



Sitecore CMS 6

Presentation Component

XSL Reference

A Conceptual Overview for Developers

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Chapter 1

Introduction

This Presentation Component XSL Reference provides a conceptual overview of common XSL rendering constructs for Sitecore developers. For more information about the topics described in this document, see the Presentation Component Reference manual.

XSL is a declarative programming language intended for processing XML using XPath statements to navigate the XML data. XML, XSL, and XPath are each significant topics of their own. While you can achieve significant functionality with only a cursory knowledge of XSL and XPath, adjusting from procedural and object-oriented programming languages that access relational data stores to a declarative language that accesses hierarchical data stores can present some challenges. This document focuses on extensions to XSL for working with Sitecore content. Consult external documentation for more information on XML, XSL, and XPath.¹

XML is a tag-based, hierarchical data store similar to HTML markup, but with stricter syntax and greater flexibility in structure and content. An XSL file is an XML file that contains elements recognized by an XSL transformation engine.

Anything you can achieve with an XSL rendering, you can alternatively implement with a sublayout or a Web control. Use XSL renderings where appropriate, but consider .NET components where XSL or XPath syntax is unwieldy, code is difficult to manage, or performance is poor.

This document contains the following chapters:

- **Chapter 1 — Introduction**
- **Chapter 2 — Basic XSL and XPath Constructs**
- **Chapter 3 — The Sitecore XML Structure**
- **Chapter 4 — XSL and XPath with Sitecore**
- **Chapter 5 — Custom XSL Extension Libraries**

¹ Sitecore recommends [XSLT: Programmer's Reference](http://www.wrox.com/WileyCDA/WroxTitle/productCd-0764543814.html), by Michael Kay (<http://www.wrox.com/WileyCDA/WroxTitle/productCd-0764543814.html>).

Chapter 2

Basic XSL and XPath Constructs

This chapter provides an overview of basic XSL and XPath constructs.

This chapter contains the following sections:

- XML, XSL, and XPath Tokens
- XSL Elements
- XPath and XSL Functions

2.1 XML, XSL, and XPath Tokens

The following table lists various programming tokens used in XSL renderings, many of which are described further in this document.

Note

The sections and chapters of this document that follow this section describe many of the constructs referenced in this chapter. Refer back to this section when you encounter these constructs.

Token	Meaning
.	A single dot character represents the context element, which is the current location of the XSL transformation engine in an XML document.
..	Two dot characters represent the parent axis.
/	By itself, the slash character represents root of an XML document. Otherwise, a slash designates the XSL path operator, which separates elements from child elements (<code>*/item</code>) and attributes (<code>*/@id</code>), much like a backslash (\) separates a file system directory from subdirectories and files.
//	Two slash characters represent the descendant axis. For performance, avoid use of this construct.
@	The at character specifies an attribute. For example, <code>@key</code> matches the attribute named <code>key</code> .
*	The star character matches any element. For example, <code>/*</code> matches the root element of any XML document.
\$	The dollar character indicates a named parameter or variable. For example, <code>\$sc_currentitem</code> represents the <code><item></code> element in the XML representation of the Sitecore database that corresponds to the URL requested by the browser
[]	Square bracket characters indicate a predicate, which often contains logic to filter a collection of elements.
&	XML-escaped ampersand (“&”).
<	XML-escaped left angle bracket (“<”).
>	XML-escaped right angle bracket (“>”).
"	XML-escaped quote (“”).
'	XML-escaped apostrophe (“’”).
&####;	XML-escaped character specified by hexadecimal value.
and	Logical and operator.
or	Logical or operator.
::	Axis resolution operator.

Note

XML supports only the five named character entities listed above. In XSL, you cannot use other named entities as you would in HTML, such as ` `. Instead, use the corresponding numerical entity, such as ` `.²

² For a table mapping text entity codes to the corresponding numerical equivalents, see http://www.webmonkey.com/reference/Special_Characters.

2.2 XSL Elements

This section provides an overview of some of some XSL elements commonly used in Sitecore XSL renderings. XSL elements use the `xsl` namespace.

Important

XSL looping constructs index elements starting with position 1, not 0 as in arrays in C#.

2.2.1 The `<xsl:variable>` XSL Element

The `<xsl:variable>` XSL element creates a named variable. For example, each of the following will create the variable `$content` that represents the `/Sitecore/Content` item (an `<item>` element in the XML document that represents a Sitecore database).

```
<xsl:variable name="content" select="/item[@key='sitecore']/item[@key='content']" />
<xsl:variable name="content" select="*/item[@key='content']" />
<xsl:variable name="content" select="sc:item('/sitecore/content',.)" />
```

If you create a variable that represents a Sitecore item, you can then retrieve values from that item, iterate over its children, or perform other operations on the item.

```
<xsl:variable name="content" select="sc:item('/sitecore/content',.)" />
<xsl:for-each select="$content/item">
  Child: <xsl:value-of select="@name" /><br />
</xsl:for-each>
```

Avoid the overhead of variables when possible. Use IDs instead of elements, and when necessary, reference `<item>` elements directly instead of using variables:

```
<xsl:for-each select="sc:item('/sitecore/content',.)/item">
  Child: <xsl:value-of select="@name" /><br />
</xsl:for-each>
```

Note

You can think of XSL variables like constants in that once you have created a variable, you cannot change its value. You can sometimes work around this issue by passing variables as parameters to recursive XSL templates.

2.2.2 The `<xsl:value-of>` XSL Element

The `<xsl:value-of>` XSL element processes a value. You can use `<xsl:value-of>` to write a value to the output stream. For example, to write the raw value of a field in an item to the output stream:

```
<xsl:value-of select="sc:fld('FieldName',$sc_currentitem)" />
```

You can also use `<xsl:value-of>` to populate a variable using a named template:

```
<xsl:template name="GetContentID">
  <xsl:value-of select="sc:item('/sitecore/content',.)/@id" />
</xsl:template>
...
<xsl:variable name="contentid">
  <xsl:call-template name="GetContentID" />
</xsl:variable>
```

You can control whether `<xsl:value-of>` escapes XML special characters such as ampersand (“&”) using the `disable-output-escaping` attribute:

```
<xsl:value-of select="sc:fld('FieldName',$sc_currentitem)" disable-output-escaping="yes" />
```

Unless you set `disable-output-escaping` to `yes`, the XSL transformation engine encodes special characters in the source value. For example, the system outputs `&` for any ampersand (“&”) characters in the source value. You may need to disable output escaping when you process a URL that contains multiple query string parameters separated by ampersand characters.

2.2.3 The <xsl:if> XSL Element

The <xsl:if> XSL element invokes the enclosed code if the condition specified by the `test` attribute is true.

Because XSL treats null and empty strings as false, a common shortcut to check whether a field exists and contains a value is to check if the `sc:fld()` XSL extension method returns true.

```
<xsl:if test="sc:fld('FieldName',$sc currentitem)">
  <!-- field exists in the specified item and contains a value-->
</xsl:if>
```

Note

XSL does not include elements such as <xsl:elseif> or <xsl:else>. Use <xsl:choose> as described in the following section for logic involving multiple conditions.

2.2.4 The <xsl:choose>, <xsl:when>, and <xsl:otherwise> XSL Elements

The <xsl:choose> element processes the first segment of code contained within an <xsl:when> element with a `test` condition that evaluates to true, or the <xsl:otherwise> element if none of the conditions evaluate to true.

```
<xsl:variable name="random" select="sc:random(10)" />
<xsl:choose>
  <xsl:when test="$random > 6">
    <!--random is greater than 6-->
  </xsl:when>
  <xsl:when test="$random > 3">
    <!--random is greater than three but less than or equal to 6-->
  </xsl:when>
  <xsl:otherwise>
    <!--random is less than or equal to 3-->
  </xsl:otherwise>
</xsl:choose>
```

Note

For each <xsl:choose> element, the system will process the segment of code contained in only one <xsl:when> element, or the <xsl:otherwise> element. If there is no <xsl:otherwise> element, and none of the `test` conditions evaluate to true, the system will not process any code within the <xsl:choose> element.

2.2.5 The <xsl:for-each> XSL Element

The <xsl:for-each> XSL element iterates over zero or more elements as specified by the XPath expression in the `select` attribute. Within each iteration of the <xsl:for-each>, the context element (".") contains the selected item.

The following example iterates over the children of the context item:

```
<xsl:for-each select="$sc_currentitem/item">
  <xsl:value-of select="@name" /><br />
</xsl:for-each>
```

2.2.6 The <xsl:sort> XSL Element

The <xsl:sort> XSL element sorts a list of elements, such as within <xsl:for-each>.

The following example sorts the children of the context item in descending order by a date field value.

```
<xsl:for-each select="$sc_currentitem/item">
  <xsl:sort select="sc:fld('__updated',.)" order="descending" />
  <xsl:value-of select="@name" /><br />
</xsl:for-each>
```


You can reverse the default sort using the `@sortorder` attribute:

```
<xsl:for-each select="$sc_currentitem/item">
  <xsl:sort select="@sortorder" order="descending" />
  <xsl:value-of select="@name" /><br />
</xsl:for-each>
```

Note

By default, items in the XML available to XSL renderings appear in the order defined in the content tree.

2.2.7 The `<xsl:template>`, `<xsl:call-template>`, and `<xsl:with-param>` XSL Elements

The `<xsl:template>` XSL element encapsulates a segment of XSL code, similar to a method, procedure, or function in other languages. The XSL transformation engine may write the output generated by the content of an `<xsl:template>` element to the output stream, or encase that output in an XSL variable. In XSL, the term template refers to a segment of XSL code contained within an `<xsl:template>` element.

