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# Document Object Model (DOM) Level 3 XPath Specification

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Editor:
> Ray Whitmer, *Netscape/AOL*

## Abstract

This specification defines the Document Object Model Level 3 XPath. It provides simple functionalities to access a DOM tree using [XPath 1.0]. This module builds on top of the Document Object Model Level 3 Core [DOM Level 3 Core].

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Comments on this document are invited and are to be sent to the public mailing list www-dom@w3.org. An archive is available at http://lists.w3.org/Archives/Public/www-dom/.

This document has been produced as part of the W3C DOM Activity. The authors of this document are the DOM Working Group members.

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# 1. Document Object Model XPath

*Editor*:
> Ray Whitmer, Netscape/AOL

## 1.1. Introduction

XPath is becoming an important part of a variety of many specifications including XForms, XPointer, XSL, CSS, and so on. It is also a clear advantage for user applications which use DOM to be able to use XPath expressions to locate nodes automatically and declaratively. But *liveness* [p.35] issues have plagued each attempt to get a list of DOM nodes matching specific criteria, as would be expected for an XPath *API* [p.35] . There have also traditionally been *model* [p.35] mismatches between DOM and XPath. This proposal specifies new interfaces and approaches to resolving these issues.

## 1.2. Mapping DOM to XPath

This section considers the differences between the Document Object Model and the XPath model as defined by [XPath 1.0].

### 1.2.1. Text Nodes

The XPath model relies on the XML Information Set [XML Information set] ands represents Character Information Items in a single logical text node where DOM may have multiple fragmented `Text` nodes due to cdata sections, entity references, etc. Instead of returning multiple nodes where XPath sees a single logical text node, only the first non-empty DOM `Text` node of any logical XPath text will be returned in the node set. Applications using XPath in an environment with fragmented text nodes must manually gather the text of a single logical text node from multiple nodes beginning with the first `Text` node identified by the implementation.

**Note:** In an attempt to better implement the XML Information Set, DOM Level 3 Core [DOM Level 3 Core] adds the attribute `wholeText` on the `Text` interface for retrieving the whole text for logically-adjacent `Text` nodes and the method `replaceWholeText` for replacing those nodes.

### 1.2.2. Namespace Nodes

The XPath model expects namespace nodes for each in-scope namespace to be attached to each *element* [p.35] . DOM and certain other W3C Information Set conformant implementations only maintain the declaration of namespaces instead of replicating them on each `Element` where they are in-scope. The DOM implementation of XPath returns a new node of type `XPATH_NAMESPACE_NODE` to properly preserve identity and ordering. This node type is only visible using the XPath evaluation methods.

## 1.2.3. Document Order

The document order of nodes in the DOM Core has been defined to be compatible with the XPath document order. According to XPath, namespace nodes are unordered with respect to other namespace nodes of the same element and precede attribute and child nodes of the same element. The DOM core must order the non-core `XPathNamespace` [p.18] nodes in this way if the XPath DOM module is supported.

# 1.3. Interfaces

A DOM application may use the `hasFeature(feature, version)` method of the `DOMImplementation` interface with parameter values "XPath" and "3.0" (respectively) to determine whether or not the event module is supported by the implementation. In order to fully support this module, an implementation must also support the "Core" feature defined in the DOM Level 3 Core specification [DOM Level 3 Core]. Please, refer to additional information about conformance in the DOM Level 3 Core specification [DOM Level 3 Core].

**Exception** *XPathException*

A new exception has been created for exceptions specific to these XPath interfaces.

**IDL Definition**

```
exception XPathException {
  unsigned short   code;
};
// XPathExceptionCode
const unsigned short      INVALID_EXPRESSION_ERR       = 1;
const unsigned short      TYPE_ERR                     = 2;
```

**Definition group** *XPathExceptionCode*
**Defined Constants**

INVALID_EXPRESSION_ERR
If the expression is not a legal expression according to the rules of the specific `XPathEvaluator` [p.10] or contains *namespace prefixes* [p.35] which are not in scope according to the specified `XPathNSResolver` [p.14] . If the `XPathEvaluator` was obtained by casting the document, the expression must be XPath 1.0 with no special extension functions.

