

# Package ‘XiMpLe’

March 3, 2023

**Type** Package

**Title** A Simple XML Tree Parser and Generator

**Description** Provides a simple XML tree parser/generator. It includes functions to read XML files into R objects, get information out of and into nodes, and write R objects back to XML code. It's not as powerful as the 'XML' package and doesn't aim to be, but for simple XML handling it could be useful. It was originally developed for the R GUI and IDE 'RKward' <<https://rkward.kde.org>>, to make plugin development easier.

**Depends** R (>= 2.9.0)

**Imports** methods

**Suggests** testthat, knitr, rmarkdown

**VignetteBuilder** knitr

**URL** <https://reaktanz.de/?c=hacking&s=XiMpLe>

**BugReports** <https://github.com/rkward-community/XiMpLe/issues>

**License** GPL (>= 3)

**Encoding** UTF-8

**LazyLoad** yes

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**Collate** '00\_class\_01\_XiMpLe.node.R'  
'00\_class\_02\_XiMpLe.doc.R'  
'00\_class\_03\_XiMpLe.validity.R'  
'01\_method\_01\_pasteXML.R'  
'XiMpLe-internal.R'  
'01\_method\_02\_node.R'  
'01\_method\_03\_show.R'  
'01\_method\_04\_validXML.R'  
'01\_method\_05\_XMLgenerators.R'  
'XMLNode.R'

```
'XMLTree.R'
'XiMpLe-package.R'
'gen_tag_functions.R'
'parseXMLTree.R'
'pasteXMLTag.R'
'provide_file.R'
'zzz_is_get_utils.R'
'zzz_is_get_utils_deprecated.R'
```

## R topics documented:

XiMpLe-package . . . . .	2
gen_tag_functions . . . . .	3
node . . . . .	5
parseXMLTree . . . . .	6
pasteXML . . . . .	7
pasteXMLTag . . . . .	9
provide_file . . . . .	10
show, XiMpLe.XML-method . . . . .	12
validXML . . . . .	12
XiMpLe.validity,-class . . . . .	15
XiMpLe_doc,-class . . . . .	16
XiMpLe_node,-class . . . . .	18
XMLgenerators . . . . .	19
XMLName . . . . .	21
XMLName, XiMpLe.node-method . . . . .	25
XMLNode . . . . .	27
XMLTree . . . . .	28
<b>Index</b>	<b>30</b>

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XiMpLe-package	<i>A Simple XML Tree Parser and Generator</i>
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## Description

Provides a simple XML tree parser/generator. It includes functions to read XML files into R objects, get information out of and into nodes, and write R objects back to XML code. It's not as powerful as the 'XML' package and doesn't aim to be, but for simple XML handling it could be useful. It was originally developed for the R GUI and IDE 'RKward' <<https://rkward.kde.org>>, to make plugin development easier.

## Details

The DESCRIPTION file:

```
Package:   XiMPLe
Type:      Package
Version:   0.11-1
Date:      2023-03-02
Depends:   R (>= 2.9.0)
Encoding:  UTF-8
License:   GPL (>= 3)
LazyLoad:  yes
URL:       https://reaktan.de/?c=hacking&s=XiMPLe
```

## Author(s)

NA

Maintainer: NA

## See Also

Useful links:

- <https://reaktan.de/?c=hacking&s=XiMPLe>
- Report bugs at <https://github.com/rkward-community/XiMPLe/issues>

---

gen\_tag\_functions      *Function generator to simplify generation of XiMPLe\_node objects*

---

## Description

Takes a vector of character strings and turns them into functions in the defined environment which in turn will generate `XiMPLe_node` objects with the string values as tag names.

## Usage

```
gen_tag_functions(
  tags,
  func_names = paste0(tags, "_"),
  envir = .GlobalEnv,
  replace = FALSE,
  func_rename = c(`?xml_` = "xml_", `!--_` = "comment_", `![CDATA[_` = "CDATA_",
  `!DOCTYPE_` = "DOCTYPE_")
)
```

**Arguments**

tags	A character vector defining the tags the generated functions should produce.
func_names	A character vector the same length as tags, defining the names of the functions to generate.
envir	The environment where all generated functions should appear.
replace	Logical, whether objects by the same name already present in envir should be preserved or replaced/overwritten.
func_rename	Named character vector defining which tags' functions should get a different name. This makes it easier to get functions with valid names that generate special tag nodes.

**Details**

The generated functions will be named according to func\_names and only have a dots argument that is given to [XMLNode](#). See the examples to understand how it's supposed to work.

**Value**

As many functions as specified by tags/func\_names.

**See Also**

[XMLNode](#),

**Examples**

```
# Say we would like to generate an HTML website and want to use
# <a>, <div> and <p> tags.
# The standard way of creating a <div> node would be this:
(my_node <- XMLNode("div", "some content", class="important"))

# By using gen_tag_functions(), we can create some shortcut functions
# to get better readability for our code and save some typing:
gen_tag_functions(tags=c("a", "div", "p"))
# We can now use div_() instead of XMLNode("div"):
(my_node2 <- div_("some content", class="important"))

# It also works for nested tags:
(my_node3 <- div_(a_(href="foo", "some content"))))

# If you don't want these functions filling up your .GlobalEnv,
# you can also put them in an attached environment, e.g.
attach(list(), name="XiMpLe_wrappers")
gen_tag_functions(tags=c("head", "body"), envir=as.environment("XiMpLe_wrappers"))
```

---

`node`*Extract/manipulate a node or parts of it from an XML tree*

---

**Description**

This method can be used to get parts of a parsed XML tree object, or to fill it with new values. `XiMple.XML` is a class union for objects of classes `XiMple_node` and `XiMple_doc`.