If you invoke a template using `<xsl:call-template>`, the XSL transformation engine writes the output of the template to the output stream. For example:

```
<xsl:template name="TemplateName">
  <xsl:value-of select="$sc_currentitem/@template" />
</xsl:template>
<xsl:call-template name="TemplateName" />
```

Alternatively, you can put the output of a template in a variable:

```
<xsl:variable name="VariableName">
  <xsl:call-template name="TemplateName" />
</xsl:variable>
```

Note

You can use XSL match templates in XSL renderings, but match templates are outside the scope of this document. For more information about match templates, see the following section `The <xsl:apply-templates> XSL Element`.

You can pass parameters to an XSL template using the `<xsl:param>` and `<xsl:with-param>` XSL elements, and you can specify default values for parameters using the `select` attribute of `<xsl:param>`.

```
<xsl:template name="TemplateName">
  <xsl:param name="VariableName" select="$sc_currentitem" />
  <xsl:value-of select="$VariableName/@template" />
</xsl:template>
<xsl:call-template name="TemplateName">
  <xsl:with-param name="VariableName" select="." />
</xsl:call-template>
```

Note

The context element within an XSL template is the element that was the context element when the element in the calling context.

2.2.8 The `<xsl:apply-templates>` XSL Element

You can use the `<xsl:apply-templates>` XSL element to invoke XSL templates using match patterns instead of explicit lists of elements such as those used by `<xsl:for-each>`. For more information about `<xsl:apply-templates>`, see external documentation on XSL.

2.3 XPath and XSL Functions

This section provides an overview of functions available in XPath statements used in XSL programming.

2.3.1 The position() Function

The `position()` function returns the location of the element within a loop. For more information about the `position()` function, see the section The ancestor and ancestor-or-self Axes.

A common pattern is to compare `position()` to `last()` to determine whether a loop has reached the last element, such as to insert a spacing element between output elements. For example, the following code outputs an HTML line break (`
`) after each link to a child item of the context item except for the last link in the list.

```
<xsl:for-each select="$sc_currentitem/item">
  <sc:link><sc:text field="FieldName" /></sc:link>
  <xsl:if test="position() != last()">
    <br />
  </xsl:if>
</xsl:for-each>
```

2.3.2 The last() Function

The `last()` function returns the number of elements in a list. For more information about the `last()` function, see the previous section The position() Function.

2.3.3 The current() Function

The `current()` function represents the current element. For more information about the `current()` function, see the previous section The position() Function.

2.3.4 The document() Function

The `document()` function retrieves an external XML source, such as an RSS feed.

```
<xsl:variable name="rssurl" select="'http://www.asp.net/news/rss.ashx'" />
<xsl:variable name="rss" select="document($rssurl)" />
<xsl:if test="$rss">
  <xsl:for-each select="$rss//item">
    <a>
      <xsl:attribute name="href">
        <xsl:value-of select="link"/>
      </xsl:attribute>
      <xsl:value-of select="title"/>
    </a>
    <p>
      <xsl:value-of select="description" />
    </p>
  </xsl:for-each>
</xsl:if>
```

You can store the URL of the RSS feed in a field of an item:

```
<xsl:variable name="rssurl" select="sc:fld('FieldName',$sc_currentitem)" />
```

2.3.5 The concat() Function

The `concat()` function concatenates strings.

```
<xsl:variable name="VariableName" select="concat('A','B')" />
<xsl:variable name="VariableName" select="concat(concat('A','B'),'C')" />
<xsl:variable name="VariableName" select="concat(concat(concat('A','B'),'C'),'D')" />
```

2.3.6 The translate() Function

The `translate()` function converts characters in an input string to other characters in an output string, or removes characters from the input string. For example, the following outputs the specified field value after replacing dash characters (“-”) to underscore characters (“_”):

```
<xsl:value-of select="translate(sc:field('FieldName',$sc_currentitem),'-','_')" />
```

You can use the `translate()` function to convert a string representation of a date or date and time to a number. Sitecore stores date and time values using the ISO date format corresponding to the .NET format pattern `yyyyMMddTHH:mm:ss`, where `T` is a literal character that separates the date portion of the value from the time portion. To convert a date in this ISO format to a number for comparisons or other purposes, you can remove the `T` character using the `translate()` function.

```
<xsl:variable name="updated"
select="translate(sc:fld('__updated',$sc_currentitem),'T','')" />
```

2.3.7 The true() Function

The `true()` function returns a true value. You can use this function to inverse a value.

2.3.8 The false() Function

The `false()` function returns a false value. You can use this function to inverse a value.

2.3.9 The not() Function

The `not()` function negates a condition. The following condition is never true:

```
<xsl:if test="not(true())">
  <!--the XSL transformation engine will never invoke this code.-->
</xsl:if>
```

2.3.10 The count() Function

The `count()` function returns the number of elements in a list. For example, to determine if the context item has more than five child `<item>` elements:

```
<xsl:if test="count($sc_currentitem/item)>5">
```

2.3.11 The contains() Function

The `contains()` function returns true if the first argument contains the second argument. You can use the `contains()` function to determine if a list of IDs, such as that stored in a Multilist field, contains the ID of a specific item. For example, to determine if a field in the context item contains the ID of the context item:

```
<xsl:variable name="ids" select="sc:fld('FieldName',$sc_currentitem)" />
<xsl:if test="contains($ids,$sc_currentitem/@id)">
  <!--The specified field in the context item contains a reference to the context
item-->
</xsl:if>
```

You can implement this without a variable:

```
<xsl:if test="contains(sc:fld('FieldName',$sc_currentitem),$sc_currentitem/@id)">
  <!--The specified field in the context item contains a reference to the context
item-->
</xsl:if>
```

Chapter 3

The Sitecore XML Structure

This chapter provides an overview of the structure of the XML representation of a Sitecore database available to XSL renderings.

This chapter contains the following sections:

- Working with Items
- XPath Navigation
- Selecting Items

3.1 Working with Items

XSL renderings access an XML document that represents the structure of a Sitecore database. The XML document consists of a hierarchy of `<item>` elements. Each `<item>` element corresponds to an item in the Sitecore content tree, and contains a number of attribute values, a collection defining the fields of the item, and potentially a number of child `<item>` elements. For XSL processing efficiency, this XML representation does not contain field values.

Important

While there are methods to view the XML representation of a Sitecore database, use your knowledge of the information architecture, including the content tree and data template definitions, and the Sitecore extensions described in this document to avoid reliance on the specific XML format.

The root `<item>` element in the XML document corresponds to the `/Sitecore` item in the content tree. The following XML fragment includes some of the data in the default `/Sitecore` and `/Sitecore/Content` items. All `<item>` elements have a similar structure.

```
<item name="sitecore" key="sitecore" id="{11111111-1111-1111-1111-111111111111}"
tid="{C6576836-910C-4A3D-BA03-C277DBD3B827}" mid="{00000000-0000-0000-0000-000000000000}"
sortorder="100" language="en" version="1" template="root" parentid="{00000000-0000-0000-0000-000000000000}">
  <fields>
    <field tfid="{5DD74568-4D4B-44C1-B513-0AF5F4CDA34F}" key="  created by" type="text" />
    <!-- additional field definition elements -->
    <field tfid="{9C6106EA-7A5A-48E2-8CAD-F0F693B1E2D4}" key="__read only" type="checkbox" />
  </fields>
  <item name="content" key="content" id="{0DE95AE4-41AB-4D01-9EB0-67441B7C2450}"
tid="{E3E2D58C-DF95-4230-ADC9-279924CECE84}" mid="{00000000-0000-0000-0000-000000000000}"
sortorder="100" language="en" version="1" template="main section" parentid="{11111111-1111-1111-1111-111111111111}">
  <fields>
    <field tfid="{BADD9CF9-53E0-4D0C-BCC0-2D784C282F6A}" key="  updated by" type="text" />
    <!-- additional field definition elements -->
  </fields>
  <!-- item elements at this level represent children of /Sitecore/Content-->
  ...
</item>
<!-- additional item elements at this level represent siblings of /Sitecore/Content-->
</item>
```

3.1.1 Item Attributes

Each `<item>` element has a specific set of attributes, including:

- **@name:** The name of the item.
- **@key:** The lowercase of the name of the item.
- **@id:** The ID of the item.
- **@tid:** The ID of the data template definition item associated with the item.
- **@mid:** The ID of the branch template or command template used to insert the item, or the null GUID.
- **@sortorder:** The numerical sort order of the item relative to its sibling items.
- **@language:** The context language.
- **@version:** The version of the item within the language.
- **@template:** The lowercase name of the data template associated with the item.
- **@parentid:** The ID of the parent item of the item, or the null GUID for the root item.

Warning

For best performance, always compare the values of `@id` attributes to determine whether two elements represent the same item. For example, test whether `$sc_currentitem/@id=$sc_item/@id`, not whether `$sc_currentitem=$sc_item`.

3.1.2 Item Fields

Each `<item>` element in the XML representation of a Sitecore database contains a `<fields>` element. Each `<fields>` element contains a number of `<field>` elements. Each `<field>` element represents a field definition in the data template associated with the item, or one of the base templates associated with that template, including the standard template.

Each `<field>` element has a specific set of attributes including:

- `@tfid`: The ID of the data template field definition item.
- `@key`: The lowercase name of the data template field definition item.
- `@type`: The lowercase name of the data template field data type.