TYPE_ERR
If the expression cannot be converted to return the specified type.

**Interface** *XPathEvaluator*

The evaluation of XPath expressions is performed by `XPathEvaluator`, which will provide evaluation of XPath 1.0 expressions with no specialized extension functions or variables. It is expected that the `XPathEvaluator` interface will be implemented on the same object which implements the `Document` interface in an implementation which supports the XPath DOM module. `XPathEvaluator` implementations may be available from other sources that may provide support for new versions of XPath or special extension functions or variables which are not defined in this

specification.

**IDL Definition**

```
interface XPathEvaluator {
  XPathExpression    createExpression(in DOMString expression,
                                      in XPathNSResolver resolver)
                                        raises(XPathException);
  XPathResult        createResult();
  XPathNSResolver    createNSResolver(in Node nodeResolver);
  XPathResult        evaluate(in DOMString expression,
                              in Node contextNode,
                              in XPathNSResolver resolver,
                              in unsigned short type,
                              in XPathResult result)
                                      raises(XPathException);
  XPathResult        evaluateExpression(in XPathExpression expression,
                                        in Node contextNode,
                                        in unsigned short type,
                                        in XPathResult result)
                                        raises(XPathException);
};
```

**Methods**

createExpression
>    Creates a parsed XPath expression with resolved namespaces. This is useful when an
>    expression will be reused in an application since it makes it possible to compile the
>    expression string into a more efficient internal form and preresolve all *namespace prefixes*
>    [p.35] which occur within the expression.
>    **Parameters**
>    expression of type DOMString
>    >    The XPath expression string to be parsed.
>    resolver of type XPathNSResolver [p.14]
>    >    The resolver permits translation of prefixes within the XPath expression into
>    >    appropriate *namespace URIs* [p.35] . If this is specified as null, any *namespace prefix*
>    >    [p.35] within the expression will result in XPathException [p.10] being thrown
>    >    with the code INVALID_EXPRESSION_ERR.
>    **Return Value**
>
>    XPathExpression [p.13]    The compiled form of the XPath expression.
>
>    **Exceptions**
>
>    XPathException    INVALID_EXPRESSION_ERR: Raised if the expression is
>    [p.10]            not legal according to the rules of the XPathEvaluator
>                      and the in-scope *namespace prefixes* [p.35] .

createNSResolver

Adapts any DOM node to resolve namespaces so that an XPath expression can be easily evaluated relative to the context of the node where it appeared within the document.

**Parameters**

nodeResolver of type Node

The node to be used as a context for namespace resolution.

**Return Value**

| | |
|---|---|
| XPathNSResolver [p.14] | XPathNSResolver which resolves namespaces with respect to the definitions in scope for a specified node. |

**No Exceptions**

createResult

Creates an XPath result object which may be passed as a parameter to the evaluation methods of this XPathEvaluator so that a new one is not created on each call to an evaluation method.

**Return Value**

| | |
|---|---|
| XPathResult [p.14] | An empty XPathEvaluator with type ANY_TYPE. |

**No Parameters**
**No Exceptions**

evaluate

Evaluates an XPath expression string and returns a result of the specified type if possible.

**Parameters**

expression of type DOMString

The XPath expression string to be parsed and evaluated.

contextNode of type Node

The context is context node for the evaluation of this XPath expression.

resolver of type XPathNSResolver [p.14]

The resolver permits translation of prefixes within the XPath expression into appropriate *namespace URIs* [p.35] . If this is specified as null, any *namespace prefix* [p.35] within the expression will result in XPathException [p.10] being thrown with the code INVALID_EXPRESSION_ERR.

type of type unsigned short

If a specific type is specified, then the result will be coerced to return the specified type relying on XPath conversions and fail if the desired coercion is not possible. This must be one of the type codes of XPathResult [p.14] .

result of type XPathResult [p.14]

The result specifies a specific XPathResult to be reused and returned by this method. If this is specified as null, a new XPathResult will be constructed and returned. Any XPathResult which was not created by this XPathEvaluator may be ignored as though a null were passed as the parameter.

**Return Value**

XPathResult [p.14]    The result of the evaluation of the XPath expression.