**Usage**

```
node(  
  obj,  
  node = list(),  
  what = NULL,  
  cond.attr = NULL,  
  cond.value = NULL,  
  element = NULL  
)  
  
## S4 method for signature 'XiMple.XML'  
node(  
  obj,  
  node = list(),  
  what = NULL,  
  cond.attr = NULL,  
  cond.value = NULL,  
  element = NULL  
)  
  
node(  
  obj,  
  node = list(),  
  what = NULL,  
  cond.attr = NULL,  
  cond.value = NULL,  
  element = NULL  
) <- value  
  
## S4 replacement method for signature 'XiMple.XML'  
node(  
  obj,  
  node = list(),  
  what = NULL,  
  cond.attr = NULL,  
  cond.value = NULL,  
  element = NULL  
) <- value
```

**Arguments**

obj	An object of class <code>XiMple_doc</code> or <code>XiMple_node</code> .
node	A list of node names (or their numeric values), where each element is the child of its previous element. duplicate matches will be returned as a list.
what	A character string, must be a valid slot name of class <code>XiMple_node</code> , like "attributes" or "value". If not NULL, only that part of a node will be returned. There's also two special properties for this option: <code>what="@path"</code> will not return the node or it's contents, but a character string with the "path" to it in the object; <code>what="obj@path"</code> is the same but won't have obj substituted with the object's name.
cond.attr	A named character string, to further filter the returned results. If not NULL, only nodes with fully matching attributes will be considered.
cond.value	A character string, similar to <code>cond.attr</code> , but is matched against the value between a pair of tags.
element	A character string naming one list element of the node slot. If NULL, all elements will be returned.
value	The value to set.

**Examples**

```
## Not run:
node(my.xml.tree, node=list("html","body"), what="attributes")
node(my.xml.tree, node=list("html","head","title"), what="value") <- "foobar"

## End(Not run)
```

---

parseXMLTree	<i>Read an XML file into an R object</i>
--------------	--

---

**Description**

Read an XML file into an R object

**Usage**

```
parseXMLTree(file, drop = NULL, object = FALSE)
```

**Arguments**

file	Character string, valid path to the XML file which should be parsed.
drop	Character vector with the possible values "comments", "cdata" "declarations", and "doctype", defining element classes to be dropped from the resulting object, or "empty_attributes", in case you would like to omit empty attributes (as used in HTML).
object	Logical, if TRUE, file will not be treated as a path name but as a character vector to be parsed as XML directly.

**Value**

An object of class `XiMple_doc` with four slots:

`file`: Full path to the parsed file, or "object" if `object=TRUE`.

`xml`: XML declaration, if found.

`dtd`: Doctype definition, if found.

`children`: A list of objects of class `XiMple_node`, with the elements "name" (the node name), "attributes" (list of attributes, if found), "children" (list of `XiMple_node` object, if found) and "value" (text value between a pair of start/end tags, if found).

**See Also**

[XiMple\\_node](#), [XiMple\\_doc](#)

**Examples**

```
## Not run:
sample.XML.object <- parseXMLTree("~/data/sample_file.xml")

## End(Not run)
```

---

pasteXML

*Paste methods for XiMple XML objects*

---

**Description**

These methods can be used to paste objects of class `XiMple_node` or `XiMple_doc`.

**Usage**

```
pasteXML(obj, ...)
```

```
## S4 method for signature 'XiMple_node'
pasteXML(
  obj,
  level = 1,
  shine = 1,
  indent.by = getOption("XiMple_indent", "\t"),
  tidy = TRUE,
  tidy.omit = c("![CDATA[", "*![CDATA["),
  as_script = FALSE,
  func_rename = c(`?xml_` = "xml_", `!--_` = "comment_", `![CDATA[_` = "CDATA_",
    `!DOCTYPE_` = "DOCTYPE_")
)
```

```
## S4 method for signature 'XiMple_doc'
pasteXML(
```

```

obj,
shine = 1,
indent.by = getOption("XiMpLe_indent", "\t"),
tidy = TRUE,
tidy.omit = c("![CDATA[", "*![CDATA["),
as_script = FALSE,
func_rename = c(`?xml_` = "xml_", `!--_` = "comment_", `![CDATA[_` = "CDATA_",
`!DOCTYPE_` = "DOCTYPE_")
)

```

### Arguments

obj	An object of class <code>XiMpLe_node</code> or <code>XiMpLe_doc</code> .
...	Additional options for the generic method, see options for a specific method, respectively.
level	Indentation level.
shine	Integer, controlling if the output should be formatted for better readability. Possible values: <ul style="list-style-type: none"> <li><b>0</b> No formatting.</li> <li><b>1</b> Nodes will be indented.</li> <li><b>2</b> Nodes will be indented and each attribute gets a new line.</li> </ul>
indent.by	A character string defining how indentation should be done. Defaults to <code>tab</code> .
tidy	Logical, if <code>TRUE</code> the special characters "<" and ">" will be replaced with the entities "&lt;" and "&gt;" in attributes and text values.
tidy.omit	A character vector with node names that should be excluded from <code>tidy</code> .
as_script	Logical, if <code>TRUE</code> , tags will be pasted as a sketch for a script to be run in conjunction with functions generated by <a href="#">gen_tag_functions</a> . This script code will most likely not run without adjustments, but is perhaps a good start anyway.
func_rename	Named character vector defining which tags' functions should get a different name. This makes it easier to get functions with valid names that generate special tag nodes. Only used when <code>as_script=TRUE</code> . Use the same names and values as you used in <a href="#">gen_tag_functions</a> .

### Note

The functions `pasteXMLNode()` and `pasteXMLTree()` have been replaced by the `pasteXML` methods. They should no longer be used.

### See Also

[XiMpLe\\_node](#), [XiMpLe\\_doc](#)



---

 pasteXMLTag

 Write an XML tag
 

---

### Description

Creates a whole XML tag with attributes and, if it is a pair of start and end tags, also one object as child. This can be used recursively to create whole XML tree structures with this one function.

### Usage

```
pasteXMLTag(
  tag,
  attr = NULL,
  child = NULL,
  empty = TRUE,
  level = 1,
  allow.empty = FALSE,
  rename = NULL,
  shine = 2,
  indent.by = getOption("XiMpLe_indent", "\t"),
  tidy = TRUE,
  as_script = FALSE,
  func_name = paste0(tag, "_"),
  func_rename = c(`?xml_` = "xml_", `!--_` = "comment_", `![CDATA[_` = "CDATA_",
    `!DOCTYPE_` = "DOCTYPE_")
)
```

### Arguments

tag	Character string, name of the XML tag.
attr	A list of attributes for the tag.
child	If empty=FALSE, a character string to be pasted as a child node between start and end tag.
empty	Logical, <true /> or <false></false>
level	Indentation level.
allow.empty	Logical, if FALSE, tags without attributes will not be returned.
rename	An optional named list if the attributes in XML need to be renamed from their list names in attr. This list must in turn have a list element named after tag, containing named character elements, where the names represent the element names in attr and their values the names the XML attribute should get.
shine	Integer, controlling if the output should be formatted for better readability. Possible values: <ul style="list-style-type: none"> <li><b>0</b> No formatting.</li> <li><b>1</b> Nodes will be indented.</li> </ul>

	<b>2</b> Nodes will be indented and each attribute gets a new line.
indent.by	A character string defining how indentation should be done. Defaults to tab.
tidy	Logical, if TRUE the special characters "<", ">" and "&" will be replaced with the entities "&lt;", "&gt;" and "&amp;" in attribute values. For comment or CDATA tags, if the text includes newline characters they will also be indented.
as_script	Logical, if TRUE, tags will be pasted as a sketch for a script to be run in conjunction with functions generated by <a href="#">gen_tag_functions</a> . This script code will most likely not run without adjustments, but is perhaps a good start anyway.
func_name	A character string, defining a function name for tag. Only used when as_script=TRUE.
func_rename	Named character vector defining which tags' functions should get a different name. This makes it easier to get functions with valid names that generate special tag nodes. Only used when as_script=TRUE. Use the same names and values as you used in <a href="#">gen_tag_functions</a> .