Note

The `<field>` elements do not contain field values. Use XSL extension controls and methods to retrieve field values.

3.2 XPath Navigation

This section describes techniques for using XPath notation to navigate an XML structure representing a Sitecore database in XSL renderings.

3.2.1 Elements and Items

XML represents data as a hierarchy of elements enclosed in angle brackets (“<>”). The XML representation of a Sitecore database available to XSL renderings represents each item in the database as an XML element of type `<item>`. In most cases, references to elements in this document refer to `<item>` elements, though the data contains other elements such as `<fields>` and `<field>` as described previously.

3.2.2 Specific Items

At any point in XSL processing, the developer can access several different items available to the XSL transformation engine.

The Context Item: `$sc_currentitem`

The context item is the item that corresponds to the path in the URL requested by the client. The `$sc_currentitem` variable contains the `<item>` element that represents the context item in the XML representation of the Sitecore database. The context item is the default data source for all renderings and therefore the default context element for XSL renderings that do not specify a data source.

The Data Source Item : `$sc_item`

A rendering can retrieve data from its data source item. The `$sc_item` variable represents the data source item for an XSL rendering. If the developer does not specify a data source item for a rendering, the default data source item is the context item, and `$sc_item` and `$sc_currentitem` are the same item.

XSL rendering logic begins with the first `<xsl:template>` XSL element in the code file. The XSL rendering boilerplate file uses the `select` attribute of the `<xsl:apply-templates>` XSL element to set the context element to the data source item and invoke the XSL template with `mode` attribute `main`:

```
<xsl:template match="*">
  <xsl:apply-templates select="$sc item" mode="main"/>
</xsl:template>
<xsl:template match="*" mode="main">
  <!--the context element is the data source item-->
  <!--developers typically insert code here-->
</xsl:template>
```

The Context Element : .

The context element is the location of the XSL transformation engine within an XML document, and is the location from which the XSL transformation engine interprets relative XPath statements. The dot character (“.”) represents the context element. XSL constructs such as `<xsl:for-each>` change the context element, but cannot change the context item.

The Current Element

Within the predicate of an XPath statement, the current element is the element that was the context element at the point that the XSL transformation engine began evaluating the XPath statement. The current element and the context element are often the same element. The `current()` function returns the current element

Consider the following example:

```
<xsl:for-each select="$sc_currentitem">
  <xsl:for-each select="./item[current()/@id=../@id]">
    <xsl:value-of select="@name" />
  </xsl:for-each>
</xsl:for-each>
```

The outer `<xsl:for-each>` element iterates over the context item (`$sc_currentitem`), setting the context element within the outer loop to the `<item>` element corresponding to the context item. The inner `<xsl:for-each>` iterates over the child `<item>` elements of the context element, which, within the outer loop, is the `<item>` element that represents the context item. Within the predicate of the XPath statement in the `select` attribute of the inner `<xsl:for-each>`, the context element is the child item, while the current element (`current()`) remains the context element as it was at the point that the XSL transformation engine began evaluating the XPath statement, which was the `<item>` element that corresponds to the context item. Because the ID of a child item is never equal to the ID of its parent, the inner `<xsl:for-each>` processes no items. This subtle difference between the current element and the context element can be important, especially when accessing the `ancestor` and `ancestor-or-self` axes as described further in this document.

Consider the following code:

```
<xsl:for-each select="$sc_item/item">
  <xsl:choose>
    <xsl:when test="$sc_currentitem/ancestor-or-self::item[@id=current()/@id]">
      <!--the context element is the iteration item or one of its descendants-->
    </xsl:when>
  </xsl:choose>
</xsl:for-each>
```

The outer `<xsl:for-each>` element iterates over the `<item>` elements that are children of the data source item (`$sc_item`). The `<xsl:when>` element tests if the context item (`$sc_currentitem`) is or has an ancestor that is that child `<item>` element (`current()`), for instance to determine if the context item is that item or one of its descendants. Within the predicate, the context element is the `<item>` element on the `ancestor-or-self` axis, while the current element remains the child of the data source item.

Important

Be sure to understand the difference between the context item, the context element, and the current element, which may or may not all be the same `<item>` in an XML document that represents a Sitecore database. The context item is the item requested by the browser. The context element is the location of the XML transformation engine in an XML document. The context item is the default context element for renderings that do not have an explicit data source. The context element is most commonly in the XML document containing the context item, and is most commonly an `<item>` element, but could be any type of element and could be in a different XML document. The current element refers to the context element, except in the predicate of looping constructs, where the current element is the element that was the context element at the opening of the loop.

Item Variables Using XPath

You can reference any item using a fully-qualified XPath statement (sometimes called a long path). For instance, you can create a variable representing the `/Sitecore/Content` item using the following XSL construct:

```
<xsl:variable name="content" select="/item[@key='sitecore']/item[@key='content']" />
```

Note

Because an XML document always has exactly one root element, you can shorten this expression using the wildcard character star ("`*`") to match that root element:

```
<xsl:variable name="content" select="*/item[@key='content']" />
```


Item Variables Using `sc:item()`

In addition to a true XPath, each `<item>` element also has a short path and an ID. If you know the ID or short path of an item, you can access that item by passing the short path or ID to the `sc:item()` XSL extension method:

```
<xsl:variable name="content" select="sc:item('/sitecore/content',.)"/>
<xsl:variable name="content" select="sc:item('{110D559F-DEA5-42EA-9C1C-8A5DF7E70EF9}',.)" />
<xsl:for-each select="$content/item">
  <xsl:value-of select="@name" /><br />
</xsl:for-each>
```

Pass Items to XSL Renderings Using the `<xsl:param>` XSL Element

You can pass additional items to XSL renderings as parameters using the `<xsl:param>` XSL element. Add rendering parameter definitions in the header of the XSL rendering, near the default parameter definitions. For example:

```
<xsl:param name="ParamNamePath"><!--default parameter value--></xsl:param>
<xsl:variable name="VariableName" select="sc:item($ParamNamePath,.)" />
```

For more information about passing parameters to XSL renderings, see the Presentation Component Reference manual.

3.2.3 Item References

An item can contain fields that contain the IDs of other Sitecore items, representing references from one item to another. If a field contains a single ID, you can use the `sc:fld()` XSL extension method to retrieve that ID, and pass it to the `sc:item()` XSL extension method to select the corresponding `<item>` element.

```
<xsl:variable name='IDVariableName' select='sc:fld('FieldName',$sc item)' />
<xsl:if test="$IDVariableName">
  <xsl:variable name='ItemVariableName' select='sc:item($IDVariableName,$sc_item)' />
  <xsl:if test="$ItemVariableName">
    <xsl:value-of select="$ItemVariableName/@name" />
  </xsl:if>
</xsl:if>
```

You can use the `sc:Split()` XSL extension method to iterate over the ordered list of IDs in a field that can reference multiple items.

```
<xsl:for-each select="sc:Split('FieldName',.)" >
  <xsl:for-each select="sc:item(text(),.)">
    <xsl:value-of select="@name" /><br />
  </xsl:for-each>
</xsl:for-each>
```

Note

While it may appear unusual to process what should always be a single item, this approach provides advantages over using only the `sc:item()` XSL extension method, such as setting the context element and shorter, more flexible, and more consistent syntax.