**Exceptions**

XPathException [p.10]    INVALID_EXPRESSION_ERR: Raised if the expression is not legal according to the rules of the XPathEvaluator and the in-scope *namespace prefixes* [p.35] .

TYPE_ERR: Raised if the result cannot be converted to return the specified type.

evaluateExpression
    Evaluates an XPath expression and returns a result.
    **Parameters**
    expression of type XPathExpression [p.13]
        The XPath expression to be evaluated.
    contextNode of type Node
        The context is context node for the evaluation of this XPath expression.
    type of type unsigned short
        If a specific type is specified, then the result will be coerced to return the specified type relying on XPath conversions and fail if the desired coercion is not possible. This must be one of the type codes of XPathResult [p.14] .
    result of type XPathResult [p.14]
        The result specifies a specific XPathResult to be reused and returned by this method. If this is specified as null, a new XPathResult will be constructed and returned. Any XPathResult which was not created by this XPathEvaluator may be ignored as though a null were passed as the parameter.
    **Return Value**

XPathResult [p.14]    The result of the evaluation of the XPath expression.

**Exceptions**

XPathException [p.10]    TYPE_ERR: Raised if the result cannot be converted to return the specified type.

**Interface *XPathExpression***

The XPathExpression interface represents a parsed and resolved XPath expression.

**IDL Definition**

```
interface XPathExpression {
};
```

**Interface *XPathNSResolver***

The XPathNSResolver interface permit prefix strings in the expression to be properly bound
to namespaceURI strings. XPathEvaluator [p.10] can construct an implementation of
XPathNSResolver from a node, or the interface may be implemented by any application.

**IDL Definition**

```
interface XPathNSResolver {
  DOMString          lookupNamespaceURI(in DOMString prefix);
};
```

**Methods**
    lookupNamespaceURI
        Look up the *namespace URI* [p.35] associated to the given *namespace prefix* [p.35] .
        **Parameters**
        prefix of type DOMString
            The prefix to look for.
        **Return Value**

          DOMString    Returns the associated *namespace URI* [p.35] or null if none is
                     found.

        **No Exceptions**

**Interface *XPathResult***

The XPathResult interface represents the result of the evaluation of an XPath expression within
the context of a particular node. Since evaluation of an XPath expression can result in various result
types, this object makes it possible to discover and manipulate the type and value of the result.

**IDL Definition**

```
interface XPathResult {

  // XPathResultType
  const unsigned short    ANY_TYPE                = 0;
  const unsigned short    NUMBER_TYPE             = 1;
  const unsigned short    STRING_TYPE             = 2;
  const unsigned short    BOOLEAN_TYPE            = 3;
  const unsigned short    NODE_SET_TYPE           = 4;
  const unsigned short    SINGLE_NODE_TYPE        = 5;

  readonly attribute unsigned short    resultType;
  readonly attribute double            numberValue;
                                  // raises(XPathException) on retrieval

  readonly attribute DOMString         stringValue;
                                  // raises(XPathException) on retrieval

  readonly attribute boolean           booleanValue;
                                  // raises(XPathException) on retrieval
```

```
    readonly attribute Node            singleNodeValue;
                                        // raises(XPathException) on retrieval

    XPathSetIterator    getSetIterator(in boolean ordered)
                                        raises(XPathException,
                                                DOMException);
    XPathSetSnapshot    getSetSnapshot(in boolean ordered)
                                        raises(XPathException,
                                                DOMException);
};
```

**Definition group *XPathResultType***

An integer indicating what type of result this is.

**Defined Constants**

ANY_TYPE
> This code does not represent a specific type. An evaluation of an XPath expression will never produce this type. If this type is requested, then the evaluation must return whatever type naturally results from evaluation of the expression.

BOOLEAN_TYPE
> The result is a boolean as defined by XPath 1.0.

NODE_SET_TYPE
> The result is a node set as defined by XPath 1.0.

NUMBER_TYPE
> The result is a number as defined by XPath 1.0.

SINGLE_NODE_TYPE
> The result is a single node, which may be any node of the node set defined by XPath 1.0, or null if the node set is empty. This is a convenience that permits optimization where the caller knows that no more than one such node exists because evaluation can stop after finding the one node of an expression that would otherwise return a node set (of type NODE_SET_TYPE).
>
> Where it is possible that multiple nodes may exist and the first node in document order is required, a NODE_SET_TYPE should be processed using an ordered iterator, because there is no order guarantee for a single node.

