This property is of type **String**.
alt
This property is of type **String**.
border
This property is of type **String**.
height
This property is of type **String**.
hspace
This property is of type **String**.
isMap
This property is of type **boolean**.
longDesc
This property is of type **String**.
src
This property is of type **String**.

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useMap
This property is of type **String**.
vspace
This property is of type **String**.
width
This property is of type **String**.

Object **HTMLObjectElement**

HTMLObjectElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLObjectElement** object has the following properties:

form
This property is of type **HTMLFormElement**.
code
This property is of type **String**.
align
This property is of type **String**.
archive
This property is of type **String**.
border
This property is of type **String**.
codeBase
This property is of type **String**.
codeType
This property is of type **String**.
data
This property is of type **String**.
declare
This property is of type **boolean**.
height
This property is of type **String**.
hspace
This property is of type **String**.
name
This property is of type **String**.
standby
This property is of type **String**.
tabIndex
This property is of type **long**.
type
This property is of type **String**.
useMap
This property is of type **String**.
vspace
This property is of type **String**.
width
This property is of type **String**.

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Object **HTMLParamElement**

HTMLParamElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLParamElement** object has the following properties:

name

This property is of type **String**.

type

This property is of type **String**.

value

This property is of type **String**.

valueType

This property is of type **String**.

Object **HTMLAppletElement**

HTMLAppletElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLAppletElement** object has the following properties:

align

This property is of type **String**.

alt

This property is of type **String**.

archive

This property is of type **String**.

code

This property is of type **String**.

codeBase

This property is of type **String**.

height

This property is of type **String**.

hspace

This property is of type **String**.

name

This property is of type **String**.

object

This property is of type **String**.

vspace

This property is of type **String**.

width

This property is of type **String**.

Object **HTMLMapElement**

HTMLMapElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLMapElement** object has the following properties:

areas

This property is of type **HTMLCollection**.

name

This property is of type **String**.

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Object **HTMLAreaElement**

HTMLAreaElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLAreaElement** object has the following properties:

accessKey

This property is of type **String**.

alt

This property is of type **String**.

coords

This property is of type **String**.

href

This property is of type **String**.

noHref

This property is of type **boolean**.

shape

This property is of type **String**.

tabIndex

This property is of type **long**.

target

This property is of type **String**.

Object **HTMLScriptElement**

HTMLScriptElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLScriptElement** object has the following properties:

text

This property is of type **String**.

htmlFor

This property is of type **String**.

event

This property is of type **String**.

charset

This property is of type **String**.

defer

This property is of type **boolean**.

src

This property is of type **String**.

type

This property is of type **String**.

Object **HTMLTableElement**

HTMLTableElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTableElement** object has the following properties:

caption

This property is of type **HTMLTableCaptionElement**.

tHead

This property is of type **HTMLTableSectionElement**.

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tFoot
This property is of type **HTMLTableSectionElement**.
rows
This property is of type **HTMLCollection**.
tBodies
This property is of type **HTMLCollection**.
align
This property is of type **String**.
bgColor
This property is of type **String**.
border
This property is of type **String**.
cellPadding
This property is of type **String**.
cellSpacing
This property is of type **String**.
frame
This property is of type **String**.
rules
This property is of type **String**.
summary
This property is of type **String**.
width
This property is of type **String**.

The **HTMLTableElement** object has the following methods:

createTHead()
This method returns a **HTMLElement**.
deleteTHead()
This method returns a **void**.
createTFoot()
This method returns a **HTMLElement**.
deleteTFoot()
This method returns a **void**.
createCaption()
This method returns a **HTMLElement**.
deleteCaption()
This method returns a **void**.
insertRow(index)
This method returns a **HTMLElement**. The **index** parameter is of type **long**.
deleteRow(index)
This method returns a **void**. The **index** parameter is of type **long**.

Object **HTMLTableCaptionElement**

HTMLTableCaptionElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTableCaptionElement** object has the following properties:

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align

This property is of type **String**.

Object **HTMLTableColElement**

HTMLTableColElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTableColElement** object has the following properties:

align

This property is of type **String**.

ch

This property is of type **String**.

chOff

This property is of type **String**.

span

This property is of type **long**.

vAlign

This property is of type **String**.

width

This property is of type **String**.

Object **HTMLTableSectionElement**

HTMLTableSectionElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTableSectionElement** object has the following properties:

align

This property is of type **String**.

ch

This property is of type **String**.

chOff

This property is of type **String**.

vAlign

This property is of type **String**.

rows

This property is of type **HTMLCollection**.

The **HTMLTableSectionElement** object has the following methods:

insertRow(index)

This method returns a **HTMLElement**. The **index** parameter is of type **long**.

deleteRow(index)

This method returns a **void**. The **index** parameter is of type **long**.

Object **HTMLTableRowElement**

HTMLTableRowElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTableRowElement** object has the following properties:

rowIndex

This property is of type **long**.

sectionRowIndex

This property is of type **long**.

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cells
This property is of type **HTMLCollection**.
align
This property is of type **String**.
bgColor
This property is of type **String**.
ch
This property is of type **String**.
chOff
This property is of type **String**.
vAlign
This property is of type **String**.

The **HTMLTableRowElement** object has the following methods:

insertCell(index)
This method returns a **HTMLElement**. The **index** parameter is of type **long**.
deleteCell(index)
This method returns a **void**. The **index** parameter is of type **long**.