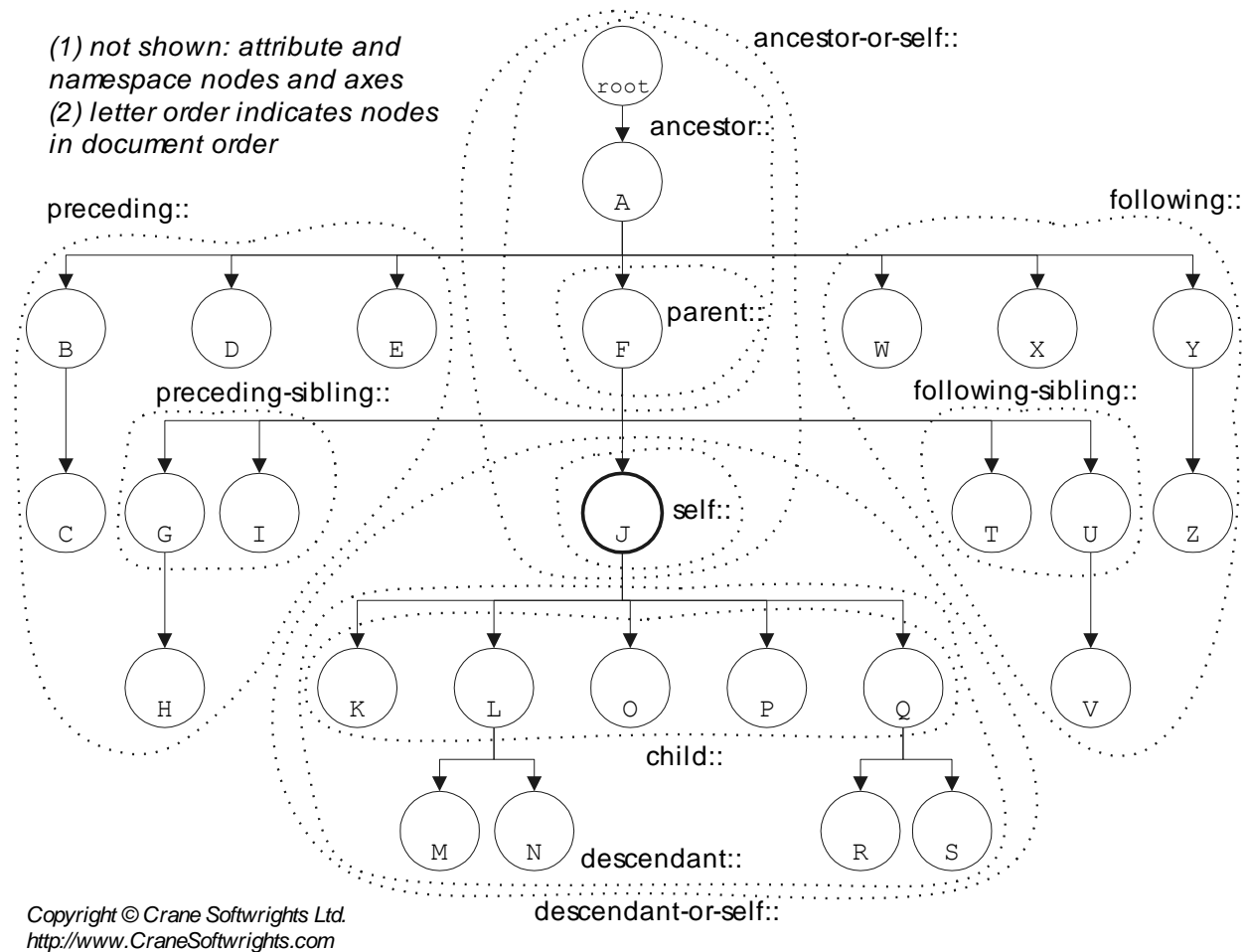
Tip

You can use the `sc:Split()` XSL extension method to process a field that contains the ID of a single item as well as fields that contain the IDs of multiple items.

3.2.4 Implicit Relationships (XPath Axes)

Each `<item>` element in the XML document has a number of implicit relationships with other `<item>` elements through various hierarchical axes. The following diagram, in which J represents the context element, provides an overview of the various XPath axes.³

³ Published with permission of Crane Softwrights Ltd., <http://www.CraneSoftwrights.com>.



The Self Axis

In XPath expressions, the dot character (“.”) represents the self axis, which contains only the context element, and is implicitly the default axis. Developers infrequently reference the self axis explicitly, instead referencing the context element implicitly or explicitly. The following three constructs are equivalent, with the shortest being generally preferable.

```
<xsl:value-of select="@id" />
<xsl:value-of select="./@id" />
<xsl:value-of select="self::*/@id" />
```

The XPath statement in the `select` attribute in the first example does not specify an axis, and therefore retrieves the value of an attribute of the context element. The second example explicitly references the context element (`.`), and uses the path operator (`/`) to select a named attribute of that item. The third example explicitly matches any element (`*`) on the self axis (`self::`), and retrieves the value of the attribute named `id`.

The Child Axis

Each element can have any number of child elements. The child axis is the default implicit axis, often represented by the path operator (`/`).

Child elements of an `<item>` element include nested `<item>` elements representing the children of the item, and other elements, such as the `<fields>` element within each `<item>` that contains `<field>` elements that represent the fields defined in the item’s data template. In Sitecore documentation, the terms children and child items are generally synonymous, and exclude child elements of an item in the XML document that are not `<item>` elements.

In all XPath statements in the `select` attribute in the following examples, the token `item` matches `<item>` elements. The first example explicitly matches `<item>` elements that are children of the context element. The second example matches the same items, demonstrating that XPath defaults to processing the child axis from the context element. The third example explicitly matches `<item>` elements on the child axis of the context element. The fourth example implicitly matches `<item>` elements on the child axis of the context element.

```
<xsl:for-each select="./item">
<xsl:for-each select="item">
<xsl:for-each select="./child:item" />
<xsl:for-each select="child:item">
```

You can use a construct such as the following to determine whether an item has children:

```
<xsl:if test="$sc_currentitem/item">
  <!--the context item has child items-->
</xsl:if>
```

The Parent Axis

Each element of the XML document has a parent element except for the root element `/Sitecore`. Two dots (`..`) specifies the axis.

For example, the following test whether the data template associated with the parent item of the context element is named `HomePage`:

```
<xsl:if test="./parent::item[@template='homepage']">
<xsl:if test="parent::item[@template='homepage']">
<xsl:if test="parent::*[@template='homepage']">
<xsl:if test="../[@template='homepage']">
<xsl:if test="..[@template='homepage']">
```

Note

The following expression determines not whether the parent item is based on the specified data template, but whether that parent item has a child that is based on that data template:

```
<xsl:if test="../item[@template='homepage']">
```

The ancestor and ancestor-or-self Axes

The `ancestor` axis returns in document order the elements that are ancestors of the context element. The `ancestor-or-self` axis is similar to the `ancestor` axis, but includes the context element itself. Document order refers to the order of elements in the XML document, from the root element down to a specific element. Considering the axis diagram included previously, if the context item is `S`, the `ancestor` axis includes `A`, `F`, `J`, and `Q`, while the `ancestor-or-self` axis includes `A`, `F`, `J`, `Q`, and `S`. The `ancestor` and `ancestor-or-self` axes are frequently useful in XSL renderings to process the items that enclose another item or determine whether an item is a descendant of another item, such as to generate a breadcrumb or highlight a navigational element corresponding to an item that contains the context item.

Within the `select` attribute of the `<xsl:for-each>` element, the `position()` function references the index of the element in the list of elements to process. For the `ancestor` and `ancestor-or-self` axes, this is the opposite of XML document order. In the predicate of the `select` attribute of the `<xsl:for-each>` element, the `last()` function returns the number of elements in the list of elements to process.

The `ancestor` axis is often useful in breadcrumbs. The breadcrumb should not include links to `A` and `F`, which represent `/Sitecore` and `/Sitecore/Content`, or to the context item, `S`, but should include links to `J` and `Q`. The `ancestor` axes excludes the context item, `S`. To exclude `A` and `F`, ignore the two furthest elements from the context item:

```
<xsl:for-each select="$sc_currentitem/ancestor::item[position()&lt;last()-1]">
```

Developers commonly use the `ancestor-or-self` to determine if one item is an ancestor of another, or is that `<item>` element itself. For instance, a navigation rendering might iterate over the sections beneath the home item, linking to each but highlighting the section containing the current page:

```
<xsl:for-each select="$home/item[@template='section']">
  <xsl:choose>
    <xsl:when test="$sc_currentitem/@id=@id">
      <!--the client has requested this section item-->
    </xsl:when>
    <xsl:when test="$sc_currentitem/ancestor-or-self::item[@id=current()/@id]">
      <!--the client has requested an item that is a descendant of this item-->
    </xsl:when>
    <xsl:otherwise>
      <!--the client has not requested this item or any of its descendants-->
    </xsl:otherwise>
  </xsl:choose>
</xsl:for-each>
```

Developers also use of the `ancestor-or-self` axis to retrieve branding information from the nearest ancestor `<item>` element that defines it, which may be the context element. For example, the following code retrieves processes an image field in the nearest ancestor that defines a value for the field, which could be the context element,

```
<sc:image field="FieldName" select="$sc_currentitem/ancestor-or-self::item[sc:fld('FieldName',.,'src')][1]" />
```

The tokens `$sc_currentitem/ancestor-or-self::item` cause the XSL transformation engine to evaluate the predicate for the context element itself and each of its ancestor `<item>` elements. The first predicate restricts the selection to only those `<item>` elements that define a value for the specified field (`[sc:fld('FieldName',.,'src')]`). The second predicate (`[1]`) selects the matching `<item>` element that is closest to the context item. The `<sc:image>` control generates an `` tag using the specified field value in that item.

Descendants and Recursion

The `descendant` axis includes all descendant elements of an element, recursively. The `descendant-or-self` axis includes all descendant elements of an element, recursively, as well as the element itself. Both axes represent elements in XML document order.

For example, in the diagram included previously, if the context element is J, then the `descendant` axis includes the K, L, M, N, O, P, Q, R, and S elements, while the `descendant-or-self` axis includes the J, K, L, M, N, O, P, Q, R, and S elements.

Recursion, including the `descendant` and `descendant-or-self` axes, can be expensive, but can serve certain purposes such as generation of a data-driven site map. For example:

```
<xsl:call-template name="SiteMapStep" />
<xsl:template name="SiteMapStep">
  <xsl:param name="level" select="1" />
  <xsl:param name="start" select="$home" />
  <ul class="{concat('sitemap', $level)}">
    <xsl:for-each select="$start/item">
      <li>
        <sc:link><sc:text field="title" /></sc:link>
        <xsl:if test="item">
          <xsl:call-template name="SiteMapStep">
            <xsl:with-param name="level" select="$level+1" />
            <xsl:with-param name="start" select="." />
          </xsl:call-template>
        </xsl:if>
      </li>
    </xsl:for-each>
  </ul>
</xsl:template>
```

Warning

For performance, avoid excessive use of the `descendant` and `descendant-or-self` axes including the `//` construct, especially to process large numbers of items. Structure the information architecture and user search indexes and other features to limit the number of items processed by any single piece of code.

3.3 Selecting Items

This section provides techniques for selecting items to process.

3.3.1 How to Select Items Based on a Specific Data Template

To process items based on a specific data template, compare the `@template` attribute in the XPath predicate.

```
<xsl:for-each select="$sc item/item[@template='templatename']">
```

Important

The `@template` attribute contains the data template key, which is the lowercase of the name of the data template.