STRING_TYPE
> The result is a string as defined by XPath 1.0.

**Attributes**

booleanValue of type boolean, readonly
> The value of this boolean result.
>
> **Exceptions on retrieval**

| | |
|---|---|
| XPathException [p.10] | TYPE_ERR: raised if resultType is not BOOLEAN_TYPE. |

numberValue of type double, readonly
> The value of this number result.
>
> **Exceptions on retrieval**

| | |
|---|---|
| XPathException [p.10] | TYPE_ERR: raised if `resultType` is not NUMBER_TYPE. |

`resultType` of type `unsigned short`, readonly
> A code representing the type of this result, as defined by the type constants.

`singleNodeValue` of type `Node`, readonly
> The value of this single node result, which may be null. This result is not guaranteed to be the first node in document order where the expression evaluates to multiple nodes.
>
> **Exceptions on retrieval**

| | |
|---|---|
| XPathException [p.10] | TYPE_ERR: raised if `resultType` is not SINGLE_NODE_TYPE. |

`stringValue` of type `DOMString`, readonly
> The value of this string result.
>
> **Exceptions on retrieval**

| | |
|---|---|
| XPathException [p.10] | TYPE_ERR: raised if `resultType` is not STRING_TYPE. |

**Methods**

`getSetIterator`
> Creates an `XPathSetIterator` [p.17] which may be used to iterate over the nodes of the set of this result.
>
> **Parameters**
>
> `ordered` of type `boolean`
>> The set must be iterated in document order.
>
> **Return Value**

| | |
|---|---|
| XPathSetIterator [p.17] | An `XPathSetIterator` which may be used to iterate the node set. |

> **Exceptions**

| | |
|---|---|
| XPathException [p.10] | TYPE_ERR: raised if `resultType` is not NODE_SET_TYPE. |
| DOMException | INVALID_STATE_ERR: The document has been mutated since the result was returned. |

`getSetSnapshot`
> Creates an `XPathSetSnapshot` [p.17] which lists the nodes of the set of this result. Unlike an iterator, after the snapshot has been requested, document mutation does not invalidate it.

**Parameters**

`ordered` of type `boolean`
> The set must be listed in document order.

**Return Value**

| | |
|---|---|
| `XPathSetSnapshot` [p.17] | An `XPathSetSnapshot` which may be used to list the node set. |

**Exceptions**

| | |
|---|---|
| `XPathException` [p.10] | TYPE_ERR: raised if `resultType` is not NODE_SET_TYPE. |
| `DOMException` | INVALID_STATE_ERR: The document has been mutated since the result was returned. |

**Interface** *XPathSetIterator*

The `XPathSetIterator` interface iterates the node set resulting from evaluation of an XPath expression.

**IDL Definition**

```
interface XPathSetIterator {
  Node              nextNode()
                                    raises(DOMException);
};
```

**Methods**

`nextNode`
> Returns the next node from the `XPathResult` [p.14] node set. If there are no more nodes in the set to be returned by the iterator, this method returns `null`.

> **Return Value**

| | |
|---|---|
| `Node` | Returns the next node. |

> **Exceptions**

| | |
|---|---|
| `DOMException` | INVALID_STATE_ERR: The document has been mutated since the node set result was returned. |

> **No Parameters**

**Interface** *XPathSetSnapshot*

The `XPathSetSnapshot` interface lists the node set resulting from an evaluation of an XPath expression as a static list that is not invalidated or changed by document mutation.

The individual nodes of a `XPathSetSnapshot` may be manipulated in the hierarchy and these changes are seen immediately by users referencing the nodes through the snapshot.

**IDL Definition**

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

**Attributes**

`length` of type `unsigned long`, readonly
>   The number of nodes in the list. The range of valid child node indices is `0` to `length-1` inclusive.