Object **HTMLTableCellElement**

HTMLTableCellElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLTableCellElement** object has the following properties:

cellIndex
This property is of type **long**.
abbr
This property is of type **String**.
align
This property is of type **String**.
axis
This property is of type **String**.
bgColor
This property is of type **String**.
ch
This property is of type **String**.
chOff
This property is of type **String**.
colSpan
This property is of type **long**.
headers
This property is of type **String**.
height
This property is of type **String**.
noWrap
This property is of type **boolean**.
rowSpan
This property is of type **long**.

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scope
This property is of type **String**.
vAlign
This property is of type **String**.
width
This property is of type **String**.

Object **HTMLFrameSetElement**

HTMLFrameSetElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLFrameSetElement** object has the following properties:

cols
This property is of type **String**.
rows
This property is of type **String**.

Object **HTMLFrameElement**

HTMLFrameElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLFrameElement** object has the following properties:

frameBorder
This property is of type **String**.
longDesc
This property is of type **String**.
marginHeight
This property is of type **String**.
marginWidth
This property is of type **String**.
name
This property is of type **String**.
noResize
This property is of type **boolean**.
scrolling
This property is of type **String**.
src
This property is of type **String**.

Object **HTMLIFrameElement**

HTMLIFrameElement has the all the properties and methods of **HTMLElement** as well as the properties and methods defined below.

The **HTMLIFrameElement** object has the following properties:

align
This property is of type **String**.
frameBorder
This property is of type **String**.
height
This property is of type **String**.
longDesc
This property is of type **String**.

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marginHeight
This property is of type **String**.
marginWidth
This property is of type **String**.
name
This property is of type **String**.
scrolling
This property is of type **String**.
src
This property is of type **String**.
width
This property is of type **String**.

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Production Notes (Non-Normative)

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The DOM specification serves as a good example of the power of using XML: all of the HTML documents, Java bindings, OMG IDL bindings, and ECMA Script bindings are generated from a single set of XML source files. This section outlines how this specification is written in XML, and how the various derived works are created.

1. The Document Type Definition

This specification was written entirely in XML, using a DTD based heavily on the DTD used by the XML Working Group for the XML specification. The major difference between the DTD used by the XML Working Group, and the DTD used for this specification is the addition of a DTD module for interface specifications.

The DTD module for interfaces specifications is a very loose translation of the Extended Backus-Naur Form (EBNF) specification of the OMG IDL syntax into XML DTD syntax. In addition to the translation, the ability to *describe* the interfaces was added, thereby creating a limited form of *literate programming* for interface definitions.

While the DTD module is sufficient for the purposes of the DOM WG, it is very loosely typed, meaning that there are very few constraints placed on the type specifications (the type information is effectively treated as an opaque string). In a DTD for object to object communication, some stricter enforcement of data types would probably be beneficial.

2. The production process

The DOM specification is written using XML. All documents are valid XML. In order to produce the HTML versions of the specification, the object indexes, the Java source code, and the OMG IDL and ECMA Script definitions, the XML specification is *converted*.

The tool currently used for conversion is *COST* by Joe English. `COST` takes the ESIS output of `nsgmls`, creates an internal representation, and then allows *scripts*, and *event handlers* to be run over the internal data structure. Event handlers allow document *patterns* and associated processing to be specified: when the pattern is matched during a pre-order traversal of a document subtree, the associated action is executed. This is the heart of the conversion process. Scripts are used to tie the various components together. For example, each of the major derived data sources (Java code etc.) is created by the execution of a script, which in turn executes one or more event handlers. The scripts and event handlers are specified using TCL.

The current version of `COST` has been somewhat modified from the publicly available version. In particular, it now runs correctly under 32-bit Windows, uses TCL 8.0, and correctly handles the case sensitivity of XML (though it probably could not correctly handle native language markup).

We could also have used `Jade`, by James Clark. Like `COST`, `Jade` allows patterns and actions to be specified, but `Jade` is based on DSSSL, an international standard, whereas `COST` is not. `Jade` is more powerful than `COST` in many ways, but prior experience of the editor with Cost made it easier to use this rather than `Jade`. A future version or Level of the DOM specification may be produced using `Jade` or an `XSL` processor.

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The complete XML source files are available at:
http://www.w3.org/TR/1998/REC-DOM-Level-1-19981001/xml-source.zip

3. Object Definitions

As stated earlier, all object definitions are specified in XML. The Java bindings, OMG IDL bindings, and ECMA Script bindings are all generated automatically from the XML source code.

This is possible because the information specified in XML is a *superset* of what these other syntax need. This is a general observation, and the same kind of technique can be applied to many other areas: given rich structure, rich processing and conversion are possible. For Java and OMG IDL, it is basically just a matter of renaming syntactic keywords; for ECMA Script, the process is somewhat more involved.

A typical object definition in XML looks something like this:

```
<interface name="foo">
  <descr><p>Description goes here...</p></descr>
  <method name="bar">
    <descr><p>Description goes here...</p></descr>
    <parameters>
      <param name="baz" type="DOMString" attr="in">
        <descr><p>Description goes here...</p></descr>
      </param>
    </parameters>
    <returns type="void">
       <descr><p>Description goes here...</p></descr>
    </returns>
    <raises>
       <!-- Throws no exceptions -->
    </raises>
  </method>
</interface>
```

As can easily be seen, this is quite verbose, but not unlike OMG IDL. In fact, when the specification was originally converted to use XML, the OMG IDL definitions were automatically converted into the corresponding XML source using common Unix text manipulation tools.

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