To process items based on one or more templates, consider the XPath `contains()` function.

```
<xsl:for-each select="$sc item/item[contains('!templatename!templatename2!',  
concat(concat('!',@template),'!'])]">
```

To process items based on data templates that share a common base template:

```
<xsl:for-each select="$sc_currentitem/item[sc:IsItemOfType('basetemplate',.)]">
```

To process items based on data templates that share a common base template, including items based directly on that base template:

```
<xsl:for-each select="$sc_currentitem/item[@template='basetemplate' or  
sc:IsItemOfType('basetemplate',.)]">
```

3.3.2 How to Select Items with a Version in the Context Language

In some sites supporting multiple languages, CMS users do not translate every item before publishing. To select items that have a version in the context language, check for a value in the creation date field. For example:

```
<xsl:for-each select="$sc_currentitem/item[sc:fld(' created',.)]">  
  <!--the context element is an item with a version in the context language-->  
</xsl:for-each>
```

3.3.3 How to Select Items with Children

To select items with children, include a predicate that specifies the existence of child `<item>` elements. For example, to process all children of the context item that have at least one child item:

```
<xsl:for-each select="$sc_currentitem/item[item]">  
  <!--the context element, a child of the context item, has at least one child item-->  
</xsl:for-each>
```

To process all children of the context item that have at least one child based on or that inherits from a specific data template and has a version in the context language:

```
<xsl:for-each select="$sc_currentitem/item[item[@template='basetemplate' or  
sc:IsItemOfType('basetemplate',.)) and sc:fld('__created',.)]">
```

Chapter 4

XSL and XPath with Sitecore

This chapter describes considerations and techniques for developers working with XSL renderings, including XSL, XPath, and Sitecore XSL extensions written in .NET.

This chapter contains the following sections:

- The Sitecore XSL Boilerplate File
- XSL Error Management
- Working with Fields
- Overview of XSL Extension Controls and Methods
- Sitecore XSL Extension Controls
- Sitecore XSL Extension Methods

4.1 The Sitecore XSL Boilerplate File

When you create a new XSL rendering using the Developer Center, Sitecore duplicates the XSL rendering boilerplate file, which provides a basis for the new code. For more information about the boilerplate file used to create XSL renderings, see the Presentation Component Cookbook.

4.2 XSL Error Management

The layout engine does not compile XSL renderings until runtime. By default, if the layout engine encounters a syntax error in an XSL rendering at runtime, it embeds information about the error in the output stream.

Extensions to XSL written in .NET may throw exceptions. By default, if a rendering calls an XSL extension method that throws an exception, the layout engine adds information about the exception to the output stream, which may include output generated by the rendering prior to the exception.

4.3 Working with Fields

The following table identifies the Sitecore XSL extension controls and methods you can use to access the different data template field types in XSL renderings as described in the following sections of this document.

Field Types	Construct	Notes
Attachment Icon IFrame Integer Internal Link Layout Number Password Security Template Field Source Tristate	N/A	Do not process these field types using XSL.
Checkbox Droplist File Grouped Droplist	<code>sc:fld()</code>	Use the <code>sc:fld()</code> XSL extension method to process the specified types of fields.
Checklist Multilist Treelist TreelistEx	<code>sc:Split()</code> and <code>sc:item()</code>	Use the <code>sc:Split()</code> XSL extension method in conjunction with the <code>sc:item()</code> XSL extension method to retrieve the items referenced by a field that allows selection of multiple items.
Date DateTime	<code><sc:date></code>	Use the <code><sc:date></code> XSL extension control to process Date and Datetime fields.
Droplink Droptree Grouped Droplink Internal Link	<code>sc:fld()</code> and <code>sc:item()</code>	Use the <code>sc:item()</code> XSL extension method in conjunction with the <code>sc:fld()</code> XSL extension method to retrieve the item referenced by a field that allows selection of a single item.
File Drop Area	<code>sc:fld()</code> and <code>sc:item()</code>	Use the <code>sc:fld()</code> XSL extension method to retrieve <code>mediaid</code> attribute of the field, and the <code>sc:item()</code> XSL extension method to access the children of that item. For more information about accessing File Drop Area fields, see the following section, File Drop Area Fields.
General Link	<code><sc:link></code>	Use the <code><sc:link></code> XSL extension control to process General Link fields.
Image	<code><sc:image></code>	Use the <code><sc:image></code> XSL extension control to process Image fields.
Multi-Line Text	<code><sc:memo></code>	Use the <code><sc:memo></code> XSL extension control to process Multi-Line text fields.
Rich Text	<code><sc:html></code>	Use the <code><sc:html></code> XSL extension control to process Rich Text fields.
Single-Line Text	<code><sc:text></code>	Use the <code><sc:text></code> XSL extension control to process Single-Line Text fields.

Tip

To view the raw value stored in a field, such as the attributes available for an Image, File, or General Link field, view raw field values in the Content Editor as described in the Client Configuration Cookbook.⁴

4.3.1 File Drop Area Fields

You can implement code based on the following to access the media items in a field of type File Drop Area:

```
<xsl:variable name="folderid" select="sc:fld('filedropareafield',$sc_item,'mediaid')"/>
/>
<xsl:if test="$folderid and sc:item($folderid,$sc_item)/item">
  <xsl:for-each select="sc:item($folderid,$sc_item)/item">
    <a href="{sc:GetMediaUrl(.)}">
      <xsl:value-of select="@name"/>
    </a>
  </xsl:for-each>
</xsl:if>
```

The `$folderid` variable contains the GUID of the attribute named `mediaid` in the `FileDropArea` field named `FileDropAreaField` in the data source for the rendering. If this value is not empty, and the corresponding item has children, then create links to each of those children.

⁴ To access the Client Configuration Cookbook, see <http://sdn5.sitecore.net/Reference/Sitecore%206.aspx>.

4.4 Overview of XSL Extension Controls and Methods

XSL extensions expose .NET logic to XSL renderings. There are two types of XSL extensions: XSL extension controls and XSL extension methods.

XSL extension controls are XML elements in the XSL code that correspond to .NET classes. For example, the `<sc:text>` element corresponds to the .NET XSL extension control class `Sitecore.Web.UI.XslControls.Text`. XSL extension controls are standalone elements in the XSL code.

XSL extension methods correspond to methods in a class. For example, the `sc:fld()` XSL extension method corresponds to the `fld()` method of the `Sitecore.Xml.Xsl.XslHelper` class represented by the `sc` namespace. XSL extension methods appear within attribute values of XSL elements and cannot stand alone.

In general, XSL extension methods are easier to write, more flexible to use, and expose more functionality than XSL extension controls more efficiently, but XSL extension controls result in more readable code syntax.

Note

Unless otherwise specified, all XSL extensions controls and methods work with the current version of each item in the context language.

4.5 Sitecore XSL Extension Controls

Sitecore provides several .NET XSL extension controls to simplify various rendering functions.

4.5.1 Common Attributes

Several of the XSL extension controls described in this chapter accept the attributes described in the following sections.

The `show-title-when-blank` Attribute

A value of `true` in the `show-title-when-blank` attribute causes the layout engine to output the name of the data template field before the inline editing control in the Page Editor if the field is empty, which can help CMS users locate empty fields.

```
<sc:text field="FieldName" show-title-when-blank="true" select="$sc_currentitem" />
```

The `disable-web-editing` Attribute

A value of `true` for the `disable-web-editing` attribute disables web editing for the field in the Page Editor. You can also disable web editing by using the `sc:fld()` XSL extension method instead of `sc:field()`, or by passing a third parameter to `sc:field()`.

```
<sc:text field="FieldName" select="$sc_currentitem" />
<xsl:value-of select="sc:field('FieldName',$sc_currentitem)" disable-output-
escaping="yes" />
<sc:text field="FieldName" disable-web-editing="true" select="$sc_currentitem" />
<xsl:value-of select="sc:fld('FieldName',$sc_currentitem)" />
<xsl:value-of select="sc:field('FieldName',$sc_currentitem,'disable-web-
editing=true')" disable-output-escaping="yes" />
```

The `select` Attribute

The `select` attribute controls the item on which the control operates. If you do not specify a value for the `select` attribute, the control operates on the context element.

Arbitrary Attributes

The `<sc:image>` and `<sc:link>` XSL extension controls pass any unrecognized attributes to the HTML element they generate.

For example:

```
<sc:image border="1" ...
<sc:link class="CSSClass" ...
```

4.5.2 The Sitecore XSL Extension Controls

This section describes the individual Sitecore XSL extension controls.

Note

The `<sc:html>`, `<sc:memo>`, and `<sc:text>` XSL extension controls are very similar. The only significant implementation difference between these XSL extension controls is that `<sc:memo>` supports the `line-breaks` attribute.

The `<sc:date>` XSL Extension Control

The `<sc:date>` XSL extension control outputs the value of a Date or Datetime field.

The `<sc:date>` XSL extension control requires the following attribute:

- **field:** The name of the Date or Datetime field.

The `<sc:date>` XSL extension control accepts the following optional attributes:

- **format:** The .NET format pattern.⁵
- **select:** The item containing the Date or Datetime field.
- **disable-web-editing:** See the preceding section The disable-web-editing Attribute.

The `sc:formatdate()` XSL extension method provides functionality equivalent to that of the `<sc:date>` XSL extension control.

```
<sc:date field="FieldName" format="d" select="$sc_currentitem" />
<xsl:value-of select="sc:formatdate(sc:fld("FieldName",$sc_currentitem),'d')" />
```

The `<sc:dot>` XSL Extension Control

The `<sc:dot>` XSL extension control generates a content marker in the Page Editor. Content markers support editing content while browsing a virtual copy of the web site.