**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 method returns `null`.
>
>   **Parameters**
>
>   `index` of type `unsigned long`
>>      Index into the collection.
>
>   **Return Value**
>
>   | | |
>   |---|---|
>   | `Node` | The node at the `index`th position in the `NodeList`, or `null` if that is not a valid index. |

>   **No Exceptions**

**Interface *XPathNamespace***

The `XPathNamespace` interface is returned by `XPathResult` [p.14] interfaces to represent the XPath namespace node type that DOM lacks. There is no public constructor for this node type. Attempts to place it into a hierarchy or a NamedNodeMap result in a `DOMException` with the code `HIERARCHY_REQUEST_ERR`. This node is *read only* [p.35] , so methods or setting of attributes that would mutate the node result in a DOMException with the code `NO_MODIFICATION_ALLOWED_ERR`.

The core specification describes attributes of the `Node` interface that are different for different node node types but does not describe `XPATH_NAMESPACE_NODE`, so here is a description of those attributes for this node type. All attributes of `Node` not described in this section have a `null` or `false` value.

`ownerDocument` matches the `ownerDocument` of the `ownerElement` even if the element is later adopted.

`prefix` is the prefix of the namespace represented by the node.

`NodeName` is the same as `prefix`.

`NodeType` is equal to XPATH_NAMESPACE_NODE.

`namespaceURI` is the namespace URI of the namespace represented by the node.

`adoptNode`, `cloneNode`, and `importNode` fail on this node type by raising a `DOMException` with the code NOT_SUPPORTED_ERR.

**IDL Definition**

```
interface XPathNamespace : Node {

  // XPathNodeType
  const unsigned short      XPATH_NAMESPACE_NODE          = 13;

  readonly attribute Element        ownerElement;
};
```

**Definition group** *XPathNodeType*

An integer indicating which type of node this is.

**Note:** There is currently only one type of node which is specific to XPath. The numbers in this list must not collide with the values assigned to core node types.

**Defined Constants**
>    XPATH_NAMESPACE_NODE
>        The node is a `Namespace`.

**Attributes**
`ownerElement` of type `Element`, readonly
>    The `Element` on which the namespace was in scope when it was requested. This does not change on a returned namespace node even if the document changes such that the namespace goes out of scope on that *element* [p.35] and this node is no longer found there by XPath.

# Appendix A: IDL Definitions

This appendix contains the complete OMG IDL [OMGIDL] for the Level 3 Document Object Model XPath definitions.

The IDL files are also available as:
http://www.w3.org/TR/2001/WD-DOM-Level-3-XPath-20010830/idl.zip

## xpath.idl:

```
// File: xpath.idl

#ifndef _XPATH_IDL_
#define _XPATH_IDL_

#include "dom.idl"

#pragma prefix "dom.w3c.org"
module xpath
{

  typedef dom::DOMString DOMString;
  typedef dom::Node Node;
  typedef dom::Element Element;

  interface XPathNSResolver;
  interface XPathResult;
  interface XPathExpression;
  interface XPathSetIterator;
  interface XPathSetSnapshot;

  exception XPathException {
    unsigned short   code;
  };
  // XPathExceptionCode
  const unsigned short      INVALID_EXPRESSION_ERR        = 1;
  const unsigned short      TYPE_ERR                      = 2;


  interface XPathEvaluator {
    XPathExpression     createExpression(in DOMString expression,
                                    in XPathNSResolver resolver)
                                    raises(XPathException);
    XPathResult         createResult();
    XPathNSResolver     createNSResolver(in Node nodeResolver);
    XPathResult         evaluate(in DOMString expression,
                            in Node contextNode,
                            in XPathNSResolver resolver,
                            in unsigned short type,
                            in XPathResult result)
                                    raises(XPathException);
    XPathResult         evaluateExpression(in XPathExpression expression,
                                    in Node contextNode,
                                    in unsigned short type,
```

```
                                            in XPathResult result)
                                   raises(XPathException);
};

interface XPathExpression {
};

interface XPathNSResolver {
  DOMString         lookupNamespaceURI(in DOMString prefix);
};

interface XPathResult {

  // XPathResultType
  const unsigned short    ANY_TYPE                    = 0;
  const unsigned short    NUMBER_TYPE                 = 1;
  const unsigned short    STRING_TYPE                 = 2;
  const unsigned short    BOOLEAN_TYPE                = 3;
  const unsigned short    NODE_SET_TYPE               = 4;
  const unsigned short    SINGLE_NODE_TYPE            = 5;

  readonly attribute unsigned short    resultType;
  readonly attribute double            numberValue;
                                       // raises(XPathException) on retrieval

  readonly attribute DOMString         stringValue;
                                       // raises(XPathException) on retrieval

  readonly attribute boolean           booleanValue;
                                       // raises(XPathException) on retrieval

  readonly attribute Node              singleNodeValue;
                                       // raises(XPathException) on retrieval

  XPathSetIterator   getSetIterator(in boolean ordered)
                                   raises(XPathException,
                                          dom::DOMException);
  XPathSetSnapshot   getSetSnapshot(in boolean ordered)
                                   raises(XPathException,
                                          dom::DOMException);
};

interface XPathSetIterator {
  Node              nextNode()
                                   raises(dom::DOMException);
};

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

interface XPathNamespace : Node {

  // XPathNodeType
  const unsigned short    XPATH_NAMESPACE_NODE        = 13;
```