**Value**

A character string.

**Note**

However, you will probably not want to use this function at all, as it is much more comfortable to create XML nodes or even nested trees with [XMLNode](#) and [XMLTree](#), and then feed the result to [pasteXML](#).

**See Also**

[XMLNode](#), [XMLTree](#), [pasteXML](#)

**Examples**

```
sample.XML.tag <- pasteXMLTag("a",
  attr=list(href="http://example.com", target="_blank"),
  child="klick here!",
  empty=FALSE)
```

---

provide\_file

*Manage static files in project directory*

---

**Description**

Copies or overwrites files from a source directory to your project directory. Can be used to make sure that files you are referencing in your generated XML code are present and up to date.

**Usage**

```
provide_file(rel, to, from, overwrite = TRUE, mode = "0777", quiet = FALSE)
```

**Arguments**

rel	Relative path of file as to be used in HTML.
to	Full path to the project directory where files should be copied to.
from	Full path to the directory where the file can be found under its rel_path.
overwrite	Logical, whether existing files should be re-written or kept in place.
mode	Permissions for newly created directories below to.
quiet	Logical, whether you would like to see a message when files are copied or already exist.

**Details**

The function returns the relative path that was given as its first argument, e.g. it can be used inside XMLNode to add relative paths to arguments while also copying the referenced file to the given output directory, keeping the relative path.

It can be useful to write a simple wrapper around this function to set the relevant from and to paths for a project (see examples).

**Value**

When called, the file is copied from the from to the to directory, including the relative path given by rel. Missing target directories below to are created on-the-fly. If successful, the function finally returns an invisible character string identical to rel.

**Examples**

```
## Not run:
# a direct call that would copy the file ~/webpage/v1/static/css/bootstrap.min.css
# to the project directory as /tmp/static/css/bootstrap.min.css
# and include "static/css/bootstrap.min.css" in the <link> tag
my_HTML <- XMLNode(
  "link",
  rel="stylesheet",
  type="text/css",
  href=provide_file(
    rel="static/css/bootstrap.min.css",
    to="/tmp",
    from="~/webpage/v1"
  )
)

# for larger projects, a wrapper function might become handy
prov <- function(
  rel,
  to="/tmp",
  from="~/webpage/v1",
  overwrite=TRUE,
  mode="0777"
){
  provide_file(rel=rel, to=to, from=from, overwrite=overwrite, mode=mode)
```

```
}  
# let's combine it with a shortcut function for <link>  
gen_tag_functions("link")  
# now this code produces the same result as the direct call above  
my_HTML2 <- link_(  
  rel="stylesheet",  
  type="text/css",  
  href=prov("static/css/bootstrap.min.css")  
)  
  
## End(Not run)
```

---

show, XiMPLe.XML-method

*Show method for S4 objects of XiMPLe XML classes*

---

### Description

Used to display objects of class [XiMPLe\\_doc](#) and [XiMPLe\\_node](#)

### Usage

```
## S4 method for signature 'XiMPLe.XML'  
show(object)
```

### Arguments

object            An object of class [XiMPLe\\_doc](#) or [XiMPLe\\_node](#)

### See Also

[XiMPLe\\_doc](#) [XiMPLe\\_node](#)

---

validXML

*Validate S4 objects of XiMPLe XML classes*

---

### Description

Checks whether objects of class [XiMPLe\\_doc](#) or [XiMPLe\\_node](#) have valid child nodes.

**Usage**

```

validXML(
  obj,
  validity = XMLValidity(),
  parent = NULL,
  children = TRUE,
  attributes = TRUE,
  warn = FALSE,
  section = parent,
  caseSens = TRUE
)

## S4 method for signature 'XiMpLe.XML'
validXML(
  obj,
  validity = XMLValidity(),
  parent = NULL,
  children = TRUE,
  attributes = TRUE,
  warn = FALSE,
  section = parent,
  caseSens = TRUE
)

```

**Arguments**

obj	An object of class <code>XiMpLe_doc</code> or <code>XiMpLe_node</code> . If <code>parent=NULL</code> , this object will be checked for validity, including its child nodes. If <code>parent</code> is either a character string or another <code>XiMpLe</code> node, it will be checked whether <code>obj</code> is a valid child node of <code>parent</code> .
validity	An object of class <code>XiMpLe.validity</code> , see <a href="#">XMLValidity</a> .
parent	Either a character string (name of the parent node) or a <code>XiMpLe</code> node, whose name will be used as name of the parent node.
children	Logical, whether child node names should be checked for validity.
attributes	Logical, whether attributes should be checked for validity.
warn	Logical, whether invalid objects should cause a warning or stop with an error.
section	Either a character string (name of the section) or a <code>XiMpLe</code> node, whose name will be used as name of the XML section this check refers to. This is only relevant for warnings and error messages, in case you want to use something different than the actual parent node name.
caseSens	Logical, whether checks should be case sensitive or not.

**Details**

`XiMpLe` can't handle DOM specifications yet, but this method can be used to construct validation schemes.

**Value**

Returns TRUE if tests pass, and depending on the setting of warn either FALSE or an error if a test fails.

**Note**

: If no parent is specified, obj will be checked recursively.