The `<sc:dot>` XSL extension control does not require any attributes.

The `<sc:dot>` XSL extension control accepts the following optional attribute:

- **select:** The item to associate with the content marker.

The `dot:Render()` XSL extension method provides functionality equivalent to that of the `<sc:dot>` XSL extension control.

```
<sc:dot select="$sc_currentitem" />
<xsl:value-of select="dot:Render($sc_currentitem)" />
```

Important

When possible, use inline editing features instead of content markers.

The `<sc:html>` XSL Extension Control

The `<sc:html>` XSL extension control outputs the value of a Rich Text field.

The `<sc:html>` XSL extension control requires the following attribute:

- **field:** The name of the Rich Text field.

The `<sc:html>` XSL extension control accepts the following optional attributes:

- **select:** The item containing the Rich Text field.
- **disable-web-editing:** See the preceding section The disable-web-editing Attribute.
- **show-title-when-blank:** See the preceding section The show-title-when-blank Attribute.

The `sc:fld()` and `sc:field()` XSL extension methods provide functionality equivalent to that of the `<sc:html>` XSL extension control.

```
<sc:html field="FieldName" select="$sc_currentitem" />
<xsl:value-of select="sc:field('FieldName',$sc_currentitem)" disable-output-
escaping="yes" />
<sc:html field="FieldName" select="$sc_currentitem" disable-web-editing="true" />
<xsl:value-of select="sc:fld('FieldName',$sc_currentitem)" />
```

The `<sc:image>` XSL Extension Control

The `<sc:image>` XSL extension control outputs an HTML image (``) element using the image referenced in an Image field.

⁵ For information about .NET date format patterns, see <http://msdn.microsoft.com/en-us/library/97x6twsz.aspx>.

The `<sc:image>` XSL extension control requires the following attribute:

- **field:** The name of the Image field.

The `<sc:image>` XSL extension control accepts the following optional attributes:

- **select:** The item containing the field.
- **w:** Width in pixels.
- **h:** Height in pixels.
- **mw:** Maximum width in pixels.
- **mh:** Maximum height in pixels.
- **la:** Language (defaults to context language).
- **vs:** Version (defaults to latest version).
- **db:** Database name (defaults to context database).
- **bc:** Background color (defaults to black).
- **as:** Allow stretch (defaults to false, set to 1 for true).
- **sc:** Scale by floating point number (.25 = 25%).
- **thn:** Thumbnail (set to 1 for true).
- **disable-web-editing:** See the preceding section The disable-web-editing Attribute.

Note

Attributes of the `<sc:image>` XSL extension control that affect height and width do not correspond to the HTML `height` and `width` attributes of the `` element. Image manipulation such as resizing occurs on the server to minimize network traffic to transfer the image from the server to the client.

The `<sc:image>` XSL extension control passes unrecognized attributes to the `` element it generates.

```
<sc:image field="FieldName" select="$sc_currentitem" border="1" thn="1"/>
```

You can use the `sc:fld()` XSL extension method to access the individual properties of an Image field.

```

```

The `<sc:link>` XSL Extension Control

The `<sc:link>` XSL extension control generates an HTML anchor (`<a>`) element.

The `<sc:link>` XSL extension control does not require any attributes.

The `<sc:link>` XSL extension control accepts the following optional attributes:

- **field:** The name of the Image field.
- **select:** The item containing the field.
- **text:** The text content that the user will click in the HTML `<a>` tag.
- **disable-web-editing:** See the preceding section The disable-web-editing Attribute.

By default, the `<sc:link>` XSL extension control generates a link to the item represented by the context element. To link to a specific item, specify that item using the `select` attribute. To link as specified in a field of type General Link in the context element, pass the name of the field to the

control using the `field` attribute. To link as specified in a General Link field in a specific item, pass both the `select` and the `field` attributes.

You can specify the text of the link using the `text` attribute, or the text value of the `<sc:link>` element. If you specify both, the layout engine ignores the `text` attribute, even if the text value evaluates to an empty string.

```
<sc:link text="click here" />
<sc:link text="this is ignored">this is output</sc:link>
```

The `<sc:link>` XSL extension control passes unrecognized attributes to the `<a>` element it generates.

```
<sc:link class="CSSClass" />
```

You can use the `sc:fld()` XSL extension method to access the individual properties of a General Link field.

```
<xsl:if test="sc:fld('FieldName',$sc_currentitem,'linktype')='mailto'">
```

Note

In the Page Editor, using `sc:field()` as a parameter to `<sc:link>` XSL extension control may result in a link looking incorrect because of including markup. To prevent this, use `sc:fld()` instead:

```
<sc:link select="$home">
<xsl:value-of select="sc:fld('Title',$home)" />
</sc:link>
```

Also, you can pass the following attribute to `<sc:link>` to disable inline editing in the Page Editor:

```
disable-web-editing="true"
```

The `<sc:memo>` XSL Extension Control

The `<sc:memo>` XSL extension control outputs the value of a Multi-Line Text field.

The `<sc:memo>` XSL extension control requires the following attribute:

- **field:** The name of the Multi-Line Text field.

The `<sc:memo>` XSL extension control accepts the following optional attributes:

- **select:** The item containing the Multi-Line Text field.
- **line-breaks:** Replacement characters for line feeds in the Multi-Line Text field.
- **disable-web-editing:** See the preceding section The disable-web-editing Attribute.
- **show-title-when-blank:** See the preceding section The show-title-when-blank Attribute.

The `sc:fld()` and `sc:field()` XSL extension methods provide functionality equivalent to that of the `<sc:memo>` XSL extension control.

```
<sc:memo field="FieldName" select="$sc_currentitem" />
<xsl:value-of select="sc:field('FieldName',$sc_currentitem)" disable-output-
escaping="yes" />
<xsl:value-of select="sc:fld('FieldName',$sc_currentitem)" />
<sc:memo field="FieldName" select="$sc_currentitem" line-breaks="&lt;br /&gt;" />
```

The `<sc:sec>` XSL Extension Control

The `<sc:sec>` XSL extension control causes the XSL transformation engine to process the enclosed segment of code if the context user has the designated access right to an item.

The `<sc:sec>` XSL extension control accepts the following attributes:

- **require:** Access right code.
- **select:** The item for which to evaluate the access right.

The `require` attribute supports the following access rights:

- **item:admin:** Administer access right.
- **item:create:** Create access right: `item:create`.
- **item:delete:** Delete access right.
- **item:read:** Read access right.
- **item:rename:** Rename access right.
- **item:write:** Write access right.

For example:

```
<sc:sec req="item:delete" select="$sc currentItem">
  <sc:sec req="item:create" select="$sc currentItem">
    <!--the context user has both delete and create access rights to the context item-->
  </sc:sec>
</sc:sec>
```

The `sc:HasRight()` XSL extension method provides functionality equivalent to that of the `<sc:sec>` XSL extension control.

```
<xsl:if test="sc:HasRight('item:delete',$sc currentItem)">
```

The `<sc:text>` XSL Extension Control

The `<sc:text>` XSL extension control outputs the value of a Single-Line Text field or other simple text field.

The `<sc:text>` XSL extension control requires the following attribute:

- **field:** The name of the Single-Line Text field.

The `<sc:text>` XSL extension control accepts the following optional attributes:

- **select:** The item containing the Single-Line Text field.
- **disable-web-editing:** See the preceding section The `disable-web-editing` Attribute.
- **show-title-when-blank:** See the preceding section The `show-title-when-blank` Attribute.

The `sc:fld()` and `sc:field()` XSL extension methods provide functionality equivalent to that of the `<sc:text>` XSL extension control.

```
<sc:text field="FieldName" select="$sc currentItem" />
<xsl:value-of select="sc:fld('FieldName',$sc currentItem)" />
<xsl:value-of select="sc:field('FieldName',$sc currentItem)" disable-output-escaping="yes" />
```

The `<sc:disableSecurity>` XSL Extension Control

The `<sc:disableSecurity>` XSL extension control causes the XSL transformation engine to disable security checks while evaluating the enclosed XSL code, causing that code to execute in the security context of an administrative user.

The `<sc:disableSecurity>` XSL extension control does not accept any attributes.

For more information about the `<sc:disableSecurity>` XSL extension control, see the following section [The `<sc:enableSecurity>` XSL Extension Control](#).

The `<sc:enableSecurity>` XSL Extension Control

The `<sc:enableSecurity>` XSL extension control causes the XSL transformation engine to apply security while evaluating the enclosed XSL code, causing that code to execute in the security context of the context user.

Because security applies by default, you do not need to use `<sc:enableSecurity>` except within `<sc:disableSecurity>`. For example:

```
<!--the system enforces security while processing this segment of code-->
<sc:disableSecurity>
  <!--the system ignores security while processing this segment of code-->
  <sc:enableSecurity>
    <!--the system enforces security while processing this segment of code-->
    </sc:enableSecurity>
  <!--the system ignores security while processing this segment of code-->
</sc:disableSecurity>
<!--the system enforces security while processing this segment of code-->
```

The `<sc:enableSecurity>` XSL extension control does not accept any attributes.

The `sc:EnterSecurityState()` and `sc:ExitSecurityState()` XSL extension methods provide functionality equivalent to that of the `<sc:disableSecurity>` and `<sc:enableSecurity>` XSL extension controls.

```
<xsl:value-of select="sc:EnterSecurityState(false())" />
  <!--the system ignores security while processing this segment of code-->
<xsl:value-of select="sc:ExitSecurityState()" />
```

The `<xsl:value-of>` elements call the XSL extension methods, but generate no output.