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```
    readonly attribute Element          ownerElement;
  };
};

#endif // _XPATH_IDL_
```

xpath.idl:

# Appendix B: Java Language Binding

This appendix contains the complete Java [Java] bindings for the Level 3 Document Object Model XPath.

The Java files are also available as
http://www.w3.org/TR/2001/WD-DOM-Level-3-XPath-20010830/java-binding.zip

# B.1: Other XPath interfaces

## org/w3c/dom/xpath/XPathException.java:

```
package org.w3c.dom.xpath;

public class XPathException extends RuntimeException {
    public XPathException(short code, String message) {
        super(message);
        this.code = code;
    }
    public short   code;
    // XPathExceptionCode
    public static final short INVALID_EXPRESSION_ERR    = 1;
    public static final short TYPE_ERR                  = 2;

}
```

## org/w3c/dom/xpath/XPathEvaluator.java:

```
package org.w3c.dom.xpath;

import org.w3c.dom.Node;

public interface XPathEvaluator {
    public XPathExpression createExpression(String expression,
                                            XPathNSResolver resolver)
                                            throws XPathException;

    public XPathResult createResult();

    public XPathNSResolver createNSResolver(Node nodeResolver);

    public XPathResult evaluate(String expression,
                                Node contextNode,
                                XPathNSResolver resolver,
                                short type,
                                XPathResult result)
                                throws XPathException;

    public XPathResult evaluateExpression(XPathExpression expression,
                                          Node contextNode,
                                          short type,
```

```
                                           XPathResult result)
                                 throws XPathException;

}
```

# org/w3c/dom/xpath/XPathExpression.java:

```
package org.w3c.dom.xpath;

public interface XPathExpression {
}
```

# org/w3c/dom/xpath/XPathNSResolver.java:

```
package org.w3c.dom.xpath;

public interface XPathNSResolver {
    public String lookupNamespaceURI(String prefix);

}
```

# org/w3c/dom/xpath/XPathResult.java:

```
package org.w3c.dom.xpath;

import org.w3c.dom.Node;
import org.w3c.dom.DOMException;

public interface XPathResult {
    // XPathResultType
    public static final short ANY_TYPE              = 0;
    public static final short NUMBER_TYPE           = 1;
    public static final short STRING_TYPE           = 2;
    public static final short BOOLEAN_TYPE          = 3;
    public static final short NODE_SET_TYPE         = 4;
    public static final short SINGLE_NODE_TYPE      = 5;

    public short getResultType();

    public double getNumberValue()
                                 throws XPathException;

    public String getStringValue()
                                 throws XPathException;

    public boolean getBooleanValue()
                                 throws XPathException;

    public Node getSingleNodeValue()
                                 throws XPathException;

    public XPathSetIterator getSetIterator(boolean ordered)
                                           throws XPathException, DOMException;
```

```
    public XPathSetSnapshot getSetSnapshot(boolean ordered)
                                        throws XPathException, DOMException;

}
```

## org/w3c/dom/xpath/XPathSetIterator.java:

```
package org.w3c.dom.xpath;

import org.w3c.dom.Node;
import org.w3c.dom.DOMException;

public interface XPathSetIterator {
    public Node nextNode()
                        throws DOMException;