**See Also**

[validXML](#), [XMLValidity](#), [XiMPLe\\_doc](#), and [XiMPLe\\_node](#)

**Examples**

```
HTMLish <- XMLValidity(
  children=list(
    body=c("a", "p", "ol", "ul", "strong"),
    head=c("title"),
    html=c("head", "body"),
    li=c("a", "br", "strong"),
    ol=c("li"),
    p=c("a", "br", "ol", "ul", "strong"),
    ul=c("li")
  ),
  attrs=list(
    a=c("href", "name"),
    p=c("align")
  ),
  allChildren=c("!--"),
  allAttrs=c("id", "class"),
  empty=c("br")
)
# make XML object
validChildNodes <- XMLNode("html",
  XMLNode("head",
    XMLNode("!--", "comment always passes"),
    XMLNode("title", "test")
  ),
  XMLNode("body",
    XMLNode("p",
      XMLNode("a", "my link"),
      XMLNode("br"),
      "text goes on"
    )
  )
)
invalidChildNodes <- XMLNode("html",
  XMLNode("head",
    XMLNode("title",
      XMLNode("body", "test")
    )
  )
)
```

```

)

# do validity checks
# the first should pass
validXML(
  validChildNodes,
  validity=HTMLish
)

# now this one should cause a warning and return FALSE
validXML(
  invalidChildNodes,
  validity=HTMLish,
  warn=TRUE
)

```

---

XiMpLe.validity,-class

*Class XiMpLe.validity*


---

## Description

Used for objects that describe valid child nodes and attributes of XiMpLe\_nodes.

## Usage

```
is.XiMpLe.validity(x)
```

## Arguments

x                    An arbitrary R object.

## Details

A constructor function XMLValidity(...) is available to be used instead of new("XiMpLe.validity", ...).

## Slots

children Named list of vectors or XiMpLe.validity objects. The element name defines the parent node name and each character string a valid child node name. If a value is in turn of class XiMpLe.validity, this object will be used for recursive validation of deeper nodes.

attrs Named list of character vectors. The element name defines the parent node name and each character string a valid attribute name.

allChildren Character vector, names of globally valid child nodes for all nodes, if any.

allAttrs Character vector, names of globally valid attributes for all nodes, if any.

empty Character vector, names of nodes that must be empty nodes (i.e., no closing tag), if any.

ignore Character vector, names of nodes that should be ignored, if any.

**See Also**[validXML](#)**Examples**

```

HTMLish <- XMLValidity(
  children=list(
    body=c("a", "p", "ol", "ul", "strong"),
    head=c("title"),
    html=c("head", "body"),
    li=c("a", "br", "strong"),
    ol=c("li"),
    p=c("a", "br", "ol", "ul", "strong"),
    ul=c("li")
  ),
  attrs=list(
    a=c("href", "name"),
    p=c("align")
  ),
  allChildren=c("!--"),
  allAttrs=c("id", "class"),
  empty=c("br")
)

# this example uses recursion: the <b> node can have the "foo"
# attribute only below an <a> node; the <d> node is also only valid
# in an <a> node
XMLRecursion <- XMLValidity(
  children=list(
    a=XMLValidity(
      children=list(
        b=c("c")
      ),
      attrs=list(
        b=c("foo")
      ),
      allChildren=c("d")
    )
  ),
  attrs=list(
    b=c("bar")
  )
)

```

---

XiMple\_doc,-class

*Classes XiMple\_doc and XiMple.doc (old)*


---

**Description**

This class is used for objects that are returned by [parseXMLTree](#).



**Usage**

```
is.XiMPLe.doc(x)

as_XiMPLe_doc(obj, extra = list(), version = 2)

## S4 method for signature 'XiMPLe.doc'
as_XiMPLe_doc(obj, extra = list(), version = 2)
```

**Arguments**

x	An arbitrary R object.
obj	An object of old class XiMPLe.doc.
extra	A list of values to set the extra slot. Note that this will be applied recursively on child nodes also.
version	Integer numeric, to set the version slot. Note that this will be applied recursively on child nodes also.

**Details**

Class XiMPLe.doc is the older one, XiMPLe\_doc was introduced with XiMPLe 0.11-1. It has two new slots (extra and version) that would have made it impossible to load old objects without issues. XiMPLe\_doc inherits from XiMPLe.doc. You can convert old objects into valid new ones using the as\_XiMPLe\_doc method and are also advised to do so, as the XiMPLe.doc class might become deprecated in future releases.

A constructor function XiMPLe\_doc(...) is available to be used instead of new("XiMPLe\_doc", ...).

There's also XiMPLe\_doc\_old(...) to be used instead of new("XiMPLe.doc", ...), but you should not use that any longer.

**Slots**

file	Character string, Name of the file.
xml	Either a named list of character values (attributes for the XML declaration of the file), or a list of XiMPLe_nodes with tags whose names must start with a "?".
dtd	A named list, attributes for the doctype definition of the file.
children	A list of objects of class XiMPLe_node (XiMPLe_doc only), or XiMPLe.node (old, XiMPLe.doc only), representing the DOM structure of the XML document.
extra	A named list that can be used to store additional information on a document (XiMPLe_doc only).
version	A numeric integer, currently defaults to 2 (XiMPLe_doc only). This is a version number that can be used in the future in combination with the added extra slot. Should that get some supported values that are interpreted by package methods, the version number will be increased and the differences documented here. You shouldn't set it manually.

---

XiMpLe\_node,-class      *Classes XiMpLe\_node and XiMpLe.node (old)*


---

## Description

These classes are used to create DOM trees of XML documents, like objects that are returned by [parseXMLTree](#).

## Usage

```
is.XiMpLe.node(x)

is.XiMpLe_node(x)

as_XiMpLe_node(obj, extra = list(), version = 2)

## S4 method for signature 'XiMpLe.node'
as_XiMpLe_node(obj, extra = list(), version = 2)
```

## Arguments

x	An arbitrary R object.
obj	An object of old class XiMpLe.node.
extra	A list of values to set the extra slot. Note that this will be applied recursively on child nodes also.
version	Integer numeric, to set the version slot. Note that this will be applied recursively on child nodes also.

## Details

Class XiMpLe.node is the older one, XiMpLe\_node was introduced with XiMpLe 0.11-1. It has two new slots (extra and version) that would have made it impossible to load old objects without issues. XiMpLe\_node inherits from XiMpLe.node. You can convert old objects into valid new ones using the as\_XiMpLe\_node method and are also advised to do so, as the XiMpLe.node class might become deprecated in future releases.

There are certain special values predefined for the name slot to easily create special XML elements:

name="" If the name is an empty character string, a pseudo node is created, [pasteXMLNode](#) will paste its value as plain text.

name="!-" Creates a comment tag, i.e., this will comment out all its children.

name="![CDATA[" Creates a CDATA section and places all its children in it.

name="\*![CDATA[" Creates a CDATA section and places all its children in it, where the CDATA markers are commented out by /\* \*/, as is used for JavaScript in XHTML.