4.6 Sitecore XSL Extension Methods

This section describes some of the Sitecore XSL extension methods available to XSL renderings.

4.6.1 The `sc` Namespace : The `Sitecore.Xml.Xsl.XslHelper` Class

This section describes the most frequently used Sitecore XSL extension methods, which are in the `Sitecore.Xml.Xsl.XslHelper` class represented by the `sc` namespace.

Important

The `Sitecore.Xml.Xsl.XslHelper` class exposes a number of XSL extension methods not documented in this section. For more information about these methods, see the Sitecore API documentation.⁶

The `sc:fld()` XSL Extension Method

The `sc:fld()` XSL extension returns the raw value of a field, or the value of an attribute within an XML field value. The following example creates a variable using the value of a field in the context item:

```
<xsl:variable name="VariableName" select="sc:fld('FieldName',$sc_currentitem)" />
```

A common use of `sc:fld()` is to determine if a Checkbox field is selected. A Checkbox field stores the value 1 if the user selects the checkbox. Always check for this value to determine whether the user has selected the checkbox.

```
<xsl:if test="sc:fld('FieldName',$sc_currentitem)!='1'">
  <!--checkbox field does not exist in context item or the user has not selected it-->
</xsl:if>
```

Certain types of fields, including Image, File, and General Link, represent their value using a single XML element with a number of attributes. You can pass a third parameter to `sc:fld()` to retrieve the value of a specific attribute. For example, to generate a link based on field of type File, you could use the `sc:fld()` method to retrieve the `src` attribute from the field value:

```
<xsl:variable name="src" select="sc:fld('FieldName',$sc_currentitem,'src')" />
<xsl:if test="$src">
  <a href="{concat('/', $src)}">
    <xsl:value-of select="concat('/', $src)" />
  </a>
</xsl:if>
```

To access the media item referenced by a File field, use the `sc:item()` method to retrieve the item referenced by the `mediaid` attribute.

```
<xsl:variable name="mediaid" select="sc:fld('FieldName',$sc_currentitem,'mediaid')" />
<xsl:if test="$mediaid">
  <xsl:variable name="mediaitem" select="sc:item($mediaid,$sc_currentitem)" />
  <xsl:if test="$mediaitem">
    <a href="{concat('/', sc:GetMediaUrl($mediaitem))}">
      <xsl:choose>
        <xsl:when test="sc:fld('title',$mediaitem)">
          <sc:text field="title" select="$mediaitem" />
        </xsl:when>
        <xsl:otherwise>
          <xsl:value-of select="$mediaitem/@name" />
        </xsl:otherwise>
      </xsl:choose>
    </a>
  </xsl:if>
</xsl:if>
```

⁶ For access to the Sitecore API documentation, see <http://sdn5.sitecore.net/Reference/Sitecore%206.aspx>.

Important

The `sc:fld()` XSL extension method does not rewrite links to use friendly URLs, for example when retrieving the value of a Rich Text field. To rewrite links, use the `sc:field()` XSL extension method as described in the following section [The `sc:field\(\)` XSL Extension Method](#).

The `sc:field()` XSL Extension Method

The `sc:field()` XSL extension method returns the value of a field and includes markup to support inline editing if the user is inline editing in the Page Editor.

```
<xsl:value-of select="sc:field('FieldName',$sc_currentitem)" disable-output-escaping="yes" />
```

You can pass parameters, including those used to resize images, using a third parameter. For example, to process an image field using parameters equivalent to the attributes supported by the `<sc:image>` XSL extension control:

```
<xsl:value-of select="sc:field('FieldName',$sc_currentitem,'disable-web-editing=yes&thn=1&thn=1&thn=1')&thn=1" disable-output-escaping="yes" />
```

The `sc:item()` XSL Extension Method

The `sc:item()` XSL extension method returns the `<item>` element corresponding to the ID or short path specified by the first parameter.

```
<xsl:variable name="content" select="/item[@key='sitecore']/item[@key='content']" />
<xsl:variable name="content" select="sc:item('/sitecore/content',$sc_currentitem)" />
<xsl:variable name="content" select="sc:item('{110D559F-DEA5-42EA-9C1C-8A5DF7E70EF9}',. )" />
<xsl:value-of select="$content/@name" />
```

Important

You must pass an element in the XML document containing the referenced item as the second parameter to the `sc:item()` extension method.

You can determine if the referenced item exists and the context user has the `item:read` access right to it by checking the value returned by the `sc:item()` XSL extension method. For example:

```
<xsl:variable name="content" select="sc:item('/sitecore/content',. )" />
<xsl:if test="$content">
  <xsl:value-of select="$content/@name" />
</xsl:if>
```

The `sc:path()` XSL Extension Method

The `sc:path()` XSL extension method returns the friendly URL of a content item.

```
<a href="{sc:path($sc_currentitem)}">
```

The `sc:GetMediaUrl()` XSL Extension Method

The `sc:GetMediaUrl()` XSL extension method returns the friendly URL of a media item. Replace the `FieldName` parameter in the sample code below with a valid field name for a field of Field Type Image or File.

```
<xsl:variable name="mediaid" select="sc:fld('FieldName',$sc_currentitem,'mediaid') " />
<xsl:if test="$mediaid">
  <xsl:variable name="mediaitem" select="sc:item($mediaid,.)" />
  <xsl:if test="$mediaitem">
    <a href="{concat('/',sc:GetMediaUrl($mediaitem))}">
      <xsl:value-of select="$mediaitem/@name" /></a>
    </xsl:if>
  </xsl:if>
```

Important

Sitecore does not prefix the URL of the media item with a slash (“/”) character automatically. This can result in URLs that exceed browser or server limits. Prefix media URLs with slash characters when necessary.

The `sc:pageMode()` XSL Extension Method

The `sc:pageMode()` XSL extension method returns an XML structure indicating the client mode, such as Preview, Page Editor, or the Debugger, with and without different features enabled. You can use this information to output markup exposing different features in different modes. For more information about using the page mode, see the Client Configuration Cookbook.⁷

The `sc:IsItemOfType()` XSL Extension Method

The `sc:IsItemOfType()` XSL extension method returns true if an item is based on a data template that inherits from a specific base data template.

```
<xsl:if test="sc:IsItemOfType('basetemplate',$sc_currentitem)">
  <xsl:if test="$sc_currentitem/@template='basetemplate' or
sc:IsItemOfType('basetemplate',$sc_currentitem)">
```

Important

The `sc:IsItemOfType()` method returns false for items that inherit directly from the specified base template. Both call the `sc:IsItemOfType()` XSL extension method and compare the template name directly when necessary:

```
<xsl:if test="sc:IsItemOfType('basetemplate',$sc_currentitem) or
$sc_currentitem/@template='basetemplate'">
```

The `sc:Split()` XSL Extension Method

The `sc:Split()` XSL extension method returns an XML structure containing the IDs of the items selected in a selection field. You can use the `sc:Split()` XSL extension method to process the values in a Tree, Multilist, Treelist, or other field allowing selection of zero or more Sitecore items. For example:

```
<xsl:for-each select="sc:Split('FieldName',$sc_currentitem)">
  <xsl:for-each select="sc:item(text(),$sc_currentitem)">
    <xsl:value-of select="@name" /><br />
  </xsl:for-each>
</xsl:for-each>
```

Note

The `sc:Split()` XSL extension method does not confirm the existence of items corresponding to the IDs contained in the field value.

The `sc:formatdate()` XSL Extension Method

The `sc:formatdate()` XSL extension method returns a formatted string based on a date value stored in the ISO format used by Sitecore. For more information about formatting dates, see the previous sections The `translate()` Function and The `<sc:date>` XSL Extension Control.

```
<xsl:value-of select="sc:formatdate(sc:fld('FieldName',$sc_currentitem),'d')" />
```

The `sc:ToLower()` XSL Extension Method

The `sc:ToLower()` XSL extension method returns the lowercase value of a string. The following condition is always true:

```
<xsl:if test="sc:ToLower($sc_currentitem/@name)=$currentitem/@key">
```

⁷ To access the Client Configuration Cookbook, see <http://sdn5.sitecore.net/Reference/Sitecore%206.aspx>.

Important

XPath is case-sensitive. Always convert values to a consistent character case before comparison.

The `sc:trace()` XSL Extension Method

The `sc:trace()` XSL extension method writes a message to the trace log visible in the Sitecore debugger. For example:

```
<xsl:value-of select="sc:trace(concat('Context element item path: ',sc:path()))" />
```

In this case, the `<xsl:value-of>` element generate no output, but calls the `sc:trace()` XSL extension method to write a message to the trace.

The `sc:qs()` XSL Extension Method

The `sc:qs()` XSL extension method returns the value of a URL query string parameter.

```
<xsl:choose>
  <xsl:when test="sc:ToLower(sc:qs('ParameterName'))='true' or sc:qs('ParameterName')='1'">
    <!--URL query string parameter is true-->
  </xsl:when>
  <xsl:otherwise>
    <!--URL query string parameter is not true-->
  </xsl:otherwise>
</xsl:choose>
```

The `sc:random()` XSL Extension Method

The `sc:random()` XSL extension method returns a somewhat random integer as returned by `System.Random.Next(int)`.⁸ For example, to generate a number between one and ten:

```
<xsl:variable name="VariableName" select="sc:random(11)" />
```

4.6.2 Additional XSL Extension Method Classes

This section describes several additional classes that you can use as XSL extension method libraries. For information about these libraries, see Sitecore API documentation.⁹

Excluding content marker functionality, the only class containing XSL extension methods provided by the default boilerplate file used to create XSL renderings is the `Sitecore.Xml.Xsl.XslHelper` class represented by the `sc` namespace. This class contains the most frequently used XSL extension methods.