}
```

## org/w3c/dom/xpath/XPathSetSnapshot.java:

```
package org.w3c.dom.xpath;

import org.w3c.dom.Node;

public interface XPathSetSnapshot {
    public Node item(int index);

    public int getLength();

}
```

## org/w3c/dom/xpath/XPathNamespace.java:

```
package org.w3c.dom.xpath;

import org.w3c.dom.Element;
import org.w3c.dom.Node;

public interface XPathNamespace extends Node {
    // XPathNodeType
    public static final short XPATH_NAMESPACE_NODE      = 13;

    public Element getOwnerElement();

}
```

org/w3c/dom/xpath/XPathNamespace.java:

# Appendix C: ECMAScript Language Binding

This appendix contains the complete ECMAScript [ECMAScript] binding for the Level 3 Document Object Model XPath definitions.

Prototype Object **XPathException**
    The **XPathException** class has the following constants:
        **XPathException.INVALID_EXPRESSION_ERR**
            This constant is of type **Number** and its value is **1**.
        **XPathException.TYPE_ERR**
            This constant is of type **Number** and its value is **2**.
Object **XPathException**
    The **XPathException** object has the following properties:
        **code**
            This property is of type **Number**.
Object **XPathEvaluator**
    The **XPathEvaluator** object has the following methods:
        **createExpression(expression, resolver)**
            This method returns a **XPathExpression** object.
            The **expression** parameter is of type **String**.
            The **resolver** parameter is a **XPathNSResolver** object.
            This method can raise a **XPathException** object.
        **createResult()**
            This method returns a **XPathResult** object.
        **createNSResolver(nodeResolver)**
            This method returns a **XPathNSResolver** object.
            The **nodeResolver** parameter is a **Node** object.
        **evaluate(expression, contextNode, resolver, type, result)**
            This method returns a **XPathResult** object.
            The **expression** parameter is of type **String**.
            The **contextNode** parameter is a **Node** object.
            The **resolver** parameter is a **XPathNSResolver** object.
            The **type** parameter is of type **Number**.
            The **result** parameter is a **XPathResult** object.
            This method can raise a **XPathException** object.
        **evaluateExpression(expression, contextNode, type, result)**
            This method returns a **XPathResult** object.
            The **expression** parameter is a **XPathExpression** object.
            The **contextNode** parameter is a **Node** object.
            The **type** parameter is of type **Number**.
            The **result** parameter is a **XPathResult** object.
            This method can raise a **XPathException** object.
Object **XPathExpression**
Object **XPathNSResolver**

The **XPathNSResolver** object has the following methods:

    **lookupNamespaceURI(prefix)**

        This method returns a **String**.

        The **prefix** parameter is of type **String**.

Prototype Object **XPathResult**

    The **XPathResult** class has the following constants:

        **XPathResult.ANY_TYPE**

            This constant is of type **Number** and its value is **0**.

        **XPathResult.NUMBER_TYPE**

            This constant is of type **Number** and its value is **1**.

        **XPathResult.STRING_TYPE**

            This constant is of type **Number** and its value is **2**.

        **XPathResult.BOOLEAN_TYPE**

            This constant is of type **Number** and its value is **3**.

        **XPathResult.NODE_SET_TYPE**

            This constant is of type **Number** and its value is **4**.

        **XPathResult.SINGLE_NODE_TYPE**

            This constant is of type **Number** and its value is **5**.

Object **XPathResult**

    The **XPathResult** object has the following properties:

        **resultType**

            This read-only property is of type **Number**.

        **numberValue**

            This read-only property is a **double** object and can raise a **XPathException** object on retrieval.

        **stringValue**

            This read-only property is of type **String** and can raise a **XPathException** object on retrieval.

        **booleanValue**

            This read-only property is of type **Boolean** and can raise a **XPathException** object on retrieval.

        **singleNodeValue**

            This read-only property is a **Node** object and can raise a **XPathException** object on retrieval.

    The **XPathResult** object has the following methods:

        **getSetIterator(ordered)**

            This method returns a **XPathSetIterator** object.

            The **ordered** parameter is of type **Boolean**.

            This method can raise a **XPathException** object or a **DOMException** object.

        **getSetSnapshot(ordered)**

            This method returns a **XPathSetSnapshot** object.

            The **ordered** parameter is of type **Boolean**.