A constructor function `XiMpLe_node(...)` is available to be used instead of `new("XiMpLe_node", ...)`.

There's also `XiMpLe_node_old(...)` to be used instead of `new("XiMpLe.node", ...)`, but you should not use that any longer.

## Slots

`name` Name of the node (i.e., the XML tag identifier). For special names see details.

`attributes` A list of named character values, representing the attributes of this node. Use `character()` as value for empty attributes.

`children` A list of further objects of class `XiMpLe.node`, representing child nodes of this node.

`value` Plain text to be used as the enclosed value of this node. Set to `value=""` if you want a childless node to be forced into a non-empty pair of start and end tags by `pasteXMLNode`.

`extra` A named list that can be used to store additional information on a node (`XiMpLe_node` only). The only value with a noticeable effect as of now (version 2) is:

`shine`: A numeric integer value between 0 and 2, overwriting the shine value of, e.g., `pasteXML` for this particular node.

`version` A numeric integer, currently defaults to 2 (`XiMpLe_node` only). This is a version number that can be used in the future in combination with the added `extra` slot. Should that get more supported values like `shine` that are interpreted by package methods, the version number will be increased and the differences documented here. You shouldn't set it manually.

---

XMLgenerators

*Generate XML generator functions from XiMpLe.validity object*

---

## Description

Takes an object of class `XiMpLe.validity` and turns it into a character vector of generator functions for each XML node that was defined.

## Usage

```
XMLgenerators(
  validity,
  prefix = "XML",
  checkValidity = TRUE,
  indent.by = getOption("XiMpLe_indent", "\t"),
  roxygenDocs = FALSE,
  valParam = "validity",
  replaceChar = "_",
  dir = NULL,
  overwrite = FALSE,
  oneFile = NULL
)
```

```
## S4 method for signature 'XiMple.validity'
XMLgenerators(
  validity,
  prefix = "XML",
  checkValidity = TRUE,
  indent.by = "\t",
  roxygenDocs = FALSE,
  valParam = "validity",
  replaceChar = "_",
  dir = NULL,
  overwrite = FALSE,
  oneFile = NULL
)
```

### Arguments

<code>validity</code>	An object of class <code>XiMple.validity</code> .
<code>prefix</code>	A character string to be used as a prefix for the resulting function names.
<code>checkValidity</code>	Logical, whether all functions should include a check for valid XML.
<code>indent.by</code>	A character string defining how indentation should be done.
<code>roxygenDocs</code>	Logical, whether a skeleton for roxygen2-ish documentation should be added.
<code>valParam</code>	A character string, name of the additional parameter to use for validation if <code>checkValidity=TRUE</code> .
<code>replaceChar</code>	A (single) character to be used as a replacement for invalid characters for R parameter names.
<code>dir</code>	A character string, path to write files to. If <code>dir=NULL</code> , no files are being written, but the results returned in form of a character vector. If <code>dir</code> is set and the directory does not yet exist, it will be created.
<code>overwrite</code>	Logical, whether existing files should be replaced when <code>dir</code> is set.
<code>oneFile</code>	A character string. If set, all functions are to be documented in one single *.Rd file, named like the string.

### Details

The resulting code follows these rules:

- Each child node gets its own argument, except if there is only one valid child node. It will use the dots element instead then.
- Each attribute will also get its own argument.
- If `CheckValidity=TRUE`, one extra argument named after the value of `valParam` will be added.
- All arguments are set to `NULL` by default.
- Only the main level of `"allAttrs"` will be taken into account, there's no recursion for this slot.

**Value**

If `dir=NULL` a named vector of character strings. Otherwise one or more files are written to the location specified via `dir`.

**See Also**

[XMLValidity](#) and [XiMpLe.validity](#)

**Examples**

```
HTMLish <- XMLValidity(
  children=list(
    body=c("a", "p", "ol", "ul", "strong"),
    head=c("title"),
    html=c("head", "body"),
    li=c("a", "br", "strong"),
    ol=c("li"),
    p=c("a", "br", "ol", "ul", "strong"),
    ul=c("li")
  ),
  attrs=list(
    a=c("href", "name"),
    p=c("align")
  ),
  allChildren=c("!--"),
  allAttrs=c("id", "class"),
  empty=c("br")
)
XMLgenerators(HTMLish)
```

---

XMLName

*Getter/setter methods for S4 objects of XiMpLe XML classes*


---

**Description**

Used to get/set certain slots from objects of class [XiMpLe\\_doc](#) and [XiMpLe\\_node](#).

**Usage**

```
XMLName(obj)
```

```
## S4 method for signature 'XiMpLe_node'
XMLName(obj)
```

```
XMLName(obj) <- value
```

```
## S4 replacement method for signature 'XiMpLe_node'
XMLName(obj) <- value
```

```
XMLAttrs(obj)

## S4 method for signature 'XiMpLe_node'
XMLAttrs(obj)

XMLAttrs(obj) <- value

## S4 replacement method for signature 'XiMpLe_node'
XMLAttrs(obj) <- value

XMLChildren(obj)

## S4 method for signature 'XiMpLe_node'
XMLChildren(obj)

## S4 method for signature 'XiMpLe_doc'
XMLChildren(obj)

XMLChildren(obj) <- value

## S4 replacement method for signature 'XiMpLe_node'
XMLChildren(obj) <- value

## S4 replacement method for signature 'XiMpLe_doc'
XMLChildren(obj) <- value

XMLValue(obj)

## S4 method for signature 'XiMpLe_node'
XMLValue(obj)

XMLValue(obj) <- value

## S4 replacement method for signature 'XiMpLe_node'
XMLValue(obj) <- value

XMLFile(obj)

## S4 method for signature 'XiMpLe_doc'
XMLFile(obj)

XMLFile(obj) <- value

## S4 replacement method for signature 'XiMpLe_doc'
XMLFile(obj) <- value

XMLDecl(obj)
```

```
## S4 method for signature 'XiMPLe_doc'
XMLDecl(obj)

XMLDecl(obj) <- value

## S4 replacement method for signature 'XiMPLe_doc'
XMLDecl(obj) <- value

XMLDTD(obj)

## S4 method for signature 'XiMPLe_doc'
XMLDTD(obj)

XMLDTD(obj) <- value

## S4 replacement method for signature 'XiMPLe_doc'
XMLDTD(obj) <- value

XMLScan(obj, name, as.list = FALSE)

## S4 method for signature 'XiMPLe_node'
XMLScan(obj, name, as.list = FALSE)

## S4 method for signature 'XiMPLe_doc'
XMLScan(obj, name, as.list = FALSE)

XMLScan(obj, name) <- value

## S4 replacement method for signature 'XiMPLe_node'
XMLScan(obj, name) <- value

## S4 replacement method for signature 'XiMPLe_doc'
XMLScan(obj, name) <- value

XMLScanDeep(obj, find = NULL, search = "attributes")

## S4 method for signature 'XiMPLe_node'
XMLScanDeep(obj, find = NULL, search = "attributes")

## S4 method for signature 'XiMPLe_doc'
XMLScanDeep(obj, find = NULL, search = "attributes")
```