To use additional extension libraries, update the XSL rendering header as shown for each additional extension library.

The `dateutil` Namespace : `Sitecore.DateUtil`

You can use some of the methods in the `Sitecore.DateUtil` class as XSL extension methods.

```
xmlns:dateutil="http://www.sitecore.net/dateutil"
exclude-result-prefixes="dot sc dateutil"
```

Note

The `sc` namespace contains the most frequently used methods for manipulating dates.

⁸ For information about `System.Random.Next(int)`, see <http://msdn.microsoft.com/en-us/library/system.random.next.aspx>.

⁹ For access to the Sitecore API documentation, see <http://sdn5.sitecore.net/Reference/Sitecore%206.aspx>.

The stringutil Namespace : Sitecore.StringUtil

While there are some methods for manipulating strings in `Sitecore.Xml.Xsl.XslHelper`, there are additional helpful methods for manipulating strings in the `Sitecore.StringUtil` class that you can use as XSL extension methods.

```
xmlns:stringutil="http://www.sitecore.net/stringutil"  
exclude-result-prefixes="dot sc stringutil"
```

The mainutil Namespace : Sitecore.MainUtil

There are some miscellaneous methods in the `Sitecore.MainUtil` class that you can use as XSL extension methods.

```
xmlns:mainutil ="http://www.sitecore.net/mainutil"  
exclude-result-prefixes="dot sc mainutil"
```

The sql Namespace : Sitecore.Xml.Xsl.SqlHelper

There are some helpful methods for working with SQL databases in the `Sitecore.Xml.Xsl.Sqlhelper` class that you can use as XSL extension methods.

```
xmlns:sql="http://www.sitecore.net/sql"  
exclude-result-prefixes="dot sc sql"
```

Chapter 5

Custom XSL Extension Libraries

This chapter provides techniques for implementing custom .NET XSL extensions.

Use custom XSL extensions:

- To perform resource-intensive operations.
- To increase readability of the code used for complex operations
- To access data in a system other than the current Sitecore database.

This chapter contains the following section:

- Custom XSL Extension Methods

5.1 Custom XSL Extension Methods

This section provides procedures for implementing custom XSL extension methods using .NET. You can register your own XSL namespace containing custom XSL extension methods, or add methods to the default `sc` namespace.

5.1.1 How to Register a Custom XSL Extension Method Library

You can register any class as a custom XSL extension method library. The class does not need to implement any interface or inherit from any specific base class.

To register a .NET class as an XSL extension library:

1. In `web.config`, navigate to the `/configuration/sitecore/xslExtensions` element.
2. Within the `<xslExtensions>` element, insert a new line based on the following.

```
<extension mode="on" type="Namespace.Class, Assembly"
namespace="http://domain.tld/class" singleInstance="true"/>
```

3. Replace the values of the `type` and `namespace` attributes with the appropriate class signature and URL.

Note

The namespace must be a valid, unique URL, but it does not have to be a valid Web page.

To use the new extension in XSL renderings and the boilerplate file used for XSL renderings, map the namespace to the URL and the `exclude-result-prefixes` attribute of the rendering.

```
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
xmlns:sc="http://www.sitecore.net/sc"
xmlns:dot="http://www.sitecore.net/dot"
xmlns:namespace="http://www.domain.tld/class"
exclude-result-prefixes="dot sc namespace">
```

Important

Add the namespace to the `exclude-result-prefixes` attribute. Otherwise, the generated markup may contain the namespace.

Tip

Consider adding the namespace definition to the boilerplate file used for XSL renderings.

5.1.2 How to Add Methods to the `sc` Namespace

To add methods to the `sc` namespace, override `Sitecore.Xml.Xsl.XslHelper`.

1. Create a class that inherits from `Sitecore.Xml.Xsl.XslHelper`.
2. In `web.config`, in the `/configuration/sitecore/xslExtensions/extension` element with namespace `http://www.sitecore.net/sc`, replace the value of the `type` attribute with the signature of your class. The `sc` namespace then exposes the methods in your class as well as the methods in the `Sitecore.Xml.Xsl.XslHelper` base class.

```
<extension mode="on" type="Namespace.Class, Assembly"
namespace="http://www.sitecore.net/sc" singleInstance="true" />
```

5.1.3 How to Access Properties of an XSL Extension Method Library Object

To access properties of an XSL extension class library object, use explicit `get_Property()` and `set_Property()` methods. For example:

```
<xsl:if test="get_PropertyName()">
  <xsl:value-of select="set_PropertyName('PropertyValue')" />
</xsl:if>
```

In this case, the `<xsl:value-of>` XSL element sets the property, and does not generate any output.

5.1.4 XSL Extension Method Examples

This section contains examples of custom .NET XSL extension methods.

GetHome() – Return a Sitecore.Data.Items.Item

The boilerplate file for XSL renderings defines a variable named `$home` using an XPath statement. This variable is invalid if you use an XSL rendering on a site that does not have `/Sitecore/Content/Home` as its start item. You can use an XSL extension method to determine the home item using logic rather than hard-coding a path.

First determine the home item for the site. Then use the `Sitecore.Configuration.Factory.GetItemNavigator()` method to convert the `Sitecore.Data.Items.Item` to the `System.Xml.XPath.XPathNodeIterator` representation used by XSL renderings.

```
namespace Namespace.Xml.Xsl
{
    private Sitecore.Data.Items.Item GetHomeItem()
    {
        Sitecore.Data.Database db = Sitecore.Context.Database;
        Sitecore.Data.Items.Item home = database.GetItem(Sitecore.Context.Site.StartPath);
        return(home);
    }
    public class XslHelper
    {
        public Sitecore.Xml.XPath.ItemNavigator GetHome()
        {
            return(Sitecore.Configuration.Factory.CreateItemNavigator(GetHomeItem()));
        }
        public string GetHomeID()
        {
            return(GetHomeItem().ID.ToString());
        }
    }
}
```

Update the `$home` variable definition in XSL rendering and the boilerplate file used for new XSL renderings.

```
<xsl:variable name="home" select="namespace:GetHome()" />
```

Note

It is generally more efficient to process a string than it is to process an XML structure. When possible, use a method that returns an ID as a string instead of returning an item as a `System.Xml.XPath.XPathNavigator`. For example, unless you are already using the `$home` variable and just need to update the logic used to define that variable, avoid defining the `$home` variable. When possible, use the `GetHomeID()` method instead of `GetHome()`. If you update the XSL rendering boilerplate file as suggested above, comment out this variable declaration to avoid unnecessary overhead. Developers can uncomment this line if they need this variable.

GetRandomSiblings() – Return Multiple Values Using XML

You can return a list from an XSL extension using a delimited string, or using XML. You can use this technique to return a list of item IDs, which you can process using XSL code similar to that used with the `sc:Split()` XSL extension method.

For example, a rendering needs to generate links to five random siblings of the context item, but never to the context item itself, and without ever generating two links to the same sibling. The following extension library class inherits from the `Sitecore.Xml.Xsl.XslHelper` class in order to use its `GetItem()` method to retrieve the `Sitecore.Data.Items.Item` corresponding to a `System.Xml.XPath.XPathNodeIterator`.

```

namespace Namespace.Xml.Xsl
{
    public class XslHelper : Sitecore.Xml.Xsl.XslHelper
    {
        public XPathNodeIterator GetRandomSiblings(XPathNodeIterator iterator,int max)
        {
            Sitecore.Xml.Packet packet = new Sitecore.Xml.Packet("values","");
            iterator.MoveNext();
            Sitecore.Data.Items.Item item = GetItem(iterator);
            if(item != null )
            {
                Sitecore.Collections.ChildList children = item.Parent.Children;
                if(children.Count>1)
                {
                    if(max>children.Count-1)
                    {
                        max = children.Count-1;
                    }
                    List<Sitecore.Data.ID> ids = new List<Sitecore.Data.ID>();
                    Random rand = new Random();
                    while(ids.Count<max)
                    {
                        int index = rand.Next(children.Count);
                        if(children[index].ID!=item.ID && !ids.Contains(children[index].ID))
                        {
                            packet.AddElement("value",children[index].ID.ToString());
                            ids.Add(children[index].ID);
                        }
                    }
                }
            }
            XPathNavigator navigator = packet.XmlDocument.CreateNavigator();
            if (navigator == null)
            {
                navigator = new XmlDocument().CreateNavigator();
            }
            navigator.MoveToRoot();
            navigator.MoveToFirstChild();
            return navigator.SelectChildren(XPathNodeType.Element);
        }
    }
}

```

This code will return an XML structure such as the following:

```

<values>
  <value>{ID}</value>
  ...
  <value>{ID}</value>
</values>

```

You can process this structure using code such as the following:

```

<xsl:for-each select="namespace:GetRandomSiblings(.,5)">
  <xsl:for-each select="sc:item(text(),$sc currentitem)">
    <sc:link>
      <xsl:value-of select="@name" />
      <br />
    </sc:link>
  </xsl:for-each>
</xsl:for-each>

```

Note

This code is provided only for demonstration purposes and could be very inefficient with a small number of siblings.