            This method can raise a **XPathException** object or a **DOMException** object.

Object **XPathSetIterator**

    The **XPathSetIterator** object has the following methods:

**nextNode()**

This method returns a **Node** object.

This method can raise a **DOMException** object.

Object **XPathSetSnapshot**

The **XPathSetSnapshot** object has the following properties:

**length**

This read-only property is of type **Number**.

The **XPathSetSnapshot** object has the following methods:

**item(index)**

This method returns a **Node** object.

The **index** parameter is of type **Number**.

**Note:** This object can also be dereferenced using square bracket notation (e.g. obj[1]). Dereferencing with an integer **index** is equivalent to invoking the **item** method with that index.

Prototype Object **XPathNamespace**

The **XPathNamespace** class has the following constants:

**XPathNamespace.XPATH_NAMESPACE_NODE**

This constant is of type **Number** and its value is **13**.

Object **XPathNamespace**

**XPathNamespace** has the all the properties and methods of the **Node** object as well as the properties and methods defined below.

The **XPathNamespace** object has the following properties:

**ownerElement**

This read-only property is a **Element** object.

# Appendix D: Acknowledgements

Many people contributed to the DOM specifications (Level 1, 2 or 3), including members of the DOM Working Group and the DOM Interest Group. We especially thank the following:

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# D.1: Production Systems

This specification was written in XML. The HTML, OMG IDL, Java and ECMAScript bindings were all produced automatically.

Thanks to Joe English, author of cost, which was used as the basis for producing DOM Level 1. Thanks also to Gavin Nicol, who wrote the scripts which run on top of cost. Arnaud Le Hors and Philippe Le Hégaret maintained the scripts.

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# Glossary

*Editors*:
    Arnaud Le Hors, W3C
    Robert S. Sutor, IBM Research (for DOM Level 1)

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.

**API**

    An *API* is an Application Programming Interface, a set of functions or methods used to access some functionality.

**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. See *Logical Structures* in XML [XML].

**live**

    An object is *live* if any change to the underlying document structure is reflected in the object.

**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.

**namespace prefix**

    A *namespace prefix* is a string that associates an element or attribute name with a *namespace URI* in XML. See namespace prefix in Namespaces in XML [XML Namespaces].

**namespace URI**

    A *namespace URI* is a URI that identifies an XML namespace. This is called the namespace name in Namespaces in XML [XML Namespaces].

**read only node**

    A *read only node* is a node that is immutable. This means its list of children, its content, and its attributes, when it is an element, cannot be changed in any way. However, a read only node can possibly be moved, when it is not itself contained in a read only node.

**tokenized**

    The description given to various information items (for example, attribute values of various types, but not including the StringType CDATA) after having been processed by the XML processor. The process includes stripping leading and trailing white space, and replacing multiple space characters by one. See the definition of tokenized type.

**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).

# References

For the latest version of any W3C specification please consult the list of W3C Technical Reports available at http://www.w3.org/TR.

## F.1: Normative references

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W3C (World Wide Web Consortium) Document Object Model Level 3 Core Specification, August 2001. Available at http://www.w3.org/TR/2001/WD-DOM-Level-3-Core-20010605

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**Java**
Sun Microsystems Inc. The Java Language Specification, James Gosling, Bill Joy, and Guy Steele, September 1996. Available at http://java.sun.com/docs/books/jls

**OMGIDL**
OMG (Object Management Group) IDL (Interface Definition Language) defined in The Common Object Request Broker: Architecture and Specification, version 2.3.1, October 1999. Available from http://www.omg.org

**XML**
W3C (World Wide Web Consortium) Extensible Markup Language (XML) 1.0, October 2000. Available at http://www.w3.org/TR/2000/REC-xml-20001006

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W3C (World Wide Web Consortium) Namespaces in XML, January 1999. Available at http://www.w3.org/TR/1999/REC-xml-names-19990114

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W3C (World Wide Web Consortium) XML Path Language (XPath) Version 1.0, November 1999. Available at http://www.w3.org/TR/1999/REC-xpath-19991116.

F.1: Normative references

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