### Arguments

obj	An object of class XiMPLe_node or XiMPLe_doc
value	The new value to set.
name	Character, name of nodes to scan for.

<code>as.list</code>	Logical, if TRUE always returns a list (or NULL), otherwise if exactly one result is found, it will be returned as a single <code>XiMpLe_node</code> .
<code>find</code>	Character, name of element to scan for.
<code>search</code>	Character, name of the slot to scan, one of "attributes", "name", or "value" for nodes.

## Details

These are convenience methods to get or set slots from XML objects without using the @ operator.

- `XMLName()`: get/set the XML node name (slot name of class `XiMpLe_node`)
- `XMLAttrs()`: get/set the XML node attributes (slot `attrs` of class `XiMpLe_node`)
- `XMLValue()`: get/set the XML node value (slot `value` of class `XiMpLe_node`)
- `XMLChildren()`: get/set the XML child nodes (slot `children` of both classes `XiMpLe_node` and `XiMpLe_doc`)
- `XMLFile()`: get/set the XML document file name (slot `file` of class `XiMpLe_doc`)
- `XMLDecl()`: get/set the XML document declaration (slot `xml` of class `XiMpLe_doc`)
- `XMLDTD()`: get/set the XML document doctype definition (slot `dtd` of class `XiMpLe_doc`)

Another special method can scan a node/document tree object for appearances of nodes with a particular name:

- `XMLScan(obj, name, as.list=FALSE)`: get/set the XML nodes by name (recursively searches slot `name` of both classes `XiMpLe_node` and `XiMpLe_doc`). If `as.list=TRUE` always returns a list (or NULL), otherwise if exactly one result is found, it will be returned as a single `XiMpLe_node`.

Finally, there is a method to scan for certain values in `XiMpLe` objects and just list them. For instance, it can be used to list all instances of a certain attribute type in a document tree:

- `XMLScanDeep(obj, find, search="attributes")`: returns all found instances of `find` in all slots defined by `search`.

## See Also

[node](#), [XiMpLe\\_doc](#), [XiMpLe\\_node](#)

## Examples

```
xmlTestNode <- XMLNode("foo", XMLNode("testchild"))
XMLName(xmlTestNode) # returns "foo"
XMLName(xmlTestNode) <- "bar"
XMLName(xmlTestNode) # now returns "bar"

# search for a child node
XMLScan(xmlTestNode, "testchild")
# remove nodes of that name
XMLScan(xmlTestNode, "testchild") <- NULL
```



---

XMLName, XiMpLe.node-method

*Deprecated functions and methods*

---

## Description

These functions were used in earlier versions of the package but are now either replaced or removed.

## Usage

```
## S4 method for signature 'XiMpLe.node'  
XMLName(obj)  
  
## S4 replacement method for signature 'XiMpLe.node'  
XMLName(obj) <- value  
  
## S4 method for signature 'XiMpLe.node'  
XMLAttrs(obj)  
  
## S4 replacement method for signature 'XiMpLe.node'  
XMLAttrs(obj) <- value  
  
## S4 method for signature 'XiMpLe.node'  
XMLChildren(obj)  
  
## S4 method for signature 'XiMpLe.doc'  
XMLChildren(obj)  
  
## S4 replacement method for signature 'XiMpLe.node'  
XMLChildren(obj) <- value  
  
## S4 replacement method for signature 'XiMpLe.doc'  
XMLChildren(obj) <- value  
  
## S4 method for signature 'XiMpLe.node'  
XMLValue(obj)  
  
## S4 replacement method for signature 'XiMpLe.node'  
XMLValue(obj) <- value  
  
## S4 method for signature 'XiMpLe.doc'  
XMLFile(obj)  
  
## S4 replacement method for signature 'XiMpLe.doc'  
XMLFile(obj) <- value  
  
## S4 method for signature 'XiMpLe.doc'
```

```
XMLDecl(obj)

## S4 replacement method for signature 'XiMpLe.doc'
XMLDecl(obj) <- value

## S4 method for signature 'XiMpLe.doc'
XMLDTD(obj)

## S4 replacement method for signature 'XiMpLe.doc'
XMLDTD(obj) <- value

## S4 method for signature 'XiMpLe.node'
XMLScan(obj, name, as.list = FALSE)

## S4 method for signature 'XiMpLe.doc'
XMLScan(obj, name, as.list = FALSE)

## S4 replacement method for signature 'XiMpLe.node'
XMLScan(obj, name) <- value

## S4 replacement method for signature 'XiMpLe.doc'
XMLScan(obj, name) <- value

## S4 method for signature 'XiMpLe.node'
XMLScanDeep(obj, find = NULL, search = "attributes")

## S4 method for signature 'XiMpLe.doc'
XMLScanDeep(obj, find = NULL, search = "attributes")

## S4 method for signature 'XiMpLe.node'
pasteXML(obj, ...)

## S4 method for signature 'XiMpLe.doc'
pasteXML(obj, ...)
```

### Arguments

obj	An object of deprecated classes XiMpLe.node or XiMpLe.doc.
value	No longer used.
name	No longer used.
as.list	No longer used.
find	No longer used.
search	No longer used.
...	No longer used.

**Details**

For methods this can also mean that the object class is deprecated and you are asked to update old objects via [as\\_XiMple\\_node](#) or [as\\_XiMple\\_doc](#).

---

XMLNode	<i>Constructor function for XiMple_node objects</i>
---------	---

---

**Description**

Can be used to create XML nodes.

**Usage**

```
XMLNode(
  tag_name,
  ...,
  attrs,
  shine,
  namespace,
  namespaceDefinitions,
  .children = list(...)
)
```

**Arguments**

tag_name	Character string, the tag name.
...	Optional children for the tag. Must be either objects of class <a href="#">XiMple_node</a> or character strings, which are treated as attributes if they are named, and as simple text values otherwise. Use a named <code>character()</code> value for empty attributes. If this argument is empty, the tag will be treated as an empty tag. To force a closing tag, supply an empty string, i.e. <code>""</code> .
attrs	An optional named list of attributes. Will be appended to attributes already defined in the <code>...</code> argument.
shine	A numeric integer value between 0 and 2, overwriting the shine value of, e.g., <a href="#">pasteXML</a> for this particular node.
namespace	Currently ignored.
namespaceDefinitions	Currently ignored.
.children	Alternative way of specifying children, if you have them already as a list. This argument completely replaces values defined in the <code>...</code> argument.

**Details**

To generate a CDATA node, set `tag_name="![CDATA["`, to create a comment, set `tag_name="!--"`. Note that all defined attributes will silently be dropped if a text node, CDATA node or comment is generated.

**Value**

An object of class `XiMPLe_node`.

**See Also**

[XMLTree](#), [pasteXML](#)

**Examples**

```
(sample.XML.node <- XMLNode("a",
  attrs=list(
    href="http://example.com",
    target="_blank"
  ),
  .children="klick here!"
))
# This is equivalent
(sample.XML.node2 <- XMLNode("a",
  "klick here!",
  href="http://example.com",
  target="_blank"
))
# As is this
(sample.XML.node3 <- XMLNode("a",
  .children=list(
    "klick here!",
    href="http://example.com",
    target="_blank"
  )
))
```

---

XMLTree

*Constructor function for XiMPLe.doc objects*

---

**Description**

Can be used to create full XML trees.

**Usage**

```
XMLTree(..., xml = NULL, dtd = NULL, .children = list(...))
```

**Arguments**

...	Optional children for the XML tree. Must be either objects of class <code>XiMPLe_node</code> or character strings, which are treated as simple text values.
xml	A named list, XML declaration of the XML tree. Currently just pasted, no checking is done.

dtd	A named list, doctype definition of the XML tree. Valid elements are doctype (root element), decl ("PUBLIC" or "SYSTEM"), id (the identifier) and refer (URI to .dtd). Currently just pasted, no checking is done.
.children	Alternative way of specifying children, if you have them already as a list.

**Value**

An object of class `XiMPLe_doc`

**See Also**

[XMLNode](#), [pasteXML](#)

**Examples**

```
sample.XML.a <- XMLNode("a",
  attrs=list(href="http://example.com", target="_blank"),
  .children="klick here!")
sample.XML.body <- XMLNode("body", .children=list(sample.XML.a))
sample.XML.html <- XMLNode("html", .children=list(XMLNode("head", ""),
  sample.XML.body))
sample.XML.tree <- XMLTree(sample.XML.html,
  xml=list(version="1.0", encoding="UTF-8"),
  dtd=list(doctype="html", decl="PUBLIC",
    id "-//W3C//DTD XHTML 1.0 Transitional//EN",
    refer="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"))
```

# Index

- \* **classes**
  - XiMple.validity, -class, 15
  - XiMple\_doc, -class, 16
  - XiMple\_node, -class, 18
- \* **methods**
  - pasteXML, 7
  - show, XiMple.XML-method, 12
  - validXML, 12
  - XMLgenerators, 19
  - XMLName, 21
- as\_XiMple\_doc, 27
- as\_XiMple\_doc (XiMple\_doc, -class), 16
- as\_XiMple\_doc, -methods
  - (XiMple\_doc, -class), 16
- as\_XiMple\_doc, XiMple.doc-method
  - (XiMple\_doc, -class), 16
- as\_XiMple\_node, 27
- as\_XiMple\_node (XiMple\_node, -class), 18
- as\_XiMple\_node, -methods
  - (XiMple\_node, -class), 18
- as\_XiMple\_node, XiMple.node-method
  - (XiMple\_node, -class), 18
- gen\_tag\_functions, 3, 8, 10
- is.XiMple.doc (XiMple\_doc, -class), 16
- is.XiMple.node (XiMple\_node, -class), 18
- is.XiMple.validity
  - (XiMple.validity, -class), 15
- is.XiMple\_node (XiMple\_node, -class), 18
- node, 5, 24
- node, -methods (node), 5
- node, XiMple.doc-method (node), 5
- node, XiMple.node-method (node), 5
- node, XiMple.XML-method (node), 5
- node, XiMple\_doc-method (node), 5
- node, XiMple\_node-method (node), 5
- node<- (node), 5
- node<-, -methods (node), 5
- node<-, XiMple.doc-method (node), 5
- node<-, XiMple.node-method (node), 5
- node<-, XiMple.XML-method (node), 5
- node<-, XiMple\_doc-method (node), 5
- node<-, XiMple\_node-method (node), 5
- parseXMLTree, 6, 16, 18
- pasteXML, 7, 10, 19, 27–29
- pasteXML, -methods (pasteXML), 7
- pasteXML, XiMple.doc-method
  - (XMLName, XiMple.node-method), 25
- pasteXML, XiMple.node-method
  - (XMLName, XiMple.node-method), 25
- pasteXML, XiMple\_doc-method (pasteXML), 7
- pasteXML, XiMple\_node-method (pasteXML), 7
- pasteXMLNode, 18, 19
- pasteXMLNode (pasteXML), 7
- pasteXMLTag, 9
- pasteXMLTree (pasteXML), 7
- provide\_file, 10
- show, -methods (show, XiMple.XML-method), 12
- show, XiMple.doc-method
  - (show, XiMple.XML-method), 12
- show, XiMple.node-method
  - (show, XiMple.XML-method), 12
- show, XiMple.XML-method, 12
- show, XiMple\_doc-method
  - (show, XiMple.XML-method), 12
- show, XiMple\_node-method
  - (show, XiMple.XML-method), 12
- validXML, 12, 14, 16
- validXML, -methods (validXML), 12

- validXML, `XiMple.doc-method` (validXML),  
21
- validXML, `XiMple.node-method` (validXML),  
21
- validXML, `XiMple.XML-method` (validXML),  
21
  
- `XiMple` (`XiMple-package`), 2
- `XiMple-deprecated`  
(XMLName, `XiMple.node-method`),  
25
- `XiMple-package`, 2
- `XiMple.doc`, `-class` (`XiMple_doc`, `-class`),  
16
- `XiMple.doc-class` (`XiMple_doc`, `-class`), 16
- `XiMple.node`, 17
- `XiMple.node`, `-class`  
(`XiMple_node`, `-class`), 18
- `XiMple.node-class` (`XiMple_node`, `-class`),  
18
- `XiMple.validity`, 13, 19, 21
- `XiMple.validity`, `-class`, 15
- `XiMple.validity-class`  
(`XiMple.validity`, `-class`), 15
- `XiMple.XML-class` (`node`), 5
- `XiMple_doc`, 6–8, 12, 14, 21, 24, 29
- `XiMple_doc` (`XiMple_doc`, `-class`), 16
- `XiMple_doc`, `-class`, 16
- `XiMple_doc-class` (`XiMple_doc`, `-class`), 16
- `XiMple_doc_old` (`XiMple_doc`, `-class`), 16
- `XiMple_node`, 3, 6–8, 12, 14, 17, 21, 24, 27, 28
- `XiMple_node` (`XiMple_node`, `-class`), 18
- `XiMple_node`, `-class`, 18
- `XiMple_node-class` (`XiMple_node`, `-class`),  
18
- `XiMple_node_old` (`XiMple_node`, `-class`), 18
- `XMLAttrs` (XMLName), 21
- `XMLAttrs`, `-methods` (XMLName), 21
- `XMLAttrs`, `XiMple.node-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLAttrs`, `XiMple.node-method` (XMLName),  
21
- `XMLAttrs<-` (XMLName), 21
- `XMLAttrs<-`, `-methods` (XMLName), 21
- `XMLAttrs<-`, `XiMple.node-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLAttrs<-`, `XiMple.node-method`  
(XMLName), 21
- `XMLChildren` (XMLName), 21
- `XMLChildren`, `-methods` (XMLName), 21
- `XMLChildren`, `XiMple.doc-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLChildren`, `XiMple.node-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLChildren`, `XiMple_doc-method`  
(XMLName), 21
- `XMLChildren`, `XiMple_node-method`  
(XMLName), 21
- `XMLChildren<-` (XMLName), 21
- `XMLChildren<-`, `-methods` (XMLName), 21
- `XMLChildren<-`, `XiMple.doc-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLChildren<-`, `XiMple.node-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLChildren<-`, `XiMple_doc-method`  
(XMLName), 21
- `XMLChildren<-`, `XiMple_node-method`  
(XMLName), 21
- `XMLDecl` (XMLName), 21
- `XMLDecl`, `-methods` (XMLName), 21
- `XMLDecl`, `XiMple.doc-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLDecl`, `XiMple_doc-method` (XMLName), 21
- `XMLDecl<-` (XMLName), 21
- `XMLDecl<-`, `-methods` (XMLName), 21
- `XMLDecl<-`, `XiMple.doc-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLDecl<-`, `XiMple_doc-method` (XMLName),  
21
- `XMLDTD` (XMLName), 21
- `XMLDTD`, `-methods` (XMLName), 21
- `XMLDTD`, `XiMple.doc-method`  
(XMLName, `XiMple.node-method`),  
25
- `XMLDTD`, `XiMple_doc-method` (XMLName), 21
- `XMLDTD<-` (XMLName), 21
- `XMLDTD<-`, `-methods` (XMLName), 21
- `XMLDTD<-`, `XiMple.doc-method`

- (XMLName, XiMple.node-method),  
25
- XMLDTD<-, XiMple\_doc-method (XMLName), 21
- XMLFile (XMLName), 21
- XMLFile, -methods (XMLName), 21
- XMLFile, XiMple.doc-method  
(XMLName, XiMple.node-method),  
25
- XMLFile, XiMple\_doc-method (XMLName), 21
- XMLFile<- (XMLName), 21
- XMLFile<-, -methods (XMLName), 21
- XMLFile<-, XiMple.doc-method  
(XMLName, XiMple.node-method),  
25
- XMLFile<-, XiMple\_doc-method (XMLName),  
21
- XMLgenerators, 19
- XMLgenerators, -methods (XMLgenerators),  
19
- XMLgenerators, XiMple.validity-method  
(XMLgenerators), 19
- XMLName, 21
- XMLName, -methods (XMLName), 21
- XMLName, XiMple.node-method, 25
- XMLName, XiMple\_node-method (XMLName), 21
- XMLName<- (XMLName), 21
- XMLName<-, -methods (XMLName), 21
- XMLName<-, XiMple.node-method  
(XMLName, XiMple.node-method),  
25
- XMLName<-, XiMple\_node-method (XMLName),  
21
- XMLNode, 4, 10, 27, 29
- XMLScan (XMLName), 21
- XMLScan, -methods (XMLName), 21
- XMLScan, XiMple.doc-method  
(XMLName, XiMple.node-method),  
25
- XMLScan, XiMple.node-method  
(XMLName, XiMple.node-method),  
25
- XMLScan, XiMple\_doc-method (XMLName), 21
- XMLScan, XiMple\_node-method (XMLName), 21
- XMLScan<- (XMLName), 21
- XMLScan<-, -methods (XMLName), 21
- XMLScan<-, XiMple.doc-method  
(XMLName, XiMple.node-method),  
25
- XMLScan<-, XiMple.node-method  
(XMLName, XiMple.node-method),  
25
- XMLScan<-, XiMple\_doc-method (XMLName),  
21
- XMLScanDeep (XMLName), 21
- XMLScanDeep, -methods (XMLName), 21
- XMLScanDeep, XiMple.doc-method  
(XMLName, XiMple.node-method),  
25
- XMLScanDeep, XiMple.node-method  
(XMLName, XiMple.node-method),  
25
- XMLScanDeep, XiMple\_doc-method  
(XMLName), 21
- XMLScanDeep, XiMple\_node-method  
(XMLName), 21
- XMLTree, 10, 28, 28
- XMLValidity, 13, 14, 21
- XMLValidity (XiMple.validity, -class), 15
- XMLValue (XMLName), 21
- XMLValue, -methods (XMLName), 21
- XMLValue, XiMple.node-method  
(XMLName, XiMple.node-method),  
25
- XMLValue, XiMple\_node-method (XMLName),  
21
- XMLValue<- (XMLName), 21
- XMLValue<-, -methods (XMLName), 21
- XMLValue<-, XiMple.node-method  
(XMLName, XiMple.node-method),  
25
- XMLValue<-, XiMple\_node-method  
(XMLName), 21